THE IAS GAZETTE

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CONTENTS

1. POLITY & GOVERNANCE

1. 1   SC RULING IN ARTICLE 299 OF THE INDIAN CONSTITUTION

Context

- The Supreme Court recently held that the government, when entering into a **contract under the President's name, cannot claim immunity from the legal provisions of that contract** under Article 299 of the Constitution.

What is Article 299 of the Constitution

- **Article 298** gives the Centre and the state governments the power to carry on **trade or business, acquire, hold, and dispose of property, and make contracts for any purpose.**
- **Article 299** delineates **how these contracts will be concluded.**
- The formal text of Article 299 of the Constitution provides that "**all contracts made in the exercise of the executive power of the Union of a State shall be expressed to be made by the President or by the Governor of the State**" and that all such contracts and "**assurances of property made in the exercise of that power shall be executed**" on behalf of the President or the Governor by persons in a manner as directed and authorized by them.

About the article 299 and Rulings of Supreme Court

'Chatturbhuj Vithaldas Jasani v. Moreshwar Parashram & Ors'	• The 1954 SC ruling in 'ChatturbhujVithaldasJasani v. MoreshwarParashram&Ors' says that there must be a definite procedure according to which **contracts must be made by agents acting on the government's behalf;** otherwise, public funds may be depleted by unauthorized or illegitimate contracts.

Implication of the ruling	• The ruling implies that contracts not adhering to the manner given in **Article 299(1) cannot be enforced by any contracting party.**
Liability	• However, Article 299 (2) says that essentially, **neither the President nor the Governor can be personally held liable for such contracts.**

History of article 299

- Articles 298 and 299 came after the Constitution came into effect and the government entered into contracts even in the pre-independence era.
- According to the **Crown Proceedings Act of 1947,** the Crown could not be sued in court for a contract it entered into.

About the case

- A recent ruling delivered by the Bench was about an application filed by **Glock Asia-Pacific Limited against the Centre** on the appointment of an arbitrator in a dispute.
- Glock Asia Pacific entered into a contract with the **Ministry of Home Affairs for the supply of 31,756 Glock pistols.**
- Centre invoked a **performance bank guarantee** which led to a dispute between the two parties.
- A performance bank guarantee, **similar to a letter of credit,** is the bank's promise that it will meet the debtor's liabilities, provided that he fails to meet the contractual obligations.
- Glock's nomination of a **retired Delhi High Court judge as the sole arbitrator** was rejected by the center arguing that the arbitrator's nomination **violated one of the tender conditions that specified an officer in the Law Ministry,** appointed by the MHA

Secretary, would be the arbitrator in case of a dispute.
- But Gluck again challenged the clause.

Why was it challenged?

Arbitration and Conciliation Act, 1996	• Section 12(5) of the **Arbitration and Conciliation Act, 1996** provides that **any person whose relationship with the parties or counsel of the dispute falls under any of the categories in the Seventh Schedule** will be ineligible to be appointed as an arbitrator.
Seventh Schedule of the Act	• The Seventh Schedule includes relationships where the arbitrator is an **employee, consultant, advisor, or has any other past or present business relationship with a party.**

The outcome of the verdict

- The Court **ruled in Gluck's favour.**
- It held that a serving employee of the Union of India, a party to the contract, to nominate a serving employee of the Union of India as the Sole Arbitrator **conflicts with Section 12(5).**

- The court also appointed former SC judge **Justice Indu Malhotra "as the Sole Arbitrator** to adjudicate upon the disputes" in the case.
- The court held that Article 299 only lays down the **formality that is necessary to bind the government with contractual liability**" and not "**the substantial law relating to the contractual liability of the Government**".

Essential requirements for government contracts under Article 299 as per 'K.P. Chowdhry v. State of Madhya Pradesh. And Others rulings

- In the 1966 ruling by SC 'K.P. Chowdhry v. State of Madhya Pradesh. And Others', which laid down **three requirements for government contracts under Article 299**
- The contract **must be expressed to be made by the Governor or the Governor-General,**
- It must be **executed in writing**, and
- The execution **should be by such persons and in such a manner as the Governor or the Governor-General might direct or authorize.**

Conclusion

- Such cases might lead to adverse effects on governments' future contracts. The recommendation of the **246th Law Commission Report** that parties must appoint an impartial and independent adjudicator must be upheld.

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1. 2   UGC (INSTITUTIONS DEEMED TO BE UNIVERSITIES) REGULATIONS, 2023

Context

- The University Grants Commission (Institutions Deemed to be Universities) Regulations, 2023 was released by **Union Education Minister Dharmendra Pradhan.**

About the University Grants Commission (Institutions Deemed to be Universities) Regulations, 2023

- The University Grants Commission (Institutions Deemed to be Universities) Regulations, 2023 will **replace the UGC**

(Institutions Deemed to be Universities) Regulations, 2019.
- The regulations are in tune with the **National Education Policy of 2020**
- Under the 2019 guidelines, higher education institutions having "**existence for not less than 20 years**" were eligible for applying for the status.
- However, the revised guidelines have now **laid norms that HEIs with multidisciplinarity, NAAC grading, NIRFranking and NBA grading will be eligible.**

Eligibility criteria to apply for deemed be university status

- **NAAC 'A' grade** with at **least a 3.01 CGPA** for three consecutive cycles or
- NBA accreditation for two third of eligible programmes for **three consecutive cycles or in the top 50 of any specific category of National Institutional Ranking Framework [NIRF]** for the last three years continuously or
- Those in the **top 100 of overall NIRF Ranking for the last three years** continuously
- Besides, **a cluster of institutions managed by more than one sponsoring body or society** can also apply for deemed to be university status.
- The new regulations also introduce the "Distinct Institution" category under which existing institutions or an institution of the following categories will be exempted from eligibility criteria.

These are, Institutions

- With the **focus on teaching and research in unique disciplines** and/or **addressing the strategic needs of the country** or **engaged in the preservation of Indian cultural heritage or preservation of the environment or dedicated to skill development or dedicated to sports or languages or any other discipline**, so determined by the Expert Committee of Commission, will be exempted from eligibility criteria.
- The revised guidelines have also made it mandatory for deemed universities to register on the **Academic Bank of Credits (ABC).**
- The University Grants Commission (UGC) Act provides for the central government to declare any institution other than a university the status of an institution deemed to be a university.
- The first set of regulations in this regard was **notified in 2010** and these were subsequently revised in 2016 and 2019.

Importance of the regulation

- It encourages universities to focus on **quality and excellence, strengthen the research ecosystem and have a long-term impact** in transforming the higher education landscape.

- The institutions can **now offer twinning programmes,** joint degree programmes, and dual degree programmes in accordance with the provisions stipulated in the regulations concerned
- The regulations will facilitate the **creation of many more quality-focused universities** in an objective and transparent manner.
- This will help **enhance competition** among universities.

About the Deemed Universities

Status	• A "deemed to be" or "deemed university" tag was given to universities that **were not originally established as universities** but were given that status.
Their current strength	• There are around 170 deemed institutions in the country currently.
Criteria for selection	• An institution of higher education, other than a university, **doing work of high standard in a specific area,** can be declared as an institution deemed to be a university.
Procedure for declaring a university as deemed university	• **Section 3 of the UGC Act, 1956** provides that the Central **Government may, on the advice of the Commission**, declare, by notification in the Official Gazette that any institution of higher education, other than a university, shall be deemed to be a university for the purpose of this Act
Powers	• Such institutions **enjoy the academic status and privileges of a university.** • Deemed to be universities, like other

universities, **have the autonomy of offering various courses and therefore, preparing students for various examinations and awards.**   • These institutions **design their own syllabus** and courses to prepare the students to foray into diverse fields after the completion of their studies.

- **Difference among states:**Allotment of the 'deemed' tag becomes complicated as different states have acts under which private universities are established.

Way ahead

- The deemed to be universities' wording is part of the UGC Act, 1956, it needs to be removed once the **Higher Education Commission of India** is established through an act of Parliament,"
- More powers and autonomy should be provided to them at par with the Universities.

Issues with deemed to be Tag

- **Issue of credibility:**it creates doubt over our credibility, **foreign universities doubt our status** and ask us to clarify if deemed to be universities are recognized universities or not, students, who seek admissions to foreign universities, are asked if they studied at a proper university or not.

Conclusion

- The Parliamentary Standing Committee on Education, Women, Children, Youth and Sports has recommended an amendment of **clause 23 of the UGC Act, 1956** that deemed universities be allowed to use the term 'university' by amending Clause 23 of the UGC Act, 1956. This recommendation should be debated and considered in due time.

1. 3   SEDITION LAW IN INDIA

Context

- A year after the Supreme Court stayed the operation of the sedition law, the Law Commission of India has recommended that the **provision of sedition law be retained with procedural safeguards** and enhanced jail term.

Reasons for Law Commission's observations:

- The 22nd Law Commission of India, headed by **former Karnataka High Court Chief Justice Ritu Raj Awasthi,** recommended a review of sedition law by the Ministry of Home Affairs.
- The Supreme Court bench which was headed by then Chief Justice of India N V Ramana, in November 2022 ruled that while testing the constitutionality of Section 124A of the Indian Penal Code had **raised the bar for the government to invoke the provision.**
- Although the court did not explicitly stay the provision, **it virtually stalled the operation of the provision.**

What is the Sedition Law?

- Section 124A of the Indian Penal Code penalizes a crime against the state.
- It defines the crime as bringing "hatred or contempt, or excites or attempts to excite disaffection towards the government established by law in India."
- In 1962, the Supreme Court in 'Kedarnath Singh v State of Bihar' upheld the constitutional validity of IPC Section 124A.
- However, restricting its scope for misuse, the court held that unless accompanied by incitement or a call for violence, criticism of the government cannot be labeled sedition.

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Law Commission's recommendations

The Commission recommended three changes to the law on sedition:

Firstly	• it added the words "**with a tendency to incite violence or cause public disorder" in the KedarNath**ruling • The report also defines the tendency to incite violence as a "**mere inclination to incite violence or cause public disorder rather than proof of actual violence or imminent threat to violence.**"
Secondly	• The report suggests **enhancing imprisonment for sedition.** One of the criticisms against the provision is that it leaves judges with wide discretion on sentencing.
Thirdly	• **Section 124A has a jail term of up to three years or life imprisonment.** The 42nd Law Commission report, in 1971, considered this to be "odd" since it would mean either imprisonment for life or imprisonment up to three years only, but nothing in between, with the minimum punishment being only fine. • The Law Commission has now proposed **to enhance the jail term to up to seven years or life imprisonment.**

Why should the Sedition law stay?

- Sedition laws help in the **struggle against terrorist, separatist, and anti-national organizations.**
- It also **protects the elected government from attempts to overthrow it** via force or illegal means.
- If disrespecting the court results in criminal prosecution, then disrespecting the government must do the same, as maintaining the existence of the legal government is a requirement for the stability of the State. Thus it **brings the government to par with the judiciary.**
- Maoist rebel groups **run parallel governments** in many various districts. These groups support a revolution to overthrow the state legislature. The sedition law helps to curb that.

Why shouldn't the Sedition law stay?

- **Vague wordings:** The terms such as "**Sedition", "disturbing the public order" or "overthrowing the government by violence and criminal means"** are subject to wide interpretation. This leads to its misuse.
- **The growing abuse of Sedition:**According to recent data, sedition charges under Section 124A have **grown by 200%.** While the conviction rate decreased from **34 in 2017 ' to 3.3% in 2019.**

- **Outlawed in the UK:**The **UK outlawed sedition in 2010.** India, while we are still adhering to the British Empire's legal system.
- **Law Commission Recommendation:**The **Law Commission of India in 2018 questioned whether Section 124A should be kept in place.** Even the removal or revision of Section 124A of the Indian Penal Code was urged.
- **Against International Covenant on Civil and Political Rights (ICCPR) principles:**India signed the **International Covenant on Civil and Political Rights (ICCPR) in 1979**, whose principles go against Sedition law.

Way ahead

- Govt should add an explanation providing that **acts expressing disapprobation of the measures of the government or the administrative action of the government** would not amount to sedition
- Govt. Should**add a clarification** that sedition would apply only if it directly results in the incitement of violence and commission of an offence of certain punishment.
- The enforcement agencies should be **trained on the implementation of sedition laws and other criminal defamation laws,** as well as on when they do not apply.
- The government should consider the **Protection of Speech and Reputation Bill,**

2016, in amended form. The Bill has certain crucial features, including

- Determining the maximum claim amounts and prohibiting governmental entities, municipal authorities, and other organizations from bringing libel and sedition lawsuits (statutory functions).
- **Imposing sanctions for less serious transgressions,** such as apologies, corrections, and retractions.

Conclusion

- The right to free speech and expression is an essential ingredient of a democracy like India. Govt should sparingly use the sedition law and they should uphold **Kedarnath v. State of Bihar** judgment providing clear instructions, Section 124A of the IPC.

1.4   POCSO ACT

Context

- The **High Court of Karnataka has refused to quash proceedings against a gynecologist under the Pocso Act** for not reporting the offense to the police or any other authority.

More about the case

- The doctor was alleged to have performed a medical termination pregnancy procedure on a **13-year-old girl in December 2022** and the case was registered under section 21 of the Pocso Act against him for failing to report the offense.
- The Court ruled that **Registered Medical Practitioners are obliged under section 19(1) of the Pocso Act to furnish information on the offence** to the concerned authorities.

Sedition Section 19 of the POCSO Act, 2012

- Section 19 of the POCSO Act, 2012 provides a mandatory report of child sexual offences to the Special Juvenile Police Unit or the local police.
- Section 21 also provides penal provisions for failure to report or record a case under the POCSO Act.

About POCSO Act

- The Protection of Children from Sexual Offences Act, 2012 ["POCSO Act, 2012"] aims at **protecting children from all types of sexual abuse.**
- It provides stringent deterrents for the commission of offences against children which ranges from a **minimum of 20 years of imprisonment to the death penalty in case of aggravated penetrative sexual assault.**

Need of the POCSO Act, 2012

- Sole legislation in India, Before the introduction of the POCSO Act, 2012, which aimed at protecting the rights of a child was the **Goa's Children's Act, 2003 and Rules, 2004.**
- The **Indian Penal Code, 1860, under Sections 375, 354 and 377,** neither protect male children from sexual abuse nor protect their modesty.
- It was necessary to establish a statute that pointedly tackles the issue of growing child sexual abuse cases in the country.

Special features of the POCSO Act, 2012

Gender-neutral provisions
- It does not differentiate between the victim or the perpetrators based on their gender. Women and men both are liable for sexual offenses against children.

Confidentiality of the victim's identity
- Section 23 of the POCSO Act provides for the procedure of media and imposes the duty to maintain the child victim's identity unless the Special Court has allowed the disclosure.

Mandatory reporting of child abuse cases
- Reporting of sexual offences by third parties who know such offences, has been made mandatory under Sections 19 to 22 of the POCSO Act.
- In Shankar Kisanrao Khade v. State of Maharashtra (2013) the Court observed that children with intellectual disabilities are more vulnerable and therefore, the institutions housing them have the responsibility to report sexual abuse cases against them.

The last seen theory
- According to this theory, the person who is last seen with the victim is assumed to be the perpetrator of the offence when the time gap between the point when they were last seen alive is so small that it is impossible for any person to have committed the crime.

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Importance of the POCSO Act, 2012
- POCSO Act, 2012 is important **to reduce the growing cases of sexual abuse** against children in India.
- It contains **provisions regarding the protection of children from sexual assault and pornography and lays down the procedure** for the implementation of these laws.
- Incidents of sexual abuse against children occur **at schools, adoption homes, religious places, parks, hostels, etc and the security** of children is not certain anywhere. The law prevents such incidents.
- It was **necessary to introduce separate legislation** which could provide a reliable system for reducing the number of such offenses and punishing the perpetrators.
- The Act has been crucial in providing a **robust justice delivery mechanism** for the victims of sexual abuse and has highlighted the significance of child rights and safety. The reporting of cases of child sexual abuse has also increased with rising awareness.
- The Act covers punishment for **both non-penetrative sexual assault and aggravated penetrative sexual assault.**

Issues with the act
- <u>Consent:</u> If the **child/adolescent refuses to undergo medical examination but the family member or investigating officer is insisting on the medical examination,** the POCSO Act is silent and does not give clear direction.
- <u>Treatment cost:</u>The law has made a legal obligation on the medical fraternity and establishment to provide free medical care to the survivors. But the **state rarely provides such compensation.**
- <u>Medical examination:</u>The POCSO Act, Section 27(2) mandates that in the case of a female child/adolescent victim, the **medical examination should be done by a female doctor.**
- However, the law mandates the available medical officer to provide emergency medical care. While, the **Criminal Law Amendment Act, Section 166A of the Indian Penal Code** mandates the Government medical officer on duty to examine the rape victim. This conflicting legal position would arise when a female doctor is not available.
- <u>Consented Sexual Intimacy:</u>The latest amendment of the Indian Penal Code regarding rape laws in 2013, provides that the age of consent for sex **has been fixed to 18 years and anyone who has consensual sex with a child below 18 years can be charged with rape.** This may increase rape cases.

Way ahead

- There is an urgent **need to clarify the issue of consent in cases where a child/adolescent refuses to undergo a medical examination** but the family member or investigating officer is insisting on the medical examination.
- The State must direct **strict compliance with Section 19 and reporting of offenses particularly by doctors who indulge in medical termination of pregnancy of minors** in extenuating circumstances.
- The issue of medical termination should be **resolved by harmonizing the laws**.
- There is an urgent need to assign responsibility and accountability to the Government, elected representatives, and policy makers for education and awareness of children.
- There is a need to **integrate family violence treatment and child sexual abuse enforcement and support actions and preventive measures and foster the development** of evaluation of sexual offense-related cases.

Conclusion

- As per **World Health Organisation,** "Child abuse or maltreatment constitutes all forms of physical and or emotional ill-treatment, sexual abuse, neglect or negligence treatment or commercial or other exploitation, resulting in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power".
- This child abuse in any form must be protected with **stringent laws and their implementation.**

1. 5   NEW PARLIAMENT IN INDIA

Context

- The new parliament of India, which was constructed under the central vista project was inaugurated by the Honorable Prime Minister of India.

About the Central Vista Project

- The "Central Vista Project" is the larger **architectural project** to revamp the 46 hectares in the political heart of New Delhi, which encompasses British colonial-era monuments and government buildings, including Sansad Bhavan (Parliament House), the Rashtrapati Bhavan (formerly the Viceroy's House), and the Secretariat Buildings.
- The project's name refers to the central administrative area, also informally known as **'Lutyens Delhi.'**
- This was named after the British architect, **Edward Lutyens, who designed the area for the British Raj between 1911 and 1931.**

History of the Indian Parliament

Architects	• The old Parliament was designed by British architects **Sir Edwin Lutyens and Herbert Baker.**
Foundation Stone	• The foundation stone for the structure was laid by **Prince Arthur, Duke of Connaught and Strathearn, in February 1921.**
Construction period	• The building's construction took six years – **from 1921 to 1927.**
Inauguration	• Viceroy Lord Irwin was invited to inaugurate the building On January 18, 1927, by **Sir Bhupendra Nath Mitra**, a member of the Governor-General's Executive Council and in charge of the Department of Industries and Labour.
Constituent Assembly	• The **Constituent Assembly took over the building after Independence and in 1950** it became the location of the Indian Parliament. It was originally

	called the **Council House and housed the Imperial Legislative Council,** the legislature of British India.
Later additions	• Two floors were added in 1956, to the building in response to a demand for more space. • In 1989, the **Parliament Museum** was inaugurated. • In 2002 it was shifted to the **Parliament Library Building** where it has been since to the building in response to a demand for more space. • In 1989, the Parliament Museum was inaugurated and in 2002 it was shifted to the Parliament Library Building where it has been since.
Inspiration of the building's shape	• The circular shape of the **Chausath Yogini temple at Mitawli village in Madhya Pradesh's Morena** might have inspired the Council House design

Salient features of the new Parliament

- **Area:** It has a built-up area of about 65,000 sq m, with its **triangular shape** which ensures the optimum utilization of space.
- **The theme of LokShaba:** The Lok Shaba hall is based on the **peacock theme, India's national bird.**
- **Seating Capacity:** The new building will house a larger Lok Sabha hall with a capacity of **up to 888 seats** and a larger RajyaSabha hall with a capacity of up to **384 seats.** The Lok Sabha may accommodate up to 1,272 seats for joint sessions of Parliament.
- **Platinum-rated Green Building:** A "Platinum-rated Green Building", the new Sansad Bhavan will embody India's commitment towards environmental sustainability.
- **The Rajya Sabha theme:** The Rajya Sabha is based on the **lotus theme, India's national flower.**
- **Technology:** The building will have ultra-modern office spaces that will be secure, efficient, and equipped with the latest communications technology.
- **An embodiment of Indian Heritage:** The building will be an embodiment of Indian heritage, reflecting the "**vibrance and diversity of modern India, incorporating our cultural and regional arts and crafts".**
- **Central Lounge:** A Central Lounge that will complement the open courtyard will be a place for members to interact with each other. The courtyard will have a banyan, the national tree.
- **Accessible to all:** The new Parliament will be diving friendly, and people with disabilities will be able to move around freely.

Why did India need a new Parliament building?

- The existing Parliament House, which was commissioned in 1927, is almost a century old.
- The building "is showing signs of distress and over-utilization and is not able to meet the current requirements in terms of space, amenities and technology".
  - o **Obsolete communication structures:** Communications infrastructure and technology is antiquated in the existing Parliament, and the sound system of all the halls needs improvement.
  - o **Safety concerns:** currently Delhi is in **Seismic Zone-IV** the current Parliament building was built when Delhi was in Seismic Zone-II; This makes it vulnerable to earthquakes.
  - o **Narrow seating space for MPs:** The present building was not designed to accommodate a bicameral legislature of India. The **number of Lok Sabha seats will probably increase significantly from the current 545 after 2026.**
  - o **Inadequate infrastructure:** The addition of services like water supply and sewer lines, air conditioning, fire fighting equipment, CCTV cameras, etc., have led to seepage of water at several places and impacted the aesthetics of the building. Fire safety is a major issue in the old building.
  - o **Inadequate workspace for employees: Many places inside the buildings have been converted into offices** and this has reduced the workspaces.

- However, there is widespread criticism for its high cost of construction, environmental damage, and disregard for heritage buildings. But disregarding the criticism, Parliament was necessary for the emergent India.

Conclusion

- The new Parliament makes the vision for a **new, "self-reliant"** India emerging out of the long shadow of its colonial past come true.

1. 6   NCERT RATIONALISATION AND IMPLICATION FOR EDUCATION

Context

- In 'rationalisation' move, NCERT drops periodic table chapter from Class X book.

More about syllabus rationalization

December 2021	• The syllabus rationalization process was **started in December 2021** and the process was completed around June 2022
Sept 2022	• **30% of the NCERT syllabi was removed** as part of the syllabus rationalization in 2022. • Last year's syllabus rationalization exercise led to the removal of some sections from the curriculum, **including lessons on Gujarat riots, Mughal courts, Emergency, Cold War, and Naxalite movement,** among others. • The **industrial revolution was scrapped** from the textbook of class 11 and a **few Dalit writers have been removed from a Class 7 textbook previously.** A few climate-related topics were removed as well.
May 2023	• NCERT drops **periodic table** chapter from Class X book

The motive behind the rationalization

- The **COVID-19 pandemic** made it **imperative to reduce the content load** on students.
- The **National Education Policy 2020** also emphasized reducing the content load and providing opportunities for experiential learning with a creative mindset.
- The **Textbook Development Committee** which was constituted in 2005 mandated to development of the syllabus in line with the **2005 National Curriculum Framework (NCF).** They had recommended rationalization.
- Issues such as the overlapping of content, "**difficulty level", and "contents which are irrelevant in the present context** need rationalization.

Issues with the rationalization

- **No extensive consultation and discussion** on the proposal was done.
- There are **vast scholarships within the deleted chapter**. This would make a student of history remain ignorant of important insights provided by scholars who have contributed to an understanding of the issues dealt with in it.
- **Removal of important chapters such as the Mughals and their works** would affect the diverse perspective of the students about history.
- New students **would not learn much about the early history of Islam**; the Umayyads, the Abbasids; the emergence of sultanates; the crusades; the evolution of the state in west Asia, Iran, central Asia, north Africa and Span etc.
- The decision **would affect boards which use NCERT textbooks, including CBSE.** In the current academic session, government schools in Uttar Pradesh have declared that they will adopt NCERT's new Class 12 history textbooks, which have removed portions about Mughal courts.

- The removal of the chapter on the historical processes which led to partition, and the violence which accompanied independence and partition, **would prove to be inadequate for them and they would be less informed about an extremely crucial phase of the history** of modern India.

Way ahead

- There is a need for **widespread debate and discussion on issues** and to make the process of rationalization transparent.
- **Experts, researchers, educationists, students and teachers** along with other stakeholders must be consulted.
- The **rationale behind the move should be clearly communicated** to the public.
- The curriculum should be **made diverse and should inculcate creative learning** along with extracurricular activities.

About NCERT

- The **National Council of Educational Research and Training (NCERT)** is an autonomous organization set up in 1961 by the Government of India
- It was established to assist and advise the Central and State Governments on policies and programmes for qualitative improvement in school education.

Conclusion

- NCERT syllabus is the **basis for conducting many government exams at various levels.** Therefore any change in the content should be reasonable and should be through the process of extensive consultation.

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1. 7   JAL JEEVAN MISSION

Context

- WHO study says **Almost 4 lakh diarrhoeal disease deaths can be averted through JalJeevan Mission.**

Findings of the report

- Almost 14 million **DALYs (Disability-adjusted life years)** from the diarrhoeal disease are estimated to be averted, with universal coverage of safely-managed drinking water in India.
- This would result in **estimated cost savings of up to $ 101 billion.**
- Providing a tap connection to every household would result in **saving significant time on water collection (66.6 million hours each day).**

About JalJeevan Mission	- The Mission was **launched on August 15, 2019.** - JalJeevan Mission aims to provide safe and adequate drinking water through **individual household tap connections by 2024 to all households in rural India.** - The mission aims to provide **all rural households with an adequate quantity (55 lpcd) of water** of prescribed quality on a regular and long-term basis. - The programme implements **source sustainability measures** as mandatory elements, such as recharge and reuses through greywater management, water conservation, and rainwater harvesting. - The JalJeevan Mission is based on a **community approach to water and includes extensive Information, Education and communication** as a key components of the mission
Components	- Development of **in-village piped water supply** infrastructure to provide tap

supported under JJM	water connection to every rural household
	• Development of **reliable drinking water sources** and/ or augmentation of existing sources to provide long-term sustainability of the water supply system
	• Wherever necessary, **bulk water transfer, treatment plants and distribution networks** cater to every rural household.
	• Retrofitting of completed and ongoing schemes to provide FHTCs at the minimum service level of **55 lpcd**
	• Support activities, i.e. **IEC, HRD, training, development of utilities, water quality laboratories, water quality testing & surveillance, R&D,** knowledge center, capacity building of communities, etc.
	• Any other unforeseen challenges/ issues emerging due to natural disasters/ calamities which affect the goal of **FHTC to every household by 2024, as per guidelines of the Ministry of Finance on Flexi Funds.**

Achievements of the Mission

- Rural tap water connections **increased from 16.64 per cent in 2019 to 62.84 per cent within a span of 41 months**, representing an average annual increase of 13.5 percent compared to a mere 0.23 per cent per annum.
- So far, **62 per cent rural households have been provided with tap water connection.**
- **More than 1.55 lakh villages, (25% of total number of villages), in India have so far reported 'HarGharJal',** i.e., every household in these villages has access to clean drinking water through taps at their household premises.
- The JJM is also **creating both direct and indirect employment opportunities** in rural areas. A preliminary survey by **IIM Bengaluru** has assessed that about 1,47,55,980person-year of

employment can be created during the five-year period of implementation of JJM.
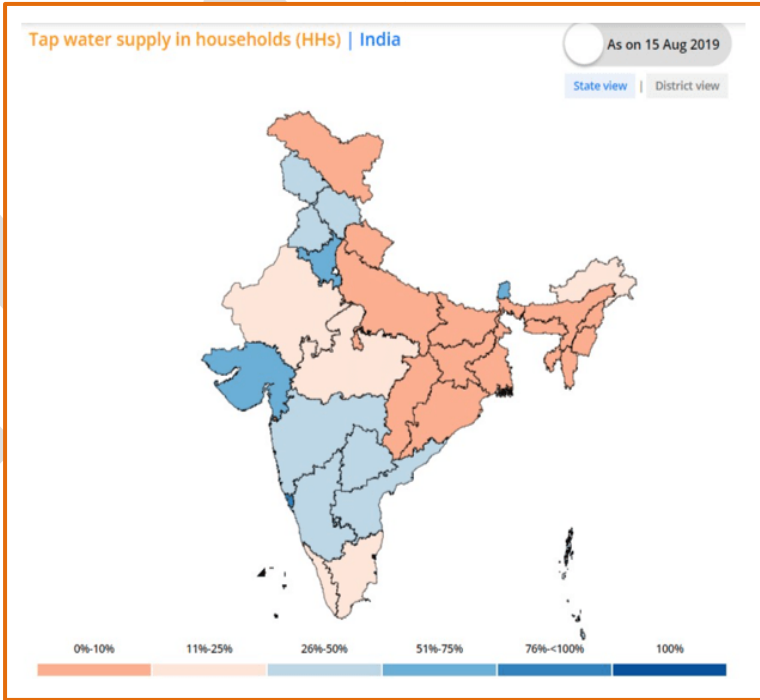
Challenges

- There are **conflicts between the centre and the states**. There are several discrepancies in the government claims.
- There are pipelines in several villages, but **running water remains a distant dream** because there are no water sources nearby.
- The biggest challenge for JalJeevan Mission is to **address quality concerns** about water supply and convince people to drink from taps.

- There are reports that the pipelines and infrastructure created have been destroyed and no maintenance has taken place.

Way ahead

- The success of the scheme requires **harmonious relations between the Union and state governments as well as community participation.**
- While creating the **pipeline infrastructure, the government needs to ensure that the villages get water as promised.**
- Supply of water only is not a panacea but **regular maintenance programmes** should be conducted.

- JJM, needs to look at **drinking water sustainability, here groundwater becomes an important** aspect and AtalBhujalYojana becomes integral to JJM. If a village needs piped water, it may also require MGNREGS [Mahatma Gandhi National Rural Employment Guarantee]. Thus there is a need for the **convergence of schemes.**

Tap water supply in households (HHs) | India

As on 13 Feb 2022

State view | District view

0%-10% | 11%-25% | 26%-50% | 51%-75% | 76%-<100% | 100%

Fig: situation before and after the launching of JalJeevan Mission. No copyright infringement intended.

Conclusion

- Diarrhea is a very common ailment, especially among new-born children. The newborns are more susceptible to water ailments. The government should ensure cleanliness and hygiene in the water supply.

1. 8   FORCED MIGRATION

Context

- The **United Nations High Commissioner for Refugees (UNHCR)** released Global Trends: Forced Displacement in 2022 report.

Findings of the report

- <u>Homelessness:</u>The number of people who were **uprooted from their hometowns due to social and climate crises** in 2022 was **21 per cent higher than in 2021and it was the largest increase ever.** Over19.1 million more people were **pushed out of their homes** last year over 2021.
- <u>Forced displacement:</u> More than 108.4 million people were **forcibly displaced by the end of 2022, 30 percent of them were children.**of these, 35.3 million were people who **had to move to another country for safety (refugees).**

- <u>Ukraine crisis:</u> A large share of **refugees were from Ukraine**, who were pushed out by the full-blown war in their country. It grew from 27,300 at the end of 2021 to 5.7 million at the end of 2022, **fastest since World War II.**
- <u>Climate related displacement:</u> Climate disasters caused **32.6 million internal displacements throughout 2022 and 8.7 million of the people did not manage to return home** by the end of the year.
- <u>Internal displacement:</u> Disaster related internal displacement **accounted for more than half (54 per cent) of all new displacements in 2022.**
- <u>Poorer countries at the receiving end:</u> Poorer countries had to bear the **biggest burden of this humanitarian crisis.** Not only did 90 per cent of the displaced population come from low- and middle-income countries, **these nations also hosted 76 per cent of the world's refugees in 2022.**
- Low-income countries, which have limited resources to adapt to the situation and account for **only 0.5 per cent of global gross domestic product**, hosted 16 per cent of the refugees. "This included very large refugee populations in Chad, the Democratic Republic of the Congo, Ethiopia, Sudan and Uganda,"

Issues and Challenges of Forced Migrations

Statelessness:		Poor countries at the receiving end:	Climate migrants	Limited classification of people:	Lack of consensus:
One of the major issues refugees face is statelessness. Stateless people are those who are not recognised as citizens by any government. As refugees, these people find it all the more difficult to avail the basic amenities like health, education and employment in the countries they have sought asylum in because they lack nationality documents.	At the end of 2022, an estimated 4.4 million people worldwide were stateless or of undetermined nationality 2 percent more than at the end of 2021.	More than half of the developing country's population lives in Latin America, South Asia, and sub-Saharan Africa. They are among the regions most vulnerable to the effects of climate change and could see large increases in both internal and cross-border migration as a result.	lack many important protections afforded to other groups, such as refugees.	The 1951 UN Refugee Convention, which was created to manage European refugees from World War II, and its expansion (via the protocol) in 1967, established the fundamental rights of refugees. This more limited classification of people is defined as those fleeing violence or persecution. However, migrants fleeing climate extremes are not currently protected under international law, and there is no consensus on how to legally define them.	The New York Declaration for Refugees and Migrants and the Global Compact for Safe, Orderly, and Regular Migration (GCM),provide governments with a framework for how to handle climate migration. The GCM recognizes climate change as a factor in driving migration, but it does not outline special legal protections for those affected.

Impact of Forced Migration

- <u>Death and violence:</u>Forced migration leads to **violence and protests which causes clashes** among people leading to death of many people in the process.
- <u>Psychological distress:</u>With **no recognition of statehood, separation from their relatives or friends and their country**, the forced migrants suffer from severe socio-psychological stress.
- severe economic loss (e.g. destruction or expropriation of property).
- <u>Non recognition:</u> Forced migrants are **not recognised by governments** and they are stateless. Thus do not enjoy the same socio-economic benefits as the locals or nationals.

- **Inability to access to other countries:** Forced migrants are not easily accepted by other countries. **Closure of the border by Belarus, and other European countries during the Ukraine** refugee crisis is one such case point.

International Laws pertaining to Migration	- **International human rights law (IHRL):** International human rights law (IHRL) lays down obligations which States are bound to respect. This law applies to all migrants, regardless of their status, are entitled to the same international human rights as everyone else. Under the law States have an obligation to migrants to respect, protect, and fulfill their human rights. - **The 1951 UN Refugee Convention:** 1951 Refugee Convention and its 1967 Protocol are the key legal documents that form the basis of UNHCR's work. **They define the term 'refugee' and outline their rights and the international standards of treatment for their protection.** - **The core principle of the 1951 Convention is non-refoulement,** which asserts that a refugee should not be returned to a country where they face serious threats to their life or freedom. - The document outlines the **basic minimum standards for the treatment of refugees, including the right to housing, work and education while displaced** so they can lead a dignified and independent life. - **The New York Declaration for Refugees and Migrants:** In September 2016 the General Assembly adopted the New York Declaration for Refugees and Migrants, to develop a global compact for safe, orderly and regular migration. - The New York Declaration included a set of commitments for refugees and migrants, and elements towards the achievement of a Global Compact on Refugees and a Global Compact for Safe, Orderly and Regular Migration. - **Global Compact for Safe, Orderly, and Regular Migration (GCM): The global compact for migration is the first, intergovernmental negotiated agreement, prepared under the auspices of the United Nations. The global compact is non-legally binding.** The GCM for the first time **recognizes climate refugees.**
About climate migration	- Climate migration occurs when **people leave their homes due to extreme weather events, including floods, heat waves, droughts, and wildfires, as well as slower-moving climate challenges** such as rising seas and intensifying water stress. - This form of migration is increasing because the world has not been able to reduce greenhouse gas emissions and halt global average temperature rise, which leads to more climate disasters.

Way ahead

- There should be **international pressure on Russia** and countries involved in Russia- Ukraine war to end the war. Efforts should be made to prevent such wars in future.

- There is a need to **revise the 1951 convention to include language on climate migration and creating a new Climate Refugee Convention.**
- **Amending the 1951 convention** would require adding a protocol, similar to the one created in 1967, aimed at defining the characteristics of climate refugees and granting them protections similar to those enjoyed by other refugees.
- Another option is to **create a new convention specifically addressing the rights and needs of climate refugees.**
- **The collection, analysis and use of credible data and information on,** among other things, **demographics, cross-border movements, internal displacement, diasporas, labor markets, seasonal trends, education and health is essential to create policies based on facts,** that weighs the benefits and risks of migration.
- Some individual governments and regional groups are moving forward with more concrete measures, such as **Argentina's humanitarian visa and the Asia-Pacific's framework on climate mobility,** which is currently being developed. Countries must adopt such measures.
- Regional cooperation can help minimize the negative consequences of migration and preserve its integrity. It can also contribute to regional and global development goals by improving human capital through sustainable development and ensuring longer-term economic growth.

Conclusion

- There is a need for **urgent, collective action to address the causes of displacement as well as reduce the impact** on those who have been uprooted. A designation of climate refugee would provide people fleeing climate issues with expanded protections, including access to legal services and planned relocation.

1. 9   CHILD TRAFFICKING IN INDIA

Context

- **The United Nations World Day Against Child Labour 2023** emphasises how social injustices, such as poverty and lack of education, create precarious conditions for children.

Child trafficking India	• According to the annual **National Crime Record Bureau's (NCRB) 'Crime in India' 2019 report,** a total of 73,138 children were reported missing. • The number of missing children **increased by 8.9% in 2019.** In 2018, the number of missing children was 67,134. • **Every eight minutes, a child goes missing in India.** Millions of missing children may have been trafficked, who end up in forced labour, slavery and sex work.
Child Trafficking a definition	• According to UNICEF a child victim of trafficking is **any person under 18** who is **recruited, transported, transferred, harbored or received for the purpose of exploitation,** either within or outside a country. • Female children are trafficked for **marriage, sex-work, criminal activity, adoption and organ trade** whereas male children are trafficked mainly for **labor and exploited as beggars.** Sometimes, trafficked children are also recruited into armed groups or for criminal activity.
Constitutional and legal provisions	• **Under Article 23 (1) Traffic in human beings and beggar** and other similar forms of forced labor are prohibited. • The Immoral Traffic (Prevention) Act, 1956 (ITPA) is the premier legislation for prevention of trafficking for commercial sexual exploitation.

Initiatives to combat trafficking of Women and Children

- The **Ministry of Women and Child Development (MWCD)** in an attempt to stop the trafficking of women and children has undertaken a number of initiatives.
- **National Plan of Action to Combat Trafficking and Commercial Sexual Exploitation of Women and Children 1998,** was formulated with the aim of **mainstreaming and reintegrating victims of trafficking.**
- **The Central Advisory Committee (CAB)** was constituted to advise on methods and tactics to address the problem.
- **Pre-rescue, Rescue and Post-rescue operations of child victims of trafficking for Commercial Sexual Exploitation protocol** were published as guidelines for all stakeholders
- **The MWCD in collaboration with NIPCCD and UNICEF** has developed three manuals for **'Judicial Handbook on Combating Trafficking of Women** and Children for Commercial Sexual Exploitation; **'Manual for Medical Officers for Dealing with Child Victims of Trafficking and Commercial Sexual Exploitation; and 'Counseling services for Child survivors of trafficking'.**
- The Ministry of Home Affairs has set up a dedicated **nodal Cell in the MHA for the prevention of trafficking.** The cell is responsible for providing state governments with the necessary research, studies and information.
- The ministry organizes **workshops for NGOs on issues relating to the trafficking of children for commercial sexual exploitation.** A special module for counsellors of trafficked victims has been formulated.
- The MWCD runs **Shelter based homes Short Stay Homes, and Swadhar Homes for women in difficult circumstances.**
- Three pilot projects were implemented i) **a Pilot project to combat the trafficking of women and children for commercial sexual exploitation** under the sanction of tradition ii) **a Pilot project to combat trafficking of women and children for commercial, sexual exploitation in source areas** and iii) **Pilot project to combat trafficking of women and children for commercial sexual exploitation in destination areas**. The projects are in the process of being converted into a full scheme.

Main reasons for child trafficking in India

- <u>Poverty:</u> Poverty is one of the main causes of child trafficking. **Economically disadvantaged families sometimes have no choice but to abandon or 'sell' their children,** leaving them in the hands of traffickers.
- <u>Natural disasters:</u> Child trafficking in India is particularly prominent in areas **struck by natural disasters as natural disasters make the children vulnerable** to being trafficked due to the loss of their parents or due to the poverty of their parents.
- <u>Illiteracy:</u> Illiteracy and lack of education make families more vulnerable to traffickers. Some of the most threatened also **include children whose births were never registered.** Many times, the early marriage of children is also carried out as a camouflage for child trafficking.
- <u>Growth of child pornography and prostitution:</u> Children, especially girl children are being trafficked to use them for the darknet economy where they are used for **pornography and in other cases for prostitution.**
- <u>Children in drug trades:</u> Children bought or transferred are used for illegal trading activities such as drug trading. **According to an estimation given by the ILO, 115 million children are working in the sex or drug trade**. As the kids are poor, innocent, and uneducated, they are easily brainwashed and forced to do drug dealings.
- <u>Child begging:</u> Children are innocent and weak in the eyes of the public. Thus, **when they see a child begging, no one can refuse to give some money to the child.** Thus, children are kidnapped or abducted and forced into begging. Sometimes, they are even purposefully blinded and handicapped by the traffickers for the purpose of begging.

International initiatives

- **The U.N. Convention on the Rights of the Child (CRC), 1989:** It is an international agreement on childhood that has become the most widely ratified human rights treaty in history and has helped transform children's lives around the world.
- **Palermo Protocol, 2000:** India ratified in 2011. This Protocol delineates a clear definition of trafficking for the first time, which helps in combating trafficking.

Way ahead

- **Amend Immoral Traffic (Prevention) Act, 1956:** An **amendment of the Immoral Traffic (Prevention) Act, 1956** to widen its scope, focus on traffickers, the human rights of victims and focus on proper implementation is required.
- **Training and skilling: Training all stakeholders such as police, government officials**, etc. to better understand the situation and hence respond properly to suspicious activity or person.
- **Use of social media:** The voice against child trafficking should be raised through media, social media, programmes and awareness-raising activities.
- **Spread awareness among parents and communities:** Lack of awareness can create situations that traffickers can exploit. A lot of

India's poor children find themselves trapped in substance abuse which can further lead to them getting trafficked. **Educated communities are capable of understanding, and effectively responding to the various ways traffickers source children**. Thus awareness is very important.

- **Immediate reporting:** If someone spots children being transported or being employed in a domestic home or factory or shop, **report it at Complaint Cell number 1800 102 7222 or dial Childline number 1098.**
- **Effective legislation:** Many cases have been filed under the recent **Protection of Children Against Sexual Offences Act (2012) and Immoral Traffic (Prevention) Act, which have successfully translated into increased convictions,** demonstrating how legislation can curb child trafficking. There is a need to make these laws effective or to make a new law which is effective.

Conclusion

- Tackle trafficking of women and girls by **addressing issues of poverty, illiteracy, lack of access to education and schools, lack of vocational skill and employment** opportunities, the prevalence of age-old evil practices like child marriages, low status of women and girls in society etc.

1. 10 NEED FOR A JUST UNIFORM CIVIL CODE

Context

- On June 14, the **Law Commission of India** decided to solicit views and proposals from the public about the Uniform Civil Code (UCC). After a hiatus of just five years, when the Commission had concluded that the **'UCC is neither necessary nor desirable"**

Uniform Civil Code (UCC)

- The idea of a UCC refers to laws that **apply to everyone in India**, replacing religion-based personal laws governing matters such as marriage, divorce, inheritance, adoption and succession.

- **In Article 44, our constitution specifies the UCC**: "The State shall endeavor to secure the citizens a Uniform Civil Code throughout the territory of India".
- The constitution is thus very clear that unless a uniform civil code is followed, integration cannot be imbibed. However, the fact is that **it is only a "directives principle"** laid down in the constitution and they are not enforceable by the court.

Should India have a uniform civil code?

Arguments to support the UCC:

- **Lessons from other countries:** UCC is prevalent in many countries now. **Even Italy has one, as does the rest of the developed world.** Polygamy has also been either banned or severely restricted in Syria, Egypt, Turkey, Morocco, Iran and even in Pakistan.

- **Need for reform in personal laws:** While other personal laws have undergone reform, for instance, Hindu Marriage Act, Hindu Succession Act, Hindu Minority and Guardianship Act, and Hindu Adoptions and Maintenance Act, Muslim law has not undergone such reforms. **Allowing Muslims, for example, to marry more than once, but prosecuting Hindus or Christians for doing the same, for instance, goes against the right to equality.** Uniform Civil Code will in the long run ensure Equality.

- **Gender equality:** There is universal agreement that personal laws, regardless of the community, are skewed against women. **The entire gamut of laws governing rights relating to property, marriage, divorce, maintenance, adoption and inheritance goes against the rights of women** in various personal laws.UCC will help to promote Gender equality.

- **Social ethics:** UCC does not insist people from one religion start practising rituals of other religions. All it requires is, with changing times, there should be a Uniform Civil code irrespective of all religions as far as social ethics such as equality and respect for women and their rights are concerned.

- **Lesson from Muslim countries:** Many Islamic countries have codified and reformed Muslim personal Law to check its misuse. Muslim countries like Egypt, Turkey and even Pakistan have reformed their laws. There is no reason why India should continue with vastly discriminatory personal laws.

- Until **1947 both India and Pakistan had governed Muslims under the Shariat Act of 1937. However, by 1961 Pakistan**, a Muslim country had reformed its Muslim Law more than India had and this remains true today.

- **Support from judiciary:** In the 1985 Shah Bano case, the Supreme Court, after two similar orders in the past, batted for a common civil code for greater national integration, and ruled that the Muslim Personal Laws couldn't be cited to deny Muslim women maintenance from their husbands after divorce. The Supreme Court again called for a UCC in 1995 and 2017.

- **Bars people of other communities to be a party against the community:** The interpretation of laws, in the absence of a uniform code for all religious communities, debars other religious communities from becoming a party to the case in the court in which an appeal is made against the members of that community. This makes them authoritarian in their domain.

Case study

- Let us take a look into the **case of Imrana-a 28 years old woman, and the mother of five children.** On June 6, 2005, Imrana, was raped by her 69-year-old father-in-law Ali Mohammad. Soon after she was raped, a local Muslim panchayat (council of elders) asked her to treat her **husband NurIlahi as her son and declared their marriage null and void! Can any law of the land justify this?**

Arguments against the UCC

- **Complex nature of Indian societies:**Indian society is extremely complex. India has a long history of personal laws and it cannot be given up easily. India is much more complex than Western societies which have been totally secularized.

- **Against the freedom of religion:**UCC is against fundamental rights guaranteed under Art. 25 and 26. **Both Article 25 (the right freely to profess, practice and propagate religion),** since it takes away the same religious rights of minorities.

- **Against minority rights:**A Uniform Civil Code administers the same set of secular civil laws to **govern different people belonging to different religions and regions.** This supersedes the right of citizens to be governed under different personal laws based on their religion or ethnicity. **The freedom to**

adopt any religion is enshrined in the Constitution. This code will affect the religious freedom of minorities.

- **Non-enforceable and not mandatory:** Article **44 provides for a Uniform civil code** for India. Article 37 of the Constitution itself makes clear, the directive principles "shall not be enforceable by any court". Nevertheless, they are "fundamental in the governance of the country".

- This shows that although our constitution itself believes that a Uniform Civil Code should be implemented in some manner, it does not make this implementation mandatory.

- **Against cultural rights:** UCC is against fundamental rights contained in Art. 29. Another defence taken against Art. 44 is of Art.29 which guarantees the right to 'culture'.

It is contended that personal law forms a part of 'culture'.

- **Against Tribal rights:** Indian Tribes such as **Nagas, Gonds, Khons, Khasi, Rabhas,** etc have their religion and practice a type of nature worship or totemism in some cases. They practice various **bizarre activities as a part of their custom.** Uniform Civil Code makes it difficult to govern tribal and scheduled areas and its implementation might be a backlash on the decades of efforts of integrating tribal people into the mainstream.

- **Non- applicability of IPC in some cases:** The Indian Penal Code (IPC) was brought in by the British in 1862 to cover all substantive aspects of criminal law. The IPC did not apply to matters such as marriage, divorce, inheritance, adoption and succession. These were governed by personal laws of different religions. Here personal laws are required.

Evolution of the Uniform Civil Code

In 1835	• The British government tried to reform local social and religious customs. • They stressed upon the need for uniformity in the codification of Indian law relating to crimes, evidence, and contracts, specifically recommending that personal laws of Hindus and Muslims be kept outside such codification.
In 1937	• Under the **East India Company, the Muslim Personal Law (Shariat) Application Act** was passed to formulate an Islamic law code for Indian Muslims. • It had no uniformity in its application at lower courts due to the diversity of the local cultures of Muslims in different parts of India.
1941	• The **B N Rau Committee** to codify the Hindu law was formed. • The committee recommended a codified Hindu law, which would give equal rights to women. • **The 1937 Act** was reviewed and the committee recommended a civil code of marriage and succession for Hindus.
1950	• **Article 44** specifying " The State shall endeavor to secure the citizens a Uniform Civil Code throughout the territory of India" became part of constitution.
Mohd Ahmed Khan vs Shah Bano Begum case (1985)	• The Supreme Court ruled in **Shah Bano's favo**r under the "maintenance of wives, children and parents" provision (Section 125) of the All India Criminal Code, which applied to all citizens, irrespective of religion. • Further, it recommended that a uniform civil code be set up.
Muslim Women's (Right to protection on divorce) Act (MWA) in 1986	• It was enacted to overturn the Supreme court's verdict in Shah Bano case. • It made Section 125 of the Criminal Procedure Code inapplicable to Muslim women.

Has any state implemented the UCC?

- UCC is in force only in the **state of Goa.** The Goa Civil Code was given by the Portuguese in 1867.
- However, **Uttarakhand** is set to be the first state in post-Independent to implement UCC. The state govts. have vowed to implement UCC in Assam and Gujarat as well.

Way ahead

- **National consensus:** Civil Code is necessary to effect an integration of India by bringing all communities into a **common platform which at present is governed by personal laws which do not form the essence of any religion.** India as a nation will not be truly secular unless uniformity is established in the form of rational non-religious codified laws. However there must be a consensus among all the religions before the UCC is made universal.
- **National debate:** In India, as far as personal law is concerned secularism has come to mean "non-intervening in the matter of religion." **This needs to be relooked and debated as there cannot be any discrimination in the guise of secularism.**
- The politicization results in appeasing the minority by giving them certain rights ultimately to catch their votes or to gain their sympathy. Secular India has upheld the freedom of religion at the cost of national unity.
- **Reform rather than UCC:** Some derogatory practices of religions can be removed by reforming personal laws in a similar way the **Triple talaq was nullified by the Supreme Court.** Inheritance rights, access to religious paces, etc rights can be ensured by reforming all the personal laws. we must deal with the roots first and the branches later." The key to achieving a UCC in essence is to simply remove all forms of discriminatory customs and traditions from personal laws.

- **Social Mobility and literacy:** As the minorities are educated and move up in the socio-economic ladder, the derogatory practices such as discrimination against women will fade away. **As per Sachar commission report on minorities**, the socio-economic conditions of Muslims are abysmally backward as compared to Hindus. Thus their social mobility and literacy is mandatory.
- **Reconcile our diversity:** India is a diverse country with diverse cultures. Efforts have to be made to reconcile our diversity with universal and indisputable arguments on human rights.

Conclusion

- Uniform Civil Code can be successfully introduced only after achieving improved levels of literacy, awareness on various socio-political issues, enlightened discussions and increased social mobility. **A secular India needs a uniform civil code. To mark time is to march with the communalists.** Thus, the ultimate aim of reforming uniform civil code should be ushering in the new dawn of freedom, dignity and opportunity for both the sexes equally. **The enactment of the UCC in piecemeal manner would be in tune with the spirit of Article 44.**

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1. 11   COMPETITION ACT AND COAL INDIA LIMITED

Context

- On June 15, the Supreme Court held that there was "**no merit**" in Coal India Ltd (CIL), a **public sector undertaking,** being excluded from the purview of the Competition Act.

More on news

- The CCI had imposed **a penalty of Rs 1773.05 crore on Coal India.**
- Fine was levied **for imposing unfair/discriminatory conditions in Fuel Supply Agreements with power producers** for supply of non-coking coal.

- The Competition Appellate Tribunal had, however, reduced the penalty to Rs 591 crore.
- The CIL has approached the apex court against the order of the appellate tribunal on the claim that they are outside the purview of CCI Act.
- However the **Supreme Court ruled that The Coal India is not excluded from the purview of the Competition Act.**
- The court held that **even departments of the government are separately included within the ambit of the word 'enterprise'.**

Arguments against CCL

- **CIL is an Enterprise:** The Competition Act, 2002 applies to the **public sector undertaking Coal India Limited (CIL)** as the company maintains the description of an enterprise engaged in mining in the context of Section 5 of the CCI act and It is not discharging any sovereign function of the government.
- **Contravenes provision of CCI Act:** CIL is in a dominant position in the coal market and entry of other firms in the coal market is difficult. The CIL through its subsidiaries, operates independently of market forces and enjoys a dominant position in the market and This contravenes the provision of competition act.
- **Against freedom of trade:** State monopoly can not be run through the medium of a Government Company such as CIL and if it is done, India will be pushed back to the pre-LPG era.
- **Dominant position of CIL:** Competition Act aims at tabooing anti-competitive agreements and thereby promoting competition. It also prohibits abuse of dominant position and if the government enterprise is given the monopoly the very purpose of CCI is defeated.
- **Against the targets of the government:** In country which is aiming at achieving a five trillion dollar economy by 2025, if the government continues to enjoy monopoly in the competitive sectors like Coal, India's global investment image would be affected.

CIL is outside the purview of CCI

- **Protection Coal Mines (Nationalization) Act, 1973:** CIL is governed by the **Coal Mines (Nationalization) Act, 1973** and that Nationalization Act cannot be reconciled with the (Competition) Act.
- The very purpose and policy underlying the Nationalization Act **was to monopolize the operation of the coal mines** and coal mining in the hands of the central government and its agencies and it is not an ordinary monopoly.
- To immunize it from challenge, **it was accorded protection of Article 31B of the Constitution of India** which has been inserted in the Ninth Schedule to the Constitution.
- **Aimed to promote common good:** Under the nationalization act the CCL is aimed **to promote common good** and bringing it under CCI defeats the very purpose of common good prescribed to achieve the goals in Article 39(b) of the Constitution.
- **Not a Department of the Government:** The CIL is not a Department of the Government. **It is a Government Company.** In fact, what is excluded from the definition of the expression 'enterprise' is a government department carrying on government functions.
- **Subsidized energy and economic benefit:** Coal is a core sector of the economy and **more than 80% of India's energy demand is met by coal.** Due to the monopoly of the government and people are able to avail the **subsidized energy.** Entry of the private sector would affect the energy sector of the economy and the poor and vulnerable would be at the receiving end.
- **An efficient company:** Coal India has been one of the efficient companies in India. It is a leading Coal PSU and is the **recipient of the Rising Star Award** in appreciation of its outstanding efforts to enhance procurement through the Government e-Marketplace GeM portal in FY 2022–23. They have been profitable since the beginning. There is no need for competition in coal sector.

Article 31(b)

- The **first constitutional amendment Act** added Article 31-B to the Constitution.
- The article says "**None of the acts placed in the 9th Schedule** shall become void on the ground that they violate rights under Part III and no judicial review is possible."
- Article 39(b) also says the **ownership and control of the material resources of the community** are so distributed as best to subserve the common good.

Definition of Enterprise under CCI

- Under section 2(h) of CCI Act an enterprise" means" **a person or a department of the Government,** who or which is, or has been, engaged in any activity, relating to the production, storage, supply, distribution, acquisition or control of articles or goods, or the provision of services, of any kind, or in investment, or in the business of acquiring, holding, underwriting or dealing with shares, debentures or other securities of any other body corporate, **either directly or through one or more of its units or divisions or subsidiaries, whether such unit or division or subsidiary is located at the same place where the enterprise is located or at a different place or at different places, but does not include any activity of the Government relatable to the sovereign functions of the Government** including all activities carried on by the departments of the Central Government dealing with atomic energy, currency, defense and space." (**Definition is written as it is to ensure visibility**)

- From the above definition of the word 'enterprise' includes **any activity relatable to the sovereign functions of the government** which would include, all activities **carried on by the departments of the central government**, dealing with various activities as mentioned above.

About Competition Commission of India

About CCI
- The Competition Commission of India has been established by the Central Government with effect from 14th October 2003.
- CCI consists of a Chairperson and 6 Members appointed by the Central Government.

Competition (Amendment) Act, 2007
- The Competition Act The Competition Act, 2002, as amended by the Competition (Amendment) Act, 2007, follows the philosophy of modern competition laws.
- The Act prohibits anti-competitive agreements, abuse of dominant position by enterprises and regulates combinations (acquisition, acquiring of control and M&A), which causes or likely to cause an appreciable adverse effect on competition within India.

Duties and objectives
- It is the duty of the Commission to eliminate practices having adverse effects on competition, promote and sustain competition, protect the interests of consumers and ensure freedom of trade in the markets of India.
- The Commission is also required to give opinion on competition issues on a reference received from a statutory authority established under any law and to undertake competition advocacy, create public awareness and impart training on competition issues.
- The goal is to create and sustain fair competition in the economy that will provide a 'level playing field' to the producers and make the markets work for the welfare of the consumers.

What is competition

- Competition is the best means of ensuring that the **'Common Man' or 'AamAadmi' has access to the broadest range of goods and services** at the most competitive prices.
- With increased competition, producers will have maximum incentive to innovate and specialize. This would result in reduced costs and wider choice to consumers.

Conclusion

- Fair competition in the market is essential to achieve the objective of growth and development. Coal India is essential for the Energy economy of India but it must **not abuse its dominant power and a fair competition must be promoted in the Coal sector.**

1.12   SHORT ARTICLES

Vice-Chancellors Appointment to State Universities

Context

- West Bengal Governor **C.V. Ananda Bose** and the **incumbent government** are at loggerheads over the appointment of interim Vice-Chancellors at 10 universities in the State.

High court rulings on the appointment of VCs-

- Calcutta High Court had earlier ruled that the **State has no authority to appoint, re-appoint, or extend the tenures of Vice Chancellors of the universities in the state of West Bengal.**
- It had further held that the appointment of Vice-Chancellors should be strictly **following the provisions of law.**

What does the rule say?

University Grants Commission (UGC) Regulations, 2018

- **As per** University Grants Commission (UGC) Regulations, 2018, **the VC of a university is** appointed by the Chancellor, who is the governor of the state, **from a panel of three to five names recommended by the Search cum Selection Committee.**

UGC Act, 1956

- **The appointments as a Vice Chancellor are under the provisions of the UGC Regulations which are a part of the** UGC Act, 1956.

Which law would prevail: State vs Central?

- Recently State governments of **Tamil Nadu, Maharashtra and Telangana had also tried to curtail the power of appointment of VCs** of state universities by Governors.
- Central legislation shall prevail by **applying the rule/principle of repugnancy as provided in Article 254** of the Constitution as the **subject 'education' is in the Concurrent List of the Seventh Schedule** of the Constitution.

Conclusion

- Central Act provides the Governor to be the appointing authority of VCs in state Universities and Education being on the **concurrent list, State governments must respect the constitutional provisions.**

PM Svanidhi Scheme

Context

- The govt disbursed 46 lakh loans to street vendors in the last three years under Prime Minister Street Vendor's Atma Nirbhar Nidhi (PM-SVANidhi).

About PM SVANidhi Scheme

First term loan	• Under the scheme, street vendors are eligible for a **first-term loan of up to Rs.10,000.**
Second and Third term loan	• If they repay the first loan, they are then eligible for a **second-term loan of up to Rs.20,000** subsequently, a third-term loan of up to Rs.50,000 is granted.
Subsidy	• It has an interest **subsidy @ 7% per annum on regular repayment of the loan**
Cashback	• It provides a **cashback of upto INR1200/- per annum** on undertaking prescribed digital transactions

Recent Changes

- Initially, it was available to all street vendors who are engaged in vending in urban areas as of or before March 24, 2020. Later it was extended to March 2022.
- Recently it was given an extension of the lending period till December 2024.
- Introduction of **3rd loan of up to ₹50,000 in addition to 1st & 2nd loans of ₹10,000 and ₹20,000 respectively.**
- It was decided to extend the 'SVANidhi Se Samriddhi' component for all beneficiaries of the PM SVANidhi scheme across the country.

Universal Postal Union (Upu)

Context

- Cabinet approves the establishment of a **Regional Office of the Universal Postal Union (UPU) in New Delhi, India** by entering into an Agreement with UPU.

About the agreement

- The Union Cabinet has approved the establishment of a Regional Office of the Universal Postal Union (UPU) in New Delhi as per provisions of the agreement.
- Under the agreement, **India would undertake UPU's development cooperation and technical assistance activities i**n the region by entering into an agreement with UPU.
- **India will provide a Field Project Expert, staff and office set-up** for UPU's regional office.
- Projects on capacity building and pieces of training, improving efficiency and quality of postal services, enhancement of Postal technology, e-commerce and trade promotion etc will be undertaken.

Importance of the agreement

- The agreement enables India to play an **active role in multilateral organizations in the postal sector.**
- It will **enhance South-South and Triangular cooperation**.
- The initiative would **help expand India's diplomatic footprint** and strengthen relations with other countries, especially in the Asia-Pacific region.

About Universal Postal Union (UPU)

Establishment	• The Universal Postal Union was established by the **Treaty of Bern of 1874.**
UN Mandate	• It is a **specialized agency of the United Nations (UN)**.
Headquarter	• The UPU's headquarter is situated in Bern, Switzerland.
Constituent Bodies	• The UPU contains four bodies consisting of the Congress, the Council of Administration (CA), the Postal Operations Council (POC) and the International Bureau (IB).
Other functions	• It also oversees the Telematics and **Express Mail Service (EMS) cooperatives.** • Each member agrees to the same terms for conducting international postal duties.

Mekedatu Dam Project

Context

- Mekedatu dam conflict arises again between **Tamil Nadu and Karnataka** over the supply of water to Bengaluru.

About the Mekedatu project

Location	• The Mekedatu dam project is located in **Ramanagaram district of Karnataka**which is about 100 km south of Bengaluru, close to where the Cauvery enters Tamil Nadu.
Purpose	• The dam, built at an

	estimated cost of Rs 6,000 crore, aims to **supply drinking water to Bengaluru and replenish the regional groundwater table.**	**Pradhan Mantri Matru Vandana Yojana**	• It was **originally launched in 2010 and renamed in 2017.**
CWC ruling of 2018	• The Central Water Commission (CWC) cleared a feasibility study for the project in 2018.		• It was previously known as the **Indira Gandhi MatritvaSahyogYojana**and is a maternity benefit program run by the government of India.

Additional content continues in the right column:

• **PradhanMantriMatruVandanaYojana (PMMVY)** is a Centrally Sponsored DBT scheme under which a cash **incentive of ₹ 5000/- (in three installments)** is provided directly in the bank/post office account of Pregnant Women and Lactating Mothers.

• The scheme is **implemented by the Ministry of Women and Child Development.** It is a conditional cash transfer scheme for pregnant and lactating women of 19 years of age or above for the first live birth.

• It provides a **partial wage compensation to women for wage-loss during childbirth and childcare** and to provide conditions for safe delivery and good nutrition and feeding practices.

• The scheme has been **brought under the National Food Security Act, 2013** to implement the provision of cash maternity benefit of ₹6,000 stated in the Act.

• Presently, the scheme is **implemented on a pilot basis in 53 selected districts and proposals**

Dispute over the Dam

• **Tamil Nadu's key arguments are that Karnataka is attempting to modify the flow of the river** by constructing two reservoirs on it.

• The Tail Nadu Government has argued the **action of Karnataka violates the final award of the CRWT** and would impound the flow in the intermediate catchment below the KrishnarajaSagar and Kabini reservoirs, and Billigundulu, along the border of Karnataka and Tamil Nadu

• The award on the **Cauvery water dispute had ruled that no irrigation project can start without the lower riparian states' consent.**

Celebrating Pm Matru Vandana Yojana as God Bharai

Context

• PM lauded the new initiative of celebrating **'PradhanMantriMatruVandanaYojana'** as **'God Bharai' ceremony in Dausa, Rajasthan.**

God Bharai

• In Hindi, godhbharai literally means to **'fill the lap' with abundance.**

• Godhbharai is a traditional Indian **baby shower celebrated during pregnancy** to welcome the unborn baby to the family and bless the mother-to-be with abundant joys of motherhood.

• **Meena** in Rajasthan celebrate **PradhanMantriMatruVandanaYojana scheme as 'God Bharai' ceremony** where all the pregnant women come together and they give them 'Poshan Kit' for the health of their babies.

are under consideration to scale it up to 200 additional 'high burden districts' in 2015–16. • The eligible beneficiaries would receive the incentive given under the **JananiSurakshaYojana (JSY) for Institutional delivery** and the incentive received under JSY are accounted in maternity benefits of the mother so that on an average a woman gets ₹6,000	

		Scheduled Tribes are a more disadvantaged group due to historic oppression and lack of access to education, employment, and property.
Kamala Neti (deceased), represented by her legal representatives, vs the Special Land Acquisition Officer	•	The Supreme Court had directed the government to examine the need to extend the HSL provisions to STs and to make suitable amendments to ensure equality **under Articles 14 and 21 of the Constitution of India.**

Inheritance Rights in India

Context

• **Union Minister of State for Law and Justice Arjun Ram Meghwal** informs that the Union govt. considering **equal property rights to Scheduled Tribe women.**

Status Of Scheduled Tribe Women In Inheritance Rights

Hindu Succession Amendment Act, 2005	• In 2005, the **Hindu Succession Act was amended to grant daughters equal rights to inherit their father's or HUF properties.** • **Women from the Scheduled Tribe community** under Section 2(2) of the Hindu Succession Amendment Act, 2005 are **denied equal rights to inherit their father's or Hindu Undivided Family (HUF) properties.**
Issues with the Hindu Succession Amendment Act, 2005	• It is discriminatory based on gender and **goes against Article 14 of the Constitution of India,** which advocates for equality before the law. • The women from

Issues in inheritance rights

• There are concerns that the **burden of proof is on the tribal claimants** to secure the benefits of the HSL.
• This could **result in the Hinduisation and assimilation of tribal women** into the social hierarchy as a caste category.

Way ahead

• Securing rights over the **inherited property should not come at the cost of the cultural identity of Adivasis.**
• Government **has to issue a notification that would include Scheduled Tribe women** in the ambit of the Hindu Succession Act, except in cases where the customs of a particular Scheduled Tribe give women an advantageous position.

Conclusion

• Decision to provide the inheritance right **should be in accordance with the cultural diversity of India** and also in accordance with the principles of gender equality.

Postal Voting for Non-Resident Indians

Context

• As per Chief Election Commissioner the **time has come for postal voting for NRIs.**

More about the news

- EC had earlier proposed that **NRI voters to allow Electronically Transmitted Postal Ballots.**
- The EC's proposal for introducing Electronically Transmitted Postal Ballots is **currently pending with the government.**

Status of NRI Voters in India

- **Voting rights for NRIs were introduced in 2011**, by an amendment to the Representation of the People Act 1950.
- A citizen of India, **absent from the country owing to employment, education etc, has not acquired citizenship of any other country** are called NRIs and they are eligible to be registered as a voter in the address mentioned in your passport.
- An **overseas elector is not issued an EPIC**& you will be allowed to vote in person at the polling station on production of your original passport.
- However, **e- postal ballots has not yet been provided to NRI Voters.**

Issues

- There is the rising threat from **fake news and deep fakes on social media,** affecting the proposal. There are chances that these ballots will be tampered or hijacked.
- Moreover, ECI is **not technically and administratively prepared** to grant voting rights to around 16 million NRIs.

Who are NRIs

As per section 6 of the Income-tax Act	• As per section 6 of the Income-tax Act, an individual is said to be non-resident in India if he is not a resident in India and an individual is deemed to be resident in India in any previous year if he satisfies any of the following conditions: • If **he is in India for a period of 182 days or more** during the previous year; or • If he is in India **for a period of 60 days or more during the previous year**

	and 365 days or more during 4 years immediately preceding the previous year. • However, in respect of an Indian citizen and a person of Indian origin who visits India during the year, **the period of 60 days as mentioned in (2) above shall be substituted with 182** days.
Finance Act, 2020 and FEMA	• Moreover , as per Finance Act, 2020, for **those with an annual income above ₹15 lakh, the period of staying in the country has been reduced to 120 days or more.** • As per FEMA act NRIs are **'Person Resident in India' or 'Person Resident Outside India' and If during the previous financial year a person stays for more than 182 days in India,** then the person will be treated as resident under Fema; in all other cases he will be treated as non-resident.

Conclusion

- The time has come when the **worlds' largest democracy** of the world invokes technology driven methodology to facilitate its over 1.34 crore overseas Indians to participate in elections by Electronically Transmitted Postal Ballot System.

National Training Conclave

Context

- PM Modi inaugurates **first National Training Conclave in Delhi**

About the Conclave

First National	• The event was hosted by

Training Conclave in Delhi	the **Capacity Building Commission (CBC) and is sponsored by the National Programme for Civil Services Capacity Building (NPCSCB)** - 'Mission Karmayogi'.
Aim of the conclave	• The National Training Conclave **aims to strengthen training infrastructure for civil servants across India.** • The conclave is an **effort to bring together all Civil Service Training Institutions (CSTIs) in a common setting** with the aim to help identify strategies for the ecosystem to build and improve
National Programme for Civil Services Capacity Building (Mission Karmayogi)	• The NPSCSB **aims to embark on a learning transformation program that will address the capacity building issues of the Civil Services** through a comprehensive online platform-iGOTKarmayogi. • iGOTKarmayogi **aims to provide online , face-to-face and blended learning and manage lifelong learning records of the officials.** • Through a **robust monitoring and evaluation system of all components at every level,** the Programme will create a culture of accountability and transparency, while enabling a clear line of vision between strategy and implementation. • iGOTKarmayogi is **an**

	online learning platform being developed as an integral part of the Digital India stack for capacity building of all government employees. • It will provide **'anytime-anywhere-any device'** learning to train around 2.0 crores users which was so far unachievable through traditional measures.

Shame of Manual Scavenging in India

Context

• Despite the Budget 2023's claim to end the practice **menace of Manual scavenging continues.**

Issues with manual scavanging	• As per the reports presented in parliament **at least 308 individuals have died while cleaning sewers and septic tanks in the past five years (2018-2022)**, of which 52 are from Tamil Nadu, 46 from Uttar Pradesh, 40 from Haryana, 38 from Maharashtra, and 33 from Delhi. • These manual scavengers are **predominantly Dalits,** who face social exclusion

	• and violence across the country owing to their caste identity. • They mostly practice manual scavenging **without protective gears and safety equipment.** • Sanitation workers are **deprived of the safeguards promised by Factories Act, 1948**
Schemes and laws for protection of manual scavengers	• Practice of manual scavenging was banned under **Employment of Manual Scavengers and Construction of Dry Latrines (Prohibition) Act, 1993.** • **Prohibition of Employment as Manual Scavengers and their Rehabilitation Act 2013** provides that manual cleaning is allowed with precautionary measures only in such cases where machines cannot be deployed. • A scheme called **National Action for Mechanised Sanitation Ecosystem (NAMASTE)** has been formulated to **promote mechanisation; sewer and septic tank workers** are to be provided with training and protection gear besides health insurance, and the scheme will cover all urban local bodies in the country.

Conclusion

• Despite directions of the Delhi High Court, the Supreme Court, the National Human Rights Commission, and the International Labour Organization's Discrimination (Employment and Occupation) Convention, 1958, **manual scavenging remains a casual**

sector, drawing workers from a historically discriminated community who lack legal awareness and education. There is need to ensure their rehabilitation with more focus on implementation measures.

Poshan App

Context

• **Poshan app** allows migrant workers to access nurseries wherever they live

The one nation one Anganwadi programme	• Under one nation one Anganwadi programme even if people relocate to another State, **they can avail of the benefits given to children under six years and pregnant women and lactating mothers** by the government. • This is possible through coordination between the Centre and the State governments by using the Poshan Tracker App on mobile phones.
The Poshan Tracker management application	• The **Poshan Tracker management application provides a 360-degree view of the activities of the Anganwadi Centre (child care centres), service deliveries of Anganwadi Workers and complete beneficiary management for pregnant women,** lactating mothers and children under six. • It also **digitizes and automates physical registers** used by workers that helps improve the quality of their work.
Poshan 2.0	• **Mission POSHAN 2.0 is an Integrated Nutrition Support Programme.**

	• It seeks to **address the challenges of malnutrition in children, adolescent girls, pregnant women and lactating mothers** through a strategic shift in nutrition content and delivery and by creation of a convergent eco-system to develop and promote practices that nurture health, wellness and immunity. • Poshan 2.0 will **seek to optimize the quality and delivery of food** under the Supplementary Nutrition Program. • Poshan 2.0 will **bring 3 important programmes/schemes under its ambit**, viz., Anganwadi Services, Scheme for Adolescent Girls and PoshanAbhiyaan.

edition of India Rankings	• Agriculture & Allied Sectors. • **Integration of "Innovation"** ranking previously executed by the **Atal Ranking of Institutions on Innovation Achievements (ARIIA)** into the India Rankings with an aim to reduce the burden on institutions of providing similar data to two different agencies. • **Expansion of scope of "Architecture" to "Architecture and Planning"** to include institutions imparting courses in Urban and Town Planning.

NIRF Ranking

Context

• Dr. Rajkumar Ranjan Singh releases India Rankings 2023 in New Delhi

About NIRF	• The National Institutional Ranking Framework (NIRF),was**launched in November 2015 by the Ministry of Education.**
Parametersand weightage for ranking	• Teaching and learning resources. • Research and professional practice. • Graduation outcome. • Outreach and inclusivity. • Perception.
Three distinct additions of 2023	• Introduction of a **new subject namely**

Shakti Scheme for Women

Shakti scheme for women	• **Karnataka launched the'Shakti':** a scheme which offers women free travel in **non-premium services offered by State–run Road Transport Corporations (RTCs).** • The State government will issue the **'Shakti Smart Card'** after receiving applications from women, including students, through the **Seva Sindhu portal.** • Until then, it has asked **RTCs to accept any identity card issued by Central or State government** that carries the photograph and address of the beneficiary to issue 'zero ticket' (free ticket).

National Commission for Scheduled Castes

Context

- National Commission for Scheduled Castes sends notice to Zomato, Delhi Police and YouTube over 'casteist' advertisement.

About The National Commission for Scheduled Castes	- The National Commission for Scheduled Castes is a constitutional **body** established to provide safeguards **against the exploitation of Scheduled Castes and Anglo-Indian communities to promote and protect their social, educational, economic and cultural interests**; special provisions were made in the Constitution.
History and Constitutional provision	- The **first Commission for Scheduled Castes and Scheduled Tribes** was set up in August 1978 with Bhola Paswan Shastri as chairman and other four members. - Consequent to the **Constitution (Eighty-Ninth Amendment) Act, 2003** the erstwhile National Commission for Scheduled Castes and Scheduled Tribes has been replaced by **(1)** National Commission for Scheduled Castes under **Article 338** and **(2)** National Commission for Scheduled Tribes under **Article 338 A.** - Article 338 of the Indian constitution deals with the **National Commission for Scheduled Castes**. Article 338 A deals with the National Commission for Scheduled Tribes.
	- The first National Commission for Scheduled Castes was constituted in 2004 with **SurajBhan as the chairman.**

The following are the functions of the commission

- **To investigate and monitor all matters relating to the safeguards provided for the Scheduled Castes** under this Constitution or any other law for the time being in force or under any order of the Government and to evaluate the working of such safeguards
- **To inquire into specific complaints** with respect to the deprivation of rights and safeguards of the Scheduled Castes
- **To participate and advise on the planning process of socio-economic development** of the Scheduled Castes and to evaluate the progress of their development under the Union and any State
- **To present to the President, annually** and at such other times as the Commission may deem fit, reports upon the working of those safeguards
- **To make in such reports recommendations** as to the measures that should be taken by the Union or any State for the effective implementation of those safeguards and other measures for the protection, welfare and socio-economic development of the Scheduled Castes
- **To discharge such other functions** in relation to the protection, welfare and development and advancement of the Scheduled Castes as the President may, subject to the provisions of any law made by Parliament, by rule specify.

Accessible India Campaign Guidelines for Universal Accessibility

Context

- Under the provision of **RPwD Act 2016(Right of Persons with disabilities)**, the Central Government in consultation with the Chief

Commissioner formulated rules for persons with disabilities.

Guidelines are framed under the Accessible India Campaign

- The **rules lay down the standards of accessibility for the physical environment, transportation, information and communication,** including appropriate technologies and systems and other facilities and services provided to the public in urban and rural areas.
- **Harmonised Guidelines and Space Standards for Universal Accessibility in India-2021** prepared by the Ministry of Housing and Urban Affairs has been amended in **RPwD (Amendment) Rules, 2023.**

Standards/Guidelines notified in RPwD Rules under Rule 15

- Accessibility for the ICT products and services (Part I and II).
- Harmonised Guidelines and Space Standard for Universal Accessibility in India-2021.
- Standard for Bus Body Code for Transportation system.
- **Invitation for guidelines:** Guidelines under Draft notification in RPwD Rules have invited public and other stakeholder's comments on accessibility standards for Health Care, Civil Aviation, culture sector and sports complex and residential facilities for sports complex.
- **Awaited for notification:** Guidelines are awaited for notification in the Gazette of India by concerned Ministry/Departments.

About Accessible India Campaign(Sugamya Bharat Abhiyan)

1. Accessible India Campaign (Sugamya Bharat Abhiyan) is a nation-wide Campaign launched by **Department of Empowerment of Persons with Disabilities (DEPwD) of Ministry of Social Justice & Empowerment** to provide universal accessibility to persons with disabilities.
2. The campaign aims at providing **equal opportunity to persons with disabilities to participate in all the aspects of life and live independently.**
3. The Sugamya Bharat Abhiyan focuses on developing **an accessible physical environment, transportation system and Information & communication ecosystem.**
4. This scheme is in accordance with the **UN Convention on the Rights of Persons with Disabilities (UNCRPD).**

- India is a **signatory to the UN Convention on the Rights of Persons with Disabilities (UNCRPD).**
- **Article 9 of UNCRPD casts an obligation on all the signatory governments** to take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, **to the physical environment, to transportation, to information and communications, i**ncluding information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas.

Targets of accessible India campaign

- Conducting accessibility audits of at least **50 most important government buildings and converting them into fully accessible building**s by July 2016 in the 26 cities.
- Conducting accessibility audit of at least 25 most **important government buildings** and converting them into fully accessible buildings by July 2016 in the 24 cities.
- Converting 50% of all the **government buildings of National Capital** and all the State capitals into fully accessible buildings by July 2018.
- Conducting audit of 50% of government buildings and converting them into fully accessible buildings in **10 most important cities / towns of all the States by July 2019**
- Conducting accessibility audit of all the **international airports, railway stations and Government owned public transport carriers** and converting them into fully accessible international airports, railway stations and public transport carriers
- Conducting accessibility audit of all the **international airports and converting** them

into fully accessible international airports by July 2016
- Conducting accessibility audit of all the domestic airports and converting them into fully accessible airports by March 2018.
- Apart from above targets there are multiple auditing targets under the scheme to ensure access to all public facilities.

Central Bureau of Investigation and Federalism

Context
- Tamil Nadu withdraws general consent for CBI within State.

About general consent	• As per **Section 6 of the DSPE Act, 1946**, the CBI needs consent from the respective State governments for investigating in their jurisdiction. • Under **Section 6 of the DSPE Act, 1946, general consent to the CBI is granted by state governments for the investigation of a specified class of offenses** against specified categories of persons enabling the federal agency to register and investigate those specified matters. • Without the general consent from these states, **CBI cannot exercise its power in the respective states.** This distinguishes the agency from the **National Investigation Agency (NIA) which has authority across states.**
About CBI	• The CBI is under the **administrative control of the Ministry of Personnel, Pension & Public**

Grievances, Government of India. It is the premier investigating police agency in India.
- CBI **derives power to investigate** from the Delhi Special Police Establishment Act, 1946 Section 2 of the Act vests DSPE with jurisdiction to investigate offenses in the Union Territories only.
- The jurisdiction can be **extended by the Central Government to other areas,** provided the State Government accords consent under Section 6 of the Act.
- The executive officers of CBI of the **rank of Sub Inspector and above**, exercise all powers of a station office in charge of the police station for the concerned area for investigation.
- As per **Section 3 of the Act, Special Police Establishment** is authorized to investigate only those cases, which are notified by the Central Government from time to time.

States which withdrew the general consent
- **The nine States** — Mizoram, West Bengal, Chhattisgarh, Rajasthan, Maharashtra, Kerala, Jharkhand, Punjab and Meghalaya — had withdrawn their general consent given to CBI.
- While **Mizoram withdrew its general consent to the CBI in July 2015, West Bengal did it in November 2018 and Chhattisgarh in January 2019.**
- Rajasthan, Maharashtra, Kerala, Jharkhand and Punjab withdrew their general consent in 2020. Meghalaya withdrew consent in 2022.

Essential Commodities Act (ECA), 1955

Context

- In a move to manage the "overall food security and to prevent hoarding and unscrupulous speculation", the Union Government **imposed limits on stock of wheat that can be held by traders, wholesalers, retailers, big chain retailers and processors.**

Objective of the move	• The objective here is **to stabilize the price of the essential commodity by steadying supply.**
What are the limits imposed	• The permissible stock that traders/wholesalers can hold is **3,000 metric tonnes.** Retailers and big chain retailers can hold up to **10 metric tonnes** at each of their outlets, while the latter can hold up to 3,000 metric tonnes at all their depots combined. Processors would be able to **stock 75% of the annual installed capacity.** • If the stock held by them is higher than the limit, they **will have 30 days from the day of issue of notification** to bring the same under the prescribed limits.
What are the additional orders?	• The government has also decided **to offload 15 lakh tonnes of wheat from the central pool via the Open Market Sale Scheme (OMSS) to flour mills, private traders, bulk buyers, manufacturers of wheat products through e-auction.** The idea is to control retail prices of wheat.

Reasons for declining production	• The production has been hampered on 2 accounts: **the unseasonal rains and hailstorms around late March and early April**preceded by a comparatively warmer February. • **Lower production** led to higher prices of the crop. • This could in turn create conditions for **local prices exceeding the government's purchase prices** and thus, bothering the latter's endeavor to stock up supplies.

About Essential Commodities Act, 1955

- The Act was enacted to **ensure the availability of essential commodities to consumers and protect them from the exploitation** of unscrupulous traders.
- The Act provides rules related to the regulation and control of production, pricing, and distribution of the essential commodities.

There are two main aims of this Act

- To **maintain or increase the supply of these essential commodities,** and
- To **secure equitable distribution and availability** of these essential commodities.

Powers of Government under the act

Power to Notify the essential commodity

- The **Central Government** from time to time can add and remove any commodity from the schedule for the interest of the general public.

Power to issue a control order (Section 3)

- Under this Act, the **Central Government has the power to issue control orders.** Such orders provide for regulation and prohibition of essential commodities scheduled in one of the following circumstances:
  o When the government finds that it is **necessary and expedient to do in favor of the general public.**
  o When they have to secure **equitable distribution and availability of these commodities in the market.**

o When they have to secure any specific commodity for the **Defence of India.**

Right to Identity

Context

- Right to change one's name **is part of the right to life:two HCs of Delhi and Allahabad** High court have ruled.

Sadanand&Anr. vs CBSE &Ors	• The Delhi HC **allowed a plea filed by two brothers to reflect their father's changed surname — from "Mochi" to "Nayak"** — on their Class 10 and 12 Board certificates, stating that the **right to identity is an "intrinsic part" of the right to life under Article 21.** • The Delhi High Court noted that the right to identity is an "intrinsic part" of the right to life under Article 21.
Md. Sameer Rao vs. State of U.P	• In this case the Allahabad HC dealt with a petition filed against an order passed by the Regional Secretary, Madhyamik Shiksha Parishad, Raebareli, rejecting Shahnawaz's application to change his name to "Md. Sameer Rao " in his High School and Intermediate certificates, seemingly "**for a higher sense of self-worth**". • The Allahabad High Court said that the **fundamental right to keep or change one's name is vested in every citizen under Articles 19(1)(a), 21, and 14 of the Constitution.**

Government's contention

- **In 'Sadanand&Anr. vs CBSE &Ors'**, the **CBSE contended** that a change in the surname of the petitioners would subsequently entail a change in their caste, which **could be misused.**
- It also said that seeking a change in the father's name beyond the school records is **not permissible.**
- **In 'Md. Sameer Rao vs. State of U.P.'** The state argued that a **change in the name is not an absolute right and is subject to restrictions imposed by law.** It was also argued that the Board rightly rejected the name change as it was barred by limitation.

Restrictions in change in name

- Although the right to change or keep one's name is a fundamental right "**by virtue of Article 19(1)(a) and Article 21**", it is not an absolute right and is subject to various reasonable restrictions.
- The procedure for the deprivation of such rights must be "**fair, just, and reasonable**" as per 2017 SC ruling in "**K. S. Puttaswamy vs. Union of India and in 2016 SC ruling in "JeejaGhosh vs. Union of India."**

India Infrastructure Project Development Funding Scheme

Context

- **Infrastructure Finance Secretariat(IFS), DEA** launched the **revamped website of PPPININDIA and online portals for India Infrastructure Project Development Funding Scheme (IIPDF)** and the Best Practices in Infrastructure.

The revamped website of PPPININDIA and online portals

- **Public Private Partnerships:** The **PPPININDIA is a website** dedicated to **promoting and facilitating Public Private Partnerships in India** and helps in bridging the gap between the public and private sectors.
- **Common platform:** The website serves as a digital platform that brings together **government entities, private companies, investors and entrepreneurs fostering**

collaboration and innovation for sustainable growth.

- <u>Readily accessible:</u> The revamped website will act as a **readily accessible repository of Policies, Guidelines, and Model Bidding Documents** including Model Concession Agreements for various sectors, Guidance Materials, Reference Documents, etc., including the newly launched Reference Guide for Setting up State PPP units.

- <u>Reference Guide for PPP Projects:</u>The Reference Guide for Setting up of State PPP units helps States to create dedicated units for promoting PPP policy, program and projects and **Reference Guide for PPP Project Appraisal and helps Project Appraisal Authorities (PSAs)** in the quality appraisal of PPP projects.

- <u>Best Practices Portal:</u>It hosts a **Best Practices Portal** that contains the best practices in the successful implementation of infrastructure projects by the states and central ministries.

India Infrastructure Project Development Fund Scheme (IIPDF Scheme)	• It is a **Central Sector Scheme.** • The scheme was launched by the **Department of Economic Affairs (DEA), Ministry of Finance**, Government of India, on 3rd November 2022. • It provides **necessary support to the PSAs,** both in the Central and State Governments, by extending financial assistance in meeting the cost of transaction advisors and consultants engaged in the development of PPP projects. • It will provide necessary **funding support to the project**
	sponsoring authorities, both in the Central and State Governments,** for creating a shelf of bankable viable PPP projects for achieving the vision of modern infrastructure for the country. • Funding under IIPDF Scheme is **in addition to the already operational Scheme for Financial Support to PPPs** in Infrastructure (VGF Scheme)which was notified on 12th July 2020. • Under the Scheme for **Financial Support to PPPs in Infrastructure (VGF Scheme) infrastructure projects undertaken through PPP** mode that are economically justified but commercially unviable are supported.

Conclusion

- The IFS will create a vibrant ecosystem that nurtures **partnerships, encourages investment, and facilitates the exchange of knowledge and resources.**

National Commission for Backward Classes

Context

- National Commission for Backward Classes flags **irregularities in Bengal OBC allocations.**

More about the news

- The National Commission for Backward Classes (NCBC) chairperson has said that out of 179 OBC groups in the Bengal state list,

118 belong to the Muslim community. He informed that **Bangladeshi immigrants and some Rohingyas have been included in Bengal's OBC list.**

- The NCBC is probing the matter and have asked the state to fix the problem.

National Commission for Backward Classes (NCBC)	• National Commission for Backward Classes (NCBC) was initially constituted by the Central Govt by the **National Commission for Backward Classes Act, 1993** • The Commission had been reconstituted 7 times up to 2016. • The National Commission for Backward Classes Act, 1993 has been **repealed through the National Commission for Backward Classes (Repeal) Act, 2018.**
Constitutional Status	• **The present Commission (8th)** was accorded Constitutional Status and constituted through "**The Constitution (One Hundred and Second Amendment) Act, 2018" Act.** • The amendment added **Article 338B** forming a Commission known as National Commission for Backward Classes. • The amendment also **added Article 342A,** which states that, the President of India is given the power to declare a particular caste as a Socially and Educationally Backward Class (SEBC), which can be modified by the Parliament. • The amendment also made changes to **Article 366 in which clause 26 C was added** which defines socially and educationally backward classes.

Composition	• The Commission consists of following persons
	  o A Chairperson
	  o A Vice-Chairperson and
	  o Three other Members in the rank & pay of Secretary to the Govt of India.

127th Constitutional Amendment Bill

- By bringing a 127th Constitutional Amendment Bill, the **Centre will give back the states the power to decide about reservations for Other Backward Classes (OBCs)** in state government jobs and higher educational institutions.
- The purpose of the Bill is to **overturn the ruling of May 5, 2021**, in the case of **Dr. Jaishri Laxmanrao Patil v. Chief Minister** in which a 5-judge Constitution Bench of the Supreme Court ruled that only the President can declare a community an OBC, upon recommendation by the National Commission for Backward Classes (NCBC).

1. 13   SNIPPETS

NYAYA VIKAS PORTAL

Nyaya Vikas Portal
- It is a Portal created for monitoring the implementation of Centrally Sponsored Schemes.
- Nyaya Vikas Portal allows four efficient ways of logging into the portal, thereby empowering stakeholders with seamless access to information pertaining to funding, documentation, project monitoring and approval.

Nyaya Vikas Scheme
- The Department of Justice has been implementing the Centrally Sponsored Scheme (CSS) for Development of Infrastructure Facilities for Districts and Subordinate Judiciary since 1993-94.
- Under the Scheme, central assistance is provided to the State Government / UT Administrations for construction of court halls and residential units for Judicial Officers / Judges of District and Subordinate Courts.
- With further extension of the scheme beyond 31.03.2021, some new features like Lawyers Hall, Toilet complexes and Digital computer rooms have been added to the scheme for the convenience of lawyers and litigants, besides court halls and residential units.
- The funds sharing pattern under the Scheme for Center and State is 60:40 in respect of States other than North Eastern and Himalayan States.
- The funds sharing pattern is 90:10 in respect of North Eastern and Himalayan States; and 100% in respect of Union Territories.

SEX CRIMES BILL JAPAN

- Japan passed a landmark sex crimes bill, also raising the age of consent from 13 to 16.
- The amendments to the Penal Code change the term for the crime of "forced sexual intercourse" to "non-consensual sexual intercourse," widening the scope of cases that can be treated as an offense.
- The law revision also criminalizes "photo voyeurism" — secretly taking sexual pictures of people — and the online grooming of children.

JUSTICE CLOCKS

- Electronic signage systems known as Justice Clocks have been across the court complexes of High Courts.
- The initiative will inform stakeholders about court-related key parameters and bring awareness among the public by providing bird eye view of court-related data.

1. 14   1 MAINS QUESTION AND 5 MCQS

Q1. Law commission has said that the 'UCC(Uniform Civil Code) is neither necessary nor desirable'. With regard to UCC, what are the arguments in support for and against the applicability of UCC in India. What should India do moving ahead? (250 words)

Introduction
- The idea of a UCC refers to laws that apply to everyone in India, replacing religion-based personal laws governing matters such as marriage, divorce, inheritance, adoption and succession.
- In article 44, our constitution clearly specifies the UCC: "**The State shall endeavor to secure the citizens a Uniform Civil Code throughout the territory of India**".

Body

Reasons for India to have UCC:
- Gender equality: There is universal agreement that personal laws, regardless of the community, are skewed against women.

Entire gamut of laws governing rights relating to property, marriage, divorce, maintenance, adoption and inheritance goes against rights of women in various personal laws.UCC will help to promote Gender equality.

- Need for reform in personal laws: While other personal laws have undergone reform, for instance Hindu Marriage Act, Hindu Succession Act, Hindu Minority and Guardianship Act, and Hindu Adoptions and Maintenance Act, the Muslim law has not undergone such reforms. **Allowing Muslims, for example, to marry more than once, but prosecute Hindus or Christians for doing the same, for instance goes against the right to equality**. Uniform Civil Code will in the long run ensure Equality.

- Social ethics: UCC does not insist people from one religion to start practicing rituals of other religions. All it requires is, with changing time, there should be a **Uniform Civil code irrespective of all religions as far as social ethics** such as equality and respect for women and their rights are concerned.

- Lesson from Muslim countries: Many Islamic countries have codified and reformed **Muslim personal Law to check its misuse. Muslim countries like Egypt, Turkey and even Pakistan** have reformed their laws.There is no reason why India should continue with vastly discriminatory personal laws.

India should not have UCC for following reasons:

- UCC is against fundamental rights guaranteed under Art. 25 and 26. Both Article 25 (the right freely to profess, practice and propagate religion), since it takes away the same religious rights of minorities.

- Non-enforceable and not mandatory: Although article 44 provides for Uniform civil code for India. Article 37 of the Constitution itself makes clear, the directive principles "**shall not be enforceable by any court**". Nevertheless, they are "fundamental in the governance of the country".

- Against cultural rights: UCC is against fundamental rights contained in Art. 29. Another defense taken against **Art. 44 are of Art.29 that guarantees right as to 'culture'.** It is contended that personal law forms a part of 'culture'.

- Against Tribal rights: **Indian Tribes such as Nagas, Gonds, Khons, Khasi, Rabhas,** etc have their own religion and practice a type of nature worship or totemism in some cases. They practice various bizarre activities as a part of their custom. Uniform Civil Code makes it difficult to govern tribal and scheduled areas and its implementation might be a backlash on the decades of efforts of integrating tribal people into the mainstream.

- Non- applicability of IPC in some cases: The Indian Penal Code (IPC) was brought in by the British in 1862 to cover all substantive aspects of criminal law. **The IPC did not apply to matters such as marriage, divorce, inheritance, adoption and succession.** These were governed by personal laws of different religions. Here personal laws are required.

Way ahead

- Reform rather than UCC: Some derogatory practices of religions can be removed by reforming personal laws in a similar way the Triple talaq was nullified by the Supreme Court. Inheritance rights, access to religious paces, etc rights can be ensured by reforming all the personal laws.we must deal with the roots first and the branches later." The key to achieving a UCC in essence is to simply remove all forms of discriminatory customs and traditions from personal laws.

- National consensus: Civil Code is necessary to effect an integration of India by bringing all communities into a common platform which at present is governed by personal laws which do not form the essence of any religion. India as a nation will not be truly secular unless uniformity is established in the form of rational non-religious codified laws. However there must be a consensus among all the religions before the UCC is made universal.

- Social Mobility and literacy: As the minorities are educated and move up in the esocio-economic ladder, the derogatory practices such as discrimination against women will

fade away. As per Sachar commission report on minorities, the socio-economic conditions of Muslims are abysmally backward as compared to Hindus. Thus their social mobility and literacy is mandatory.

- Reconcile our diversity: India is a diverse country with diverse cultures. Efforts have to be made to reconcile our diversity with universal and indisputable arguments on human rights.

Conclusion

- Uniform Civil Code can be successfully introduced only after achieving improved levels of literacy, awareness on various socio-political issues, enlightened discussions and increased social mobility.The enactment of the UCC in piecemeal manner would be in tune with the spirit of Article 44.

Q2. Consider the following statements:

1. ED has enforcement power under The Prevention of Money Laundering Act, 2002 (PMLA) only.
2. The proceeds of crime over and above ₹1 crore are investigated by ED.

   Which of the above statements are correct?
   A. 1 only
   B. 2 only
   C. Both statements are correct.
   D. None of the statements are correct.

Ans: B

Statement 1 is incorrect: The prime objective of the Enforcement Directorate is the enforcement of two key Acts of the Government of India namely, the Foreign Exchange Management Act, 1999 (FEMA) The Prevention of Money Laundering Act, 2002 (PMLA) The Fugitive Economic Offenders Act, 2018 (FEOA).

Statement 2 is correct: Any offense registered by a local police station, which has generated proceeds of crime over and above ₹1 crore are investigated by ED.

Q3. Consider the following statements:

1. Enterprise under section 2(h) of CCI Act includes a department of the Government of India.
2. Article 31-C of the constitution says "None of the acts placed in the 9th Schedule shall become void on the ground that they violate

rights under Part III and no judicial review is possible."

Which of the above statements are correct?
A. 1 only
B. 2 only
C. Both
D. None

Ans: A

Statement 1 is correct: Under section 2(h) of CCI Act an enterprise" *means" a person or a department of the Government*, who or which is, or has been, engaged in any activity, relating to the production, storage, supply, distribution, acquisition or control of articles or goods etc."

Statement 2 is incorrect: The first constitutional amendment Act added **Article 31-B** to the Constitution.

The article says "None of the acts placed in the 9th Schedule shall become void on the ground that they violate rights under Part III and no judicial review is possible."

Q4. Consider the following statements about Digital Publisher Content Grievances Council (DPCGC)

1. The DGCGC is a registered self-regulatory body for OTT platforms.
2. It is headed by Cabinet secretary of India.

   Which of the above statements are correct?
   A. 1 only
   B. 2 only
   C. Both statements are correct.
   D. None of the statements are correct.

Ans: A

About Digital Publisher Content Grievances Council (DPCGC)

The DGCGC is a registered self-regulatory body for OTT platforms.*(Statement 1 is correct)*

The DPCGC is an independent self-regulatory body for online curated content providers (OCCPs), and is headed by **retired Supreme Court Judge Justice A K Sikri.**(Statement 2 is incorrect)

It was set up in June 2021, and is registered by the Ministry of Information and Broadcasting. It was formed as per the provisions of the new IT laws introduced in 2021, which sought to restrict certain kinds of online content.

Q5. Consider the following statements about adoption rule in India

1. Single male person shall not be eligible to adopt a girl child.
2. The consent of any one of the spouses for the adoption shall be required, in case of a married couple.

Which of the above statements are correct?
A. 1 only
B. 2 only
C. Both statements are correct.
D. None of the statements are correct.

Ans: A

Who is eligible to adopt a child?

The prospective adoptive parents should be physically, mentally and emotionally stable; financially capable; motivated to adopt a child; and should not have any life threatening medical condition.

Any prospective adoptive parent, irrespective of his marital status and whether or not he has his own biological son or daughter, can adopt a child;

Single female is eligible to adopt a child of any gender:

Single male person shall not be eligible to adopt a girl child;(
Statement 1 is correct)

*The consent of botch the spouses for the adoption shall be required, in case of a married couple. (**Statement 2 is incorrect**)*

Q6. Consider the following statements:

1. The Pradhan Mantri Matsya Sampada Yojana (PMMSY) was launched in 2016.
2. It is implemented for the period of five years from FY 2020-21 to FY 2024-25.

Which of the above statements are correct?
A. 1 only
B. 2 only
C. Both statements are correct.
D. None of the statements are correct.

Ans: B

*Statement 1 is incorrect: The Pradhan Mantri Matsya Sampada Yojana (PMMSY) was launched in **September 2020** with an aim to double the income of fish farmers and fishers in the country.*

Statement 2 is correct: PMMSY is aimed to bring about the Blue Revolution through sustainable and responsible development of the fisheries sector in India at a total investment of ₹ 20,050 crore for holistic development of the fisheries sector including the welfare of fishers.

*PMMSY is implemented in all the States and Union Territories for a period of five years from **FY 2020-21 to FY 2024-25.***

2. INTERNATIONAL RELATIONS

2. 1   INDIA NEPAL RELATIONS

Context

- The border between **India and Nepal should not become a barrier**, PM Modi said as the two sides signed a series of agreements on **energy and transport, including export of Nepal's hydropower to Bangladesh through Indian territory**.

Details

- Welcoming Prime Minister Pushpa Kamal Dahal 'Prachanda', who is on a four-day visit to India, PM Modi said the two countries should fast-track projects related to the Ramayana circuit.
- Both sides signed the Transit Agreement. It will help Nepal's population access India's inland waterways.
- India would take forward the 2022 India-Nepal vision document for cooperation in the power sector that sets an ambitious goal in India-Nepal power trade and transmission.

Introduction:

- Nepal shares border with 5 Indian states. The commitment to the principles of **peaceful coexistence, sovereign equality** and understanding of each other's aspirations has been the base to form foundations of bilateral relations.
- The two countries not only share an open border and unhindered movement of people, but they also have close bonds through marriages and familial ties, popularly known as **Roti-BetikaRishta.**
- Both the countries have been deeply engaged in the regional and sub-regional frameworks of **SAARC, BIMSTEC and BBIN** for enhancing cooperation for greater economic integration.

Current relations:

Water relation

- Nepal and India have a long history of water relationship with lapses in cooperation in the past.

- **E.g. Sarada Agreement (1920), Kosi Agreement (1954), Gandak Agreement (1959) and Mahakali Treaty (1996).**

Economic relations

- India is Nepal's **largest trade partner and the largest source of foreign investments**, about **150 Indian ventures** operate in Nepal in manufacturing, services (banking, insurance, dry port, education and telecom), power sector and tourism industries.

- **Eg. Cross-border railways, Pancheshwar multipurpose project, motorable bridges over Mahakali River.**

Cultural relation

- Both nations promote people-to-people contacts, organise cultural programmes, and conferences and seminars.

- India and Nepal have also signed **three sister-city agreements for the twinning of Kathmandu-Varanasi, Lumbini-Bodhgaya and Janakpur-Ayodhya**.

Defence relation

- India has assisted the Nepalese Army (NA) in its modernization through the provision of equipment and training and cooperation in areas of disaster management.
- **E.g. the 'Indo-Nepal Battalion-level Joint Military Exercise 'SURYA KIRAN' is conducted alternately in India and in Nepal.**

Connectivity

- Firstbroad-gauge Passenger Rail link, Link Jaynagar in Bihar to Kurtha in Nepal. It will be extended to Bardibas in Nepal.
- **E.g. Projects like Raxaul-Kathmandu Railway projects, BBIN.**

Concerns in Indo-Nepal relationship:

Nepalese claim over Indian territories

- Nepal proclaims 400 km2 of Indian land **in Kalapani, Lipulekh and Limpiyadhura**as part of Nepal's secretary. India and Nepal claim the same disputed territory on the respective political maps.

Infrastructure projects

- Inauguration of a crucial road going through Lipulekh to Kailash and Mansarovar by India for building connectivity with the Tibetan plateau has frayed the relations.

Anti-Indian Sentiment post alleged Blockade by India

- India has been alleged to apply blockade after the Nepalese Constituent Assembly failed to acknowledge the demands of **the Terai region Madhesis**.

National Security

- **Indo-Nepalese borders are not separated by any natural barriers and, in fact, there is a free movement of people and goods. Thus,** the possibility that through Nepal's northern borders any power (emphasis on China) upon entering Nepal, can easily access the Indian mainland.

Concerns due to China

- Once considered as a buffer state between India and China, Nepal is now showing an inclination towards Beijing. China is trying to stimulate and tempt Nepal with multiple aids, economic growth and acquisition by coordinating with the present ruling party of Nepal.

Steps need to be taken to strengthen the relationship:

Restoration of peace

- As democratic ethics laden nations, Indo-Nepal border issue is solvable with Restoration of peace treaty. Indian needs to adopt a new foreign policy to retrieve peaceful treaties with the new approach for cooperation with Nepal.
- E.g. Boundary dispute resolution between India and Bangladesh should serve as a model for this.

Strengthening Economic Ties

- The power trade agreement needs to be such that India can build trust in Nepal. Despite more renewable energy projects (solar) coming up in India, **hydropower is the only source that can manage peak demand in India.**
- **E.g.** The **Bilateral Investment Promotion and Protection Agreement (BIPPA)** signed between India and Nepal needs **more attention from Nepal's side**.

Regional cooperation

- India requires to get its acts together and promote the regional cooperation structures with and intergovernmental organization uniting the South Asian region like SAARC and BIMSTEC.

Better Government to Government Relations:

- The importance of government-to-government relations can no longer be underestimated. Also, politicisation of issues needs to be avoided.

Conclusion

- In the past 50 years, India and Nepal seem to have experienced all the shades which a bilateral relationship can witness—friendship, doubt, trust, concealed antagonism, open distrust, helplessness, mutual appreciation, etc.
- They also know that whether they like it or not, they have no choice but to live together.

They have also experienced the costs of suspicions and what it is to have trust in each other. Respecting each other's sensitivities, the two countries are on the threshold of building positive, mutually beneficial relations.

2. 2   INDIA NEW ZEALAND RELATION

Context
- The first Round Table Joint Meeting between India and New Zealand with the industry and industry associations of both the countries took place today in New Delhi.

Details
- Looking at the present quantum of bilateral trade between the two countries, both sides acknowledged the huge potential in India and New Zealand partnership and **the need for bringing in synergy for enhanced economic relations in areas of mutual interest.**
- The New Zealand High Commissioner, in his brief remark emphasized on collective efforts keeping in mind the principles of **mutual benefits, proportionality, facilitating trade and association with private sectors.**
- Some of the areas explored by him included promotion of **Unified Payment Interface (UPI) system, carbon credit co-operation, economic co-operation through sectoral arrangements** and working together on specific issues like the **comprehensive proposal made by Zespri and prioritization of requests on non-tariff measures for bilateral gains to the businesses of both the sides.**
- The High Commissioner also informed that India New Zealand Business Council has brought out a report in April, 2023 on **"India New Zealand –Relationship ready for next phase"**, reflecting feasible areas of co-operative activities for economic prosperity.

Introduction:
- India–New Zealand relations are the interactions between India and New Zealand. Both these countries were once part of the British Empire. There are approximately 175,000 people of Indian descent in New Zealand.
- **Bilateral relations were established** between India and New Zealand in **1952**.
- India–New Zealand relations were cordial but not extensive after **Indian independence**. More recently, New Zealand has shown **interest** in extending ties with India due to **India's impressive GDP growth.**

India-New Zealand Current Relations

Diplomatic Relation

Both countries became independent in the same year and diplomatic representation of India was established in 1950 with the opening of a Trade Commission, which was later upgraded to High Commission.

Economic Relation

India is NZ's 11th largest two-way trading partner with total two-way trade valued at US$1.80 bn during the year ending September 2020. Education and tourism are NZ's growth sectors with India.

Both sides are committed to work towards a high-quality, comprehensive and balanced bilateral FTA, which is being negotiated since 2010.

Bilateral institutional mechanisms

Foreign Office Consultations, Bilateral Cyber Dialogue, Economic Dialogue.

NZ India Central Association, founded in 1926, is the umbrella organisation of all Indian associations in NZ and will celebrate its centenary in a few years' time.

As per a recent study conducted by an Indian association, by a conservative estimate, PIOs contribute $ 10 bn to the NZ economy.

Civil Aviation Cooperation

Given the large Indian diaspora in NZ and increasing two-way tourism flow, there is a strong case for a direct air connection between the two countries which might prove to be a game-change for all aspects of bilateral relations

Defence Relation

Defence cooperation has been more limited, but there have been joint naval exercises, and Indian and New Zealand troops have served together in United Nations peacekeeping missions in Kosovo and Sudan.

Cooperation in the field of Science & Technology

The 3rd India-NZ Joint Committee Meeting onScience& Technology Committee was held in New Delhi on 23 May, 2016.

Cultural Relation

Given the vast diaspora exceeding 2,00,000, all Indian festivals like Diwali, Holi, Onam, etc are celebrated with much enthusiasm by various community associations across New Zealand.

National Days such as Independence Day, Republic Day and Gandhi Jayanti are also celebrated with great pride by various community associations in addition to celebrations hosted by the High Commission in Wellington.

Connectivity

India NZ Business Council (INZBC) and India NZ Trade Alliance (INZTA) are the two prominent organizations working to promote India-NZ trade and investment relations.

Concerns in India New-Zealand relationship:

Visa issue:

- New Zealand's relationship with India is not in good health. **New Zealand's unwillingness to renew visas for Indian students** who had left New Zealand during the COVID-19 pandemic and called for "**fairer and more sympathetic treatment".**

Trade challenges

- Trade figures demonstrate **the difficulties New Zealand's relationship with India is facing.**While New Zealand's exports to India were approaching 2 billion New Zealand dollars annually in 2017, they have since **collapsed to under NZ$800 million**.

COVID-19 Impact

- India now ranks only **15th in the list of New Zealand's biggest trading partners**. As recently as 2016, India was New Zealand's 10th biggest trading partner. For comparison, New Zealand **now sells less to India than it does to the United Arab Emirates.**

Limited interest

- **New Zealand's Labor Government** has shown only limited interest in nurturing the relationship with India, even allowing for COVID-19 travel disruptions.

Concerns due to QUAD

- The Australia-India relationship has undoubtedly blossomed since the revival of the **Quadrilateral Security Dialogue (or Quad** for short, an arrangement that also includes Japan and the United States) in 2017, but there is more to it than just that.
- The **current strength of India's relationship with Australia** – and the relative **weakness of ties with New Zealand** – seems all the more remarkable when the current geopolitical fault line of Ukraine is brought into the equation.

Steps need to be taken to strengthen the relationship:
Restoration of relations

- **Developing more 'India-capable' New Zealanders** will help us understand a growing and changing India and its impact on New Zealand's interests.
- It will also help businesses and other stakeholders to successfully navigate India's operating environment.
- **For e.g.Support experts with experience and relationships** in India to share their knowledge on India and the relationship.

Goods and services trade grows for shared prosperity

- India and New Zealand have **considerable potential to build modern, mutually beneficial commercial** relationships. New Zealand businesses have the innovative and intellectual capability, technology and expertise to assist India's economic development.
- **E.g.**Promote **improved flight linkages between India and New Zealand, including direct flights**.

Regional cooperation

- Work with stakeholders to develop and deliver a '**public diplomacy' strategy** for India that compellingly demonstrates New Zealand creativity, expertise and credentials; positioning New Zealand as a partner to India.

Stronger and broader sporting and cultural connections between New Zealand and India

- New Zealand's multiculturalism, large Indian community, and **TeAo Māori all have much to offer in enrichening** our relationship with India.
- Our **successful Indian communities**, and our sporting contacts, are a bridge for building connections and relationships.
- They can help strengthen understanding of New Zealand as a progressive nation of innovators and problem-solvers who care for people and place.

Conclusion

- New Zealand and India have shared interests in a peaceful and **prosperous Indo-Pacific region**. By fostering shared approaches bilaterally and in international fora, such as the **East Asia Summit,** we can help solve problems and contribute to the region's development and stability.

- New Zealand and India also have an interest in working together to protect democratic norms and the integrity of the rules-based international system, including through the United Nations, **World Trade Organisation, and environmental agreements**.

2. 3   INDIA USA RELATIONS

Context
- The United States and India affirm that the ways in which technology is designed, developed, governed, and used should be shaped by our shared democratic values and respect for universal human rights.

Details
- **The Initiative on Critical and Emerging Technologies** is a framework agreed upon by **India and the U.S. for cooperation** on critical and emerging technologies in areas including **artificial intelligence, quantum computing, semiconductors and wireless telecommunication.**
- It was launched in January this year to strengthen their **strategic partnership and drive technology and defence cooperation**.
- **Key takeaways include setting up a research agency partnership to drive collaboration in areas like**
- AI; developing a new defence industrial cooperation roadmap to accelerate technological cooperation for joint development and production;
- Developing common standards in AI;
- Developing a roadmap to accelerate defence technological cooperation and 'innovation bridge' to connect defence startups;
- Supporting the development of a semiconductor ecosystem;
- Strengthening cooperation on human spaceflight; advancing cooperation on development in 5G and 6G;
- And adopting openran network technology in India.

Introduction:
- India and the United States enjoy **close relations and have deepened collaboration** on issues such as **counterterrorism and countering Chinese influence in the Indo-Pacific.**

- India and the United States unveiled a roadmap for **enhanced collaboration in high-technology areas**, with a focus on addressing regulatory barriers and aligning export controls for smoother trade and *"deeper cooperation"* in critical areas.
- **India and the U.S. signed anMoU on establishing a semiconductor supply chain** that paved the way for creating a semiconductor sub-committee to review recommendations from an industry-led task force launched in connection with the iCET.

Current relations:
High-level dialogue mechanisms between India-U.S.:
- **India-U.S. 2+2 Ministerial Dialogue**: India-U.S. 2+2 Ministerial Dialogue is led by the heads of foreign and defence ministries of India and the U.S. Two rounds of this Dialogue have been held so far.
- **India-U.S. Commercial Dialogue**: The India-U.S. Commercial Dialogue is led by the Minister of Commerce and Industry (CIM) and the U.S. Secretary of Commerce.
- **India – U.S. Economic and Financial Partnership**: The India – U.S. Economic and Financial Partnership is led by the Finance Minister (FM) and the U.S. Secretary of the Treasury.
- **India-U.S. Trade Policy Forum**: The India-U.S. Trade Policy Forum is led by CIM and the U.S. Trade Representative (USTR).

- **India-U.S. Strategic Energy Partnership**: The India-U.S. Strategic Energy Partnership is led by the Minister of Petroleum and Natural Gas and the U.S. Secretary of Energy.

Economic relations

- The **U.S. is India's largest trading partner**, goods and services combined.
- Bilateral trade in goods and services grew by more **than 10% per annum over the past two years to reach US$ 142 billion** in 2018.
- **E.g. India's** goods exports to the **U.S. were valued at US$ 54 billion and India's goods imports** from the U.S. were valued at US$ 33 billion.
- **India's services exports to the U.S**. were valued at US$ 28.7 billion and India's imports of services from U.S. were valued at US $ 25.8 billion.
- direct investments in India are estimated at **about US$ 44.5 billion whereas Indian FDI in U.S. is estimated** at US$ 18 billion.

Energy and crude oil

- The U.S. has emerged as a key partner for India in the field of energy.
- The **bilateral Strategic Energy Partnership**launched in 2018 is robust and witnessing increasing diversification across both conventional and renewable energy sources.
- An India-U.S. Natural Gas Task Force was also created.
- **India has started importing crude and LNG from the U.S.**from 2017 and 2018 respectively.

Civil Nuclear Cooperation

- The **bilateral civil nuclear cooperation agreement** was signed in October 2008.
- India and the U.S. have a **Civil Nuclear Energy Working group on R&D activities**.
- A U.S. company - **Westinghouse is in discussions with Nuclear Power Corporation of India Limited (NPCIL)**for implementation of a project that envisages six AP 1000 reactors at Kovvada (A.P.).

Defence relation

- India conducts more bilateral exercises with the U.S. than with any other country**. Some important bilateral exercises are: Yudh Abhyas, Vajra Prahar, Tarkash, Tiger Triumph, and Cope India.**
- Aggregate worth of defence-related acquisitions from the U.S. is more than US$ 15 billion.
- The India-U.S. **Defence Technology and Trade Initiative (DTTI)**is aimed at promoting co-development and co- production efforts.
- In June 2016, the U.S. recognized India as a *"Major Defence Partner"*,which commits the U.S. to facilitate technology sharing with India to a level commensurate with that of its closest allies and partners.
- **Apart from the 2+2 Ministerial Dialogue**, some other important dialogue mechanisms on defence cooperation are: Defence Policy Group, Military Cooperation Group, Defense Technology and Trade Initiative etc.

Counter-terrorism and internal security

- The bilateral Joint Working Group on Counter-Terrorismis an important mechanism in this regard.
- Both sides have also been working together in **law- enforcement and security cooperation** through the six subgroups under the HSD.
- Apart from the above, both sides also cooperate with each other on counter-terrorism and security issues in various multilateral bodies.
- Cyber security cooperation between India and the U.S. is carried out under the **India-U.S. Cyber Framework**.
- The two important dialogue mechanisms in this domain are – **India-U.S. Cyber Security Dialogue and the India-U.S. Joint Working Group on ICT.**

Concerns in India New-Zealand relationship:

Tariffs war:

- In 2018, the US imposed additional **tariffs of 25% on steel and 10% on aluminum imports** from various countries, including India, India's refusal to remove the 20% tariffs on ICT products.

Trade challenges

- Like removal of India from its list of developing countries and taking off India from list of **beneficiary-developing countries** under

its scheme of Generalized System of Preferences.

WTO disputes

- Like Capping prices of medical devices by India, greater Indian market access for American agriculture and dairy products etc.

Other issues

- **IPR:** India is also on U.S.'s Priority Watch List.
- **H1B visas:** US has ramped up H-1B denials.
- Soft policy towards Pakistan and tensions with Iran, Russia, and divergence of interests in Afghanistan.

Steps need to be taken to strengthen the relationship:

Variables that would prove to be impediments to the growth of the Indo–US strategic partnership in the future:

- **US domestic problems:** Political disunity, protectionism etc.
- **Fear of China's rise at the cost of US power**
- **India's domestic problems:** Issues such as Naxal insurgency, corruption, bureaucratic delays and anti-American feeling among certain sections of the Indian polity.

8 principal areas of Indo–US cooperation:

- **Possible support for India in UNSC:**
  o Amid India's push for UN Security Council reforms, the US has said it supports building a consensus for a "*modest*" expansion of the Council for both permanent and non-permanent members, provided it does not diminish its effectiveness or its efficacy and does not alter or expand the veto.
- **US Entity List:**
  o `Removing entities from the US Entity List would certainly consolidate the relationship.
- **Economic aspect of the relationship will also be crucial.**
  o $10 b worth deals with various Indian corporations suggest that the US is looking for Indian investments which would create jobs in the US.
- **India getting US support for membership in four export control regimes:**

  o What are the criteria for memberships and how other countries react and whether US can push Indian claim.

- **Pakistan-US relations:**
  o US military aid to Pakistan would continue to be an area of irritation for India.
- **Counterterrorism:**
  o Some good cooperation has happened between India and the US. But this cooperation needs to be deepened further given that the US is still reluctant to share intelligence about Pakistan with India.
- **India expects the US to advocate and support a greater role for India in Afghanistan.**
- Pakistan's efforts to exclude India's role in Afghanistan has been voiced by India with the US.
- **Good relations with China are important for both countries and neither country wants to offend China.**
- There continues to be a divergence between India and the US on Iran and Myanmar. Convergence will take time to develop. There is anti-US sentiment in India in some political quarters. Finally, stronger Indo-US relations may alienate other countries and allies like Russia and China.

Conclusion

- India-U.S. bilateral relations have developed into a *"global strategic partnership",* based on shared democratic values and increasing convergence of interests on bilateral, regional and global issues.
- The emphasis placed by the Government in India on development and good governance has created an opportunity to reinvigorate bilateral ties and enhance cooperation under the motto - *"Chalein Saath Saath: Forward Together We Go", and "Sanjha Prayas, Sab ka Vikas" (Shared Effort, Progress for All)* adopted during the first two summits of Prime Minister Modi and President Obama in September 2014 and January 2015 respectively.

2.4 REVIVAL OF INDIA-EGYPT RELATIONS

Context
- Prime Minister Narendra Modi's visit to Cairo built on the visit by the Egyptian leader Abdel Fattah El-Sisi earlier this year when he was chief guest at the Republic Day parade in this country.

Details
- Prime Minister Narendra Modi embarked on a two-nation tour, including a state visit to Egypt, upon the invitation of President Abdel Fattah El-Sisi. This visit marked PM Modi's first visit to Egypt as Prime Minister and the first bilateral visit by an Indian Prime Minister in 26 years.

Key Highlights of the Visit:

Strategic Partnership and Agreements
- India and Egypt signed a strategic partnership agreement, marking a significant milestone in their bilateral relationship.
- Memoranda of Understanding (MoUs) were signed in the fields of agriculture, archaeology and antiquities, and competition law.
- Discussions also encompassed multilateral cooperation, including the G-20, food security, energy, and climate change.

Bilateral Engagements
- A roundtable meeting with the Egyptian Prime Minister and a meeting with President El-Sisi were scheduled during the two-day state visit.
- The discussions aimed to strengthen bilateral ties, enhance cooperation on various issues, and explore new avenues of collaboration.

Interactions and Cultural Engagements
- PM Modi had the opportunity to interact with the Indian community in Egypt, fostering a sense of connection and understanding.
- He also **visited the Grand Mufti of Egypt**, DrShawki Ibrahim Abdel-KarimAllam, and engaged with Egyptian thought leaders.

Visit to Al-Hakim Mosque
- PM Modi visited the historic Al-Hakim Mosque in Cairo, named after the 16th Fatimid caliph, Al-Hakim bi-Amr Allah.

- This visit showcased the rich cultural heritage and historical ties between India and Egypt.

Tribute to Indian Soldiers
- PM Modi paid homage to the Indian soldiers who made the supreme sacrifice fighting for Egypt during World War I.
- He visited the Heliopolis War Grave cemetery, honoring over 4,300 Indian soldiers who perished in Egypt and Aden during the war.

About Egypt-India Relations
- India and Egypt, two of the world's oldest civilizations, have enjoyed a history of close contact from ancient times. Ashoka's edicts refer to his relations with Egypt under Ptolemy-II. In modern times, Mahatma Gandhi and SaadZaghloul shared common goals on the independence of their countries, a relationship that was to blossom into an exceptionally close friendship between President Nasser and Prime Minister Nehru, leading to a Friendship Treaty between the two countries in 1955.

Political Relations
- India and Egypt share close political understanding based on long history of contacts and cooperation in bilateral, regional and global issues.
- The joint announcement of establishment of diplomatic relations at Ambassadorial level was made on 18 August 1947.
- Both countries have cooperated closely in multilateral fora and were the founding members of Non-Aligned Movement. The year 2022 is of particular significance since it marks the 75th anniversary of diplomatic relation between India and Egypt.

Economic Relations
- Egypt has traditionally been one of India's most important trading partners in the African continent. The India-Egypt Bilateral Trade Agreement has been in operation since March 1978 and is based on the Most Favoured Nation clause and the bilateral trade has increased more than five times in last ten years.

- The bilateral trade in 2018-19 was US$ 4.55 billion. Despite Pandemic, the volume of trade declined only marginally to US $ 4.5 billion in 2019-20 and to US $ 4.15 billion in 2020-21.
- During April 2022-January 2023 period of FY 2022-23, according to DGCIS, the bilateral trade has reached nearly USD 4.4 billion, with USD 2.9 billion worth exports from India and USD 1.5 billion worth imports from Egypt to India.

Defence Relations

- Egypt and India enjoy cordial defence relations. There was close cooperation between the Air Forces, with joint development of a fighter aircraft in 1960s. IAF pilots also trained Egyptian pilots from 1960s until 1984.
- Substantive discussions on various aspects of Defense cooperation and ways to further enhance mutual exchanges were held during the meetings. AnMoU on Defense Cooperation was signed on 19 Nov 2022 by both the Defense Ministers.
- Egypt participated in the Multinational Training Exercise for friendly African countries held at Pune in March 2019. The first ever IAF-EAF Joint Tactical Air Exercise, Dessert Warrior, was held in Egypt from 29-31 October 2021.

Cultural Relations

- The Maulana Azad Centre for Indian Culture (MACIC) has been promoting cultural cooperation between the two countries, through regular activities such as Hindi, Urdu and Yoga classes; seminars; film shows; exhibitions and participation in local cultural activities. In its outreach activities, MACIC also organizes India Day(s) in Egyptian Governorates and universities on a regular basis.
- Yoga has gained immense popularity in Egypt.

Concerns in India Egypt relationship:

- **Egypt's economic situation** has recently caused an ugly spat with its benefactors in the Gulf Cooperation Council (GCC). Since 2011, the latter have provided Egypt with $92 billion.

- **The army's control of politics and economy** in Egypt has not allowed for a different political-economic alternative.
- **Besides reflecting the natural frustration** of a rich ancient civilisation that is now in dire straits and dependent on nouveau riche relatives, the Egyptian outburst is also due to GCC pledges that have not been fulfilled.
- **Brotherhood's intellectuals, underground or in exile**, had attempted in their writings to draw from Islamic traditions the norms of modern-day democratic governance, espousing the principles of constitutionalism, human rights, political parties, free elections and responsible governments.
- **The Egyptian president's visit to India affirms** the commitment of both countries to work together to build political and economic ties that had lost much of their resonance over the last few decades due to Egypt's domestic difficulties. Since the relationship is still at a nascent stage, the joint statement is functional in both tone and content.

Steps need to be taken to strengthen the relationship:

- Egypt, which is facing a shortage of food grains as its major sources were the warring Ukraine and Russia, wants to buy wheat from India. In May last year, India — which had put a ban on sale of wheat — allowed export of 61,000 tonnes to Egypt. But the country wants more grains, in view of the shortages.
- Egypt's President is also coming at a time when the country is facing a massive economic crisis due to depleted forex reserves. While there has been no request for budgetary support, India is looking at increasing investments in the country, especially in major infrastructure projects in and around the Suez Canal, in terms of special economic zones in Alexandria and Cairo.
- Egypt is also keen to push for more tourism from India, and ease movement of people so that there is more forex inflow into their tourism-dependent economy.
- With Sisi being a former Army chief, Egypt is interested in procuring defence equipment from India, which includes LCA Tejas, missiles

like Akash, DRDO's Smart Anti-Airfield Weapon, and radars.

Conclusion

- The two countries will also look at the education sector, where Indian higher educational institutions can set up campuses in Egypt: a proposal for establishing an IIT in Egypt is in the works.

2.5 SHORT ARTICLES

India and UN Peacekeeping Mission

Context

- The Indian Army commemorated the 75th International Day of UN Peacekeepers on 29th May, by paying homage to the fallen comrades by laying wreath at National War Memorial, New Delhi by the Chief of the Army Staff, Vice Chief of Army Staff and representatives from Navy and Air Force, Ministry of External Affairs and United Nations.

About

- India has a rich legacy of contribution to UN Peacekeeping operations and is **one of the largest contributors of troops**. It has contributed **approximately 2,75,000 troops to peacekeeping missions** so far, with **around 5,900 troops currently deployed** in 12 UN Missions.
- Indian Army personnel have operated under difficult conditions in challenging terrains and have **displayed exemplary professionalism, humane approach, courage and valour, to the extent of making the supreme sacrifice** to defend the UN mandates.
- **159 Indian Army soldiers** have made the supreme sacrifice to ensure peace across the globe.
- Apart from the current deployment, **India has pledged one Infantry Battalion Group and Corvette with Helicopter**, as hard power and an Engineer Company & Signal Company as Force enablers, to be deployed at the behest of the UN.
- The Indian Army has established a **Centre for UN Peacekeeping (CUNPK) in New Delhi** to impart niche training in peacekeeping operations. The Centre trains more than **12,000 troops every year.**
- **India has been at the forefront of capacity development for the UN**, host nations and partner nations.
- It has **always strived to support UN initiatives by providing agile and flexible units**, peacekeeper training, logistic support, enhancing gender parity and contributing to technological enhancements.

G20 and Third Employment Working Group

Context

- The 3rd Employment Working Group (EWG) meeting under the G20 Indian Presidency successfully concluded on 2nd June in Geneva.

Details

- The three-day meeting, which took place from June 31st to June 2nd, 2023, at the International Labour Organization (ILO) headquarters in Geneva, Switzerland, witnessed active participation from delegates representing 78 G20 Members, Invitee Countries, Guest Countries, and International Organizations.

About Employment working group

About

- The EWG's mandate is to address priority labour, employment and social issues to further develop strong, sustainable, balanced, inclusive and job-rich growth.
- The EWG's work will be guided in particular by the set of broad objectives stated below and directions from the Leaders, Labour and Employment Ministers and G20 Sherpas.

Membership

- Participation in the EWG is open to representatives and experts from G20 member and guest countries

Partnership

- The EWG will work in cooperation with the official B20 and L20 groups and other social engagement groups as appropriate and according to the arrangements to be decided by the EWG.
- The EWG will encourage the B20 and L20 to engage in social dialogue on issues of common interest.

Functions

- The EWG is chaired on a 'troika' presidency basis led by the incumbent, supported by the previous and the following year's G20 presidencies.
- The secretariat support for the EWG is provided by the incumbent G20 presidency. In the decisions of the EWG, consensus-based approach shall be applied.
- In the areas of joint interest, the EWG may work with other working groups and seek collaboration on those issues.
- In case specific expertise is required in the implementation of EWG's tasks, time-limited and voluntary-based technical sub-groups may be established.
- The mandate, work plan, composition and co-facilitators of those sub-groups are decided by the member countries.

G20: Third Health Working Group Meeting

Context

- **Union Health & Family Welfare and Chemicals and Fertilizer Minister virtually addressed the inaugural session at the G20 Health Ministers meeting at Yogyakarta, Indonesia**.

Details

- The present pandemic has highlighted the fault lines in the **global health governance** and has brought to the fore the importance of strengthening **Global Health Architecture**. It has reinforced the need to assess health ecosystems, health financing and their

linkages in light of the experience in managing the current pandemic.

- **Indonesia** has hosted two Health Working Group Meetings in Yogyakarta and Lombok wherein priority issues of 'Harmonizing Global Health Protocol Standards' and '**Building Global Health System Resilience'** were discussed and deliberated upon.
- Union Health Minister advocated for an inclusive, agile and responsive framework for health emergency management, supported by a **global mechanism of surveillance, sustainable financing and equitable distribution of medical countermeasures.**
- G20 countries account for **80% of the world's GDP and share 80% of global cross-border trade** and hence G20's engagement and leadership will be vital to strengthen the **global health architecture and management** of any future health emergencies.

About G-20	
Objective	• It is the **premier forum for international economic cooperation**, which reflects a recognition that global prosperity is interdependent and our **economic opportunities and challenges are interlinked**.
Members	• **Apart from the G7 countries, the G20 comprises** Argentina, Australia, Brazil, China, India, Indonesia, Mexico, Russia, Saudi Arabia, South Africa, South Korea, and Turkey.

EU Migration Deal

Context

- The recent agreement reached by European Union ministers on how to handle irregular arrivals of asylum-seekers and migrants.

Details

- EU states have been trading blame over **providing for new arrivals since the 2015 influx** of over a million people, mostly from Syria.

- The **bloc has tightened external borders, asylum laws, and struck deals in** the Middle East and North Africa to reduce irregular immigration.
- The goal is to restart **cooperation among EU countries to distribute the task of caring for arriving refugees and migrants** more evenly.

About European Union

Aim	• It is a political and economic union of 27 member states primarily located in Europe.
Established	• Established in **1993** with the signing of the **Maastricht Treaty**, the EU aims to promote peace, stability, and prosperity among its members.
Members	• **The members of EU are:** Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.
Functions	• The European Commission serves as the **executive branch, proposing legislation** and implementing EU policies. • The European Parliament **represents EU citizens and participates in the legislative process.** • The Council of the European Union consists of ministers from member states, responsible for adopting laws and coordinating policies. • The EU has **common policies** in various areas, **such as agriculture, fisheries, regional development, and environmental protection.**

G20: Women 20 (W20) Summit

Context

- **Union Health & Family Welfare and Chemicals and Fertilizer Minister virtually addressed the inaugural session at the G20 Health Ministers meeting at Yogyakarta, Indonesia**.

Details

- W20 India took over the presidency from W20 Indonesia on 12 December 2022. W20, under India's presidency, is focused on actualizing Prime Minister ShriNarendraModi's vision of *"Women-Led Development"* with a with the **vision to create a world of equality and equity where every woman lives with dignity and where every woman** gets the opportunity to thrive, transcend and transform their lives and those of others.
- W20, 2023 is **focusing on removing barriersto women-led development and ensuring an enabling environment** and ecosystem for women to **realize their full potential, transforming their lives as well as of others.**
- The goal that has been set by the W20 2023 is to ensure continuity of the W20agenda from the past presidencies while establishing a stronger W20 global and national network.
- These inclusive consultations and actions will be feeding into the W20 Communique and G20 Leaders' Declaration.
- **W20, 2023 aims to ensure that the W20 communique** is representative and comprehensive and will provide solutions to **enhance the status of women across the globe.**

About W-20	
Members	• W20 (Women 20) is an **official engagement group under the G20** which was established during the Turkish presidency in 2015.
Objective	• Its primary objective is to ensure that gender considerations are

	mainstreamed into G20 discussions and translated into the **G20 Leaders' Declaration as policies and commitments that foster gender equality and women's economic empowerment.**
Priority areas	• There are five priority areas of W20 under India's Presidency which include, **Women in Entrepreneurship, Women Leadership at Grassroots, Bridging the Gender Digital Divide, Education & Skill Development and Women & Girls as change makers Climate Resilience Action.**

River Sonai of West Bengal

Context

- In a step towards improving the ground conditions along the India-Bangladesh border, the chiefs of the border security forces of the two countries agreed onto initiate five projects.

Details

- **The Sonai River is a river in** the North 24 Parganas district of **West Bengal, India.**
- Human development activity filled in portions of the river, leaving only sporadic ponds with many dried sections of the river route.
- **Drained areas near Amudia and Hakimpur** near the national border have been used by Jamaat-ul-Mujahideen Bangladesh terrorists as a route to invade India.
- The river Sonai flows through the town of Sonai joining with Barak River near Dungripar Village of Sonai.
- As per the 2011 census of India, Sonai had a total population of 324,315, of which 51% were male and 49% were female. Sonai has an average literacy rate of 80%, with a male literacy rate of 54% and female literacy rate of 46%.

Global Liveability Index 2023

Context

- The Economist Intelligence Unit (EIU) has recently unveiled its highly anticipated list of the 'Most Liveable Cities in the World

Details

- The Economist Intelligence Unit (EIU) has released its highly anticipated list of the 'Most Liveable Cities in the World 2023.'
- The ranking evaluates cities based on five metrics: healthcare, culture, environment, education, and stability.
- Vienna, Austria, has been named the best city to live in for the second consecutive year, praised for its stability, infrastructure, education, healthcare, and cultural offerings.
- Copenhagen, Denmark, retains its second-place position, followed by Melbourne and Sydney in Australia.
- This year, the index covered 172 cities and for the second year in a row, Vienna, Austria, has been named the best city to live in the world.
- Three Canadian cities – Vancouver, Calgary and Toronto — also made it to the top ten list. From Asia, Japan's Osaka was ranked number 10 in the rankings.

Wagner Mutiny

Context

- Russia's Wagner Private Military Company staged a short-lived Mutiny against the country's defense establishment, pushing Russia into an unprecedented internal security crisis.

Details

- Wagner Group, a Russian private military company funded by the Russian government, staged a rebellion.The rebellion occurred during a period of increasing tensions between the Russian Ministry of Defence and Yevgeny Prigozhin, the leader of Wagner.
- Prigozhin portrayed the rebellion as a response to an alleged attack on his forces by the ministryand refused to integrate Wagner Group into the Russian Armed Forces.

- The rebellion Prigozhin demanded that they be turned over to him.In a televised address on 24 June, Russian president Vladimir Putin called Wagner mercenaries "patriots" while also denouncing their actions as treason and

pledging to quell the rebellion.
- Prigozhin's forces successfully took control of Rostov-on-Don and the headquarters of the Southern Military District in it. They then advanced towards Moscow in an armored column.
- Following the intervention of Belarusian president Alexander Lukashenko, Putin publicly presented Wagner with three options: **joining the Ministry of Defense, relocating to Belarus, or disbanding**. Prigozhin agreed to step down, and on the late evening of 24 June, his forces began withdrawing from Rostov-on-Don. The Russian Federal Security Service initiated a case for armed rebellion under Article 279 of the Criminal Code but later closed it on 27 June and dropped the charges.
- Wagner Group also released a video accusing the defense leadership of ordering airstrikes on Wagner and taking control of the Southern

Military District headquarters in Rostov-on-Don.

Copenhagen Meeting
Context
- As part of consultations on key principles of peace, Head of the Office of the President of Ukraine Andriy Yermak held a series of bilateral meetings in Copenhagen with national security advisors to the leaders of India, South Africa, Türkiye, Japan and EU institutions.

Details
- Ukraine has made progress in building broad international support for a peace blueprint.
- However, any summit to endorse the document is at least months away, according to officials.
- Senior officials from Ukraine, G7 countries, the European Union, and other nations met in Denmark for talks on the concept.
- The meeting aimed to advance a proposal by Ukrainian President VolodymyrZelenskiy for a "peace summit" to endorse principles for ending the war.

Peace Formula
- The focus of the talks was on finding common ground for a possible peace formula.
- The discussions built on a 10-point plan outlined by President Zelenskiy in November.
- Officials emphasized the importance of basing the formula on the principles of the U.N. Charter, such as territorial integrity and sovereignty.

India Suriname Relations
Context
- President Droupadi Murmu recently highlighted the deep-rooted ties between India and Suriname.

Details
- The partnership is grounded in the common historical experience of colonialism and that the two countries relations have evolved over a period of time and have stood the test of time.

- The Indian President during the event conveyed her heartfelt affection and greetings from **more than 1.4 billion people of India to the people of Suriname.**

About India-Suriname Relationship:

Political	• India enjoys close, warm and friendly relations with Suriname, reinforced by cultural and people-to-people contacts bridged by Indian Diaspora's arrival dating back to 146 years. • **Establishment of diplomatic relations**: In 1976 the Indian Embassy opened in **Paramaribo in 1977** and the **Surinamese Embassy** in New Delhi in 2000.
Economy	• Indian export to Suriname consists of boilers, machinery, iron & steel, electrical machinery & equipment, sound recorders, pharmaceutical products, textiles, vehicles, coffee, tea and spices, rubber, paper, tobacco, organic chemicals, furniture, carpets, ceramic products, footwear and printed books; Indian import consists of wood, aluminium, textiles,herbal products, garments, spices, and electrical machinery • **Exports to India in 2018-19 US$:** 111.94 million, Imports from India 2018-19: US 1.34 million
Cultural	• Indian Cultural Centre in Suriname was opened in **1978**

	and pursued soft-power diplomacy initiatives including Hindi language, Kathak, Yoga and classical music.
Indian diaspora	• Indian diaspora, which currently constitutes 27% of Suriname's population of about 5.68 lakhs (and some 50 Sindhi families), arrived in Suriname 146 years ago never disconnected themselves with their roots. • Both India and Suriname have implemented the **MoU on the waiver of visa** for official and diplomatic passport holders.

1267 Al Qaeda Sanctions Committee

Context

- China blocked a proposal by India and the U.S. at the United Nations to designate Pakistan-based LeT terrorist Sajid Mir, wanted for his involvement in the 26/11 Mumbai terror attacks, as a global terrorist.

Details

- China stymied a joint proposal by India and the US for listing Mir under the 1267 al-Qaeda Sanctions Committee so that he would be subjected to an assets freeze, travel ban and arms embargo, people familiar with the matter said.
- Mir is wanted in India and the US in connection with the 2008 Mumbai attacks, during which he directed the 10-member LeT team that killed 166 people.
- India's response to the development came in the form of a statement read out by joint secretary Prakash Gupta at a high-level conference on counter-terrorism at the UN General Assembly.
- India's external affairs ministry has in the past questioned China's use of the so-called "technical hold" to block the listing of several Pakistan-based terrorists at the UN Security Council.

- China had also blocked a move to designate Mir last year. Other terrorists whose listings at the Security Council have been held up by China include Shahid Mahmood and Talha Saeed of LeT and Abdul RaufAsghar of Jaish-e-Mohammed (JeM).

2. 6   SNIPPET

INTERNATIONAL CRIMINAL COURT

- The ICC is an independent international organization and is not part of the UN system. It was created two decades ago as a standing body under the Rome Statute of 1998.
- It is the first permanent treaty-based court established to help end impunity for the most serious crimes of concern to the international community.
- Function: To investigate war crimes, genocide and crimes against humanity.
- Headquarters: The court is based in The Hague, Netherlands.

G20: DIGITAL ECONOMY WORKING GROUP CONFERENCE

- The third meeting of 'G20 Digital Economy Working Group (DEWG)' concluded today at Pune.
- The agenda of the meeting included the Global DPI Summit and Global DPI Exhibition as the side events and closed-door meetings among the G20 delegates, invited countries and IOs on the priority areas.
- The Summit was attended by over 250 delegates in-person, out of which, there are around 150 foreign delegates from 50 countries.
- More than 2000 persons attended virtually. India signed MoU with four countries namely Armenia, Sierra Leone, Suriname and Antigua and Barbuda on sharing INDIA STACK i.e. successful digital solutions implemented at population scale.
- The summit provided the global platform to discuss sector agnostic (foundational) and sectoral DPIs that inter-alia involved leadership, policy & practitioner level insightful, thought provoking and future shaping discussions among overall 60 Global Experts.
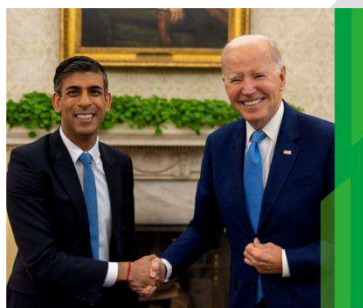
ATLANTIC DECLARATION

- The leaders adopted an "Atlantic Declaration" to enhance industry ties in defense and renewable energy.
- The declaration acknowledges the challenges to international stability posed by authoritarian states, disruptive technologies, non-state actors, and transnational issues like climate change.
- The goal is to boost cooperation between the US and UK to tackle these challenges effectively.

SAI20 SUMMIT

- The SAI20 Summit of the SAI20 Engagement Group under India's G20 Presidency concluded in Goa.
- It focused on the deliberations and adoption of the final draft of the SAI20 Communique. The final SAI20 Communique, an inclusive, decisive, and action-oriented document, was adopted upon consensus by SAI20 member SAIs in the SAI20 summit.
- The SAI20 priority areas include "Blue Economy" and "Responsible Artificial Intelligence" which represent new-age opportunities and concerns.

2. 7   1 MAINS QUESTION AND 5 MCQS

Q1. The United States and India affirm that the ways in which technology is designed, developed, governed, and used should be shaped by our shared democratic values and respect for universal human rights. Analyze the implications and suggest measures for the India-USA relationship. (15M, 250 words)

Answer

Introduction:

- India and the United States unveiled a roadmap for **enhanced collaboration in high-technology areas**, with a focus on addressing regulatory barriers and aligning export controls for smoother trade and *"deeper cooperation"* in critical areas.

- **India and the U.S. signed anMoU on establishing a semiconductor supply chain** that paved the way for creating a semiconductor sub-committee to review recommendations from an industry-led task force launched in connection with the iCET.

Body:

Implications in India-USA relations:

Tariffs war:

- In 2018, the US imposed additional **tariffs of 25% on steel and 10% on aluminum imports** from various countries, including India, India's refusal to remove the 20% tariffs on ICT products.

Trade challenges

- like removal of India from its list of developing countries and taking off India from list of **beneficiary-developing countries** under its scheme of Generalized System of Preferences.

WTO disputes

- like Capping prices of medical devices by India, greater Indian market access for American agriculture and dairy products etc.

Other issues

- **IPR:** India is also on U.S.'s Priority Watch List.

- **H1B visas:** US has ramped up H-1B denials.

- Soft policy towards Pakistan and tensions with Iran, Russia, and divergence of interests in Afghanistan.

Measures to be taken:

- **Possible support for India in UNSC:**
  - Amid India's push for UN Security Council reforms, the US has said it supports building a consensus for a "*modest*" expansion of the Council for both permanent and non-permanent members, provided it does not diminish its effectiveness or its efficacy and does not alter or expand the veto.

- **US Entity List:**
  - Removing entities from the US Entity List would certainly consolidate the relationship.

- **Economic aspect of the relationship will also be crucial.**
  - $10 b worth deals with various Indian corporations suggest that the US is looking for Indian investments which would create jobs in the US.

- **India getting US support for membership in four export control regimes:**
  - What are the criteria for memberships and how other countries react and whether US can push Indian claim.

Conclusion:

- India-U.S. bilateral relations have developed into a *"global strategic partnership"*, based on shared democratic values and increasing convergence of interests on bilateral, regional and global issues.

Q2. Which of the following statements is/are correct with reference to the International Criminal Court?

1. The ICC is an intergovernmental organization and is not part of the UN system.
2. ICC can also prosecute persons who are above 15 when the crime was committed.

Select the mail correct option using the code given below:
A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Answer: D

Explanation:

- *The ICC is an independent international organization and is not part of the UN system. Hence statement 1 is incorrect.*
- *It is the first permanent treaty-based court established to help end impunity for the most serious crimes of concern to the international community.*
- *The court does not have the power to arrest sitting heads of state or bring them to trial.*
- *She must rely on other leaders and governments to act as her sheriffs around the world.*
- *Acting officially as head of state, member of government or parliament or as an elected representative or public official in no way exempts a person from prosecution or criminal liability.*
- *ICC cannot prosecute persons who are below 18 when the crime was committed. Hence statement 2 is incorrect.*

Q3. Which of the following statements is/are correct with reference to G20?

1. India is currently part of the G-20 Troika, comprising Indonesia, Malaysia and India.
2. Together, the G20 countries make up around 80% of the world's economy and 75% of the world's population.
3. During India's Presidency, India, Indonesia and Brazil would form the troika.

Select the correct option using the code given below:
1 and 2only
2 and 3only
3 only
1 and 3 only

Answer: C

Explanation:

- *India is currently part of the G-20 Troika (current, previous and incoming G20 presidencies) comprising Indonesia, Italy and India. Hence statement 1 is incorrect.*
- *During our Presidency, India, Indonesia and Brazil would form the troika. Hence statement 3 is correct.*

- *This would be the first time when the troika would consist of three developing countries and emerging economies, providing them a greater voice.*
- *Apart from the G7 countries, the G20 comprises Argentina, Australia, Brazil, China, India, Indonesia, Mexico, Russia, Saudi Arabia, South Africa, South Korea, and Turkey.*
- *Together, the G20 countries make up around 80% of the world's economy and two-thirds of the world's population. Hence statement 2 is incorrect.*

Q4. Which of the following statements is/are correct with reference to European Union?

1. EU is a political and economic union of 25 member states primarily located in Europe.
2. The European Commission serves as the executive branch, proposing legislation and implementing EU policies

Select the correct option using the code given below:
A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Answer: B

Explanation:

- *The EU is a political and economic union of 27 member states primarily located in Europe. Established in 1993 with the signing of the Maastricht Treaty, the EU aims to promote peace, stability, and prosperity among its members. Hence statement 1 is incorrect.*
- *The EU has several institutions that play crucial roles in decision-making and governance, including the European Commission, the European Parliament, the Council of the European Union, and the European Court of Justice.*
- *The European Commission serves as the executive branch, proposing legislation and implementing EU policies. Hence statement 2 is correct.*
- *The European Parliament represents EU citizens and participates in the legislative process.*

Q5. Which of the following statements about Global Liveability Index is/are incorrect?

1. It is released by Economist Intelligence Unit (EIU).
2. It is evaluated on the basis of five metrics.
3. Copenhagen, Denmark has been ranked as the Mostliveable City in the World as per the 2023 rankings.

Select the correct statements using the codes below:

A. 1 and 2only

B. 2 and 3only

C. 3 only

D. 1 and 3 only

Answer: C

Explanation:

- *The Economist Intelligence Unit (EIU) has released its highly anticipated list of the 'Most Liveable Cities in the World 2023.'*

- *The ranking evaluates cities based on five metrics: healthcare, culture, environment, education, and stability.*

- *Vienna, Austria, has been named the best city to live in for the second consecutive year, praised for its stability, infrastructure, education, healthcare, and cultural offerings.*

- *Copenhagen, Denmark, retains its second-place position, followed by Melbourne and Sydney in Australia.Hence only statement 3 is incorrect.*

Q6. *Consider the following statements about India-Nepal relations:*

1. Nepal shares a border with 5 Indian states.

2. India signed the Treaty of Peace and Friendship with Nepal after the China border dispute.

3. Recruitment of Gorkhas from Nepal started in the British Indian army after the Treaty of Sagauli (1816).

Select the correct statements using the codes below:

A. 1 and 2only

B. 2 and 3only

C. 3 only

D. 1 and 3 only

Answer: D

Explanation:

- *Recruitment of Gorkhas from Nepal started in the British Indian army after the Treaty of Sagauli (1816) between the government of Nepal and the British East India Company. Hence statement 3 is correct.*

- *It became a tripartite arrangement in 1947 after India became independent and Gorkhas in Nepal were given a choice to serve in the Indian Army or go to the United Kingdom.*

- *India and Nepal share similar ties in terms of Hinduism and Buddhism with Buddha's birthplace Lumbini located in present-day Nepal.*

- *The India-Nepal Treaty of Peace and Friendship of 1950 forms the bedrock of the special relations that exist between India and Nepal. Hence statement 2 is incorrect.*

- *Nepal shares a border with 5 Indian states- Uttarakhand, Uttar Pradesh, West Bengal, Sikkim and Bihar. Hence statement 1 is correct.*

3. ECONOMY

3. 1 EVERGREENING OF LOANS

Context

- Governor of the Reserve Bank of India (RBI) warned banks against using innovative methods for the evergreening of loans.

Details

- The RBI Governor warned banks against using innovative methods for the evergreening of loans, such as **selling and buying back loans** from each other, **persuading good borrowers** to enter into **structured deals with stressed borrowers**, using internal accounts to adjust repayment obligations, and renewing or disbursing new loans to stressed borrowers or related entities.
- The Governor said that such methods suggest a lack of vigilance by the board, CEO and audit committees of banks and that the RBI will take strict action against any such cases.

Evergreening of loans: A risky practice that needs to be curbed

- Evergreening of loans is a term that refers to the **practice of banks lending more money to borrowers who are already in default or close to it, to avoid classifying their loans as non-performing assets (NPAs).** This way, banks can artificially maintain a healthy balance sheet and avoid provisioning for bad loans.
- This practice is risky and unethical, as it conceals the true state of stress in the banking sector and prevents the efficient allocation of credit to productive sectors.

RBI report

- The evergreening of loans in India has been a persistent problem for many years. **According to a recent report by the Reserve Bank of India (RBI), the evergreening of loans accounted for about 7.5% of the total bank credit in India as of March 2020.**
- The report also revealed that some sectors, such as power, infrastructure, telecom and real estate, had a higher incidence of evergreening than others. For example, in the power sector, some banks had extended loans to power plants that were not operational or had low capacity utilization.

The key Reasons behind the evergreening of loans in India are:

Lack of effective regulation and supervision

- The lack of effective regulation and supervision of the banking sector by the RBI and other authorities.
- The other authorities, such as the Central Vigilance Commission (CVC), the Central Bureau of Investigation (CBI) and the Enforcement Directorate (ED), have also been **ineffective or slow in investigating and prosecuting cases of evergreening.**

Pressure from the government and other influential entities

- Pressure from the government and other influential entities to lend to certain sectors or projects that are deemed strategic or socially important. While these sectors may have a positive impact on the economy and society, they may also have a **higher risk of default or evergreening.**

The incentive structure of the bank managers and employees

- The incentive structure of the bank managers and employees, who are rewarded for increasing the loan portfolio and meeting the targets, rather than ensuring the quality and recovery of the loans.

Fear of legal action and public backlash

- The fear of legal action and public backlash from the borrowers, who may be politically connected or influential in their respective domains. The **borrowers may use their connections to threaten or coerce the banks to extend or renew their loans.**

Lack of transparency and accountability

- The lack of transparency and accountability in the banking sector makes it difficult to detect and prevent the evergreening of loans. The

banks may not disclose or report their true financial position and risk exposure to the regulators, auditors, shareholders or other stakeholders.

The evergreening of loans has several negative consequences

Undermines the financial stability and credibility

- It undermines the financial stability and credibility of the banks, as they hide their true financial position and risk exposure. This may erode the trust and confidence of the depositors, investors, creditors and other stakeholders in the banking system. It may also expose the banks to higher losses or insolvency in case of a shock or crisis.

Reduces the availability and affordability of credit

- It reduces the availability and affordability of credit for genuine borrowers, who may have better creditworthiness and repayment capacity. The evergreening borrowers may crowd out or squeeze out genuine borrowers from accessing credit from the banks. They may also increase the cost of borrowing for others by raising the interest rates or fees charged by the banks.

Distorts the allocation of resources and capital

- It distorts the allocation of resources and capital in the economy, as it supports inefficient and unviable businesses at the cost of productive and innovative ones. The evergreening borrowers may consume more resources and capital than they generate, creating a negative value addition for the economy.

Hampers the growth and development

- It hampers the growth and development of the economy, as it lowers the investment and consumption demand and creates a drag on the GDP. The evergreening borrowers may not invest or expand their businesses, as they are more concerned with servicing their existing loans.
- They may not contribute to the tax revenue or employment generation of the economy. They may also reduce the consumption demand by diverting their income or savings to repay their loans.

Increases the fiscal burden

- It increases the fiscal burden on the government, as it may have to bail out the banks or provide subsidies to the borrowers in case of a crisis. The government may have to inject capital or liquidity into the banks to prevent their collapse or contagion. The government may also have to provide waivers or relief to the borrowers to appease them or avoid social unrest.

The Reserve Bank of India (RBI) has taken several steps

- **Tightening the norms for recognition and resolution of stressed assets**, such as the Insolvency and Bankruptcy Code (IBC), the Prudential Framework for Resolution of Stressed Assets, and the Asset Quality Review (AQR).
- **Enhancing the supervision and monitoring of banks' asset quality,** such as the Central Repository of Information on Large Credits (CRILC), the Risk Assessment Reports (RARs), and the Prompt Corrective Action (PCA) framework.
- **Strengthening the provisioning and capital requirements for banks,** such as the Basel III norms, the countercyclical capital buffer (CCyB), and the provision coverage ratio (PCR).
- **Encouraging the development of secondary markets for stressed assets,** such as the Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act, the Asset Reconstruction Companies (ARCs), and the bad bank proposal.
- These steps have helped in improving the transparency and accountability of banks' lending practices, reducing the level of stressed assets, and enhancing the resilience of the banking system. However, more needs to be done to address the root causes of evergreening, such as governance issues, moral hazard, and regulatory arbitrage. The RBI will continue to monitor the situation closely and take further measures as necessary to ensure financial stability and economic growth.

Need for a comprehensive and coordinated approach that involves:

Strengthening the regulatory and supervisory framework

- Strengthening the regulatory and supervisory framework of the banking sector by enhancing the powers and autonomy of the RBI and other authorities. The RBI should adopt a more proactive and consistent approach in defining, identifying, monitoring and resolving NPAs and evergreening.
- The R**BI should also impose stricter norms and penalties for evergreening and ensure compliance with the banks.** The other authorities, such as the CVC, the CBI and the ED, should also, act swiftly and effectively in investigating and prosecuting cases of evergreening.

Improving the governance and accountability

- Improving the governance and accountability of the banks by ensuring proper due diligence, risk management, audit and disclosure practices. The banks should adopt more rigorous and transparent processes and systems for appraising, sanctioning, disbursing and recovering loans.
- The **banks should also implement robust and independent internal and external audit mechanisms** to verify and validate their financial statements and reports.

Reforming the incentive structure

- Reforming the incentive structure of the bank managers and employees by linking their compensation to the performance and quality of the loans, rather than the volume and growth.

- The bank managers and employees should be evaluated and rewarded based on their ability to ensure the quality and recovery of the loans, rather than their ability to increase the loan portfolio and meet the targets.

Streamlining the legal and judicial system

- Streamlining the legal and judicial system by expediting the resolution and recovery of bad loans and enforcing strict penalties for fraud and malpractice. **The legal and judicial system should provide a fast-track mechanism for resolving disputes** and recovering dues related to bad loans.

Enhancing Transparency and Competition

- Enhancing transparency and competition in the banking sector by promoting greater disclosure, diversification and innovation. The banking sector should adopt more open and standardized formats and platforms for sharing information among themselves and with other stakeholders.
- The b**anking sector should also diversify its sources and modes of funding and lending**, such as by tapping into capital markets or alternative channels. The banking sector should also foster innovation in products, services, processes and technologies to improve efficiency, quality and customer satisfaction.

Conclusion

- The evergreening of loans is a serious challenge for India's banking sector and economy. It requires urgent attention and action from all stakeholders to curb this menace and restore trust and confidence in the financial system.

3.2 WORLD'S LARGEST GRAIN STORAGE PLAN

Context

- The Union Cabinet, led by Prime Minister has given its approval for the establishment and empowerment of an Inter-Ministerial Committee (IMC) to facilitate the "World's Largest Grain Storage Plan in Cooperative Sector".

Details

- The World's Largest Grain Storage Plan in Cooperative Sector is a groundbreaking initiative that aims to address the challenges of food security, crop damage, and distress sales by farmers in India.

- The plan involves setting up various types of agri-infrastructure, such as warehouses, custom hiring centres, processing units, etc. at the level of Primary Agricultural Credit Societies (PACS), which are the grassroots-level cooperative institutions that provide credit and other services to farmers.

Objectives

- To **create decentralized storage capacity** at the local level by building godowns and other infrastructure for agriculture and allied purposes at selected viable Primary Agricultural Credit Societies (PACS).
- To **enable PACS to function as procurement centres**, fair price shops, custom hiring centres, processing units, etc.

Primary Agricultural Credit Societies (PACS)

- Primary Agricultural Credit Societies (PACS) are cooperative institutions that provide credit and other services to farmers at the village level.
- They are the lowest tier of the short-term cooperative credit structure in India, which also includes District Central Cooperative Banks (DCCBs) and State Cooperative Banks (StCBs).
- PACS have a large membership base of around 13 crore farmers and operates in nearly 1 lakh panchayats across the country. It offers short-term and medium-term loans to farmers for agricultural purposes, such as buying seeds, fertilizers, pesticides, etc. They are refinanced by NABARD through DCCBs and StCBs. PACS play a vital role in supporting the rural economy and enhancing the income of farmers.
- PACS face many challenges, such as lack of coverage in some areas, low capitalization, poor governance, outdated technology, and weak linkages with other institutions. To address these issues, the government has launched various schemes and initiatives to strengthen and revitalize PACS. These include establishing new PACS in uncovered panchayats, computerizing PACS operations, providing financial assistance for infrastructure development, improving governance and management practices, and promoting convergence with other schemes of the Ministry of Cooperation.

Implementation

- The plan will be implemented **by converging various schemes of the Ministry of Agriculture and Farmers Welfare, Ministry of Consumer Affairs, Food and Public Distribution and Ministry of Food Processing Industries**, with a budget of approximately Rs 1 lakh crore.
- The Ministry of Cooperation will also implement a pilot project in at least 10 selected districts of different states/UTs to gather regional insights for nationwide implementation.
- The pilot project will provide valuable insights into the various regional requirements of the plan, which will be incorporated for the country-wide implementation.

Inter-Ministerial Committee (IMC)

- The IMC will be **chaired by the Minister of Cooperation and will have other ministers and secretaries as members**. It will be responsible for modifying the guidelines and implementation methodologies of the schemes of the respective ministries as per the need, within the approved outlays and goals.

It can offer a range of services to farmers, such as:

- Functioning as procurement centres for State Agencies/ Food Corporation of India (FCI) and ensuring fair prices for farmers' produce.
- Serving as fair price shops (FPS) and distributing food grains under the National Food Security Act (NFSA) to the beneficiaries.
- Setting up custom hiring centres and providing agricultural machinery and equipment on rent to farmers.

- Setting up common processing units and adding value to agricultural produce through sorting, grading, assaying, packaging, etc.

Some of these benefits are:

- Reducing **food grain wastage** and enhancing food security by creating adequate storage capacity at the farm level.
- Preventing distress sales by farmers and ensuring remunerative prices for their produce by linking them with markets through PACS.
- Reducing transportation costs and improving efficiency by decentralizing procurement and distribution operations through PACS.
- Strengthening PACS and enhancing their viability and sustainability by diversifying their income sources and improving their service delivery.
- Promoting cooperative values and principles among farmers and fostering a spirit of self-reliance and collective action.
- Storage facilities are essential for the welfare of farmers in India, as they can help them avoid distress sales of their crops. Distress sales occur when farmers are forced to sell their produce at low prices due to excess supply, lack of demand, or poor market conditions. Storage facilities can enable farmers to store their crops safely and sell them when the prices are favourable, thus increasing their income and reducing their losses. Storage facilities can also reduce the wastage of crops due to spoilage, pests, or weather damage. Therefore, storage facilities can play a vital role in improving the profitability and sustainability of agriculture in India.

Conclusion

- The World's Largest Grain Storage Plan in Cooperative Sector is a visionary step towards achieving the goals of Atmanirbhar Bharat (Self-reliant India) and doubling farmers' income by 2022. It is also aligned with the United Nations Sustainable Development Goals (SDGs) of ending hunger, achieving food security, improving nutrition, and promoting sustainable agriculture. The plan reflects the commitment of the government to empower the cooperative sector and harness its potential for the welfare of the farmers and the nation.

3. 3 TOY STORY OF INDIA

Context

- India's toy industry has witnessed a remarkable turnaround in its export performance in the last few years. From being a net importer of toys, India has become a net exporter.

Details

- India has a rich and ancient tradition of toy making, dating back to the Indus Valley Civilization. The original toys were made from natural materials such as bamboo sticks, hay, natural clay, rocks and fibre cloth. However, today, the advent of progressive technology and mechanism has stimulated companies to produce fresh and inventive toys.

- Between 2018-19 and 2021-22, toy exports increased from ₹812 crore to ₹1,237 crore, and imports declined from ₹2,593 crore to ₹819 crore, official data show.

The factor that has boosted India's toy exports

Rising demand for quality and eco-friendly toys in the Global market

- The factor that has boosted India's toy exports is the rising demand for quality and eco-friendly toys in the global market. India has an advantage in producing such toys, as it has a rich tradition of handicrafts and a skilled workforce.
- India has access to natural materials like wood, cotton, jute, etc., that can be used to make organic and sustainable toys. Moreover, India has a diverse and vibrant culture that

can inspire innovative and creative designs for toys.

Policy support from the government

- The government has recognized the potential of the toy industry as a source of employment and income generation, especially for women and rural artisans.
- The government has also identified toys as one of the priority sectors under the Make in India and Atmanirbhar Bharat campaigns. **Some of the initiatives taken by the government to promote toy exports include:**
  - o Setting up a National Toy Action Plan to provide a roadmap for the development of the toy industry.
  - o Launching a Toy Cluster Development Scheme to provide infrastructure and common facilities for toy clusters.
  - o Organizing a National Toy Fair to showcase the products and innovations of Indian toy manufacturers.
  - o Providing incentives and subsidies for toy exporters under various schemes like Merchandise Exports from India Scheme (MEIS), Rebate of State and Central Taxes and Levies (RoSCTL), etc.
  - o Simplifying the quality standards and certification process for toys.
  - o Reducing the import duty on raw materials and components for toys.

Resilience and adaptability of the industry players

- Indian toy manufacturers have shown remarkable agility and innovation in responding to the changing market trends and consumer preferences. They have also leveraged digital platforms and e-commerce channels to reach out to new customers and markets.
- Some of the examples of how Indian toy makers have adapted to the global demand are:
  - o Developing educational and STEM (Science, Technology, Engineering, Mathematics) toys that enhance learning and cognitive skills.
  - o Creating interactive and smart toys that use artificial intelligence, augmented reality, virtual reality, etc.
  - o Making customized and personalized toys that cater to individual tastes and preferences.
  - o Producing ethical and social toys that promote values like diversity, inclusion, empathy, etc.
- The export turnaround in India's toy story demonstrates the potential of the Indian toy industry to become a global hub by 2025-2030. However, to sustain this momentum and achieve greater heights, the industry needs to overcome some key challenges.

Key challenges for Indian Toys

- Enhancing the quality and safety standards of Indian toys to meet the expectations and requirements of international buyers and regulators. The industry needs to invest more in research and development, testing facilities, certification processes and quality control mechanisms.

- Improving the infrastructure and logistics facilities for the toy industry to reduce the cost of production and transportation and increase the efficiency and competitiveness of Indian toys in the global market. The industry also needs to leverage the opportunities offered by various trade agreements and preferential market access schemes with different countries.

- Strengthening the intellectual property rights protection and enforcement for Indian toys to prevent counterfeiting, piracy and infringement of trademarks, designs and patents. The industry also needs to create more awareness about the value and benefits of intellectual property rights among its stakeholders.

- Promoting innovation and diversification in the product portfolio of Indian toys to cater to the changing preferences and needs of different segments of customers across age groups, genders, regions and cultures.

The industry also needs to adopt new technologies such as artificial intelligence, augmented reality, virtual reality and the Internet of Things to create more interactive and engaging toys.

Other challenges

- High dependence on imports from countries like China, Vietnam, Hong Kong, and Taiwan, which account for over 80% of the toy market in India. This exposes the sector to risks of supply chain disruptions, quality issues, and price fluctuations.

- Low penetration of organized retail and e-commerce channels for toy distribution, especially in rural and semi-urban areas. This limits the access and availability of quality toys for a large segment of consumers.

- Lack of adequate infrastructure, skilled manpower, technology, and innovation capabilities for domestic toy manufacturing. This affects the quality, variety, safety, and affordability of toys produced in India.

- High cost of raw materials, logistics, taxation, and compliance for toy production and trade. This reduces the profitability and competitiveness of toy manufacturers and exporters.

Key challenges such as:

Enhancing the quality and safety standards

- Enhancing the quality and safety standards of Indian toys to meet the expectations and requirements of international buyers and regulators. The **industry needs to invest more in research and development, testing facilities, certification processes and quality control mechanisms.**

Improving the infrastructure and logistics facilities

- Improving the infrastructure and logistics facilities for the toy industry to reduce the cost of production and transportation and increase the efficiency and competitiveness

of Indian toys in the global market. The industry also needs to leverage the opportunities offered by various trade agreements and preferential market access schemes with different countries.

Strengthening the intellectual property rights protection

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Promoting innovation and diversification

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Other challenges

- **High dependence on imports** from countries like China, Vietnam, Hong Kong, and Taiwan, which account for over 80% of the toy market in India. This exposes the sector to risks of supply chain disruptions, quality issues, and price fluctuations.
- **Low penetration of organized retail and e-commerce channels** for toy distribution, especially in rural and semi-urban areas. This limits the access and availability of quality toys for a large segment of consumers.
- **Lack of adequate infrastructure, skilled manpower, technology, and innovation capabilities** for domestic toy manufacturing. This affects the quality, variety, safety, and affordability of toys produced in India.
- **High cost of raw materials, logistics, taxation, and compliance** for toy production and trade.

This reduces the profitability and competitiveness of toy manufacturers and exporters.

Need for a holistic and collaborative approach involving various stakeholders, such as:

- The government should **provide policy support and incentives for domestic toy manufacturing and exports**, such as tax breaks, subsidies, credit facilities, infrastructure development, quality standards, and market access.
- The industry should **invest in research and development (R&D),** technology upgradation, product innovation, design excellence, branding, and marketing to create a distinct identity for Indian toys in the global market.
- Academia should collaborate with the industry to provide education, training, skill development, and research opportunities for toy professionals and entrepreneurs.
- Civil society should create awareness and advocacy campaigns to promote the importance of toys for child development and well-being.
- Consumers should support local toy makers by buying Indian-made toys that reflect the country's rich culture, heritage, and diversity.

Conclusion

- The export turnaround in India's toy story is indeed commendable, but it is not without challenges. The Indian toy industry still faces several issues like lack of scale, fragmentation, low R&D investment, high dependence on imports for raw materials and components, competition from cheap imports, etc. To overcome these challenges and sustain its export growth, India needs to focus on improving its quality standards, enhancing its design capabilities, strengthening its backward linkages, diversifying its product portfolio, expanding its market reach, and creating a strong brand identity for its toys.

3. 4 STRATEGIC PETROLEUM RESERVES IN SALT CAVERNS

Context

- The Government of India has entrusted Engineers India (EIL), a state-owned engineering consultancy firm, with the task of exploring the possibility and feasibility of creating strategic oil reserves in salt caverns in Rajasthan. This is in line with the government's goal of increasing the country's strategic oil storage capacity to cope with potential disruptions in the global oil supply chain.

Details

What are strategic oil reserves?

- Strategic oil reserves are large stockpiles of crude oil that are maintained by governments or private entities to ensure energy security and availability during global supply shocks and other emergencies. Countries build strategic crude oil reserves to mitigate major supply disruptions in the global supply chain, such as wars, natural disasters, political instability, or sanctions.
- According to the International Energy Agency (IEA), its member countries are required to hold a minimum of 90 days of net oil imports as strategic reserves. I**ndia, which is not a member of the IEA, depends on imports for more than 85% of its crude oil requirement.** Therefore, building strategic petroleum reserves (SPR) is crucial for India's energy security and economic stability.

Strategic petroleum reserves (SPR) in India

- India currently has an SPR capacity of 5.33 million tonnes, or around 39 million barrels of crude, that can meet around 9.5 days of demand.
- The country's three existing SPR facilities — at Mangaluru and Padur in Karnataka and Visakhapatnam in Andhra Pradesh— are made up of excavated rock caverns.
- The country is in the process of expanding its SPR capacity by a cumulative 6.5 million tonnes at two locations — Chandikhol in Odisha (4 million tonnes) and Padur (2.5 million tonnes).

- India's SPR facilities come under the Petroleum Ministry's special purpose vehicle Indian Strategic Petroleum Reserve (ISPRL),a subsidiary of the Oil Industry Development Board.

How do salt caverns differ from rock caverns?

- **Salt caverns are created by solution mining, where water dissolves salt deposits in geological formations**. The brine (salt water) is then removed, leaving space for crude oil storage. This is easier, faster, and cheaper than making rock caverns.
- **Rock caverns are made by blasting and drilling hard rock formations**, forming chambers for oil storage.
- **Salt caverns are better for oil storage** because they are naturally sealed and allow quick injection and extraction of oil, according to a report by MIT's Environmental Solutions Initiative.

Salt caverns have several advantages over other types of underground storage facilities

- Salt caverns **can be created relatively quickly and cheaply** by dissolving salt with water and pumping out the brine.
- Salt caverns have **high storage capacity** and can accommodate large volumes of oil in a small area.
- Salt caverns have **high operational flexibility** and can allow rapid injection and withdrawal of oil without affecting the pressure or quality of the stored product.
- Salt caverns have **high safety and environmental standards** and can prevent leakage or contamination of oil due to the impermeability and self-healing properties of salt.
- **Rajasthan is suitable because of its ample number of salt formation locations.**

Developing oil reserves in salt caverns in India poses several challenges

- Finding suitable salt formations that have adequate depth, thickness, purity, and stability to host oil caverns.
- Obtaining clearances and approvals from various authorities and stakeholders for land

acquisition, water supply, brine disposal, environmental impact assessment, etc.

- Ensuring adequate infrastructure and logistics for transporting oil to and from the caverns.
- Managing the risks and uncertainties associated with the construction and operation of the caverns.
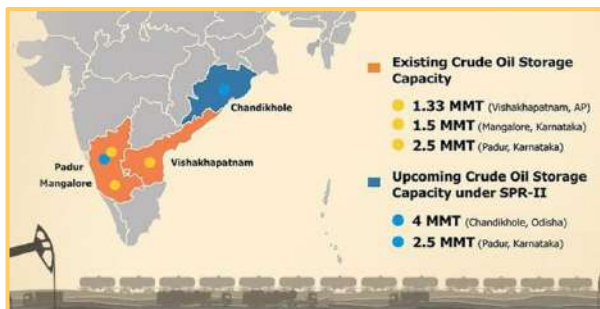
Developing oil reserves in salt caverns in India also offers several opportunities and benefits

- Enhancing India's energy security and resilience by diversifying its sources and modes of oil storage.

- Reducing India's import bill and exposure to global oil price fluctuations by creating a buffer stock of cheap oil.
- Creating employment and income opportunities for local communities and industries involved in the project.
- Promoting innovation and research in the field of underground storage technology.

Conclusion

- Oil reserves in salt caverns are an emerging option for enhancing India's strategic petroleum reserves. While there are many challenges involved in developing such reserves, there are also many opportunities and benefits. Successful implementation of this project would require a coordinated effort from various stakeholders, including the government, the private sector, academia, and the civil society.

3. 5   WTO AND ICT TARIFFS

Context

- India may postpone its appeal against a ruling by the World Trade Organization (WTO) that found its tariffs on mobile phones and electronic components, among other information and communication technology (ICT) goods, to be inconsistent with its obligations under the General Agreement on Tariffs and Trade (GATT) 1994.

Details

- India is considering delaying its appeal to the World Trade Organization (WTO) on the ruling that favours the European Union (EU) over India's tariffs on certain information and communication technology (ICT) goods, such as mobile phones and their components.
- The tariffs, which range from 7.5% to 20%, have been challenged by the EU and other members of the WTO as violating India's obligations under the Information Technology Agreement (ITA), which requires zero-duty rates on these goods.

World Trade Organization (WTO) and ICT Tariffs

- The World Trade Organization (WTO) is an international organization that regulates trade and settles disputes among its 164 members. One of the main functions of the WTO is to ensure that members comply with their commitments on tariffs and other trade barriers. Tariffs are taxes imposed on imported goods that affect their price and competitiveness in the domestic market.
- One of the sectors that have been subject to tariff disputes at the WTO is the information and communication technology (ICT) sector. ICT goods include products such as mobile phones, computers, routers, speakers, headphones, and other devices that enable communication and information exchange. ICT goods are essential for economic development, innovation, and social inclusion, especially in the digital age.

Information Technology Agreement

- The WTO has a plurilateral agreement on ICT goods called the Information Technology Agreement (ITA). The ITA was concluded in 1996 and expanded in 2015. It covers over

200 products and commits participants to eliminate tariffs on these products.

- The ITA currently has 82 participants, representing about 97% of world trade in ICT goods. However, **not all WTO members are part of the ITA, and some of them still apply tariffs on ICT goods.**

- One of these **non-ITA members is India**, which is also one of the largest and fastest-growing markets for ICT goods in the world. India has bound its tariffs on ICT goods at zero per cent in its WTO schedule, which means that it cannot legally raise them above this level. However, India has argued that some of the products covered by the ITA are not included in its schedule, and therefore it can apply tariffs on them.

Dispute between India and some of the ITA participants

- The argument made by India has led to a dispute between India and some of the ITA participants, especially the European Union (EU), which is one of the main exporters of ICT goods to India.

- The **EU claimed that India's tariffs on certain ICT goods violate its WTO commitments and harm its trade interests**. The EU also claimed that India's tariffs are inconsistent with the principle of technological neutrality, which means that products with similar functions should be treated equally regardless of their design or features.

- The **EU initiated a WTO dispute against India** in April 2019, challenging its tariff treatment on certain goods in the ICT sector. The EU identified 11 tariff lines that are subject to India's tariffs, ranging from 7.5% to 20%. These tariff lines cover products such as mobile phones, base stations, routers, modems, switches, optical fibre cables, headphones, speakers, microphones, and smartwatches.

Panel report and appeal

- The dispute went through consultations and panel proceedings at the WTO. The panel report was circulated on 17 April 2023. The panel found that **India's tariffs on certain ICT goods are inconsistent with the GATT 1994,** which requires WTO members to apply tariffs according to their schedules and not to exceed their bound rates.

- The panel rejected India's argument that some of the products at issue are not covered by its schedule because they have evolved or developed since its accession to the WTO in 1995. It also rejected India's argument that some of the products at issue are not ICT goods but consumer electronics or accessories.

- India had until 17 June 2023 to appeal the panel's findings to the WTO Appellate Body, but it has reportedly decided not to do so, at least for now.

Negotiated solution

- According to sources, India is seeking a negotiated solution with the EU under the Trade and Technology Council (TTC), which was launched in June 2023 as a platform for cooperation on digital issues.

- The TTC aims to promote common standards and norms for emerging technologies, such as artificial intelligence, cybersecurity and data governance. India hopes that by engaging with the EU on these matters, it can secure some concessions or flexibility on its ICT tariffs, which it claims are necessary to protect its domestic industry and promote its Make in India initiative.

EU's position

- It is unclear whether the EU will agree to such an outcome, given that it has consistently maintained that India's tariffs are unjustified and harmful to its exporters and consumers.

- The EU has also expressed its disappointment with India's decision not to join the expanded Information Technology Agreement (ITA), which covers more than 200 additional ICT products.

- The **EU argues that by joining the ITA expansion, India would benefit from greater market access and lower costs for its ICT sector.**

Other WTO members' views

- India's decision to defer its appeal may also face opposition from other WTO members who have an interest in the dispute, such as

Japan, Singapore, Chinese Taipei and the United States.

- These members have reserved their third-party rights in both the panel and Appellate Body proceedings and may not be satisfied with a bilateral solution between India and the EU. They may also question India's compliance with the panel report, which will be automatically adopted by the WTO Dispute Settlement Body (DSB) unless there is a consensus to reject it.
- India's move to postpone its appeal may not be enough to resolve the dispute over its ICT tariffs. It may still have to face legal challenges and trade retaliation from other WTO members if it does not bring its measures into conformity with its WTO obligations.

Way forward

- The best way forward for India is to **engage in meaningful dialogue with the complainants and other stakeholders,** such as domestic industry associations, consumer groups and civil society organizations, and seek a mutually acceptable solution that balances trade liberalization and development goals.
- A possible solution could be to **phase out or reduce the tariffs gradually over a reasonable period** while providing adequate support and

incentives for domestic ICT producers to enhance their competitiveness and innovation capacity. This could include measures such as tax breaks, subsidies, R&D grants, infrastructure development, skill training and quality standards.

- India could seek an exemption or a waiver from its tariff commitments under GATT 1994 or Article IX of the WTO Agreement, respectively. These provisions allow WTO members to modify or withdraw their concessions under certain conditions and procedures. However, this option may be difficult and costly, as it would require obtaining the consent of all WTO members or at least those having a principal supplying interest in the products concerned.

Conclusion

- India should engage in constructive dialogue with its trading partners and explore possible options for resolving the dispute amicably. It must review its tariff policy and ensure that it is consistent with its WTO commitments and conducive to its economic development. It should support the reform of the WTO's dispute settlement system and the restoration of the appellate body, which are essential for maintaining a rules-based trading system.

3.6 CITIIS 2.0

Context

- The Cabinet has given its nod to the second phase of the CITIIS project, a flagship programme of the Smart Cities Mission that aims to foster integrated waste management and climate-oriented reform actions in urban areas.

Details

- CITIIS (City Investments to Innovate, Integrate and Sustain). It is a programme that **supports innovative and sustainable urban development projects that are aligned with the principles of circular economy.**
- Circular economy is a concept that promotes the reduction, reuse and recycling of resources, and minimizes waste generation and environmental impact.
- The Ministry of Housing and Urban Affairs (MoHUA), will soon issue a detailed guideline on the eligibility criteria, application process, evaluation framework, and implementation modalities for CITIIS 2.0. Interested cities will have to submit their project proposals online through a dedicated portal. The final selection of the cities will be announced by the end of 2023.

- It is a way of producing and consuming goods and services that minimize the use of natural resources and reduces waste and pollution.
- In a circular economy, products are designed to last longer, be repaired or refurbished, and be recycled or reused at the end of their life cycle. This helps to keep materials and products in use for as long as possible and to regenerate natural systems.
- It is different from a linear economy, where products are made from raw materials, used once, and then thrown away. It aims to create value for businesses and customers, while also protecting the environment and addressing global challenges such as climate change and biodiversity loss.

CITIIS

- CITIIS was launched in 2018 as **a joint initiative** of the Ministry of Housing and Urban Affairs (MoHUA), the French Development Agency (AFD), Kreditanstaltfür Wiederaufbau (KfW), the European Union (EU), and National Institute of Urban Affairs (NIUA).
- The first phase of CITIIS supported 12 projects in 12 cities across four thematic areas: sustainable mobility, public open spaces, urban e-governance and innovation, and social and organizational innovation.

What is CITIIS 2.0?

- CITIIS 2.0 is the second phase of the programme that will be implemented from 2023 to 2027. It will **focus on one thematic area: integrated waste management at the city level.**
- The programme will also support climate-oriented reform actions at the state level, and institutional strengthening and knowledge dissemination at the national level.
- CITIIS 2.0 will be based on a competitive selection process, where 18 cities will be chosen based on their project proposals, readiness, and commitment.
- The selected cities will receive financial assistance in the form of grants and loans from AFD and KfW, as well as technical assistance from NIUA and other partners.
- The programme will also leverage co-financing from other sources such as state governments, urban local bodies, the private sector, and multilateral agencies.

What are the expected outcomes of CITIIS 2.0?

- Improved management of solid waste, liquid waste, and organic waste in urban areas.
- Enhanced resource efficiency and circularity in urban systems.
- Reduced greenhouse gas emissions and improved air quality in cities.
- Strengthened institutional capacity and governance for urban planning and service delivery.
- Increased citizen participation and awareness of waste management and climate change issues.
- Enhanced knowledge sharing and learning among cities, states, and national stakeholders

Potential challenges that may arise during the implementation of the project are;

- **Lack of adequate data and information** on urban waste generation, composition, management and disposal, as well as on urban greenhouse gas emissions, vulnerability and adaptation to climate change. This may hamper the identification, design and evaluation of urban projects.
- **Lack of coordination and convergenc**e among various urban agencies, departments and programmes involved in waste management and climate action. This may lead to duplication, fragmentation and inefficiency of the urban projects.
- **Lack of adequate financial resources and mechanisms** to support the capital and operational costs of the urban projects. This

may affect the viability and sustainability of the urban projects.

- **Lack of technical expertise and capacity** among urban stakeholders to implement innovative and integrated solutions for waste management and climate action. This may affect the quality and effectiveness of the urban projects.
- **Lack of awareness and participation** among urban citizens and communities on the benefits and responsibilities of waste management and climate action. This may affect the acceptance and ownership of urban projects.

Some of the possible measures that can be taken are:

Strengthening the data collection

- Strengthening the data collection, analysis and dissemination systems on urban waste management and climate action. This can be done by using smart technologies such as sensors, drones, GIS, IoT, etc., as well as by engaging citizens and communities in data generation and sharing.

Enhancing the coordination and convergence

- Enhancing the coordination and convergence among various urban agencies, departments and programmes involved in waste management and climate action. This can be done by establishing a dedicated institutional mechanism at the city level to oversee and facilitate the implementation of the CITIIS 2.0 project, as well as by aligning the project with other relevant urban initiatives such as AMRUT, HRIDAY, NULM, etc.

Mobilizing additional financial resources

- Mobilizing additional financial resources and mechanisms to support the capital and operational costs of the urban projects. This can be done by leveraging various sources of funding such as municipal bonds, public-private partnerships, corporate social

responsibility, carbon credits, etc., as well as by adopting innovative financing models such as performance-based contracts, revolving funds, blended finance, etc.

Building technical expertise and capacity

- Building technical expertise and capacity among urban stakeholders to implement innovative and integrated solutions for waste management and climate action. This can be done by providing training, mentoring, exposure visits, peer learning, etc., to the city officials, project staff, service providers, etc., as well as by engaging experts from academia, research institutions, civil society organizations, etc.

Raising awareness and participation

- Raising awareness and participation among urban citizens and communities on the benefits and responsibilities of waste management and climate action. This can be done by conducting campaigns, workshops, competitions, exhibitions, etc., to disseminate information and best practices on waste management and climate action, as well as by involving citizens and communities in the co-creation, co-implementation and co-monitoring of the urban projects.

Conclusion

- The CITIIS 2.0 project is a timely and relevant initiative that will help India achieve its vision of smart, sustainable and inclusive cities. The project will not only address the critical challenges of urban waste management and climate change but also enhance the quality of life and well-being of urban citizens. The project will also foster a culture of innovation and learning among urban **stakeholders by encouraging them to experiment with new ideas, technologies and partnerships** for solving urban challenges.

3. 7   RAILWAY SAFETY IN INDIA AND KAVACH

Context

- According to the data from the Ministry of Railways, there were nearly 1400 railway accidents in India between 2010 and 2020, resulting in more than 1,200 fatalities and more than 2,100 injuries. A recent 2023 Odisha train collision claimed the lives of nearly 300 people.

Details

- Railway safety is a crucial aspect of ensuring the smooth functioning of the transport sector in India. Railways are the lifeline of the country, connecting millions of people and goods across vast distances. However, railway accidents are also a major concern, causing loss of lives, injuries, and property damage.
- To address this issue, the Indian Railways has launched a series of initiatives to improve railway safety and security. One of these initiatives is Kavach, which is a comprehensive security system that aims to prevent and detect any threats or sabotage on railway tracks.

- Rail accidents are one of the most serious threats to public safety and transportation efficiency. They can cause loss of lives, injuries, property damage, environmental pollution, and disruption of services.
- The most common types of accidents were derailments (65%), collisions (15%), level-crossing accidents (12%) and fire incidents (4%). Some of the factors that contribute to these accidents are human error, technical failure, sabotage, natural disasters, overcrowding and poor maintenance.
- Some of the main reasons for rail accidents are:

  ★ **Human error:** This can include mistakes by train drivers, signal operators, maintenance workers, or passengers. Human error can also be influenced by factors such as fatigue, stress, distraction, alcohol, or drugs.

  ★ **Technical failure:** This can include malfunctions or defects in the train equipment, signalling system, track infrastructure, or communication network.

  ★ **External factors:** This can include collisions with other vehicles, animals, or objects; derailments due to obstacles on the tracks; fires or explosions due to flammable materials or explosives; or terrorist attacks or sabotage.

RAIL ACCIDENTS

Some of the safety measures to prevent rail accidents are:

- Improving the training and supervision of trained staff and ensuring their compliance with rules and regulations.
- Enhancing the inspection and maintenance of train equipment, signalling system, track infrastructure, and communication network and ensuring their reliability and security.
- Installing and upgrading safety devices such as automatic train control, positive train control, emergency brakes, fire extinguishers, and surveillance cameras.
- Educating and informing the public about the dangers and risks of rail travel and encouraging their cooperation and vigilance.
- Coordinating and cooperating with other stakeholders such as government agencies, law enforcement authorities, emergency services, media outlets, and civil society organizations.

Kavach has several features that make it a robust and effective security system. Some of these features are;

Train Collision Avoidance System (TCAS)

- This system uses radio frequency identification (RFID) tags and readers to detect the location and speed of trains on the tracks and sends alerts and commands to the locomotive drivers and station masters to avoid collisions. TCAS also has an automatic braking feature that can stop the train in case of emergency.

Train Protection and Warning System (TPWS)

- This system uses track-side balises and onboard equipment to monitor the speed and movement of trains and warns the drivers if they exceed the permissible speed limit or approach a signal in danger. TPWS also has an automatic braking feature that can stop the train in case of overspeeding or signal violation.

Fire Detection and Suppression System (FDSS)

- This system uses smoke detectors, fire alarms, sprinklers, and fire extinguishers to detect and suppress fire incidents in coaches. FDSS also has an emergency communication system that can alert passengers and staff about the fire situation and guide them to evacuate safely.

Video Surveillance System (VSS)

- This system uses CCTV cameras, digital video recorders, and monitors to provide real-time surveillance of railway stations, platforms, tracks, bridges, tunnels, level crossings, and other critical areas. VSS also has a facial recognition feature that can identify suspects and criminals from the database of the Railway Protection Force (RPF).

Data Analytics System (DAS)

- This system uses big data tools and artificial intelligence to collect, process, analyze, and visualize various data related to railway operations, such as train schedules, passenger traffic, freight movement, asset management, safety performance, etc. DAS also has a predictive analytics feature that can identify patterns and trends from the data and provide insights for decision-making and planning.

Kavach has several significant for improving railway safety and security in India

Enhances the surveillance

- Kavach enhances the surveillance and detection capabilities of the railway security forces. It can prevent any potential attacks or sabotage on railway tracks by terrorists, Naxalites, criminals, etc. It can also reduce the risk of accidents due to human error or negligence.

Improves the response and action capabilities
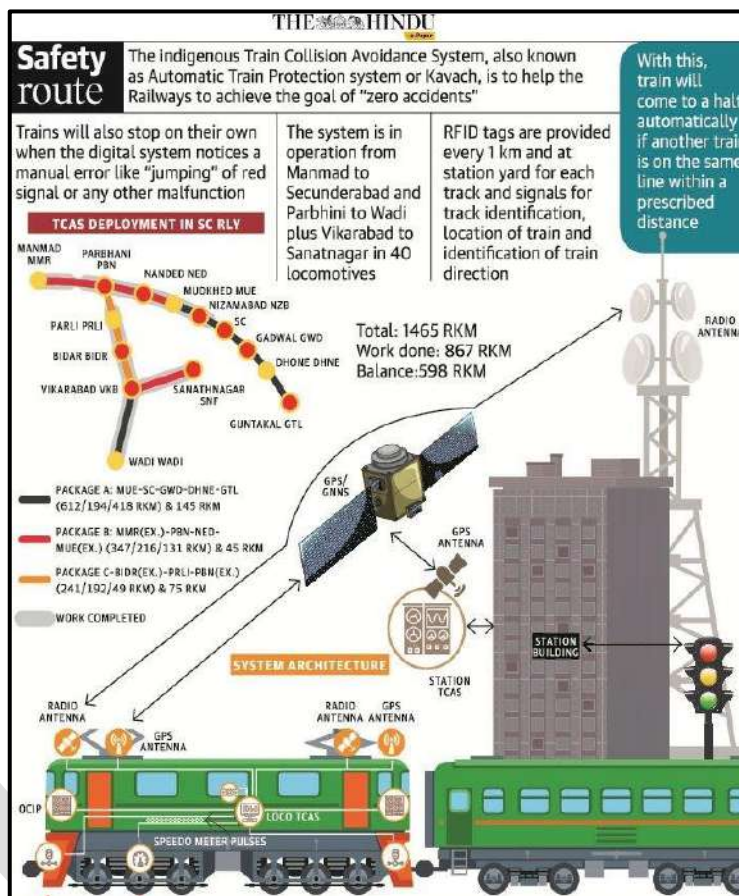
- Kavach improves the response and action capabilities of the railway security forces. It can ensure timely and coordinated intervention of various agencies in case of any emergency. It can also minimise the loss of lives, injuries, and property damage.

Boosts confidence and trust

- Kavach boosts the confidence and trust of the passengers and the public in the railway system. It can ensure a safe and secure journey for millions of people who travel by train every day. It can also enhance the image and reputation of the Indian Railways as a world-class transport service provider.

Kavach also faces some challenges and limitations

High cost

- The estimated cost of KAVACH is around Rs 25,000 crore ($3.4 billion), which is a huge investment for the cash-strapped Indian Railways. Moreover, KAVACH requires regular maintenance and upgradation to ensure its optimal performance and compatibility with changing technologies.

Technical glitches

- KAVACH relies on sophisticated technologies that may malfunction or fail due to various reasons such as power outages, signal interference, cyberattack, environmental factors etc. Therefore KAVACH needs to have backup systems and contingency plans to deal with such situations.

Human factors

- KAVACH involves a change in the work culture and behavior of the railway staff who have been used to manual operations for decades. Therefore KAVACH needs to have proper training programs and awareness campaigns to educate them about its benefits and usage.

Legal issues

- KAVACH may raise some legal issues related to privacy rights data protection intellectual property rights etc. Therefore KAVACH needs to have clear policies and regulations to address these issues.

Steps need to be taken

- The Indian Railways **needs to scale up Kavach from a pilot project to a national project that covers all major railway routes in India**. It also needs to integrate Kavach with other existing or proposed security systems such as Train Collision Avoidance System (TCAS), Integrated Security System (ISS), etc.
- The Indian Railways needs to strengthen Kavach with more advanced features such as facial recognition, biometric identification, automatic number plate recognition, etc. It also needs to enhance Kavach with more capabilities such as cyber security, disaster management, crowd control, etc.
- The Indian Railways needs to sensitise and train Kavach personnel on various aspects of railway security such as legal, ethical, social, environmental, etc. It also needs to empower and motivate Kavach personnel with incentives, rewards, recognition, etc.

Conclusion

- Kavach is a commendable initiative by the Indian Railways to improve railway safety and security in India. It has the potential to transform the railway system into a safe and secure mode of transport for millions of people. However, Kavach also needs to overcome some challenges and limitations to achieve its full potential and effectiveness. The Indian Railways needs to take appropriate steps to make Kavach a successful model for railway security in India.

3. 8   DUTY-FREE QUOTA FREE (DFQF) SCHEME

Context

- According to a report by the LDC Group at the World Trade Organisation (WTO), over 85% of the approximately 11,000 products given at zero tariffs by India to least developed countries (LDCs) under the WTO's duty-free quota-free (DFQF) system remain unutilized.

Details

- India has been a leader in providing preferential market access to LDCs since 2008 when it became the first developing country to implement the 2005 WTO Hong Kong Ministerial Meeting decision. This decision called for all members, both developed and developing, to grant duty-free quota-free (DFQF) access to all products originating in all LDCs.

- India's scheme covers 98.2% of its tariff lines, with 10,991 out of 11,506 being duty-free. The duty-free lines include 1,129 for agricultural products and 9,862 for non-agricultural products. India's scheme aims to help LDCs integrate into the global trade system and increase their trading opportunities.

World Trade Organization (WTO)

- The World Trade Organization (WTO) is an intergovernmental organization that aims to facilitate and regulate international trade among its 164 member states.
- The WTO was established in 1995, replacing the General Agreement on Tariffs and Trade (GATT) that had been in force since 1948.
- It oversees the implementation and enforcement of trade agreements and provides a platform for negotiating new trade rules and resolving trade disputes.
- It cooperates with other international organizations, such as the United Nations, to promote global economic development and cooperation.
- The WTO's main objectives are to ensure that trade flows as smoothly, predictably and freely as possible, and to create a fair and transparent trading system that benefits all participants.

Duty-free Quota Free (DFQF) Scheme

- The DFQF scheme is a special trade arrangement that allows the poorest countries in the world to export their goods to richer countries without paying any taxes or facing any limits. The scheme is designed to help these countries grow their economies and reduce their poverty levels.

- India is one of the countries that has offered this scheme to 49 least-developed countries (LDCs) under the World Trade Organisation (WTO). India has opened up its market to more than 11,500 products from these countries since 2008. However, a recent study by the LDC Group at the WTO shows that only 15% of these products have been used by the LDCs, leaving a lot of room for improvement.

The report identifies several factors that limit the utilization

Lack of product diversification and value addition

- The LDCs mainly export raw materials and low-value-added products, such as cotton, coffee, oilseeds, and minerals, while India

imports more processed and high-value-added products, such as textiles, garments, leather goods, and chemicals.

High non-tariff barriers and standards

- The high non-tariff barriers and standards imposed by India on some products, such as textiles, garments, leather goods, and agricultural products, increase the cost and complexity of exporting to India. For example, India requires sanitary and phytosanitary certificates, conformity assessment certificates, and rules of origin certificates for some products, which are difficult and costly for LDCs to obtain.

Low awareness and information

- The low awareness and information among the LDC exporters and traders about the DFQF scheme and its procedures and requirements. For example, many LDC exporters and traders are not aware of the list of products that are eligible for DFQF access, the tariff codes that need to be used, the documentation that needs to be submitted,

and the benefits that can be availed under the scheme.

Inadequate trade facilitation and infrastructure

- The inadequate trade facilitation and infrastructure in the LDCs hamper their connectivity and logistics with India. For example, poor road networks, border delays, customs inefficiencies, lack of storage facilities, and high transportation costs affect the quality and competitiveness of LDC exports.

The report suggests some measures such as:

Enhancing product diversification and value addition

- The LDCs need to diversify their export baskets and add value to their products by investing in technology, innovation, skills development, quality standards, and market linkages. India can support this process by providing technical assistance, capacity building, technology transfer, and investment promotion to the LDCs.

Reducing non-tariff barriers and standards

- India needs to **simplify and harmonies its non-tariff measures and standards with international norms and best practices**. India can also provide preferential treatment to LDC exports in terms of testing, certification,

inspection, and clearance procedures. India can also facilitate mutual recognition agreements with LDCs on conformity assessment procedures.

Increasing awareness and information

- India needs to disseminate more information about the DFQF scheme and its benefits to the LDC exporters and traders through various channels such as websites, brochures,

Improving trade facilitation and infrastructure

- India needs to improve its trade facilitation and infrastructure with the LDCs by reducing trade costs, enhancing transit facilities, upgrading border posts, streamlining customs procedures, and expanding transport networks.

Conclusion

- The DFQF scheme is a generous gesture by India to support the development of LDCs through trade. However, the scheme remains underutilized due to various constraints faced by the LDC exporters. To realise the full potential of the scheme, both India and the LDCs need to work together to overcome these challenges and create a win-win situation for both sides.

3.9   MORGAN STANLEY'S GLOBAL ECONOMIC OUTLOOK

Context

- The Global economy is facing a challenging year in 2023, according to Morgan Stanley's latest forecast. The investment bank expects global GDP growth to slow down to 2.2%, from 3% in 2022, as consumer demand moderates, inflation pressures ease, and monetary policy tightening.

Details

- Morgan Stanley is one of the leading global financial institutions that provide insights and analysis on the state of the world economy.
- According to Morgan Stanley, the **year 2023 is expected to be characterized by significant challenges to global economic growth due to various factors.** These include heightened consumer demand following the COVID-19 pandemic, excessive retail inventories, and the persistent battle against inflation. As a result, Morgan Stanley projects that global GDP growth will slow down to 2.2% in 2023, compared to 3% in 2022 and 6.4% in 2021.

Key points from Morgan Stanley's forecasts:

Global economy

- The **global economy is expected to slow down in terms of both growth and inflation**. Morgan Stanley projects that the global GDP growth will moderate from 6% in 2021 to 4.3% in 2022 and 3.5% in 2023. Similarly, the global inflation rate will ease from 3.4% in 2021 to 2.8% in 2022 and 2.5% in 2023.

G10 countries

- The **G10 countries, which comprise some of the most advanced and wealthy economies in the world, will face sluggish growth in the coming years**. The G10 countries include Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States. Morgan Stanley predicts that the G10 GDP growth will average only 1.7% in 2022 and 1.5% in 2023.

United Kingdom

- The United Kingdom will struggle to grow above 1% in the next year and a half. Morgan Stanley expects that the UK GDP growth will be 0.9% in 2022 and 0.8% in 2023, as the country faces headwinds from Brexit and the pandemic.

China

- **China will regain its growth momentum** and outperform most of its peers. Morgan Stanley forecasts that China's GDP growth will rebound from 8.2% in 2021 to 5.5% in 2022 and 5.7% in 2023.
- China's growth rate will still be lower than India's, which is projected to be around 8-9% in the next few years. It is important to note that China's economy is much larger than India's, with a nominal GDP of about $20 trillion compared to India's $4 trillion. This means that China's growth adds more value to the global economy than India's.

United States

- The inflation situation in the US, which has a significant impact on the global financial markets and interest rates, will improve by the end of 2023. Morgan Stanley expects that the US inflation rate will decline from 4.2% in 2021 to 2.6% in 2022 and 1.9% in 2023, close to the US Federal Reserve's target of 2%. This will allow the US central bank to maintain a supportive monetary policy stance for longer, which will benefit other economies including India.
- Overall, Morgan Stanley's forecast suggests that the global economy will face a more challenging environment in 2023, as it transitions from a post-pandemic rebound to a more mature phase of expansion. The bank advises investors to be cautious and selective in their portfolio allocation and to focus on sectors and regions that can benefit from structural trends and policy support.

Some of the key actions that can stimulate growth in the future are:

- Investing in digital infrastructure and platforms that enable connectivity, data

sharing, and collaboration across sectors and regions.

- Supporting research and development (R&D) and entrepreneurship that generate new ideas and solutions for societal problems.
- Promoting lifelong learning and reskilling that equip workers with the skills that complement the new technologies and increase their employability and adaptability.
- Enhancing labour mobility and flexibility that allow workers to move across jobs, sectors, and locations according to changing demand and preferences.
- Strengthening social safety nets and redistribution mechanisms that protect workers from income loss, poverty, and insecurity due to technological change or other shocks.
- Reforming tax systems and regulations that incentivize innovation, investment, and competition, while ensuring fair taxation of digital activities and addressing negative externalities such as pollution or cyber attacks.

How to stimulate growth in a changing world

- The world is facing unprecedented challenges and opportunities in the 21st century. The rapid pace of technological change, the ageing of populations, the rise of inequality, and the threat of climate change are some of the forces that are reshaping the global economy and society.

Productivity

- One of the **key drivers of growth is productivity, which measures how efficiently inputs such as capital and labour are used to produce outputs such as goods and services.**
- Productivity growth depends on innovation, which is enabled by technology, but also by factors such as competition, market structure, business dynamism, human capital, and institutions.
- However, productivity growth has been slowing down in most advanced economies, and the benefits of innovation have been unevenly distributed across firms and workers.

- To boost productivity and innovation, policymakers need to foster a more conducive environment for businesses and workers to adapt to new technologies and markets. This includes investing in infrastructure, education, skills, research and development, and digital connectivity; promoting competition and market entry; supporting workers' transition and mobility; and strengthening governance and institutions.

Labour

- Another driver of growth is labour, which reflects both the quantity and quality of human resources available for production.
- Labour supply is affected by demographic trends such as ageing and migration, as well as by social factors such as gender equality, health, and well-being.
- **Labour demand is influenced by technological change, which can create new jobs but also displace existing ones**. Automation and digitalization can also change the nature of work and the skills required for it.
- To enhance labour supply and demand, policymakers need to address the challenges and opportunities posed by demographic and technological change. This includes increasing labour force participation, especially among women, youth, and older workers; improving education and training systems to equip workers with relevant skills; ensuring adequate social protection and safety nets for workers; and fostering social dialogue and cooperation among stakeholders.

Indian context

- A special case of interest is India, which is one of the fastest-growing economies in the world, but also faces significant challenges in achieving its full potential.
- India has a large and young population, a vibrant entrepreneurial culture, a diversified industrial base, and a strong democratic tradition.
- However, it also suffers from low productivity, high informality, poor

infrastructure, low human capital, widespread poverty, and social fragmentation.

- To stimulate growth in India, policymakers need to pursue a comprehensive reform agenda that addresses both structural and cyclical issues. This includes improving public services such as health, education, sanitation, and electricity; enhancing financial inclusion and access to credit; simplifying regulations and reducing corruption; promoting trade and foreign investment; strengthening fiscal discipline and monetary policy; and fostering social cohesion and inclusion.

3.10 PAYMENT/SETTLEMENT SYSTEM FOR EMERGENCIES

Context

- The Reserve Bank of India (RBI) recently announced plans to introduce a 'Lightweight' Payment and Settlement System (LPSS) for emergencies which were proposed in RBI's annual report for 2022-23.

Details

- The lightweight system aims to provide resilience and continuity of payment and settlement systems while ensuring efficiency during emergencies.

What is LPSS?

- LPSS is a **new initiative by the RBI to develop a portable and independent payment system that can be operated from anywhere by a bare minimum staff in exigencies such as natural calamities or war.**
- The system will be activated only when needed and will primarily process critical transactions that are vital for the stability of the economy, such as government and market-related transactions.
- The system will operate on minimalistic hardware and software, enabling it to be deployed from anywhere with a low number of staff.
- By doing so, the **LPSS aims to ensure near-zero downtime in the payment and settlement system** of the country.

Why is LPSS needed?

- Conventional payment systems such as RTGS, NEFT, and UPI rely on complex wired networks and advanced IT infrastructure to handle large transaction volumes while maintaining sustained availability. However, natural calamities or war can temporarily render these systems unavailable due to disruptions in communication and information infrastructure.
- This can pose a serious risk to the liquidity pipeline of the economy and erode public confidence in digital payments and financial market infrastructure. To mitigate this risk, the RBI has planned a lightweight payment system that is designed to be resilient in such circumstances.
- For example, during the 2015 Nepal earthquake, many ATMs and POS terminals were damaged or inaccessible, affecting the availability of cash and electronic payments. Similarly, during the 2019 Pulwama attack, there were reports of internet shutdowns in some parts of Kashmir, affecting the functioning of online payment systems. In such scenarios, **a lightweight payment system could provide an alternative mode of payment that is independent of the existing infrastructure and can be operated from remote locations.**

How will LPSS work?

- The LPSS will be **independent of conventional technologies** and will use alternative communication channels such as satellite or radio frequency.
- The system will **have a centralized server** that will communicate with participant institutions through secure terminals.
- The system will have a **simplified user interface** that will allow users to initiate and authorize transactions using biometric authentication or smart cards.
- The system will also **have a backup database** that will store transaction records and reconcile them with the main database once normalcy is restored.

- The LPSS will act as a bunker equivalent for payment systems, enhancing public confidence in digital payments and financial market infrastructure even during extreme conditions.

What are the benefits of LPSS?

- It will ensure the uninterrupted functioning of essential payment services like bulk payments, interbank payments, and the provision of cash to participant institutions during emergencies.
- It will reduce the dependency on existing infrastructure and technologies that may be vulnerable to disruptions or attacks.
- It will enable faster and smoother transactions by using alternative channels and devices that are not affected by network congestion or availability issues.
- It will facilitate contactless and secure payments by using biometric authentication or smart cards that do not require physical contact or exchange of currency notes.
- It will improve the resilience and efficiency of the payment and settlement systems while ensuring compliance with regulatory standards and legal frameworks.

Some of the challenges are:

- Developing a robust framework for oversight, regulation, supervision, and governance of the LPSS.

- Ensuring interoperability and compatibility with existing payment systems and standards.
- Securing the system from cyber-attacks and other threats.
- Testing the system for various scenarios and contingencies.
- Creating awareness and acceptance among stakeholders and users.
- The RBI has stated that it will work on developing the LPSS in consultation with various stakeholders, including government agencies, financial institutions, market participants, service providers, technology experts, and academia. The RBI will also conduct pilot tests and simulations to evaluate the feasibility and effectiveness of the system.

Conclusion

- The LPSS is a visionary initiative by the RBI that aims to enhance the resilience and efficiency of payment and settlement systems in India. It will provide a backup solution for emergencies that can ensure the uninterrupted functioning of essential payment services. It will also boost public confidence in digital payments and financial market infrastructure. The LPSS is expected to be operational by 2025.

3. 11   NATIONAL E-COMMERCE POLICY

Context

- The national e-commerce policy of India is currently undergoing inter-ministerial consultations.

Details

- The national e-commerce policy of India is a draft document that aims to create a conducive environment for the development and growth of the e-commerce sector in the country. The policy also seeks to boost exports, streamline regulation, ease of doing business, adopt modern technologies and integrate supply chains.

- The policy will consider the possibility of setting up a regulator for the sector to ensure compliance and fair practices.

National e-commerce policy

- The Indian government has been working on a national e-commerce policy since 2018 to address the challenges and create a conducive environment for the development of the sector. The draft policy was released in 2019 for public consultation and is expected to be finalized soon.
- The draft policy covers six broad themes: data, infrastructure development, e-commerce marketplaces, regulatory issues,

stimulating the domestic digital economy and export promotion through e-commerce.

Key features of the draft policy

Data

- The draft policy **recognizes data as a national asset and a sovereign resource**. It **proposes data localization for all user-generated data collected by e-commerce platforms**, social media, search engines and IoT devices.

- It **restricts cross-border data flows and mandates data sharing with Indian authorities upon request**. It aims to promote data infrastructure such as data centers, server farms and towers by giving them infrastructure status.

Infrastructure development

- The draft policy envisages **creating a robust physical and digital infrastructure for e-commerce** such as roads, railways, ports, airports, telecom networks, and payment systems and logistics services.

- It proposes to establish a National Logistics e-Marketplace to integrate various logistics service providers and facilitate the seamless movement of goods.

E-commerce marketplaces

- The draft policy defines **e-commerce marketplaces as entities that provide information technology platforms on a digital network to act as a facilitator between buyers and sellers.**

- It distinguishes between inventory-based and marketplace-based models of e-commerce and **prohibits foreign direct investment (FDI) in inventory-based models.**

- In an **inventory-based model, the e-commerce company owns the products or services and sells them directly** to the customers.

- In a **marketplace-based model, the e-commerce company provides a digital platform to facilitate transactions between buyers and sellers. The e-commerce company does not own or control the products or services in this model.**

- It lays down guidelines for ensuring fair competition, preventing predatory pricing, curbing counterfeit products and protecting intellectual property rights.

Regulatory issues

- The draft policy proposes to **set up a regulator for e-commerce to monitor compliance with the policy framework and address the grievances of consumers and businesses.**

- It proposes to **enact an e-commerce law to define the rights and obligations of various stakeholders** and provide penalties for violations.

- It suggests harmonizing various laws and regulations related to e-commerce such as GST, consumer protection, competition law and IT Act.

Stimulating the domestic digital economy

- The draft policy aims to **foster the growth of MSMEs and start-ups in the e-commerce sector by providing them access to credit, technology, skilling and market linkages**.

- It proposes to create a single window system for facilitating ease of doing business for e-commerce entities.

- It encourages innovation and research in emerging technologies such as artificial intelligence, blockchain and cloud computing.

Export promotion through e-commerce

- The draft policy seeks to leverage e-commerce as a tool for enhancing India's exports by creating an enabling environment for cross-border trade. It proposes to simplify customs procedures, reduce tariffs and duties, facilitate digital payments and provide incentives for exporters.

- The finalization of the national e-commerce policy is expected to provide clarity and certainty for the sector and pave the way for its sustainable growth. The policy will also help India achieve its vision of becoming a trillion-dollar digital economy by 2025.

E-Commerce Sector in India

- E-commerce, or electronic commerce, refers to the buying and selling of goods and services using the Internet. It also includes other activities such as online marketing,

payment processing, customer service and delivery.

- E-commerce has emerged as a major force in the Indian economy, transforming the way businesses operate and consumers shop.

Background

- The e-commerce sector in India has a long and diverse history. It can be traced back to the late 1990s, However, it was only after 2010 that the sector witnessed rapid growth, fueled by factors such as rising internet penetration, increasing smartphone usage, growing disposable income, changing consumer preferences and favorable government policies.

Key features of the e-commerce sector in India are:

- It is **dominated by two major players**: Flipkart and Amazon, which together account for more than 70% of the market share. Other notable players include Snapdeal, Paytm Mall, Myntra, BigBasket and Grofers.

- It **covers a wide range of categories**, such as electronics, fashion, grocery, furniture, books, travel and education. The most popular category is electronics, followed by fashion and grocery.

- **It caters to both urban and rural consumers**, with a significant presence in tier-II and tier-III cities. According to a report by Bain & Company and Flipkart, e-commerce penetration in rural India grew from 13% in 2018 to 25% in 2020.

- **It offers various benefits to consumers, such as convenience, variety, affordability, quality and personalization.** It also enables access to products and services that may not be available locally or offline.

- **It provides opportunities for sellers, especially small and medium enterprises (SMEs), to expand** their reach, reduce costs, improve efficiency and enhance customer satisfaction. It also creates employment opportunities for logistics providers, delivery personnel, digital marketers and other service providers.

Impact on the Economy and Society

- It **contributes to the gross domestic product (GDP) of the country**. According to a report by NASSCOM and PwC India, e-commerce is expected to generate $200 billion in revenue by 2026, up from $38.5 billion in 2017.

- It **supports the growth of other sectors, such as manufacturing, logistics, IT and retail**. According to a report by Deloitte India and the Retailers Association of India (RAI), e-commerce has the potential to create 1.45 million direct jobs and 5.8 million indirect jobs by 2021.

- **It fosters innovation and entrepreneurship in the country.** According to a report by KPMG and Google India, e-commerce has enabled more than 2 lakh sellers to launch their brands online since 2014.

- **It empowers consumers with more choices, better prices and greater convenience**.

- **It promotes social inclusion and development in rural areas**. According to a report by BCG and Facebook India, e-commerce has enabled more than 50 million rural consumers to access products and services online since 2016.

Challenges that need to be addressed for sustained growth

Lack of adequate infrastructure

- The e-commerce sector relies **heavily on physical infrastructure such as roads, electricity, internet connectivity and warehouses**. However, India still lags behind many countries in terms of these parameters, which affects the quality and speed of delivery, the availability of products and the cost of operations.

Regulatory uncertainty

- The e-commerce sector is subject to various laws and regulations at different levels of government, such as foreign direct investment (FDI) norms, goods and services tax (GST), consumer protection act, data protection bill and e-commerce policy. However, these **laws and regulations are often unclear, inconsistent or conflicting, which creates confusion and uncertainty for both buyers and sellers.**

Competition from offline players

- The e-commerce sector faces stiff competition from offline players, such as Kirana stores, local vendors and organized retail chains, which have a strong presence and loyal customer base in the Indian market. These players offer advantages such as instant delivery, cash on delivery, personal touch and trust, which are still preferred by many consumers.

Cyber security risks

- The e-commerce sector **involves the exchange of sensitive information and transactions over the Internet, which exposes it to various cyber security risks, such as hacking, phishing, fraud and identity theft**. These risks can compromise the privacy and security of consumers and sellers, as well as damage the reputation and credibility of the e-commerce platforms.

Ethical and social issues

- The e-commerce sector also **raises some ethical and social issues, such as environmental impact, consumer rights, labour rights and fair trade practices.** For instance, the e-commerce sector generates a large amount of packaging waste and carbon emissions, which affect the environment and climate change.
- The e-commerce sector may affect the livelihoods and working conditions of offline sellers and workers, who may face unfair competition or exploitation.

The way forward for the e-commerce sector

Improving the infrastructure

- The government **and the private sector should work together to improve the physical infrastructure that supports the e-commerce sector, such as roads, electricity, internet connectivity and warehouses**. This will enhance the efficiency, reliability and affordability of the e-commerce services, as well as expand their reach and coverage.

Streamlining the regulations

- The government should **formulate clear, consistent and comprehensive laws and regulations for the e-commerce sector, in**

consultation with all the stakeholders, such as buyers, sellers, platforms, industry associations and experts. This will create a level playing field, foster transparency and accountability, and protect the interests and rights of all the parties involved.

Collaborating with offline players

- The e-commerce platforms should **collaborate with offline players, such as Kirana stores, local vendors and organized retail chains, to create a hybrid model of online-offline integration.** This will enable them to leverage each other's strengths, offer more choices and convenience to consumers, and create a win-win situation for both sides.

Enhancing cyber security

- The e-commerce platforms should **adopt best practices and standards for cyber security, such as encryption, authentication, verification and monitoring.** They should educate and aware their consumers and sellers about the potential risks and precautions involved in online transactions.
- They should also cooperate with the government and other agencies to prevent and respond to any cyber attacks or incidents.

Addressing ethical and social issues

- The e-commerce platforms should **adopt ethical and social responsibility policies and practices, such as reducing packaging waste and carbon emissions, ensuring consumer rights and satisfaction**, respecting labour rights and welfare, and promoting fair trade and local products.
- They should engage with their consumers and sellers to raise awareness and encourage participation in these initiatives.

Conclusion

- The e-commerce sector in India is a dynamic and promising domain that has immense potential to transform the economy and society. By overcoming its challenges and leveraging its opportunities, it can create value for all its stakeholders and contribute to the vision of a digital India.

3. 12   RBI'S CIRCULAR ON WILFUL DEFAULTER LOAN SETTLEMENT

Context

- The Reserve Bank of India (RBI) has recently issued a framework for lenders to deal with loans that have been classified as fraud or willful default. According to this framework, lenders can opt for a compromise settlement with the borrowers, which means they can agree to accept a lower amount than the original claim and close the account.

Details

- This provision has been met with criticism from various quarters, including bank unions, opposition parties and experts, who argue that it will encourage more borrowers to default on their loans and undermine the integrity of the banking system. They also point out that compromise settlement for fraud accounts is against the principles of justice and accountability.

Background

- **Loan frauds are a serious threat to the financial stability and integrity of the banking system**. According to RBI data, the amount involved in bank fraud increased from Rs 10,170 crore in 2013-14 to Rs 1,85,644crore in 2019-20.
- The majority of these frauds were related to advances or loans given by banks to borrowers who either misused or diverted the funds for purposes other than those for which they were sanctioned or failed to repay the loans despite having the capacity to do so.
- The RBI has been issuing various guidelines and instructions to banks on the prevention, detection and reporting of fraud over the years. However, it was felt that there was a need for a more comprehensive and robust framework that would address the gaps and weaknesses in the existing system and ensure timely action against fraudulent borrowers and bank staff involved in such cases.

Key Highlights of the Framework

- **It defines loan fraud** as "a deliberate act of omission or commission by any person, carried out in the course of a banking transaction or in the books of accounts maintained manually or under computer system in banks, resulting into wrongful gain to any person for a temporary period or otherwise, with or without any monetary loss to the bank".
- **It lays down a four-stage process for dealing with loan frauds:** Early Warning Signals (EWS), Red Flagged Accounts (RFA), Fraud Risk Management (FRM) and Fraud Monitoring (FM).
- **It prescribes a timeline for each stage of the process and specifies the roles and responsibilities of various functionaries within the bank and outside agencies** such as RBI, Central Bureau of Investigation (CBI), Central Vigilance Commission (CVC), and Serious Fraud Investigation Office (SFIO) etc.
- **It mandates that all accounts exceeding Rs 50 crore if classified as NPAs, should be examined by banks from the angle of possible fraud,** and a report should be submitted to RBI within a month.
- It requires **banks to report all confirmed fraud cases above Rs 1 lakh to RBI through Fraud Monitoring Report (FMR)** within three weeks of detection.
- It stipulates that banks should make provisions for fraud accounts as per the asset classification norms prescribed by RBI.
- It directs banks to initiate staff accountability proceedings against those responsible for fraud or negligence within six months of reporting the fraud.
- It advises **banks to adopt best practices such as strengthening internal controls, conducting forensic audits, using data analytics and artificial intelligence etc**. to prevent and detect loan frauds.

What are the implications for a wilful defaulter?

- Being a willful defaulter has serious consequences for the borrower as well as the lender.
- **For the borrower,** it means losing access to credit from any bank or financial institution for at least five years from the date of

declaration as a willful defaulter. It also means facing legal action from the lender for recovery of dues and possible criminal prosecution for fraud.

- **For the lender,** it means taking a hit on its balance sheet and profitability due to provisioning and write-off of bad loans. It also means losing trust and reputation among its customers and stakeholders.

What is a compromise settlement?

- A compromise settlement is an **arrangement between the lender and the borrower to fully settle the lender's claim upfront, which may or may not include a complete recovery of dues.**
- The RBI has allowed lenders to enter into such settlements with borrowers who have been classified as fraud or willful defaulters, subject to certain conditions including;
  o Obtaining approval from their board or competent authority.
  o Ensuring that there is no violation of any law or regulation.
  o Obtaining an undertaking from the borrower that he or she will not avail of any fresh credit facility from any bank or financial institution for at least 12 months from the date of execution of the settlement.
  o Reporting the details of such settlements to RBI and credit information companies.

What are the pros and cons of compromise settlement?

- The proponents of compromise settlement argue that it is a **pragmatic way of resolving bad loans and recovering some amount from the borrowers who are otherwise unwilling or unable to pay**. They also claim that it will help in reducing litigation costs and freeing up capital for lending to productive sectors.
- The opponents of compromise settlement contend that it will **create moral hazard and incentivize more borrowers to default on their loans, knowing that they can get away with paying less than what they owe**.
- They also assert that it will erode the credibility and discipline of the banking

system and dilute the deterrent effect of declaring someone as a wilful defaulter.

Significance of the framework

- It **provides a clear and uniform definition of loan fraud that covers all types of fraudulent activities** in relation to advances or loans given by banks.
- It **streamlines and standardizes the process of identification, reporting and resolution of loan frauds** across all banks and ensures timely action against fraudulent borrowers and bank staff.
- It **enhances the transparency and accountability of banks** in dealing with loan fraud and improves their risk management and governance systems.
- It **facilitates better coordination and cooperation among various stakeholders** such as banks, RBI, investigative agencies, regulators etc. in tackling loan frauds.
- It **helps in reducing the losses incurred by banks** due to loan frauds and improving their asset quality and profitability.

Challenges

- The **identification and reporting** may be subjective and prone to errors or delays due to a lack of adequate data or expertise among bank staff.
- The **investigation and prosecution of loan fraud cases** may face legal hurdles or procedural bottlenecks due to the complex nature of such cases or the involvement of multiple jurisdictions or agencies.
- The recovery of dues from fraudulent borrowers may be difficult or time-consuming due to inadequate collateral or insolvency proceedings or willful evasion by them.
- The **staff accountability proceedings may face resistance or interference** from vested interests or trade unions or political pressures.
- The adoption of best practices such as forensic audits or data analytics may require additional investment or training by banks.

Way Forward

- The **banks should develop a robust system of data collection and analysis** to identify and

report EWS and RFA in a timely and accurate manner.

- The **RBI should provide regular guidance and feedback to banks** on the implementation of the framework and monitor their compliance and performance through periodic audits and inspections.

- The **investigative agencies should expedite the investigation and prosecution of loan fraud cases** and ensure speedy disposal of such cases by courts.

- The **banks should pursue the recovery of dues from fraudulent borrowers through all possible means**, including legal action, attachment of assets, insolvency proceedings etc.

- The **banks should conduct staff accountability proceedings fairly and impartially** and take appropriate disciplinary action against those found guilty of fraud or negligence.

- The banks should adopt best practices such as forensic audits, data analytics, artificial intelligence etc. to prevent and detect loan frauds and enhance their risk management and governance systems.

Conclusion

- The RBI's circular on wilful defaulters is part of its broader efforts to clean up the bad loan problem in the Indian banking system, which has been exacerbated by the COVID-19 pandemic. The RBI has also announced various measures such as restructuring, moratorium, and asset quality review and resolution framework to deal with stressed assets.

Must Read
Compromise Settlement of willful defaulters:

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3. 13 GENETICALLY MODIFIED CROPS IN INDIA

Context

- The debate over Genetically Modified (GM) crops in India has been reignited by the recent decision of three States to reject a proposal to conduct field trials of a new transgenic cotton variety.

Details

- The proposal approved by the Centre's Genetic Engineering Appraisal Committee (GEAC), the apex regulatory body for GM crops, involved testing a **cotton seed that contains a gene, Cry2Ai that purportedly makes cotton resistant to pink bollworm, a major pest that causes significant losses to farmers.**

- **Gujarat, Maharashtra and Telangana, which together account for over 80% of India's cotton production**, have deferred the proposal, citing concerns over biosafety, environmental impact and socio-economic implications of introducing a new GM crop.

> - **Bt cotton is currently the only GM crop that is commercially cultivated in India**, although several other crops such as brinjal, mustard and rice have been developed and tested by public and private institutions. However, none of these crops have received approval from the GEAC for commercial release, due to various reasons ranging from scientific uncertainty to public opposition.

Status of transgenic crops in India

- Bt cotton accounts for 95% of the total cotton area in India and has helped **increase yields, reduce pesticide use and enhance farmer incomes**. However, Bt cotton is also facing challenges such as pest resistance, illegal cultivation of unapproved varieties and contamination of non-GM crops.

- Apart from Bt cotton, several other transgenic crops have been developed and tested in India, but none of them has reached the stage of commercialization. Some of these crops are:

Btbrinjal

- In 2009, the GEAC approved Btbrinjal for commercial release, but the then Minister of Environment and Forests imposed an indefinite moratorium on its introduction, following protests from civil society groups and some State governments.
- The main arguments against Btbrinjal were related to its **potential health and environmental risks, socio-economic impacts on small farmers and consumers, and ethical and cultural issues.**

GM mustard

- In 2017, the GEAC recommended GM mustard for commercial release, but the final decision is pending with the Ministry of Environment, Forest and Climate Change.
- The main opposition to GM mustard comes from farmers' organisations, environmental activists and some scientists who claim that GM mustard **poses threats to biodiversity, native varieties and honey bees** and that there are alternative ways to increase mustard production without resorting to genetic engineering.

Golden rice

- Golden rice was **developed to address vitamin A deficiency**, which affects millions of children and pregnant women in developing countries.
- Golden rice has been tested in several countries including India, where it was approved for field trials by the GEAC in 2017. However, the **trials have not been conducted yet due to regulatory hurdles** and opposition from anti-GM groups who argue that golden rice is not an effective or safe solution for malnutrition and that it will undermine food sovereignty and agrobiodiversity.

Process of regulating transgenic crops in India

- Transgenic crops are plants that have been genetically modified to enhance certain traits, such as pest resistance or drought tolerance. The process of regulating transgenic crops in India involves several steps and agencies to ensure their safety and efficacy.

Development

- Scientists insert transgenic genes into plants using various methods, such as biolistics or Agrobacterium-mediated transformation. The transgenic plants are then tested in laboratories and greenhouses to check their performance and stability.

Biosafety assessment

- The transgenic plants undergo biosafety assessment by the Review Committee on Genetic Manipulation (RCGM), which is a statutory body under the Department of Biotechnology (DBT). The RCGM evaluates the molecular, biochemical, and agronomic aspects of transgenic plants and issues permissions for confined field trials (CFTs).

Field trials

- The CFTs are conducted under **the supervision of the Genetic Engineering Appraisal Committee (GEAC), which is the apex regulatory body for transgenic crops under the Ministry of Environment, Forest and Climate Change (MoEFCC).**
- The GEAC reviews the data from the RCGM and grants approvals for CFTs at different locations and seasons. The CFTs are designed to assess the agronomic performance, environmental safety, and socio-economic impact of transgenic crops.

Commercialization

- After the successful completion of CFTs, the developer can apply for commercial release of the transgenic crop to the GEAC. The GEAC examines the data from CFTs and consults with other stakeholders, such as State governments, farmers' groups, civil society organizations, and experts. The GEAC then decides whether to approve or reject the commercialization of the transgenic crop.

Cry2Ai

- The new GM cotton seed, called Cry2Ai, contains a gene that makes it resistant to pink bollworm, a major pest that damages cotton crops.
- The Cry2Ai seed has passed the initial tests in confined conditions and was approved by the GEAC for field trials in Telangana, Maharashtra, Gujarat and Haryana. These trials are meant to evaluate the performance and safety of the seed in real-world conditions.
- **Agriculture is a State subject in India**, which means that the States have the final say on whether they want to allow such trials or not. Only Haryana agreed to host the trials, while the other three States declined. The reasons for their refusal are not clear.
- Telangana asked for more time to consider the proposal and then said it would not allow trials in the current cropping season.
- Gujarat said the proposal was unacceptable to them but did not give any explanation. Maharashtra did not respond at all.

Significance

- Supporters of GM crops argue that they can help **increase crop productivity, reduce pesticide use, improve farmers' income and food security, and address climate change challenges**. They cite scientific evidence and international experience to back their claims. They also point out that India has already adopted GM

✅ Benefits of GMOs	Risks of GMOs ❌
Nutritional value of foods could be improved (e.g. by introducing proteins, vitamins or vaccines)	New traits could cause adverse health reactions (e.g. new proteins may cause allergic responses)
Crops can be produced that lack known allergens	Removal of traits could have unknown effects
Crops can grow in arid conditions for better yield (e.g. by introducing drought resistant genes)	Crops may limit biodiversity of local environment (increased competition with native species)
GM crops can produce herbicides to kill pests	Cross pollination could lead to 'super weeds'
Improve food supply / agriculture in poor countries (GM crops can be engineered for improved yields)	Patents restrict farmers from accessing GM seeds (biotech companies hold monopolies over crop use)
GM crops may have longer shelf lives (less spoil)	Foods with GM components may not be labeled
Reduces economic costs and carbon footprint – less need for land clearing and pesticide usage	Different governments may have conflicting regulatory standards concerning safe usage

cotton successfully and that it has become one of the largest producers and exporters of cotton in the world.

Concern

- The rejection of field trials by three major cotton-growing States is a setback for GM crop research in India. It reflects the **lack of trust and coordination between the Centre and the States** on this issue.
- It shows the influence of anti-GM lobby groups who have been campaigning against GM crops for years. They claim that GM crops are unsafe for human health and the environment, harm biodiversity and farmers' rights, and benefit only multinational corporations.

Way Forward

- The GEAC has now asked the Department of Biotechnology (DBT) and the Indian Council of Agricultural Research (ICAR) to organise workshops and seminars to educate the State governments about GM technology and its regulatory framework.
- It **requires a balanced and informed approach that considers both the risks and benefits of this technology**. It also requires a transparent and robust regulatory system that ensures safety and accountability at every stage of research and development.
- It requires dialogue and consensus among all stakeholders - scientists, farmers, consumers, industry, civil society and government - on what kind of agriculture India needs in the 21st century.

Must Read:

GM Crops: https://www.iasgyan.in/daily-current-affairs/gm-crops-40

3. 14   GEOGRAPHICAL INDICATION TAG

Context

- Seven products from Uttar Pradesh have been granted the Geographical Indication (GI) tag.

Details

- Uttar Pradesh, the most populous state in India, is home to a rich and diverse cultural heritage. The state is known for its handicrafts, textiles, musical instruments, and other products that reflect the skills and creativity of its people. Recently, seven of these products have been granted the Geographical Indication (GI) tag by the Government of India, which recognizes their uniqueness and origin.

7 PRODUCTS FROM UTTAR PRADESH THAT HAVE RECEIVED THE GI TAG

Mahoba Gaura Patthar Hastashlip

- A stone carving art form that depicts various motifs and figures inspired by nature, mythology and history.
- The artisans use a variety of tools and techniques to carve intricate designs on the locally available red sandstone, which is also known as gaurapatthar. The stone carvings are used for making idols, statues, panels, pillars, lamps, pots, etc.

Amroha Dholak

- A musical instrument made of wood and leather, used in various folk and classical music genres. It is known for its distinctive sound and craftsmanship.
- The instrument is made by carving hollow blocks of various sizes and shapes out of wood from mango and Sheesham trees, which are then covered with animal skin, typically goatskin.

Kalpi Handmade Paper

A paper made from waste cotton rags using an ancient technique that dates back to the Mughal era. The paper is soft, smooth and eco-friendly. It is used for making various items such as notebooks, envelopes, cards, paintings, etc. The paper is also decorated with floral motifs using natural colours.

Barabanki Handloom Product

- A handloom product that includes various types of fabrics such as cotton, silk, wool, jute, etc. woven on traditional looms by skilled weavers.
- The fabrics are known for their fine quality, durability and variety of designs. Some of the famous products are Barabanki sarees, stoles, shawls, carpets, etc.

Sambhal Horn Craft

- A craft that involves making various items such as jewellery, buttons, combs, pen stands, etc. from animal horns. The horns are sourced from buffaloes, cows, goats and camels, and are processed by boiling, cutting, shaping, polishing and colouring. The horn craft is an eco-friendly and sustainable way of utilizing animal waste.

Mainpuri Tarkashi

A metal inlay art form that involves embedding thin wires of brass, copper or silver into wooden objects such as boxes, trays, tables, chairs, etc. The artisans use a special chisel to create grooves on the wood surface, and then fill them with the metal wires using a hammer. The metal inlay creates a contrast with the wood and enhances its beauty.

Baghpat Home Furnishings

- A range of home furnishing products such as bed sheets, pillow covers, curtains, table cloths, etc. made of cotton fabric using a block printing technique.
- The fabric is dyed with natural colours derived from plants, flowers, fruits and minerals.
- The blocks are made of wood and have intricate designs carved on them. The artisans use these blocks to stamp the fabric with different patterns and colours.

Geographical Indication Tag

About

- Geographical Indications (GIs) are **products that have a specific geographical origin and possess qualities or a reputation that are due to that origin.**
- They **include agricultural, natural, manufactured goods, foodstuffs and handicrafts**. For example, Darjeeling tea, Kashmiri saffron, Banarasi silk, Kanchipuramsarees, etc.
- GIs are **a form of intellectual property rights that protect the collective interests of the producers and the consumers of these products**. They also promote the economic and social development of the regions where they are produced.

Background

- The concept of GIs dates back to ancient times when certain products were associated with their places of origin, such as wines, cheeses, pottery, etc. However, the term "geographical indication" was first used in the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement of the World Trade Organization (WTO) in 1994.
- The **TRIPS Agreement defines a GI** as "indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristics of the good is essentially attributable to its geographical origin".
- The TRIPS Agreement also obliges the WTO members to provide legal means to prevent the misuse or misappropriation of GIs by third parties.

Indian Law

- **India, as a member of the WTO, enacted the Geographical Indications of Goods (Registration & Protection) Act 1999 which came into force in 2003.** The Act provides for the registration and protection of GIs in India.
- The Act defines a GI as "an indication which identifies such goods as agricultural goods, natural goods or manufactured goods as originating, or manufactured in the territory of a country, or a region or locality in that territory, where a given quality, reputation or other characteristics of such goods is essentially attributable to its geographical origin and in case where such goods are manufactured goods one of the activities of either the production or of processing or preparation of the goods concerned takes place in such territory, region or locality, as the case may be".
- The Act also establishes a **Geographical Indications Registry under the Controller General of Patents, Designs and Trade Marks for the administration and registration of GIs.** The Registry is located in Chennai.

Features of the GI tag

- It is granted to a group of producers or an organization representing them.
- It is **valid for 10 years and can be renewed indefinitely**.
- It confers exclusive rights to use the GI on the registered products.
- It **prohibits unauthorized use of the GI by others.**
- It enables the registered holders to take legal action against infringers.
- It enhances the reputation and goodwill of the products.
- It creates a distinct identity and market niche for the products.
- It helps in preserving the traditional knowledge and cultural heritage associated with the products.

Significances

- It **promotes the rural economy and livelihoods** of the producers.
- It **boosts exports and foreign exchange earnings**.
- It attracts tourism and cultural diversity.
- It **safeguards consumer interests** and prevents unfair trade practices.
- It fosters innovation and quality improvement.
- It contributes to national pride and identity.

Challenges

- **Lack of awareness and education** among producers and consumers about GIs.
- **Inadequate infrastructure and resources** for registration and enforcement of GIs.

- **Competition from counterfeit and imitation products** in domestic and international markets.
- **Difficulty in maintaining quality standards and consistency** across different batches of products.
- **Lack of coordination and cooperation** among various stakeholders involved in GIs.

Way Forward

- Creating awareness campaigns and capacity-building programs for producers and consumers about GIs.
- **Strengthening the legal framework and institutional mechanisms** for registration and protection of GIs.
- **Developing quality control systems and certification** schemes for GI products.

- Encouraging branding and marketing strategies for GI products.
- **Establishing linkages and networks among producers**, traders, retailers, exporters, etc. for GI products.
- Promoting research and development on GIs and their socio-economic impacts.

Conclusion

- Geographical Indications Tags are valuable assets for India that can enhance its economic, social and cultural development. They can also serve as a tool for achieving sustainable development goals. Therefore, it is imperative to protect and promote them with due diligence and care.

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3. 15 SHORT ARTICLES

Nutrient-Based Subsidy Regime

Context

- To address the problem of nutrient imbalance, the Commission on Agricultural Costs and Prices (CACP) has proposed that the Centre include urea in the nitrogen-based subsidy (NBS) scheme.

Details

- The Commission for Agricultural Costs and Prices (CACP) has recently suggested that the government should include urea under the nutrient-based subsidy (NBS) regime. This is a policy recommendation aimed at addressing the issue of the imbalanced use of fertilisers in Indian agriculture, which has adversely affected soil health and crop productivity.

What is the NBS regime?

- The **NBS regime was introduced in 2010 to replace the earlier system of fixed and uniform subsidies for non-urea fertilisers.**
- **Under NBS, the subsidy is linked to the nutrient content of the fertiliser**, rather than its product name.
- This gives more flexibility to the manufacturers to produce and sell different grades of fertilisers and also encourages

farmers to use a balanced mix of nutrients according to their soil requirements.

Urea is not covered under NBS

- **Urea, which is the most widely used fertiliser in India, was kept out of the NBS regime.** The government continues to control its maximum retail price (MRP) and subsidy amount.
- This has distorted the relative prices of urea and other fertilisers, leading to excessive and inefficient use of urea by farmers.

Why is urea overused?

- **Urea is a nitrogenous fertilizer that provides nitrogen, one of the essential nutrients for plant growth**. However, plants also need other nutrients such as phosphorus, potassium, sulphur and micronutrients for optimal growth and yield.
- **The ideal ratio of nitrogen, phosphorus and potassium (NPK) for most crops is 4:2:1. However, in India, the actual ratio of NPK consumption is skewed towards nitrogen, at around 8:3:1.**
- One of the main reasons for this imbalance is the **low and stagnant price of urea compared to other fertilisers.** While the MRP of urea has been fixed at Rs 5,360 per metric tonne (MT) since 2012, the prices of other fertilisers such as di-ammonium phosphate (DAP) and

muriate of potash (MOP) have increased over time due to market fluctuations and decontrol under NBS.

- As a result, urea is much cheaper than other fertilisers on a per kg basis, making it more affordable and attractive for farmers.

- Another reason for urea overuse is the **inadequate availability and quality of other fertilisers in the market**. Due to limited domestic production and high import dependence, the supply of non-urea fertilisers is often erratic and insufficient to meet the demand. Moreover, some unscrupulous dealers may adulterate or mislabel non-urea fertilisers to make higher profits, reducing their effectiveness and reliability.

What are the consequences of urea overuse?

- **Soil degradation:** Urea application increases soil acidity and reduces soil organic matter, affecting its physical, chemical and biological properties. This reduces soil fertility and makes it more prone to erosion and nutrient leaching.

- **Nutrient deficiency:** Urea application creates an imbalance in the availability of other nutrients in the soil, leading to deficiency or toxicity of some elements. This affects crop growth and quality, and may also increase susceptibility to pests and diseases.

- **Environmental pollution:** Urea application contributes to greenhouse gas emissions such as nitrous oxide and methane from soil microbial activity. It also causes nitrate contamination of groundwater and surface water bodies, affecting aquatic life and human health.

- **Subsidy burden:** Urea subsidy accounts for more than half of the total fertiliser subsidy bill of the government, which has been increasing over the years due to rising consumption and import costs. This puts a strain on the fiscal resources of the government and crowds out public investment in other sectors.

How can the NBS regime help?

- Bringing urea under the NBS regime can help address some of these problems by <u>rationalising its price and subsidy structure.</u>

Under the NBS regime, **urea subsidy would be linked to its nutrient content rather than its product name, giving more freedom to manufacturers to produce different grades and formulations of urea**. This would also enable farmers to choose the most suitable type and quantity of urea for their crops and soils.

- Under the NBS regime, **urea MRP would be increased gradually over some time to reflect its true cost of production and import.** This would **reduce the price gap between urea and other fertilisers, encouraging farmers to use a balanced mix of nutrients.** This would also reduce the subsidy burden on the government and free up resources for other developmental purposes.

Conclusion

- The CACP's recommendation to bring urea under the NBS regime is a welcome step towards addressing the problem of imbalanced use of fertilisers in Indian agriculture. However, it should be implemented in a phased and participatory manner, taking into account the interests and concerns of all stakeholders, especially farmers. Along with the NBS regime, the government should also adopt a holistic approach to improve soil health, crop nutrition and fertiliser efficiency in the country.

https://www.iasgyan.in/daily-current-affairs/urea-under-nbs-regime

Minimum Support Price for Kharif Crops

Context

- The Cabinet Committee on Economic Affairs (CCEA) chaired by Prime Minister NarendraModi has announced the Minimum Support Price (MSP) for kharif crops for the 2023-24 season. The MSP is the price at which the government guarantees to buy crops from farmers, regardless of market rates.

Details

- The MSP for kharif crops has increased as compared to last year. The government claims that this will ensure a return of at least 50% over the cost of production for farmers and boost their income and livelihood.

Criticism

- Several farmers' organisations have expressed their dissatisfaction and disappointment with the MSP hike, saying that it is inadequate and does not cover the rising input costs such as seeds, fertilisers, pesticides, labour, electricity and diesel.
- They have also pointed out that the cost of production calculated by the government is based on outdated data and does not reflect the actual expenses incurred by farmers. They have demanded that the government should revise the cost of production based on current data and increase the MSP accordingly.

Government Argument

- The government has defended its MSP decision, saying that it is based on the recommendations of the Commission for Agricultural Costs and Prices (CACP), an expert body that advises the government on price policy for agricultural commodities.
- The government claimed that it has increased the MSP for kharif crops and that it has procured record quantities of crops from farmers at MSP in recent years.

Kharif crops

- Kharif crops are the crops that **grow during the monsoon season, which lasts from June to September in India. These crops depend on the rainfall and humidity for their growth and yield**. They are also known as monsoon crops or rainy-season crops.
- Some of the most common kharif crops in India are **paddy, maize, millets, pulses, oilseeds, cotton and sugarcane.**
- These crops **contribute to about 55% of the total foodgrain production in the country**. They also provide raw materials for various industries such as textiles, sugar, edible oil and biofuel.
- Kharif crops play a vital role in ensuring food security and economic stability in India. They

provide staple food for millions of people and generate income for farmers. They also help in maintaining soil fertility and preventing soil erosion.

What is MSP and how is it determined?

- Minimum Support Price (MSP) is the guaranteed amount paid to farmers when the government buys their produce. This is a way of ensuring that farmers get a fair price for their crops and do not suffer losses due to market fluctuations or natural calamities.
- The **government announces MSPs for 22 mandated crops**. The mandated crops include 14 crops of the kharif season, such as paddy, maize, cotton, etc., 6 rabi crops, such as wheat, barley, mustard, etc., and two other commercial crops, namely jute and copra.
- In addition, the MSPs of toria and de-husked coconut are fixed based on the MSPs of rapeseed/mustard and copra, respectively.
- The **MSPs are based on the recommendations of the Commission for Agricultural Costs and Prices (CACP), which is an attached office of the Ministry of Agriculture and Farmers Welfare.**
- The **CACP was established in 1965** and is responsible for advising the government on the price policy of major agricultural commodities. The **CACP considers various factors such as cost of production, demand and supply, market price trends, inter-crop price parity, etc., while making its recommendations.**
- The **final decision on the level of MSPs is taken by the Cabinet Committee on Economic Affairs (CCEA) chaired by the Prime Minister of India.** The CCEA approves the MSPs after taking into account the views of various stakeholders such as state governments, farmers' organizations, etc.
- The MSP is aimed at ensuring remunerative prices to growers for their produce and encouraging crop diversification. It also helps in maintaining food security and stability in the country by providing an incentive to farmers to grow more food grains.

Antardrishti - A Financial Inclusion Dashboard

Context

- Reserve Bank of India (RBI) Governor launched a financial inclusion dashboard named 'Antardrishti'. As the name suggests, the dashboard will provide the required insight to assess and monitor the progress of financial inclusion by capturing relevant parameters.

Details

- The dashboard is based on the Financial Inclusion Index (FI-Index), which has been developed by the RBI to measure the extent and depth of financial inclusion in India.

Financial Inclusion Index (FI-Index)

- The FI-Index has been conceptualised as a comprehensive index incorporating details of banking, investments, insurance, postal as well as the pension sector in consultation with the government and respective sectoral regulators.

- The **FI-Index comprises four sub-indices**: Access, Usage, and Quality.

- Each sub-index captures various dimensions of financial inclusion such as availability, affordability, convenience, awareness, protection and impact.

- The **FI-Index is computed using a range of indicators from various data sources** such as RBI, the National Payments Corporation of India (NPCI), the Insurance Regulatory and Development Authority of India (IRDAI), the Pension Fund Regulatory and Development Authority (PFRDA) and the Department of Posts.

'Antardrishti' Dashboard

- **The dashboard also provides state-wise and district-wise data on various parameters of financial inclusion** such as bank branches, ATMs, point of sale (POS) terminals, bank accounts, debit cards, credit cards, mobile banking, internet banking, UPI transactions, Aadhaar seeding, PMJDY accounts, insurance policies, pension accounts and postal savings.

- The dashboard also allows users to compare and analyse the data across different periods and regions.

Financial inclusion

- Financial inclusion is the **process of ensuring that everyone has access to affordable and appropriate financial services** and products, such as bank accounts, savings, credit, insurance and payments. Financial inclusion can help people improve their lives, reduce poverty and achieve their goals.

Why is financial inclusion important?

- **Empower people to manage their money better**, save for emergencies and invest in their future.

- **Increase economic opportunities and productivity** by enabling people to start or grow businesses, access markets and create jobs.

- **Enhance social welfare and stability by reducing inequality**, promoting gender equality and supporting social protection.

- **Support sustainable development and environmental protection** by facilitating green finance and climate resilience.

- Financial inclusion requires collaboration and innovation from various stakeholders, such as governments, regulators, financial service providers, technology companies, civil society and consumers.

Key actions to promote financial inclusion

- Developing an enabling policy and regulatory environment that fosters competition, innovation and consumer protection.

- Leveraging digital technologies and platforms to expand the reach lower the cost and improve the quality of financial services and products.

- **Building financial literacy and capability among consumers** to help them make informed and responsible financial decisions.

- **Addressing the barriers and challenges faced by specific segments of the population**, such as women, youth, rural dwellers and low-income groups.

- Financial inclusion is not only a goal in itself but also a means to achieve other goals. By advancing financial inclusion, we can

contribute to a more inclusive, prosperous and sustainable world for all.

Conclusion

- The dashboard is a significant step towards enhancing transparency and accountability in the financial inclusion agenda of the country. It will help in identifying the gaps and challenges in achieving universal access to formal financial services. It will facilitate evidence-based policy-making and effective monitoring and evaluation of various schemes and programmes.

Default Loss Guarantee

Context

- The Reserve Bank of India (RBI) recently issued guidelines on Default Loss Guarantee (DLG) arrangements in digital lending, which could have a positive impact on the profitability of digital platforms that partner with regulated entities (REs) such as banks and non-banking financial companies (NBFCs).

Details

- According to a report by India Ratings and Research (Ind-Ra), the DLG guidelines could improve the profitability of digital platforms by 5% to 15%, depending on the level of guarantee cover and the risk profile of the borrowers.

What is DLG?

- Default Loss Guarantee (DLG) is a **type of arrangement where a party (such as a digital platform or a fintech company) provides a guarantee to regulated entities (REs) for a portion of the loan portfolio originated through the digital channel.**
- In case of default by the borrowers, the **guarantor will bear the loss up to a certain percentage, known as the First Loss Default Guarantee (FLDG).**
- The DLG arrangement aims to **promote responsible innovation and prudent risk management in digital lending**, as well as to align the interests of the REs and the digital platforms.

The RBI has permitted DLG arrangements subject to certain conditions

- The DLG arrangement **should be disclosed to the borrowers at the time of loan sanction.**
- The **FLDG cover should not exceed 5% of the outstanding loan portfolio**.
- The REs should maintain adequate capital and provisioning for the loans covered by DLG.
- The REs should monitor and report the performance of the DLG portfolio separately.

How will DLG benefit digital platforms?

- **Enhancing their credibility and reputation in the market**, as they will share the credit risk with the REs.
- **Improving their bargaining power with the REs**, as they will be able to negotiate better terms and conditions for lending.
- **Increasing their revenue potential**, as they will be able to earn fee income from providing DLG services, as well as from cross-selling other products and services to the borrowers.
- **Reducing their operational costs**, as they will be able to leverage their technology and data analytics capabilities to streamline and automate the loan origination and servicing processes.

Implications for the borrowers

- The guidelines specify the minimum requirements for the DLG contracts, such as the eligibility criteria, the coverage ratio, the premium payment, and the reporting and monitoring mechanisms. The **implications for the borrowers are mixed.**
- The DLG arrangements are aimed at providing a cushion to the REs against the credit risk of the borrowers sourced by the digital platforms.
- On one hand, the **DLG arrangements could lower the cost of borrowing for some segments of borrower**s, especially those who have limited access to formal credit channels or who have low credit scores.
- On the other hand, the **DLG arrangements could also increase the risk of over-indebtedness and predatory lending practices by some digital platforms**, as they may have the incentive to push loans to borrowers who may not be able to repay them.

- Therefore, the RBI needs **to ensure that the DLG arrangements are implemented transparently and responsibly** and that the borrowers are adequately informed and protected from any unfair or abusive practices by the digital platforms or the REs.

The profitability of digital platforms depends on:

- The level of FLDG cover provided by the digital platforms will determine their exposure to credit losses.
- The risk profile of the borrowers will influence the default rate and recovery rate of the loans.
- The fee structure and revenue-sharing arrangement between the REs and the digital platforms will affect their income streams.

Some challenges for digital platforms

- **Managing the credit quality and performance of the DLG portfolio**, which will require robust underwriting standards, risk assessment models, collection mechanisms and fraud prevention measures.
- **Complying with the regulatory guidelines and norms applicable** to DLG arrangements, which will entail adequate disclosures, reporting, audits and governance practices.
- **Maintaining sufficient liquidity and capital buffers** to meet their obligations under DLG arrangements, which will depend on their cash flow management and fundraising capabilities.

Conclusion

- The RBI guidelines on DLG are a welcome step towards fostering a more robust and inclusive digital lending sector in India. They can help improve profitability, efficiency and risk management for LSPs and REs, while also benefiting borrowers with more choices and better deals.

Non-Banking Prepaid Payment Instrument

Context

- The Reserve Bank of India (RBI) has allowed non-banking prepaid payment instruments (PPI) issuers to issue e-RUPI vouchers.

Details

What is e-RUPI?

- E-RUPI is a **pre-paid digital voucher which a beneficiary gets on his phone in the form of an SMS or QR code.**
- The **voucher can be redeemed at specific service providers without any intermediary or bank account.**
- The voucher is issued for a specific purpose and amount and is valid for a limited period.

Benefits of e-RUPI

- It **ensures timely and targeted delivery of benefits and subsidies to the intended recipients**, without any leakage or fraud.
- It **reduces the cost and hassle of handling cash or cards and eliminates the need for KYC verification** or bank account details.
- It **enhances the privacy and security of the transactions**, as the voucher is encrypted and can only be used by the authorized person.
- It **enables digital inclusion and empowerment of the underprivileged and marginalized sections of society**, who may not have access to formal banking channels.
- It **fosters innovation and competition among PPI issuers** and service providers, who can offer customized and value-added solutions to their customers.

How will RBI's policy impact the e-RUPI ecosystem?

- The RBI's policy will **allow non-banking PPI issuers, such as mobile wallets, prepaid cards, and UPI apps, to issue e-RUPI vouchers to their customers**. This will increase the availability and accessibility of e-RUPI vouchers across various sectors and segments of society.
- The policy will enable interoperability among different PPI issuers and service providers, which will enhance convenience and choice for the users.
- The RBI has issued guidelines for the eligibility criteria, operational requirements, and safeguards for non-banking PPI issuers who want to issue e-RUPI vouchers. The PPI issuers will have to comply with these norms and obtain authorization from the RBI before issuing e-RUPI vouchers.

- The RBI's policy is expected to boost the adoption and usage of e-RUPI vouchers in India, which will in turn support the government's vision of a less-cash and more-digital economy.

Must Read

e-RUPI: https://www.iasgyan.in/ias-gazette-magazine/e-rupi-digital-currency-push

Law Commission on Adverse Possession

Context

- The Law Commission of India recently submitted its 22nd report on the topic of adverse possession, which strongly recommended that the law relating to adverse possession not be changed or abolished because it serves a useful social purpose and protects the rights of the poor and marginalised sections of society.

Details

- The 22nd Law Commission of India in its report on the topic of adverse possession, which is a legal doctrine that allows a person to acquire ownership of a property by occupying it for a certain period without the consent of the original owner.

- The report has **strongly recommended that the law relating to adverse possession should not be changed or abolished, as it serves a useful social purpose and protects the rights of the poor and marginalized sections of society.**

Adverse Possession

- It is a **legal principle that allows a person who occupies another person's land without their permission to acquire legal ownership of that land after a certain period**. This can happen intentionally or unintentionally, with or without the knowledge of the true owner.

- It is a **legal doctrine that allows a person to acquire ownership rights over a property by occupying it for a continuous and uninterrupted period of 12 years, without the consent of the original owner.** This doctrine was introduced in India by the British rulers and is governed by the Limitation Act of 1963.

Highlights of the Law Commission report on Adverse possession

- It is **not a mode of acquiring title by force or fraud, but rathera recognition of the factual situation of possession and the legal consequences that flow from it.**

- It does **not violate the right to property under Article 300A of the Constitution**, as it does not amount to deprivation or expropriation by the state, but rather a transfer of title by operation of law.

- It is **not contrary to the human rights** obligations of India under various international treaties and conventions.

- There is no justification for introducing any change in the law relating to adverse possession, as it would create chaos and confusion in the land records and lead to litigation and disputes.

- The report has suggested that instead of changing the law, the government should focus on improving the administration and management of land records and ensuring that the rights and interests of all parties are duly protected.

Conclusion

- Adverse possession is a disputable and complex subject that affects millions of Indians. It involves a dispute between two opposing principles: the protection of property rights and the avoidance of stale claims. While some say that adverse possession serves a social function by resolving disputes and guaranteeing productive land use, others claim that it violates human rights and encourages land grabs. The law must be modified to balance these interests and preserve the rights of both owners and occupiers.

Must Read

Adverse possession:https://www.iasgyan.in/daily-current-affairs/adverse-possession

Strengthening Primary Agricultural Credit Societies

Context

- The Indian government has recently announced a series of new initiatives to strengthen the role of Primary Agricultural Credit Societies (PACS) in the rural economy.

Details

- These decisions were taken in a meeting between the Union Home Minister and Minister of Cooperation and Minister of Chemicals and Fertilizers in New Delhi.

Highlights of the Key Decisions

Fertilizer retailers

- PACS that are not currently functioning as **fertilizer retailers will be identified and encouraged to do so based on feasibility in a phased manner.** This will help in increasing the availability and accessibility of fertilizers for the farmers and reducing their dependence on middlemen.

Pradhan Mantri Kisan Samridhi Kendras

- PACS that are not currently functioning as Pradhan Mantri Kisan Samridhi Kendras (PMKSK) will be brought under the ambit of PMKSK.
- PMKSK is a scheme launched by the government to provide various services and inputs to the farmers such as seeds, pesticides, farm machinery, credit, insurance, etc. through a single window system at PACS level.

Marketing of organic fertilizers

- PACS will be **connected with the marketing of organic fertilizers, especially fermented organic manure (FoM) or liquid fermented organic manure (LFOM) or phosphate-enriched organic manure (PROM).**
- These bio-based fertilisers can improve soil health and crop productivity while reducing environmental pollution. PACS can also help in creating awareness and demand for these products among the farmers.

Drone entrepreneurs

- PACS can also be employed as drone entrepreneurs for spraying fertilizers and pesticides. Drones can also be used for the survey of the property. This will help in reducing labour costs, enhancing efficiency and accuracy, and minimizing health risks for the farmers.

Market Development Assistance

- Under the Market Development Assistance (MDA) scheme of the Department of Fertilizers, **fertilizer companies will act as an aggregator for small bio-organic producers to market the end product.** In this supply and marketing chain of bio-organic fertilizers, PACS will also be included as wholesalers/retailers. This will help in creating a viable market for bio-organic fertilizers and supporting small-scale producers.

Primary Agricultural Credit Societies

- Primary Agricultural Credit Societies (PACS) are the **smallest and most basic units of the cooperative banking system in India, operating at the village level** and serving about 13 crore farmers, mostly small and marginal ones.
- PACS **provides credit and other financial services to the rural population, especially the small and marginal farmers**. They are owned and managed by their members, who elect their representatives to the board of directors.
- They operate at the village level and are affiliated with the District Central Cooperative Banks (DCCBs), which in turn are linked to the State Cooperative Banks (SCBs).
- They play a vital role in the rural economy by mobilizing savings, providing loans for agricultural and non-agricultural purposes, and offering other services such as crop insurance, warehousing, and marketing.

Conclusion

- These initiatives are expected to boost the income and livelihood of the farmers, especially the small and marginal ones, who constitute about 95% of the Kisan Credit Card (KCC) loans given by PACS. They will also help in improving the digitalisation, transparency, accountability, and efficiency of PACS, which are crucial for the development of the rural economy.

India's Disinflation Process

Context

- The disinflation process in India will be slow and protracted, with the 4% inflation target likely to be met only over the medium term, the Reserve Bank of India (RBI) Governor said in a recent speech.

Details

- The disinflation process in India has been gradual and uneven, reflecting the complex interplay of various factors. The RBI has used a combination of conventional and unconventional tools to manage liquidity and transmission of policy rates.
- The RBI has also adopted a forward-looking and proactive approach to balance the trade-off between growth and inflation.
- The disinflation process has been supported by favourable base effects, subdued demand conditions, low oil prices and prudent fiscal policy.

Disinflation

- Disinflation is a term that describes **a situation where the rate of inflation is slowing down, but still positive. In other words, the prices of goods and services are still rising, but at a lower pace than before.**
- Disinflation is different from deflation, which is a situation where the prices of goods and services are falling.

Some possible causes of disinflation are:

- **A decline in aggregate demand** can result from a recession, a loss of consumer confidence, or a shock to income or wealth.
- **An increase in aggregate supply** can result from an expansion of production capacity, a technological innovation, or a reduction in input costs.
- **A tight monetary policy by the central bank** can result from a rise in interest rates, a contraction of the money supply, or a change in the inflation target.
- **External factors, such as a fall in global oil prices**, which can lower the cost of energy and transportation for domestic producers and consumers, or a strengthening of the

domestic currency, which can make imports cheaper and exports more expensive

Effects of disinflation are:

- A **reduction in the cost of living** for consumers and an improvement in the competitiveness of domestic producers, which can boost their purchasing power and market share.
- A lowering of the expectations of future inflation **can encourage more saving and investment,** as the real return on financial assets increases and the uncertainty about future prices decreases.
- A reduction in the profits of firms and the incomes of workers can lead to lower spending and output, as the nominal revenue growth slows down and the wage growth lags behind the price growth.
- An increase in the real value of debt **can make it harder for borrowers to repay their loans**, as the nominal interest payments remain unchanged while the nominal income growth declines.

Strategies for dealing with disinflation are:

Fiscal stimulus

- The government can increase its spending or reduce its taxes to stimulate aggregate demand and create more jobs and income. Fiscal stimulus can also have a multiplier effect, as higher spending and income lead to more consumption and investment.

Monetary stimulus

- The central bank can lower its interest rates or engage in quantitative easing to make borrowing cheaper and increase the money supply. It can also have a spillover effect, as lower interest rates and higher money supply lead to more lending and spending.

Structural reforms

- The government can implement policies that enhance the efficiency and competitiveness of the economy, such as improving infrastructure, education, health care, innovation, regulation, and governance.
- Structural reforms can also have a long-term effect, as they increase the potential growth rate and productivity of the economy.

Conclusion

- Disinflation is a complex phenomenon that requires careful analysis and policy response. By understanding its causes and consequences, policymakers can design appropriate strategies to ensure that disinflation does not turn into deflation or stagnation.

Must Read:

Inflation: https://www.iasgyan.in/daily-current-affairs/inflation-19

Sovereign Gold Bond Scheme 2023-24

Context

- The Government of India has announced the issuance of Sovereign Gold Bonds (SGBs) for the financial year 2023-24. These bonds are denominated in grams of gold and offer an attractive alternative to holding physical gold.

Details

- Gold is one of the most coveted and cherished assets in India. It is not only a symbol of wealth and prosperity, but also a hedge against inflation and currency fluctuations. However, holding physical gold has its drawbacks, such as storage costs, security risks, purity issues, and capital gains tax.

- To address the challenges and to reduce the demand for physical gold, the Government of India has announced the issuance of Sovereign Gold Bonds (SGBs). These bonds are denominated in grams of gold and offer an attractive alternative to holding physical gold.

What are Sovereign Gold Bonds?

- Sovereign Gold Bonds are **government securities issued by the Reserve Bank of India (RBI) on behalf of the Government of India.**

- They are **linked to the price of gold and carry a fixed interest rate of 2.5% per annum**, payable semi-annually.

- The bonds have a **maturity period of eight years, with an option to exit after the fifth year.**

- The bonds are **issued in multiples of one gram of gold**, with a minimum investment of one gram and a maximum limit of four kilograms per individual per fiscal year.

- The bonds can be purchased through banks, post offices, stock exchanges, and designated agents.

- The bonds are also **eligible for trading on stock exchanges within a fortnight of issuance.**

Benefits of Sovereign Gold Bonds

- **No risk of theft, loss, or impurity:** The bonds are held in dematerialized form and can be easily transferred or redeemed without any hassle.

- **No storage or making charges:** The bonds do not incur any additional costs associated with buying or storing physical gold.

- **Tax benefits:** The interest income from the bonds is taxable as per the income tax slab of the investor, but the capital gains arising from the redemption or sale of the bonds are exempt from tax. Moreover, there is no tax deducted at source (TDS) on the interest payments.

- **Indexation benefit:** The bonds are indexed to the price of gold, which means that the investor gets the benefit of any increase in the price of gold over time.

- **Sovereign guarantee:** The bonds are backed by the full faith and credit of the Government of India, which ensures timely payment of interest and principal.

- **Easy liquidity:** The bonds can be easily sold or redeemed through banks, post offices, or stock exchanges, subject to certain conditions.

- **Loan facility:** The bonds can be used as collateral for availing loans from banks or other financial institutions.

Challenges

- **Low awareness and acceptance:** Many investors are still unaware or sceptical about the features and benefits of SGBs. They may prefer physical gold due to its emotional and cultural value, or due to a lack of trust in the government or digital platforms.

- **Price volatility:** The price of gold is subject to fluctuations due to various factors, such as global demand and supply, geopolitical events, currency movements, etc. This may affect the returns from SGBs in case of premature exit or sale.
- **Lock-in period:** The bonds have a lock-in period of five years, which may not suit investors who need liquidity or flexibility in their investments.
- **Opportunity cost:** The interest rate offered by SGBs may be lower than other fixed-income instruments, such as bank deposits, corporate bonds, etc. This may reduce the attractiveness of SGBs for investors who seek higher returns.

How can Sovereign Gold Bonds be made more popular?

- **Creating awareness and education:** The government and RBI should launch campaigns and programs to educate investors about the features and benefits of SGBs. They should also address the myths and misconceptions associated with SGBs and highlight their advantages over physical gold.
- **Simplifying the process and procedures:** The government and RBI should simplify and streamline the process and procedures for issuing, buying, selling, and redeeming SGBs. They should also leverage digital platforms and technologies to make SGBs more accessible and convenient for investors.
- **Offering incentives and discounts:** The government and RBI should offer incentives and discounts to investors who buy SGBs online or through digital modes. They should also consider offering higher interest rates or lower issue prices to attract more investors.
- **Enhancing liquidity and traceability:** The government and RBI should ensure that SGBs are listed and traded on stock exchanges on time. They should also facilitate market-making and price discovery for SGBs to improve their liquidity and traceability.

Conclusion

- Sovereign Gold Bonds are a golden opportunity for investors who want to invest in gold without the hassles and costs associated with physical gold. They offer several benefits such as tax exemption, indexation, sovereign guarantee, and easy liquidity. However, they also face some challenges such as low awareness, price volatility, lock-in period, and opportunity cost. To overcome these challenges and to make SGBs more popular, the government and RBI should take various steps such as creating awareness, simplifying the process, offering incentives, and enhancing liquidity.

Must Read:

Sovereign Gold Bonds Scheme 2023-24: https://www.iasgyan.in/daily-current-affairs/sovereign-gold-bond-scheme-2023-24

Draft Guidelines on Bio-Stimulants

Context

- The Ministry of Agriculture and Farmers Welfare has recently issued the Fertiliser (inorganic, organic or mixed) Control Amendment Order 2021, which introduces Schedule VI for the registration of biostimulants. This makes India one of the few countries in the world to have a legal framework for biostimulants.

Details

- The draft guidelines provide details on the type and format of data and information that need to be submitted along with the application for registration. It also outlines the procedure and criteria for the evaluation and approval of bio-stimulants by the competent authority.

Bio-stimulants

About

- Bio-stimulants are **substances or microorganisms that enhance the growth and development of plants**. They can improve the nutrient uptake, stress tolerance, and resistance of plants to pests and diseases.
- **Bio-stimulants are not fertilizers, pesticides, or genetically modified organisms**. They are **natural or synthetic products that work in harmony with the plant's physiology and the soil's microbiome.** For example; for instance Humic acids; fulvic acid

- They can **reduce the dependence on chemical inputs, increase the yield and quality of crops, and promote the sustainability and resilience of agroecosystems**. Bio-stimulants can also help mitigate the effects of climate change, such as drought, salinity, and temperature extremes, on crop production.
- They are **regulated by the Fertiliser (inorganic, organic or mixed) Control Amendment Order 2021, also known as the FCO Amendment Order,** which was notified by the agriculture ministry in India earlier this year.

FCO Amendment Order

- The FCO Amendment order **defines bio-stimulants** as "substances or microorganisms, other than fertilisers, that when applied to plants or the rhizosphere, stimulate natural processes to benefit nutrient uptake, nutrient efficiency, tolerance to abiotic stress and/or crop quality, independently of its nutrient content".
- The order **introduces Schedule VI, which lists the biostimulants that are allowed to be imported or manufactured in India**. It also lays down the draft guidelines for the registration of biostimulants, which aim to ensure the quality, safety, and efficacy of these products before they reach the farmers and consumers.
- The order **specifies that any person who intends to manufacture or import any bio-stimulant for sale in India must list such bio-stimulant under Schedule VI of the order**. This requires the applicant to submit various data and information to prove the identity, quality, safety and efficacy of the bio-stimulant.

Draft Guidelines

- The agriculture ministry has recently issued draft guidelines for the registration of bio-stimulants under Schedule VI of the FCO Amendment order.
- According to the draft guidelines, **the applicant should ensure that the data and information submitted are authentic, replicable, utilizable and of good quality**. The

complete study reports should be submitted in electronic form.
- According to the draft guidelines, any person who wants to import or manufacture a biostimulant in India has to apply for registration to the Central Bio-stimulant Committee (CBC), which is a body constituted by the Department of Agriculture, Cooperation and Farmers Welfare. The applicant has to submit various data and documents to prove the identity, composition, mode of action, benefits, and risks of the biostimulant.

The data and information required for registration include:

- **Data on proposed application:** This includes the name and address of the applicant, the trade name and common name of the bio-stimulant, its intended use and target crops, its recommended dose and method of application, its shelf life and storage conditions, etc.
- **Data on the identity of the bio-stimulant:** This includes the source and origin of the bio-stimulant, its chemical composition and analysis, its physical and chemical properties, its stability and compatibility with other inputs, etc.
- **Data to assess risk to humans and the environment:** This includes the data on toxicity, ecotoxicity, biodegradability and bioaccumulation potential of the bio-stimulant, as well as its impact on soil health, water quality and biodiversity.
- **Data to assess the efficacy of the product:** This includes the data on bio-efficacy trials conducted in different agro-climatic zones and cropping systems, following standard protocols and guidelines. The data should demonstrate that the bio-stimulant has a positive effect on plant growth, yield and quality, as well as on nutrient uptake and efficiency, stress tolerance and crop health.
- **Data on packaging and labelling:** This includes the data on the type and material of packaging used for the bio-stimulant, as well as the contents of the label that should provide clear and accurate information on the

product name, composition, usage instructions, precautions, etc.

Conclusion

- The draft guidelines for biostimulants are a welcome step towards promoting innovation and sustainability in Indian agriculture. They will help to create a level playing field for biostimulant manufacturers and users and ensure that only safe and effective products are available in the market. They will also encourage more research and development on biostimulants and their potential benefits for enhancing crop productivity and resilience in a changing climate.

National Time Release Study Report by CBIC

Context

- The National Time Release Study (NTRS) 2023 report was released by the Central Board of Indirect Taxes and Customs (CBIC).

Central Board of Indirect Taxes and Customs (CBIC)

- CBIC is a part of the Department of Revenue under the Ministry of Finance, Government of India.
- It deals with the tasks of formulation of policy concerning levy and collection of Customs, Central Excise duties, Goods & Services Tax (GST), prevention of smuggling and administration of matters relating to Customs, Central Excise, GST and Narcotics to the extent under CBIC's purview.
- The Board is the administrative authority for its subordinate organizations, including Custom Houses, Central Excise and GST Commission rates and the Central Revenues Control Laboratory.

Details

- Time Release Study (TRS) is a tool that **measures the performance of the cargo clearance process at the Customs stations**.
- It calculates the time taken from the arrival of the cargo to its release for domestic use in

case of imports, and from the arrival of the cargo to its departure from the country in case of exports.

Objectives of this Study

- To evaluate the progress made towards the National Trade Facilitation Action Plan (NTFAP) targets.
- To identify the impact of various trade facilitation initiatives, especially "Path to Promptness".
- To identify the challenges to further reduce the release time.

Highlights of the Study

- The ports included in the study are seaports, air cargo complexes (ACCs), inland container depots (ICDs) and integrated check posts (ICPs) that handle about 80% of import bills and 70% of export bills in the country.
- The **average import release time has gotten better over time**, decreasing by 20% for ICDs, 11% for ACCs, and 9% for seaports in 2023 compared to 2022.
- It is discovered that the standard deviation measure is reduced, indicating a higher degree of certainty regarding the swift discharge of imported cargo.
- It confirms the **three-pronged "Path to Promptness," which includes;**
    o Pre-arrival processing enabled by advance import document filing.
    o Risk-based cargo facilitation.
    o Advantages of trusted client programmes like Authorised Economic Operators.

Conclusion

- The improved release time is the result of the efforts of many parties, including Customs, port authorities, Customs Brokers, and Participating Government Agencies (PGAs), in putting in place various trade facilitation measures, which encourages continued cooperation to speed up cargo clearance and increase trade efficiency.

Subsidies and Climate Change

Context

- A new World Bank report highlighted the harmful effects of subsidising agriculture,

fishing, and fossil fuel sectors in an inefficient way, both directly and indirectly, by spending trillions of dollars that worsen climate change.

Details

- The report estimated that subsidies in these three sectors amounted to more than $7 trillion, which is equal to 8% of the global gross domestic product.
- It suggested that these **subsidies, which are often seen as a way to support economies in distress, could be better used to fund activities that help with the transition to a low-carbon economy or to improve the quality of life for people**, as they have serious implications for the environment.

Highlights of the report

- In 2021, countries spent $577 billion to artificially lower the price of polluting fuels such as oil, gas, and coal. These actions encouraged the excessive use of fossil fuels. As a result, **fossil fuel consumption causes air pollution in developing middle-income countries that suffer from high health costs,** the World Bank report pointed out.
- **Most countries spend six times more money on subsidising fossil fuel consumption than on fulfilling their commitments under the 2015 Paris Agreement.** Redirecting these subsidies could free up significant resources for sustainable purposes, the report said.
- **Ineffective subsidy use is responsible for up to 17% of all nitrogen pollution** in water over the past 30 years, which has large enough health impacts to reduce labour productivity by up to 3.5%.
- The report noted that **reducing the incentives to use polluting fuels may not be very effective** as the energy demand is only weakly responsive to prices, as cleaner alternatives are not widely available and are sometimes not affordable.
- Ensuring the availability and affordability of clean technologies, addressing information and capacity gaps, and addressing behavioural biases are ways to increase the effectiveness of subsidy reform, the report recommended.

Subsidies and Climate Change

- Climate change is one of the most urgent and complex challenges facing humanity today. It is caused by the accumulation of greenhouse gases (GHGs) in the atmosphere, mainly from the burning of fossil fuels. These **GHGs trap heat and cause the Earth's temperature to rise,** leading to a variety of negative impacts such as melting ice caps, rising sea levels, extreme weather events, biodiversity loss, and human health risks.
- One of the key drivers of fossil fuel consumption and GHG emissions is the **existence of subsidies that lower the price of these energy sources** and make them more attractive than cleaner alternatives.
- **Subsidies can take various forms, such as direct payments, tax breaks, price controls, or preferential loans**. According to the International Monetary Fund (IMF), global fossil fuel subsidies amounted to $5.2 trillion in 2017 or 6.5% of global GDP. This is more than the total spending on health care by all governments in the world.

Concern over Subsidies

- Subsidies have significant economic, social, and environmental costs. They **distort markets** and create inefficiencies, leading to wasteful consumption and overproduction of fossil fuels. They also **reduce government revenues and crowd out public spending on more productive and beneficial areas** such as education, health, infrastructure, or renewable energy.
- They **exacerbate income inequality and poverty**, as they mostly benefit the wealthy who consume more energy than the poor. They contribute to climate change by increasing GHG emissions and delaying the transition to a low-carbon economy.

Reforming subsidies

- Reforming fossil fuel subsidies is a crucial step towards tackling climate change and achieving sustainable development.
- By removing subsidies, governments can create a level playing field for renewable energy sources and encourage innovation and investment in clean technologies. Government can also generate fiscal savings

and increase public revenues that can be used to finance social programs or green initiatives.

- It can improve social equity and welfare by targeting subsidies to the most vulnerable groups or providing cash transfers or other forms of compensation to mitigate the impact of higher energy prices.
- However, reforming fossil fuel subsidies is not an easy task. It requires political will and public support, as well as careful design and implementation.

Challenges and barriers

- Include **vested interests from powerful groups** that benefit from subsidies, such as fossil fuel producers or consumers;
- **Lack of awareness or information** about the true costs and benefits of subsidies.
- **Social resistance or opposition** from groups that fear losing their income or access to affordable energy.
- Institutional or technical constraints that limit the capacity or feasibility of reform.
- To overcome these challenges and barriers, governments need to adopt a comprehensive and coherent approach that involves multiple stakeholders and addresses multiple dimensions of subsidy reform.

Way Forward

- Assessing the magnitude and impact of subsidies and communicating them clearly to the public.
- Setting clear and realistic objectives and timelines for reform.
- **Developing alternative policies** or measures to support renewable energy development and energy efficiency.
- Providing adequate compensation or assistance to affected groups, especially the poor and vulnerable.
- Engaging in dialogue and consultation with relevant stakeholders, such as civil society, business, media, or international organizations.
- Building coalitions and alliances with supportive actors, such as environmental groups, academics, or regional partners.

- Monitoring and evaluating the progress and outcomes of reform and adjusting accordingly.

Conclusion

- Subsidies are not inherently bad or good. They can be useful tools to achieve certain policy objectives, such as promoting social welfare or environmental protection. However, when they are misaligned with these objectives or have unintended consequences, they can become harmful and counterproductive. This is the case with fossil fuel subsidies that contribute to climate change and undermine sustainable development. By reforming these subsidies, governments can unleash multiple benefits for their economies, societies, and environments.

Must Read:

Climate Change and Subsidies:

https://www.iasgyan.in/daily-current-affairs/climate-change-and-subsidies

Open Market Sale Scheme

Context

- The recent decision by the Centre to restrict the open market sale scheme (OMSS) of foodgrains has left many States in a quandary.

Details

- The **Centre's decision to disallow States from buying foodgrains from the Food Corporation of India (FCI) under the open market sale scheme (OMSS) has triggered a crisis for many State governments**, especially those that rely on the scheme to provide subsidized food to the poor and vulnerable sections of society.
- The Centre has justified the move by saying that it is **aimed at curbing inflation and ensuring adequate stock levels in the central pool**. However, the Opposition has accused the government of hurting the most marginalized sections of society and violating the federal structure of the country.

Criticism

- The move has been criticized by several Opposition parties and civil society groups,

who have accused the government of being insensitive to the plight of the poor and vulnerable sections of society, especially in the wake of the Covid-19 pandemic and the subsequent lockdowns that have disrupted livelihoods and incomes.

- They have also questioned the rationale behind the decision, given that the **FCI has more than enough foodgrains in its godown, far exceeding the buffer norms.**

Arguments by Government

- The Centre has defended its decision, saying that **it is a temporary measure aimed at curbing inflation and ensuring food security for the country.**

- The government has argued that allowing States to buy foodgrains from the FCI at subsidized rates would create an artificial demand in the market and push up prices.

- It has also claimed that it is not stopping States from procuring food grains from other sources, such as private traders or farmers, as long as they pay the market price.

- The government has also assured that it will continue to provide foodgrains to States under the National Food Security Act (NFSA), which covers about 80 crore people in the country.

- Under the NFSA, eligible beneficiaries get 5 kg of wheat or rice per person per month at Rs 2 or Rs 3 per kg respectively. The Centre bears the entire cost of this subsidy, which amounts to about Rs 1.8 lakh crore per year.

- However, many States have pointed out that the **NFSA does not cover all sections of society that need food assistance, especially those who do not have ration cards or are excluded from the list due to various reasons**. They have also argued that buying food grains from private sources would increase their financial burden and affect their fiscal situation. Some States have also expressed concern over the availability and quality of foodgrains in the open market.

Alternative ways

- Given this situation, **some States have decided to look for alternative ways to buy food grains for their welfare schemes.**

- Tamil Nadu has said that it will use its funds to buy foodgrains from the FCI at an economic cost, which is higher than the OMSS price but lower than the market price.

- Punjab has said that it will explore the possibility of procuring foodgrains directly from farmers through its agencies.

- Other States are also exploring various options to ensure that their people do not suffer due to the Centre's decision.

What is the open market sale scheme?

- The open market sale scheme is a mechanism through which the **FCI sells foodgrains, mainly wheat and rice, to State governments and other bulk buyers at predetermined prices in the open market.**

- The scheme was introduced to offload excess stocks of foodgrains from the central pool and to moderate market prices.

- The FCI procures food grains from farmers at minimum support prices (MSPs) and maintains buffer stocks for public distribution and other welfare schemes.

- The OMSS helps in creating space for fresh procurement and reducing storage costs.

Features

- The **OMSS has two components**: one for State governments and another for private traders.

- Under **the first component, State governments can buy foodgrains from the FCI** at prices that are lower than the economic cost (which includes procurement, storage and distribution costs) but higher than the MSPs.

- The difference between the economic cost and the OMSS price is borne by the Centre as a subsidy. The State governments can use the foodgrains for their schemes or sell them in the open market.

- **Under the second component, private traders can buy food grains from the FCI** at prices that are slightly higher than the economic cost.

- The FCI fixes the OMSS prices quarterly, taking into account the prevailing market prices and demand-supply situation.

Significances

- The OMSS serves multiple purposes for both the Centre and the States.
- **For Centre,** it helps in managing surplus stocks of foodgrains, reducing storage losses, saving on carrying costs and avoiding distress sales. It also helps in stabilizing food prices and containing inflationary pressures.
- **For States,** it provides an additional source of foodgrains, apart from their allocated quota under the National Food Security Act (NFSA), to meet their requirements for various welfare schemes. It also enables them to provide subsidized food to those who are not covered by the NFSA or who face food insecurity due to natural calamities or other reasons.

Challenges

- Lack of uniformity in the OMSS prices across States creates regional disparities and arbitrage opportunities.
- Poor quality of foodgrains supplied by the FCI, which affects their acceptability and consumption.
- Inadequate infrastructure and logistics for transporting and storing foodgrains, which leads to delays, wastage and pilferage.
- Lack of transparency and accountability in the operations of the FCI and its agents, results in corruption and leakages.

Way forward

- The Centre should reconsider its decision and resume the OMSS for States, keeping in mind their genuine needs and concerns. It should also address the structural issues that plague the scheme, such as rationalizing OMSS prices, improving food quality, strengthening infrastructure and logistics, enhancing transparency and accountability, and ensuring coordination and cooperation among various stakeholders.
- The States should cooperate with the Centre and adhere to its guidelines and norms for buying foodgrains under OMSS. They should also improve their own procurement and distribution systems, and adopt innovative measures to enhance food security and nutrition for their people.

Must Read:

*Open market sale scheme (OMSS):*https://www.iasgyan.in/daily-current-affairs/open-market-sale-scheme-omss

United Payments Interface Payments

Context

- The daily limitations on United Payments Interface (UPI) transactions imposed by apps and banks — both in terms of amount and volume — have focused attention on India's rapid increase in such transactions.

Details

- In 2021, the **National Payments Corporation of India (NCPI) limited the number of daily transactions to 20 and the amount to 1 lakh per day**. However, banks and applications have set their limits at various periods in recent months.
- This has resulted in a complex web of value and volume restrictions. For example, according to ICICI Bank's UPI FAQ website, the number of transactions in 24 hours is limited to 10, although Bank of Baroda and HDFC Bank allow 20 transactions in the same period.
- Such restrictions were imposed in response to the recent growth in the amount of UPI transactions in India, following its popularity as an alternative to cash in the aftermath of demonetization.

Key observations

- The monthly number of UPI transactions in millions from April 2016 to May 2023. In India, **around 190 million UPI payments were performed in May 2018. This increased to 9,415 million in May 2023, an enormous 4,855% rise.**
- **In 2017-18, UPI had a 5.9% share of all retail payments**, while pre-paid payment instruments (Paytm and Amazon wallets, gift certificates, etc.) and debit cards dominated with shares of over 20% each.
- **In 2022-23, UPI surpassed all other instruments, with a share of more than 73%,** while pre-paid payment instruments trailed far behind with a 6.5% share. In addition, the

share of retail payments made using credit cards fell from more than 11% to just 2.5% during the same period.

- **The increase in transactions was primarily in terms of volume rather than value.** In May 2018, the total value of UPI transactions was 33,288 crore or Rs. 1,756 per transaction. The similar figure for May 2023 was 14, 89,145 crore, which equates to 1,581 per transaction – a 175 per transaction decrease in five years.
- The evolution of the share of various instruments in the value of retail payments in India. **In 2017-18, UPI accounted for only 0.4% of total retail payment value. In 2022-23, it increased to 21.1%.**
- **Consumers are gradually accepting UPI as a substitute for petty cash**, with the **value connected with each transaction decreasing with time.**
- According to PwC's Indian payments guide, **banks are struggling to keep up with the growth in UPI payments by modernizing their banking infrastructure and technical systems**.
- The struggle is causing transaction failures. This is also why smaller banks set UPI transaction limitations significantly lower than the NCPI's 1 lakh cap.

UPI payments
About
- Unified Payments Interface (UPI) is a system that **allows users to transfer money instantly from one bank account to another using their smartphones.** UPI has been gaining popularity in India since its launch in 2016, especially after the demonetization of high-value currency notes in November of that year.

UPI offers several benefits for users
- **UPI is interoperable**, which means that **users can link multiple bank accounts to a single UPI app** and choose which account to use for each transaction.
- **UPI is secure,as it uses a three-factor authentication system** that requires users to enter a PIN or biometric verification to authorize each transaction.
- **UPI is convenient**, as it does not require users to enter the beneficiary's bank account details

or IFSC code. Users can simply use the beneficiary's mobile number, UPI ID or QR code to initiate a payment.

- **UPI is cost-effective**, as it does not charge any fees for peer-to-peer transactions and charges minimal fees for merchant transactions.

Why UPI poses challenges for Banks
- **UPI reduces the profitability of banks**, as they have to bear the operational costs of processing UPI transactions without earning any revenue from them. Banks also lose out on the interest income that they could have earned from the deposits that are transferred through UPI.
- **UPI increases competition among banks**, as users can switch between different bank accounts and apps without any loyalty or preference. Banks have to invest more in marketing and customer acquisition to retain and attract UPI users.
- **UPI exposes banks to more risks**, such as frauds, cyberattacks, technical glitches and regulatory changes. Banks have to ensure that their systems are robust and compliant with the NPCI guidelines and the Reserve Bank of India norms.

Conclusion
- UPI is a revolutionary innovation that has transformed the digital payments landscape in India. It has empowered users with more choice, convenience and security while making payments. However, it has also created some problems for banks that have to cope with lower margins, higher competition and greater risks. The future of UPI will depend on how well the banks can balance these trades-offs and provide value-added services to their customers.

Must Read:
UPI: https://iasgyan.in/daily-current-affairs/upi-4

RBI's Riot Provisions
Context
- The State of Manipur is facing a severe crisis due to the ethnic violence that has erupted between the Kuki-Zo and the Meitei

communities. To provide some relief to the affected borrowers, the Manipur government has invoked a special provision of the RBI that allows restructuring and rescheduling of loans in areas hit by natural or man-made calamities.

Details

*   This provision enables the **banks to offer a moratorium on the repayment of loans and extend the repayment period without affecting the credit rating of the borrowers**.
*   This is a rare move by the State government as this provision has been mostly used for areas affected by natural disasters like floods, droughts, earthquakes, etc. and not for a law and order situation in the recent past.
*   The **Chief Secretary of Manipur issued an order stating that many properties and businesses of residents have been affected either directly or indirectly due to the present law and order situation in the State.** He said that many borrowers who had taken loans from banks were not in a position to repay them and requested the SLBC [State Level Bankers' Committee] to extend relief to them.
*   The SLBC discussed the matter on June 9 and agreed to invoke the RBI provision for restructuring and rescheduling of loans.

Steps taken by SLBC

*   The **SLBC announced that the borrowers who are affected by the violence can approach their respective banks and submit an application along with proof of damage or loss of income or property due to the violence**. The banks will then assess the eligibility of the borrowers for relief measures and restructure or reschedule their loans accordingly.
*   **They announced that the relief measures will be applicable for all types of loans, including agricultural, retail, MSME, education, housing, etc.** They also directed the banks to ensure that no penal interest or charges are levied on the borrowers who avail of the relief measures.

RBI's Riot Provisions
About

*   The Reserve Bank of India (RBI) announced a set of measures to deal with the potential impact of the riots in some parts of the country on the banking sector. These measures are collectively known as the RBI's Riot Provisions.
*   They are **aimed at ensuring the safety and soundness of the financial system, as well as providing relief and support to the affected customers and businesses.**
*   The **background of the RBI's Riot Provisions can be traced to the guidelines issued by the RBI in 2018**, which laid down the framework for dealing with natural calamities and other disasters affecting bank operations.
*   The guidelines stated that banks should have a board-approved policy for disaster recovery and business continuity, which should include contingency plans for various scenarios, such as floods, earthquakes, riots, cyber-attacks, etc.
*   The guidelines specified the roles and responsibilities of various stakeholders, such as the RBI, banks, state governments, insurance companies, etc., in managing the crisis.

What is the provision?

*   The provision is **part of the "Reserve Bank of India (Relief Measures by Banks in Areas Affected by Natural Calamities) Directions, 2018."** It is mentioned in Chapter No. 7, which deals with "Riots and Disturbances."
*   The provision gives RBI the authority to advice banks to extend rehabilitation assistance to riot/disturbance-affected persons, following certain guidelines. The guidelines cover various aspects of loan restructuring, fresh lending and other measures, including KYC norms.

Who can benefit from the provision?

*   The **provision applies to every Scheduled Commercial Bank** (excluding Regional Rural Banks) licensed to operate in India by RBI.
*   It covers all short-term loans, except those overdue at the time of the riots, for restructuring. It also covers long-term agricultural loans, if the crop is damaged without harm to productive assets.

How does the provision work?

- The provision allows banks to restructure loans based on the extent of crop loss or damage to assets caused by the riots.
- **For crop loans,** if the loss ranges between 33% and 50%, borrowers are eligible for a maximum repayment period of two years. If the crop loss exceeds 50%, the repayment period can be extended up to a maximum of five years.
- **For long-term agricultural loans**, banks can reschedule instalment payments for the affected year and extend the loan period by one year. All restructured loan accounts will have a moratorium period of at least one year.

What are the benefits of the provision?

- The provision aims to **provide relief and rehabilitation to borrowers who are facing difficulties in repaying their loans due to riots and violence.** It also helps banks to avoid bad loans and maintain their asset quality. The provision also encourages banks to continue lending to the affected areas and support their economic recovery.

Significances

- They demonstrate the proactive and responsive role of the RBI in addressing the challenges posed by unforeseen events that disrupt the normal functioning of the banking sector and affect its stability.
- **They provide a comprehensive and flexible framework for banks** to deal with the crisis and mitigate its adverse effects on their operations, assets, customers, and borrowers.
- **They enable banks to extend timely and adequate relief and support** to their customers and borrowers affected by the riots, especially those belonging to the vulnerable segments of society and the economy.
- They facilitate the smooth recovery and restoration of normalcy in the banking sector and the economy as a whole.

Challenges

- They require a high degree of coordination and cooperation among various stakeholders involved in managing the crisis, such as the RBI, banks, state governments, insurance companies, law enforcement agencies, etc.
- **They entail a careful assessment and monitoring of the extent and impact** of damage caused by the riots on the banking sector and its customers and borrowers.
- They involve a trade-off between providing relief and support to the affected parties and maintaining prudential norms and regulatory standards for banks.
- They pose a risk of moral hazard and adverse selection for banks and their customers and borrowers.

Way forward to ensure their effective implementation and evaluation:

- **The RBI should ensure that banks comply with its guidelines and instructions** regarding reporting, assessment, relief measures, security arrangements, service availability, etc., in a timely and transparent manner.
- The RBI should also monitor the impact of its provisions on the banking sector's performance indicators, such as asset quality, capital adequacy, profitability, liquidity, etc., and take corrective actions if needed.
- **The RBI should evaluate the outcomes and effectiveness of its provisions** in terms of achieving its objectives of ensuring financial stability and providing relief and support to the affected parties.
- The RBI should also review its provisions periodically and update them based on feedback from various stakeholders and best practices from other countries.

Conclusion

- The RBI's Riot Provisions is a commendable initiative by the central bank to deal with an unprecedented situation that poses a threat to the banking sector and its customers. They reflect its commitment to safeguarding financial stability while being sensitive to social and economic realities. They also provide a valuable lesson for the future in terms of preparing for and responding to such events in a timely and effective manner.

Biodegradable Cutlery

Context

- The Bureau of Indian Standards (BIS) has issued a new standard for food serving utensils manufactured from agricultural byproducts such as leaves, stems, and husks. The standard "IS 18267: 2023", intends to eliminate plastic waste and support sustainable development in the country.

Details

- IS 18267: 2023 is a **standard that specifies the requirements for food serving utensils made from agricultural by-products, such as leaves, stems, and husks**. These utensils include plates, bowls, cups, spoons, forks, and knives.
- It is important because it addresses the problem of plastic waste generated by disposable food serving utensils. According to a report by the Central Pollution Control Board (CPCB), India generates about 26,000 tonnes of plastic waste per day, out of which about 10% is used for food packaging and serving.
- Most of this plastic waste ends up in landfills, water bodies, or is burned, causing environmental pollution and health hazards.

How it will benefit consumers, producers, and the environment?

- **Consumers will have access to safe, hygienic, and eco-friendly food serving utensils** that are suitable for various occasions, such as parties, picnics, festivals, weddings, etc.
- **Producers will have a clear and uniform standard to follow for making quality food serving utensils** from agricultural by-products. They will also have a competitive edge in the market and the potential to export their products to other countries.
- **Environment will benefit from reduced plastic waste and greenhouse gas emissions**. The agricultural by-products used for making the utensils will also act as organic fertilizers for improving soil fertility.

Biodegradable cutlery

About

- Biodegradable utensils are a **type of disposable cutlery that degrades quickly into natural components without leaving toxic residues or microplastics behind.**
- They are believed to be a more environmentally beneficial alternative to traditional plastic utensils, which are created from fossil fuels and can be found in the environment for hundreds of years.

Features

- **Biodegradable cutlery is constructed from natural materials** that degrade into harmless compounds when composted. Bamboo, sugarcane, corn, plant oils, animal fats, straw, woodchips, orange peels, and sawdust are some of the primary materials utilised for biodegradable utensils.
- **They are compostable**, which means they can be disposed of in a compost bin or a commercial compost facility and converted into soil after a given amount of time. Bambu Home's bamboo cutlery, for example, is certified to be compostable in 4-6 months in a home composting system.
- **They are biodegradable, which means they can decompose in nature** without leaving dangerous residues or microplastics. Berkeley scientists, for example, have invented a novel technology that renders biodegradable plastics compostable in a matter of weeks using only heat and water.
- **They can withstand high temperatures** ranging from 180 to 190 degrees Fahrenheit and can be used in microwaves and dishwashers. Zerowasteman's biodegradable products, for example, are microwave safe and have high heat resistance.
- **They are gluten-free and do not contain any added PFAs (per and poly-fluoroalkyl compounds), which are toxins that can leach into food and water and cause health issues.** According to Fortune Business Insights' biodegradable cutlery industry analysis, biodegradable cutlery is gluten-free and contains no additional PFAs.

Significance

- Biodegradable cutlery **provides various environmental and health benefits**.
- They **reduce the usage of fossil fuels** and the emissions of greenhouse gases related to plastic production.
- They **limit the quantity of plastic waste that winds up in landfills, oceans, and ecosystems**, endangering wildlife and biodiversity.
- They **limit the possibility of hazardous chemicals and additives leaching from plastic utensils** into food and beverages.
- They **advocate for a circular economy** in which resources are reused and repurposed rather than discarded.
- They **promote sustainable agriculture and forestry practices**, such as growing crops and trees for bioplastic manufacture.

Challenges

- They are **more expensive than plastic utensils** due to higher production costs and lower economies of scale.
- They **have a lower shelf life than plastic utensils** because of their vulnerability to moisture and microbial destruction.
- They **require special conditions for proper decomposition**, such as high temperatures, humidity, and oxygen levels. These conditions are frequently not met in residential compost bins or landfills, where the majority of biodegradable utensils end up.
- They can contaminate other recyclable plastics if mixed in recycling bins or facilities.
- They can cause uncertainty among customers and garbage managers as to how to properly dispose of them.

Some of the possible actions are:

- **Developing new technologies and innovations that can lower production costs** and improve the performance of biodegradable utensils. For example, using renewable materials, enhancing durability and functionality, and reducing carbon footprint.
- **Increasing consumer awareness and education** about the benefits and proper use of biodegradable utensils. For example, providing information on how to dispose of them correctly, how to avoid contamination,

and how to compare them with other alternatives.

- **Establishing clear standards and labels for biodegradable utensils** that can distinguish them from other types of plastics. For example, using internationally recognized certifications, symbols, and claims that can verify the biodegradability and compostability of the products.
- **Expanding the availability and accessibility of composting facilities** that can process biodegradable utensils efficiently and safely. For example, investing in infrastructure, equipment, and personnel, as well as creating partnerships with waste management companies, municipalities, and communities.
- **Encouraging government policies and incentives** that can support the development and adoption of biodegradable utensils. For example, offering subsidies, tax breaks, grants, and loans for producers and consumers, as well as implementing regulations, bans, and fees for conventional plastics.

Conclusion

- Biodegradable utensils are a promising option for reducing the environmental impact of disposable cutlery. However, they also face some challenges that need to be addressed. By combining technological innovation, consumer education, standardization, composting infrastructure and policy support, biodegradable utensils can become a viable solution for a more sustainable future.

Special Assistance to States for Capital Investment

Context

- The Ministry of Finance's Department of Expenditure has accepted capital investment proposals totaling Rs. 56,415 crores in 16 states for the current fiscal year. The scheme titled 'Special Assistance to States for Capital Investment 2023-24' has been approved.

Details

- Capital investment projects in a variety of sectors, including health, education, irrigation,

water supply, power, roads, bridges, and railways, have been approved.

- Under this scheme, funds for meeting the state share of the Jal Jeevan Mission and the Pradhan Mantri Gramme Sadak Yojana have also been granted to the states to accelerate the pace of projects in these areas.

About

- The plan 'Special Assistance to States for Capital Investment 2023-24' was **proposed in the Union Budget 2023-24 in response to a stronger multiplier effect of capital expenditure** and to promote capital investment by states.
- The initiative provides special **assistance to state governments in the form of a 50-year interest-free loan up to a total of Rs. 1.3 lakh crore for the fiscal year 2023-24.**
- The scheme is a **continuation of a similar scheme entitled 'Special Assistance to States for Capital Investment for 2022-23' that was executed by the Ministry of Finance in the last financial year**. Under that scheme, Capital Investment proposals of Rs. 95,147.19 crores were approved by the Ministry for various sectors such as health, education, water supply, power, transport, irrigation, etc.

Parts of the scheme

- The scheme is a comprehensive initiative to boost capital investment in various sectors and promote urban development, national integration and digital literacy.

Part-I

- Part-I is the largest component of the scheme, with Rs. 1 lakh crore **allocated among the States based on their share of central taxes and duties as per the 15th Finance Commission's award.**
- This part aims to support the States in undertaking capital projects that enhance their economic growth and social welfare.

Part-II

- Part II is dedicated **to encouraging the States to implement the vehicle scrapping policy, which will reduce pollution, improve road safety and stimulate the automobile industry.**
- The States can avail incentives of Rs. 3,000 crores for scrapping State Government

vehicles and ambulances, waiving liabilities on old vehicles, providing tax concessions to individuals for scrapping old vehicles and setting up automated vehicle testing facilities.

Part-III and IV

- Part III and IV are **linked to reforms in urban planning and urban finance, which are essential for improving the quality of life and governance in cities.**
- The States can get incentives of Rs. 15,000 crores for urban planning reforms, such as streamlining land use regulations, simplifying building permissions, promoting transit-oriented development and ensuring disaster resilience.
- The States can also get an additional Rs. 5,000 crore for making their Urban Local Bodies creditworthy and improving their finances through measures such as property tax reforms, user charge collection, municipal bonds and public-private partnerships.

Part-V

- Part V is **aimed at increasing the housing stock for police personnel and their families within the police stations in urban areas.** This will enhance the security and morale of the police force and also create demand for the construction sector. An amount of Rs. 2,000 crore is earmarked for this purpose under the scheme.

Part-VI

- Part VI is designed **to promote national integration, carry forward the concept of "Make in India" and support the concept of "One District, One Product (ODOP)" through the construction of Unity Mall in each State.**
- The Unity Mall will showcase the cultural diversity and unique products of each district and also provide a platform for marketing and entrepreneurship. An amount of Rs. 5,000 crore has been set aside for this purpose under the scheme.

Part-VII

- Part VII is **focused on providing financial assistance to States for setting up libraries with digital infrastructure at Panchayat and Ward levels for children and adolescents**. This will foster a culture of reading and

learning among the young generation and also bridge the digital divide in rural and urban areas. An amount of Rs. 5,000 crore is earmarked for this purpose under the scheme.

Significance

- The scheme will augment the resources of the States and enable them to undertake more capital projects that have high multiplier effects on growth and employment.
- It will **improve the quality of public infrastructure and services in various sectors** such as health, education, water supply, urban development, agriculture, irrigation, power, transport, etc.
- It will **reduce the financial stress of the States** and improve their financial position by increasing their revenue generation capacity and reducing their borrowing costs.
- It will **promote cooperative federalism and incentivise good fiscal management** by linking the funds to performance indicators.
- It will **enhance transparency and accountability** by ensuring online monitoring and reporting of the funds' utilisation.

Challenges

- **The scheme requires timely submission of proposals** by the States and timely release of funds by the Centre to ensure optimal utilisation of the funds.
- **It requires proper coordination and convergence** among various departments and agencies at the State and Central level to avoid duplication and wastage of resources.
- **It requires adequate capacity building and technical support** for the States to prepare quality proposals, implement capital projects efficiently and report their outcomes accurately.
- **It requires regular evaluation and feedback mechanisms** to assess the impact of the funds on growth, employment and welfare indicators.

Way forward

- The 'Special Assistance to States for Capital Investment 2023-24' scheme is a welcome step by the Centre to support the States in their capital expenditure and economic recovery. However, it is not a substitute for a

comprehensive fiscal reform that addresses the structural issues of revenue mobilisation, expenditure rationalisation and debt sustainability at both levels of government. Therefore, both the Centre and States must work together to achieve a balanced and sustainable fiscal policy that promotes growth, equity and social justice in India.

White Fly

Context

- The 'RugoseSpiralling Whitefly,' an invasive bug that destroys palm, coconut, and banana plants, among other things, has recently been discovered in Pune. The insect not only reduces coconut tree yield but also reduces the nutritional value of the fruit.

Details

- Rugosespiralling whitefly (RSW) is a dangerous pest of ornamental and fruit plants that can cause significant damage and yield loss.
- RSW is difficult to control due to its high reproductive rate, wide host range, and tolerance to several pesticides. Furthermore, RSW can spread quickly by wind or human-mediated translocation of afflicted plants.

Rugosespiralling whitefly (RSW)

About

- RugoseSpiralling Whitefly (RSW) is a **species of whitefly in the Aleyrodidae family.**
- It is **indigenous to Central America and the Caribbean**, but it has spread to other parts of the world, including Florida, Hawaii, Africa, and Asia.
- It was discovered in Kerala in 2016 and has since spread to Tamil Nadu, Karnataka, and Maharashtra.

Features

- RSW is a **tiny, white bug that reaches about 1-2 mm in length.**
- It possesses piercing-sucking mouthparts that allow it to feed on plant sap.
- **It lays eggs in a spiral pattern on the underside of leaves, leaving white waxy deposits**. The eggs hatch into nymphs, which

are flat and scale-like and feed on plant tissues.

- The nymphs emit honeydew, a sticky material that attracts ants and other insects and stimulates the growth of sooty mould, a black fungus that decreases photosynthesis.

SPIRALLING OUT OF CONTROL
➤ The Rugose Spiralling Whitefly derives its name from its egg-laying pattern
➤ It is a tiny insect measuring up to 2 mm in length
➤ It sucks out sap from under the leaves, inducing stress on the host plant from the loss of water and nutrients
➤ The honeydew excreted by the fly attracts ants and encourages the growth of fungus, thus affecting the plant

Concern

- Many commercially significant crops, including coconut, banana, palm, mango, guava, papaya, and citrus, are severely impacted by RSW. It causes **direct damage to the plants by draining the sap and diminishing their vigour.**
- It causes **indirect harm by promoting the formation of sooty mould and increasing the spread of viral infections.**
- It has the **potential to diminish coconut yield and quality** by influencing the size, weight, and oil content of the nuts.
- It has the potential to alter the flavour and look of bananas and other fruits.
- RSW has **a high reproductive potential as well as the ability to disperse quickly**. A female RSW can lay up to 200 eggs in her lifespan, with the eggs hatching in as little as 5-7 days.
- Adults can fly vast distances using wind currents to infest new locations.
- It may **feed on more than 60 plant species from 23 families,** making crop rotation or host plant resistance difficult to control.
- It has evolved resistance to various insecticides as a result of their indiscriminate usage and over-reliance.
- RSW requires an integrated pest management (IPM) approach that includes a variety of control approaches, including cultural, biological, mechanical, and chemical.

Some of the IPM practices that can be adopted are:

Monitoring and scouting

- Regularly inspecting the crops for signs of infestation and taking action before it becomes severe. This can help to detect the presence of whiteflies, their natural enemies and the symptoms of viral diseases. Monitoring can also help to determine the best time and method of intervention.

Sanitation

- Removing and destroying infested plant parts and debris to reduce the source of inoculum and breeding sites. This can prevent the spread of whiteflies and viral diseases to healthy plants and neighbouring fields. Sanitation can also reduce the competition for nutrients and water between the crops and the weeds.

Pruning

- Pruning the lower leaves of coconut trees to expose the whiteflies to natural enemies and sunlight. This can reduce the hiding places and food sources for the whiteflies and increase their mortality. Pruning can also improve air circulation and light penetration in the canopy, which can enhance the growth and health of the plants.

Mulching

- Covering the soil with organic matter to conserve moisture and suppress weed growth. This can improve soil fertility and structure, which can benefit the coconut crops. Mulching can also create a favourable environment for beneficial organisms such as earthworms, ants and spiders, which can prey on or compete with whiteflies.

Biological control

- Using natural enemies such as parasitoids, predators and pathogens to reduce the population of whiteflies. Some examples are Coccinellaseptempunctata (predators) and Beauveriabassiana (fungus).
- Biological control can be enhanced by conserving or introducing these natural enemies in the field, avoiding broad-spectrum insecticides that can harm them and providing

them with alternative food sources such as nectar plants.

Mechanical control

- Using yellow sticky traps or water jets to trap or dislodge the whiteflies from the plants. This can reduce the number of whiteflies and their honeydew production, which can attract more pests and diseases. Mechanical control can be effective when used in combination with other methods or in small-scale situations.

Chemical control

- Using selective or botanical insecticides as a last resort when other methods fail or are not feasible. Some examples are neem oil, azadirachtin, pyrethrum and spinosad. Chemical control should be used with caution, following the label instructions and safety precautions, rotating different modes of action to avoid resistance development and applying them at the right time and dosage.

Conclusion

- RugoseSpiralling Whitefly (RSW) endangers farmers' livelihoods and consumer food security. It necessitates immediate attention and action from all stakeholders involved in crop production and protection. We can reduce insect damage and assure sustainable agriculture by implementing integrated pest management (IPM) practices.

Liberalised Remittance Scheme

Context

- The government has announced some changes to the rules governing overseas spending and remittances by Indian residents.

Details

Important changes announced by the Government

- **Overseas spending using international credit cards will not be counted under the Liberalised Remittance Scheme (LRS),** which allows residents to send up to USD 250,000 abroad per financial year for various purposes. This means that an Indian resident can use a credit card for foreign transactions

without worrying about the LRS limit or tax implications.

- The government has deferred the implementation of a higher tax collected at source (TCS) rate of 20% on overseas remittances under LRS and on the purchase of overseas tour packages by three months. The new rate will be effective from October 1, 2023, instead of July 1, 2023.
- **The higher TCS rate of 20 % will apply only when the LRS payments or the tour package expenses exceed Rs 7 lakh per individual per annum.** For amounts up to Rs 7 lakh, the existing TCS rate of 5% will continue to apply.
- The higher TCS rate will not apply when the remittance is for education or medical purpose, irrespective of the amount.
- The government has clarified that these changes are aimed at curbing tax evasion and money laundering through LRS and not at discouraging legitimate overseas spending or remittances by residents.
- These changes are expected to bring more transparency and compliance in the foreign exchange transactions by residents and also generate additional revenue for the government.

Liberalised Remittance Scheme

About

- The Liberalised Remittance Scheme (LRS) is **a facility provided by the Reserve Bank of India (RBI) that allows resident individuals to remit money abroad for various purposes, such as education, travel, medical treatment, investment, etc.**
- The scheme was **introduced in 2004 with a limit of USD 25,000 per financial year** and has been gradually increased over the years. The current limit is USD 250,000 per financial year.

Features

- The remitter does not need to seek prior approval from the RBI or any other authority for remitting money under the LRS, except in some cases where the purpose of remittance is restricted or prohibited by the government.
- The remitter can choose any authorised dealer bank or money changer to make the

remittance, subject to their compliance with the RBI guidelines and the Foreign Exchange Management Act (FEMA).

- The remitter can use any freely convertible foreign currency for the remittance, as long as the equivalent amount in Indian rupees does not exceed the limit of USD 250,000 per financial year.
- The remitter can use the LRS for multiple purposes and transactions within the limit, as long as they are permissible under the FEMA and the RBI regulations.
- The remitter can also use the LRS to open and maintain foreign currency accounts abroad, subject to certain conditions and reporting requirements.

Significances for the Indian Economy and Society

- The LRS facilitates the integration of India with the global economy and **promotes cross-border trade, investment, tourism, education and cultural exchange.**
- It **enables resident individuals to diversify their portfolios and hedge against currency risk** by investing in foreign assets, such as stocks, bonds, mutual funds, etc.
- It empowers resident individuals to access better quality and cheaper services abroad, such as education, health care, travel, etc.
- It **enhances the competitiveness and innovation of Indian businesses** and professionals by allowing them to access global markets, technologies, skills and opportunities.
- It contributes to the development of the domestic financial sector by increasing the demand for foreign exchange and stimulating the growth of authorised dealers and money changers.

Challenges

- The LRS **may lead to an increase in capital outflows and a depletion of foreign exchange reserves**, which may affect the balance of payments and the exchange rate stability of the rupee.
- It may expose resident individuals to various legal, regulatory, tax and operational risks in foreign jurisdictions, which may result in losses or disputes.

- It **may create a scope for money laundering, tax evasion, terror financing and other illicit activities** by unscrupulous elements who may misuse the scheme for transferring funds abroad.
- Therefore, there is a need for a balanced and prudent approach towards the LRS that ensures its benefits while mitigating its risks.

Some possible ways forward

- The **RBI should monitor and review the LRS periodically and make necessary adjustments** in the limit, purpose and procedure of remittance based on the macroeconomic conditions and policy objectives.
- The **RBI should strengthen its supervision and enforcement mechanism** over authorised dealers and money changers to ensure their compliance with FEMA and other relevant laws and regulations.
- The RBI should enhance its data collection and analysis system to track the volume, destination, purpose and impact of remittances under the LRS.
- The **RBI should collaborate with other regulators and agencies** at home and abroad to prevent and combat any misuse or abuse of the LRS for illegal or harmful purposes.
- The RBI should educate and sensitise resident individuals about their rights and responsibilities under the LRS and provide them with adequate guidance and support for making informed decisions.

Conclusion

- The Liberalised Remittance Scheme is a progressive and beneficial policy initiative that has enabled resident individuals to participate in the global economy and access various opportunities abroad. However, it also entails certain challenges and risks that need to be addressed carefully. By adopting a balanced and prudent approach towards the LRS, India can maximise its potential while minimising its pitfalls.

Must Read:

TAX ON LIBERALISED REMITTANCES SCHEME: https://www.iasgyan.in/daily-current-affairs/tax-on-liberalised-remittances-

3. 16   SNIPPETS

DEBT CEILING

- US President signed a bill that suspended the debt ceiling until January 1, 2025.
- The debt ceiling is a legal limit on how much the federal government can borrow to finance its spending.
- It was first introduced in 1917 and has been raised or suspended many times since then.
- When the debt ceiling is reached, the Treasury Department can no longer issue new bonds to raise funds and has to rely on its cash reserves and extraordinary measures to pay its bills.

CRUISE VESSEL MV EMPRESS

- India has launched its first international cruise vessel "MV Empress".
- The ship can accommodate up to 1,800 passengers and 700 crew members (not useful figures can skip this), departed from Chennai on June 17 and reached Colombo on June 19.
- The cruise offers a variety of amenities and entertainment options for the guests, including a casino, a spa, a theatre, a swimming pool, and several restaurants and bars.
- The cruise aims to promote cultural exchange and cooperation between India and Sri Lanka, as well as showcase the beauty and diversity of both countries.
- MV Empress is expected to boost the economy and create employment opportunities in the region.

GLOBAL DPI SUMMIT

- The Digital Public Infrastructure (DPI) Summit was inaugurated by the Union Minister of State in Electronics and IT on 28th June 2023.
- It was a platform for dialogue and collaboration among policymakers, practitioners, innovators, and researchers on various aspects of DPI, such as design principles, governance models, interoperability standards, data protection, inclusion, and innovation.
- The summit showcased some of the successful DPI initiatives from India and other countries, such as India Stack, Aadhaar, UPI, CoWIN, e-RUPI, DigiLocker, e-NAM, eVIN, etc.
- During the summit, a Memorandum of Understanding (MoU) was signed between India and three countries namely Armenia, Sierra Leone, and Suriname on sharing India Stack i.e. successful digital solutions implemented at a population scale.

HENLEY PRIVATE WEALTH MIGRATION REPORT

- According to the Henley Private Wealth Migration Report 2023, India is projected to experience a net outflow of 6,500 high-net-worth individuals (HNWIs) in 2023. This represents a decline from the 7,500 HNWIs who left India in 2022.
- This makes India the country with the second-highest outflow of HNWIs in the world, trailing only China (net loss of 13,500). According to the findings, the United Kingdom (3,200) and Russia (3,000) are ranked third and fourth, respectively.
- The top three destinations for HNWI migration in 2023 are expected to be the United States, Canada, and the United Kingdom.
- The high net-worth individual population in India is expected to grow by 80% by 2031, making India one of the world's fastest-growing wealth markets during this period. This expansion will be fueled mostly by the country's burgeoning financial services, healthcare, and technology industries.
- The report's findings suggest that India is still a desirable destination for HNWIs, despite the recent decline in outflows.

WORLD BANK'S MIGRATION AND DEVELOPMENT BRIEF

- According to the World Bank's latest Migration and Development Brief, the growth of remittance inflows to India could slow down to a mere 0.2% in 2023, after reaching a record high of $111 billion in 2022.
- The World Bank cites two main reasons: slower growth in the advanced economies that host most of the Indian migrants, and a high base effect from the previous year.
- Some positive factors that could support remittance inflows to India in the medium term, such as the diversification of migration destinations, the adoption of digital technologies for remittance transfers, and the resilience of informal channels.
  - However, it warns that these factors may not be enough to offset the negative effects of slower growth and high base effect in 2023.
- The slowdown of remittance inflows growth could have implications for India's external balance, domestic consumption, and poverty reduction.

GLOBAL STARTUP ECOSYSTEM REPORT

- Bengaluru, India's Silicon Valley, has ranked 20th in the Global Startup Ecosystem Report (GSER) 2023, published by Startup Genome.
- The report provides a comprehensive overview of the state of startup ecosystems around the world, based on six key factors: performance, funding, market reach, connectedness, talent and knowledge.
- According to the report, New York City and London are tied for the second spot, behind Silicon Valley, which remains the undisputed leader of the global startup scene.
- Among the emerging ecosystems, Pune has made a significant leap from the 51-60 range in 2022 to the 31-40 range in 2023, reflecting India's rapid digital transformation and innovation potential.

NANDI PORTAL

- The Union Minister of Fisheries, Animal Husbandry & Dairying inaugurated the Nandi (NOC Approval for New Drug and Inoculation System) portal.
- The portal was developed by the Department of Animal Husbandry and Dairying (DAHD).

  It aims to streamline the process of obtaining No Objection Certificates (NOCs) for new animal drugs and vaccines in India.
- It will enable a transparent and efficient regulatory approval process for veterinary products by the DAHD integrating with the SUGAM portal of the Central Drugs Standard Control Organization.
  - SUGAM facilitate the online submission of applications, tracking of status, and approval of licenses for drugs, cosmetics, and medical devices.
  - It aims to improve the efficiency and transparency of the regulatory process and to ensure the safety and quality of the products.

  The Portal will help in enhancing the availability and accessibility of quality animal drugs and vaccines in the country, which will benefit the farmers and livestock owners.

3. 17   1 MAINS QUESTION AND 5 MCQS

Q1. *The World Trade Organization (WTO) has recently released a report that flags the poor utilization of India's duty-free tariff preference (DFTP) scheme for least developed countries (LDCs). What are the reasons for this low uptake of the scheme? How does it affect India's trade relations with LDCs and its role as a development partner? What are the possible ways to improve the effectiveness and impact of the scheme?*

Answer:

- The World Trade Organization (WTO) has recently released a report that flags the poor utilization of India's duty-free tariff preference (DFTP) scheme for least-

developed countries (LDCs). The DFTP scheme, launched in 2008, aims to provide preferential market access to LDCs by eliminating or reducing tariffs on their exports to India. The scheme covers about 98.2% of India's tariff lines and benefits 49 LDCs, including 34 from Africa.

- However, according to the WTO report, the average utilization rate of the scheme was only 26.8% in 2019, which means that only a quarter of the eligible exports from LDCs to India enjoyed duty-free or preferential treatment. The report identifies several factors that contribute to this low uptake of the scheme, such as:

o Lack of awareness and information among LDC exporters and importers about the scheme and its procedures.

o High compliance costs and administrative burdens associated with the rules of origin and certificate of origin requirements.

o Non-tariff barriers such as sanitary and phytosanitary measures, technical trade barriers, and quality standards limit the market access to LDC products.

o Supply-side constraints and the limited production capacity of LDCs affect their ability to produce and export competitive and diversified products.

- Trade diversion and erosion effects due to India's free trade agreements with other countries that offer similar or better preferences to LDCs.

- The low utilization of the DFTP scheme has implications for India's trade relations with LDCs and its role as a development partner. On one hand, the scheme reflects India's commitment to support the integration of LDCs into the global trading system and to contribute to their economic development. On the other hand, the scheme also serves India's strategic interests in enhancing its presence and influence in Africa and Asia, especially in the context of China's growing economic clout in these regions.

- Therefore, India needs to improve the effectiveness and impact of the DFTP scheme by addressing the challenges and constraints

faced by LDC exporters and importers. Some of the possible ways to do so are:

o Increasing awareness and outreach programs to disseminate information about the scheme and its benefits to potential beneficiaries.

o Simplifying and harmonizing the rules of origin and certificate of origin procedures and providing technical assistance and capacity building to LDCs on these issues.

o Reducing or eliminating non-tariff barriers that affect LDC products and ensuring transparency and predictability in their application.

o Enhancing trade facilitation measures such as customs clearance, transit, transport, and logistics services to reduce trade costs and delays for LDCs.

o Supporting LDCs in improving their supply-side capacity, product quality, diversification, and value addition through development cooperation initiatives such as aid for trade, technology transfer, investment promotion, and infrastructure development.

- By doing so, India can not only increase the utilization of the DFTP scheme but also strengthen its trade ties and partnership with LDCs in a mutually beneficial manner.

Q2. What is the common symptom of damage caused by Rugosespiralling whitefly on host plants?

A) Leaf curling and yellowing
B) Leaf mining and skeletonization
C) Sooty mould growth and honeydew secretion
D) Gall formation and leaf distortion

Answer: C

Explanation: Rugosespiralling whitefly is a pest that affects many host plants, such as palms, fruits, and ornamentals. It feeds on the plant sap and excretes honeydew, which promotes the growth of sooty mould on the leaves. The most common symptom of damage caused by this pest is the presence of sooty mould and honeydew on the leaves, which reduces the photosynthetic capacity and aesthetic value of the plant. Therefore, the correct answer is C) Sooty mould growth and honeydew secretion.

Q3. Consider the following statements about biodegradable utensils:

1. They can be moulded into any shape and size

2. They can withstand high temperatures and liquids

3. They can be eaten or digested by humans or animals

4. They can be composted at home or industrial facilities

How many of the above statements are correct?

A) Only 1

B) Only 2

C) Only 3

D) All

Answer: C

Explanation: Biodegradable utensils are not edible or digestible by humans or animals. Some biodegradable utensils may be made from edible materials such as pasta or rice, but they are not meant to be consumed as food. Biodegradable utensils should be disposed of properly in compost bins or facilities.

Q4. How many of the following purposes are allowed under the Liberalised Remittances Scheme (LRS)?

1. Education

2. Medical treatment

3. Gift

4. Donation

A) Only 1

B) Only 2

C) Only 3

D) All

Answer: D

Explanation: The LRS covers a wide range of purposes for which resident individuals can remit foreign exchange abroad. Some of the common purposes are education, medical treatment, gift, donation, the maintenance of relatives, travel, investment, etc.

Q5. Recently, the term "Antardrishti" was frequently seen in the news. It is related with:

A) Defence System

B) Super Computer

C) Scheme for physically challenged people

D) Financial inclusion dashboard

Answer: D

Explanation: The Reserve Bank of India (RBI) Governor, Shaktikanta Das, unveiled a new financial inclusion dashboard named 'Antardrishti'. The dashboard aims to provide a comprehensive view of the progress and performance of various financial inclusion initiatives in the country. The dashboard will also help in identifying the gaps and challenges in achieving financial inclusion for all. 'Antardrishti' means 'vision' in Hindi, and the dashboard reflects the RBI's vision of ensuring access to formal financial services for every Indian citizen.

Q6. What is a possible consequence of Greedflation?

1. Social unrest and inequality

2. Economic stagnation and recession

3. Environmental degradation and resource depletion

(A) 1 and 2 only

(B) 2 and 3 only

(C) 1 and 3 only

(D) 1, 2 and 3

Answer: D

Explanation:

Greedflation is a term that describes the phenomenon of rising prices and falling wages due to excessive greed and corruption in the economy. Greedflation can have several negative consequences, such as:

- *Social unrest and inequality: Greedflation can widen the gap between the rich and the poor, creating resentment and frustration among disadvantaged groups. This can lead to social conflicts, protests, violence and crime.*

- *Economic stagnation and recession: Greedflation can reduce the purchasing power and living standards of the majority of the population, affecting their consumption and saving patterns. This can lower the aggregate demand and output in the economy, causing slowdowns and downturns.*

- *Environmental degradation and resource depletion: Greedflation can encourage wasteful and unsustainable production and consumption practices, driven by short-term profits and self-interest. This can harm the natural environment and exhaust finite resources, threatening the long-term viability of the economy.*

4. DEFENCE & SECURITY

4. 1   SHORT ARTICLE

SIPRI Report

Context

- A report by Sweden-based think-tank Sipri stated that India appeared to be expanding its nuclear arsenal and developing new types of nuclear delivery systems.

Details

- India is intensifying its efforts to bolster its **nuclear capabilities**, with a particular emphasis on developing longer-range weapons, according to a report by **Sweden-based think-tank Stockholm International Peace Research Institute (Sipri).**
- According to the report, **India and Pakistan appeared to be expanding their nuclear arsenals** and developing new types of nuclear delivery systems.
- **India appears to be placing growing emphasis on longer-range weapons**, including those capable of reaching targets across China.
- The rapidly **increasing geo-political tension in the Indo-Pacific region**, marked by China's assertive **behaviour and rapid military modernisation,** has compelled India to reassess its strategic priorities.
- India's focus on longer-range nuclear weapons aims to bolster its **deterrence capabilities against China**.
- India's pursuit of longer-range nuclear weapons involves advancements in missile technology and infrastructure.

About Stockholm International Peace Research Institute (SIPRI)

Established	• It was founded in 1966.
Purpose	• It is an **independent international institute** dedicated to research into conflict, armaments, arms control and disarmament.
Criteria	• The research is based on open sources and is directed to **decision-makers, researchers,**

	media and the interested **public.**
Headquarters	• **Solna, Stockholm Sweden**.

Common Annual Confidential Report

Context

- Efforts are underway to enhance **integration and jointness in the armed forces**, with a significant step taken towards achieving **commonality in procedures**. The implementation of a **common Annual Confidential Report (ACR) for two- and three-star officers** is set to play a crucial role in this endeavor.

Details of the report

- It was a recent decision of the Indian military to go for **common annual confidential reports for two and three-star officers.**
- Common ACRs for senior military officers are **aimed at aiding cross-service postings, essential to create jointness and integration among the three services.**
- The senior officers in the ranks of **Brigadier and Major General and equivalent** will be **transferred to other services** under the given move.
- These officers would be transferred to missile units, for handling UAVs, and for logistics, repair and recovery and material and supplies management among other roles in the two other services.
- **Inter-service postings of a large batch of around 40 officers** of the rank of Major and Lieutenant Colonel and equivalent were approved earlier.
- Earlier, **only a handful of such postings had taken place within the services**.

About cross-service postings decision

Purpose	• The reform will prove instrumental in the path towards achieving

	commonality in procedures, and assessments and lead to better outcomes, thereby contributing to jointness and integration.		'NATO plus five' arrangement. • The legislation aims to facilitate the transfer of defense equipment with minimal bureaucratic interference..
Advantages	• **Tri services integration**: This will be in line with efforts towards tri-service integration of the Army, Navy and Air Force. • **Theatre command**: integration would pave the way for the planned creation of theatre commands**.**	India's Rejection	• External Affairs Minister S. Jaishankar stated that the proposed framework does not apply to India. • The Biden administration understands India's position and the unique circumstances it faces..

NATO Plus Five Status

Context

The introduction of legislation in the U.S. Senate to grant India 'NATO plus five' defense status.

Details

- Timed with Prime Minister Narendra Modi's arrival in Washington, the U.S. Senate's India Caucus Co-Chairs, Mark Warner (Democrat, Virginia) and John Cornyn (Republican, Texas), will introduce legislation to give India 'NATO plus five' defence status. India's External Affairs Minister, S. Jaishankar, however, had already rejected the framework for India.

- The arrangement currently exists between the U.S, its NATO partners and five countries: Australia, New Zealand, South Korea, Japan and Israel. The Warner announcement follows a recommendation from a U.S. House of Representatives committee on China that India be included in the club.

NATO Plus Five' Defense Arrangement

Senator Warner's Announcement	• Senators Warner and Cornyn plan to introduce the legislation as a standalone bill and as an amendment to the defense authorization. • The goal is to upgrade India-U.S. defense ties by adding India to the

GE and HAL Pact to make Fighter Jet Engines

Context

- An agreement to facilitate the transfer of at least 11 critical jet engine technologies is likely to be announced during Prime Minister Narendra Modi's ongoing official State Visit to the United States.

Details

- In a landmark deal that gives a massive boost to ties between the US and India, General Electric (GE) Aerospace signed a **Memorandum of Understanding (MoU)** with **Hindustan Aeronautics Limited (HAL**) Thursday to produce fighter jet engines for the Indian Air Force.

- The agreement, the statement said, includes the potential joint production of GE Aerospace's F414 engines in India, for which it is working with the US government to receive necessary export authorisation.

- In a statement,GE Aerospace said this pact marks **"a major milestone"** and is "*a key element in strengthening defence cooperation between the two countries"*.

- The F414 engines will power the IAF's Light Combat Aircraft Mk2 jets.

- **India's first indigenous fighter** jet LCA Tejas is powered by GE's F404 engines – India failed to develop a jet engine despite repeated

attempts by DRDO's Gas Turbine Research Establishment.

- **As many as 75 F404 engines havebeen delivered and another 99 areon** order for **LCA Mk1A by GE**, it said in the statement, adding that eight F414 engines have been delivered as part of an ongoing development programme for LCA Mk2.
- India has been talking to other global jet engine makers for technology transfer such as Safran SA of France and Rolls-Royce of the United Kingdom for the AMCA.
- The GE-404 engine, the basic design of which has been replicated in the **F414, was developed in the 1970s**.
- GE's presence in India includes its research and technology centre, the **John F Welch Technology Centre** in Bengaluru, which opened in 2000, and **its Multi-modal Factory at Pune**, which opened in 2015.

Distinguished Service Awards for Armed Forces Personnel

Context

- President Droupadi Murmu confers 84 Distinguished Service Awards in Delhi.

Details

- **President** Droupadi Murmu, who is also the Supreme Commander of the Armed Forces, conferred 84 Distinguished Service Awards to serving and retired Indian Armed Forces and Coast Guard personnel for distinguished service of exceptional order during the Defence Investiture Ceremony (Phase-II) in New Delhi.
- Among 84 awards, were 52 Ati Vishisht Seva Medals (AVSMs), one Bar to AVSM, three Uttam Yudh Seva Medals (UYSMs) and 28 Param Vishisht Seva Medals (PVSMs).
- The awards were presented during a defence investiture ceremony held at the Rashtrapati Bhavan.
- President Murmu had conferred eight Kirti Chakras, including five posthumously, on personnel of the Army and paramilitary and police forces for displaying indomitable courage and extraordinary valour in the line of duty.
- Kirti Chakra is India's second-highest peacetime gallantry award.
- The Shaurya Chakra is India's third-highest peacetime gallantry award after the Ashok Chakra and Kirti Chakra.

4. 2   SNIPPETS

COMBINED MARITIME FORCES

- It is a multi-national naval partnership, which exists to promote 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.
- Its main focus areas are defeating terrorism, preventing piracy, encouraging regional cooperation, and promoting a safe maritime environment.
- The 34 nations that comprise CMF are not bound by either a political or military mandate.
- Participation is purely voluntary. No nation is asked to carry out any duty that it is unwilling to conduct. The contribution from each country varies depending on its ability to contribute assets and the availability of those assets at any given time.
- The maritime forces are based in Bahrain and undertake counter-terrorism, counter-piracy and regional cooperation.

VARUNASTRA

- It is an indigenously designed and developed heavyweight, ship-launched anti-submarine torpedo.
- It was designed and developed by the Naval Science and Technological Laboratory in Visakhapatnam under the Defence Research and Development Organisation.
- It is the only torpedo in the world to have a GPS- based locating aid.
- It is an electrically-propelled anti-submarine torpedo capable of targeting quiet submarines, both in deep and shallow waters.

PROJECT AKASHTEER

- The first contract with BEL is for the procurement of an Automated Air Defense Control & Reporting System called 'Project Akashteer' for the Indian Army.
- It is a new automation initiative under which a range of new systems, mostly indigenous, are being inducted, with new technologies factoring in the new realities.
- It will enable monitoring of low-level airspace in battle areas and control the Ground Based Air Defense Weapon Systems.

SANSHODHAK SHIP

- The ship named 'Sanshodhak', meaning 'Researcher', signifies the primary role of the ship as a Survey Vessel.
- The ships would also be deployed for collecting oceanographic and geophysical data for defence as well as civil applications.
- The hull of these ships is made by Steel Authority of India Limited from indigenously developed DMR 249-A steel.It can carry four Survey Motor Boats and an integral helicopter.

EX EKUVERIN

- It is a bilateral annual exercise conducted alternatively in India and Maldives.
- The 11th Edition of the exercise was held in Maldives. The 12th edition of the exercise is aimed at enhancing interoperability in Counter Insurgency/ Counter Terrorism Operations under the UN mandate.
- It aims to. carry out joint Humanitarian Assistance and Disaster Relief operations.

MQ-9B ARMED DRONES

- The General Atomics MQ-9 Reaper, which is also called Predator B, is an unmanned aerial vehicle (UAV).
- It is capable of remotely controlled or autonomous flight operations.
- It has been developed by General Atomics Aeronautical Systems (GA-ASI) for the United States Air Force (USAF).
- The MQ-9 and other UAVs are referred to as Remotely Piloted Vehicles/Aircraft (RPV/RPA) by the USAF to indicate ground control by humans.
- It is the first hunter-killer UAV designed for long-endurance, high-altitude surveillance.

ANJADIP SHIP

- The ship has been named Anjadip after the island of Anjadip, located off Karwar.
- It signifies the strategic maritime importance of the Island.
- The island is connected to the mainland by a breakwater and is part of INS Kadamba.
- The building of eight ASW SWC ships is as per the contract signed between MoD and Garden Reach Shipbuilders & Engineers (GRSE), Kolkata.

JULLEY LADAKH INITIATIVE OF INDIAN NAVY

- Indian Navy is conducting "Julley Ladakh" (Hello Ladakh), an outreach programme to
- Ladakh to increase awareness about the service in the pristine state and to engage with youth and civil society there.
- It is a Motorcycle Expedition being conducted in partnership with M/s TVS Motors.
- It was a 5000km Motorcycle Expedition flagged off from New Delhi.
- The first phase of the expedition was flagged off from New Delhi on June 15 Jun and will reach Leh on 28 June. It will pass through the states of Delhi, Haryana, Punjab and Jammu & Kashmir.

EX KHAAN QUEST 2023

- It is a multinational peacekeeping operations exercise conducted in Mongolia.
- It consists of a United Nations Peacekeeping Mission command post exercise, and a UN PKO (PeaceKeeping Operation) Mission field training exercise, at the Mongolian Armed Forces' Five Hills Training Area.
- The Indian Army is represented by a contingent of the Garhwal Rifles.
- The exercise includes Command Post Exercise (CPX), Field Training Exercise (FTX), combat discussions, lectures and demonstrations.

CHASHMA-V NUCLEAR POWER PLANT

- The Chashma Nuclear Power Plant (or CHASNUPP) is a large commercial nuclear power plant located in the vicinities of Chashma colony and Kundian in Punjab in Pakistan.
- The nuclear power plant is generating energy for industrial usage with four nuclear reactors with one being in the construction phase in cooperation with China.
- The power site is covered under the International Atomic Energy Agency (IAEA) monitoring and safeguards which also provide funding for the site expansion.

INS KIRPAN MISSILE CORVETTE

- India gifted the indigenously-built in-service missile corvette INS Kirpan to Vietnam to enhance that country's naval capabilities.
- It means enhancing existing areas of collaboration, especially in defense industry cooperation, maritime security, and multinational cooperation.
- INS Kirpan is a Khukri class missile corvette displacing 1,350 tonnes and was commissioned into the Navy on January 12, 1991.

It has a displacement of close to 1,400 tonnes, a length of 91 metres, a beam of 11 metres, and is capable of speed in excess of 25 knots.

TAPAS UAV

- Tactical Airborne Platform for Aerial Surveillance-Beyond Horizon-201 (TAPAS BH-201) is a Medium Altitude Long Endurance (MALE) unmanned aerial vehicle (UAV).
- It is being developed in the country by Aeronautical Development Establishment (ADE).
- In November 2016, the first flight of the UAV took place.

ISC DHRUV

- Shri Rajnath Singh inaugurated the Integrated Simulator Complex (ISC) 'Dhruv' at Southern Naval Command.
- ISC 'Dhruv' hosts modern state-of-the-art indigenously-built simulators which will significantly enhance practical training in the Indian Navy.

INDUS X

- The INDUS X event was co-organised by Innovations for Defence Excellence (iDEX), Ministry of Defence, and US Department of Defence (DoD) and hosted by US-India Business Council (USIBC).
- INDUS X fact sheet released for operationalising the 'Defence Innovation Bridge' under Initiative on Critical and Emerging Technologies (iCET).
- A first-of-its-kind joint showcasing of innovative technologies by Indian and US start-ups took place.
- 15 Indian start-ups and 10 US start-ups, from multiple domains of maritime, AI, autonomous systems, and space, showcased their technologies to Indian and US stakeholders.

SARMAT MISSILES

- Sarmat is an intercontinental ballistic missile and are capable of carrying 10 or more nuclear warheads.
- It has the capability of firing over either of the earth's poles with a range of 11,000 to 18,000 km. It will replace the Soviet-era Soviet-era Voyevoda missiles.
- The missiles would be deployed with a unit in the Krasnoyarsk region of Siberia, about 3,000 km (1,860 miles) east of Moscow.

INS SUNAYNA

- It is the second of the NOPV (Naval Offshore Patrol Vessel) class of ship and it was commissioned at Kochi in 2013. It is based under Southern Naval Command.
- It is built at Goa Shipyard Limited, and it is designed to meet the increasing ocean surveillance and patrolling requirements of the Indian Navy.
- The warship is designed to undertake fleet support operations, coastal and offshore patrolling, ocean surveillance and monitoring of Sea Lines of Communications and offshore assets, and escort duties.

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4. 3   1 MAINS QUESTION AND 5 MCQS

Q1. The primary purpose of NATO is to promote collective defense and security cooperation among its member countries. Discuss the significance of NATO (North Atlantic Treaty Organization) in the contemporary global security architecture. (10 M)

Answer:

- NATO consists of 31 member countries as of now. The original 12 founding members were Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom, and the United States. Additional countries have joined over the years, including Germany, Greece, Spain, Turkey, Poland, and many others.

Significance of NATO (North Atlantic Treaty Organization) in the contemporary global security architecture:

Partnerships

- NATO has developed partnerships with other countries and international organizations. Partnerships include the Euro-Atlantic Partnership Council (EAPC) and the Partnership for Peace (PfP) program, among others.

Adaptations and Evolutions

- NATO has adapted and evolved over time to address changing security challenges. It has expanded its focus beyond Europe to address global security issues.
- NATO engages in activities such as counterterrorism, cybersecurity, and crisis management.

Role in International Security

- NATO plays a crucial role in international security and stability. It contributes to deterrence, defense, and conflict resolution.
- NATO has been involved in various military operations, including peacekeeping missions and combat operations in Afghanistan, the Balkans, and elsewhere.

Transatlantic Alliance

- NATO represents a strong transatlantic alliance between North America and Europe. It fosters cooperation and solidarity among member countries on both sides of the Atlantic Ocean.
- The purpose of the 'NATO plus five' arrangement is to enhance defense cooperation, interoperability, and security

coordination between the United States, NATO, and the five partner countries.

Q2. Consider the following statements about the ship named MQ-9 Reaper:

1. It is a heavy lift military aircraft.
2. It is developed by General Atomics, a US based defense company.
3. It is capable of remotely controlled or autonomous flight operations.

Which of the above statements is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. All of the above
D. None

Answer: B

- *The General Atomics MQ-9 Reaper, which is also called Predator B, is an unmanned aerial vehicle (UAV).* **Statement 1 is incorrect.**
- *It is capable of remotely controlled or autonomous flight operations.* **Statement 3 is correct.**
- *It has been developed by General Atomics Aeronautical Systems (GA-ASI) for the United States Air Force (USAF).* **Statement 2 is correct.**
- *Hindustan Aeronautics Ltd. (HAL) and General Atomics last year announced that the turbo-propeller engines which power the MQ-9 would be supported by HAL's engine division for the Indian market.*

Q3. Consider the following statements about Anjadip Ship:

1. They are designed to undertake the operations such as anti-submarine operations in coastal waters, Low Intensity Maritime Operations (LIMO), and Mine Laying operations including subsurface surveillance in littoral waters.
2. The ship has been named Anjadip after the island of Anjadip, located off Karwar.

Which of the above statements is/are correct?

A. 1 only
B. 2 only
C. Both
D. None

Answer: C

- *The ship has been named Anjadip after the island of Anjadip, located off Karwar.It signifies the strategic maritime importance of the Island.***Statement 2 is correct.**
- *The island is connected to the mainland by a breakwater and is part of INS Kadamba.*
- *The building of eight ASW SWC ships is as per the contract signed between MoD and Garden Reach Shipbuilders & Engineers (GRSE), Kolkata.*
- *Four ships are being built at GRSE, Kolkata and the construction of a balance of four ships has been given to M/s L&T Shipbuilding, Kattupalli as per the terms of the contract.*
- *This Arnala class ship will replace the Abhay class ASW Corvettes of the Indian Navy*
- *They are designed to undertake the following operations-* **Statement 1 is correct.**
  o *anti-submarine operations in coastal waters,*
  o *Low-Intensity Maritime Operations (LIMO), and*
  o *Mine Laying operations including subsurface surveillance in littoral waters.*

Q4. Consider the following statements about joint military exercise "Julley Ladakh"

1. It is an outreach programme to Ladakh by the Indian Navy.
2. It has been flagged off from Mumbai and will pass through the states of Delhi, Haryana, Punjab and Jammu & Kashmir.
3. It has been done in collaboration with TVS motor.

How many of the above statements are correct?

A. Only One
B. Only Two
C. Only Three
D. None

Answer: C

- *It is a Motorcycle Expedition being conducted in partnership with M/s TVS Motors.* **Statement 3 is correct.**
- *It was a 5000km Motorcycle Expedition flagged off from New Delhi.*
- *The first phase of the expedition was flagged off from New Delhi on June 15 Jun and will reach Leh on 28 June. It will pass through the states of Delhi, Haryana, Punjab and Jammu & Kashmir.* **Statement 2 is correct.**
- *Indian Navy is conducting "Julley Ladakh" (Hello Ladakh), an outreach programme to Ladakh to increase awareness about the pristine state' engage with youth and civil society there.* **Statement 1 is correct.**

Q5. Which organization is responsible for overseeing nuclear disasters in India?

A. Nuclear Power Corporation of India Limited (NPCIL)
B. Atomic Energy Regulatory Board (AERB)
C. Department of Atomic Energy (DAE)
D. Indian Nuclear Emergency Management Committee (INEMC)

Answer: B

- The Atomic Energy Regulatory Board was established in 1983, by the President of India under the Atomic Energy Act, of 1962.
- The regulatory authority of AERB is derived under the Atomic Energy Act and the Environment (Protection) Act, of 1986.
- The Mission of the AERB is to ensure the use of ionizing radiation and nuclear energy in India does not cause undue risk to the health of people and the environment.
- Develop safety policies in nuclear, radiation and industrial safety areas for facilities under its purview.
- Develop Safety Codes, Guides and Standards for siting, design, construction, commissioning, operation and decommissioning of different types of nuclear and radiation facilities.

Q6. Consider the following statements about INS Sunayna:

1. It is the second of the NOPV (Naval Offshore Patrol Vessel) class of ship of Indian Navy.
2. It is built at Goa Shipyard Limited.
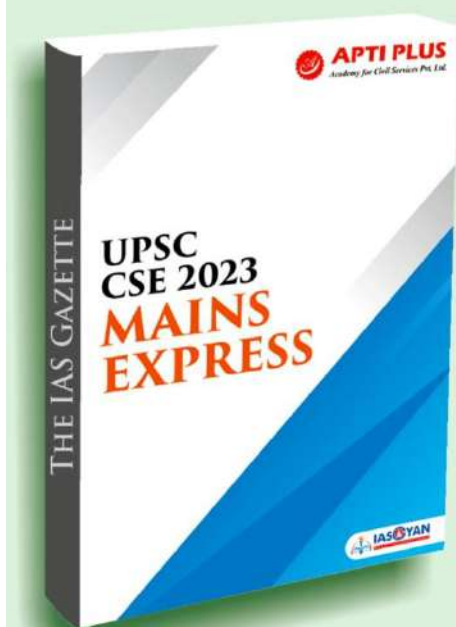
Which of the above statements is/are correct?

A. 1 only
B. 2 only
C. Both
D. None

Answer: C

Both statements are correct:

- It is the second of the NOPV (Naval Offshore Patrol Vessel) class of ship and it was commissioned at Kochi in 2013.
- INS Sunayna is based under Southern Naval Command.
- It is built at Goa Shipyard Limited, and it is designed to meet the increasing ocean surveillance and patrolling requirements of the Indian Navy.
- The warship is designed to undertake fleet support operations, coastal and offshore patrolling, ocean surveillance and monitoring of Sea Lines of Communications and offshore assets, and escort duties.

5. ENVIRONMENT & ECOLOGY

5. 1   STATE OF INDIA'S ENVIRONMENT REPORT

Context

- **CSE-DTE(Centre for Science-Environment and Down To Earth)** recently released the 2023 State of India's Environment report.

About the report

- It is released by Down To Earth, the **fortnightly magazine by New Delhi-based non-profit Centre for Science and Environment.**
- The report covers extensive subject assessments, ranging from **climate change, agriculture and industry to water, plastics, forests and biodiversity.**

Findings of the report	
	• **Encroachment in Water bodies:** Over 30,000 water bodies have been encroached on in the country.
	• **Municipal solid wastes:** India is generating 150,000 tonnes of municipal solid waste every day — more than half of which is either dumped in landfills or remains unattended.
	• **Life lost due to air pollution:** The average duration of life lost to air pollution in India is Four years and 11 months. **Rural India is losing more years due to air pollution-related health issues than the urban belt.** Rural India needs 35 per cent more community health centers to be built.
	• **Environmental Crimes:** The environmental crimes continue to grow and as per the report courts need to decide on 245 cases every day to clear the .backlog.
	• **Extreme Weather Events:** Between January and October 2022, **which is 304 days, India witnessed extreme weather events on 271 days.** These extreme weather events claimed over 2,900 lives.
	• **Sustainable development goals (SDGs):** India's overall global rank in **meeting the United Nations-mandated sustainable development goals (SDGs) has slipped by nine places to 121 in 2022.**

Way ahead for India's Environmental Issues

- **Democratic debates:** Debate and discussion on a search for **appropriate technological and management solutions as the region moves towards higher rates of economic growth and social development** should take place.
- **Appropriate Policy and good governance:** This **converts environmental concerns into development programmes**, leading development of a strong civil society; and empowers people in the management of natural resources.
- **Science and Technology:** Pollution control requires investments in scientific and technological research as also in wildlife research, toxicology and epidemiology.
- **Forest Management:** The **scientific forest management is lacking in India.** The government invested heavily in science for India's food security and for industrial development, now is the time to put as much into science for ecological security.
- **Stringent action against environmental crimes: Exploitation of the have-nots in the name of development must not continue.** All environmental scams, developmental projects in core areas without environmental clearance and other corrupt practices must be considered heinous crimes.

- **Environmental Ethics:** Respect for nature; respect for cultural diversity; respect for the poor, their knowledge and their extraordinary ability to manage their affairs in the worst of adversity; respect for equity, including its social, cultural, economic and gender dimensions; and, respect for democracy and the right of participation etc are **values which must be inculcated in people of India.**

India's Performance in various Environmental reports

Environment Performance Index-2022

- India has finished at the **bottom of the Environment Performance Index-2022** released by the World Bank.
- India is among those countries in the world that have the worst environmental health. Out of 180 countries that have been ranked, India is in the bottom five with a **score of 18.9.**
- Even Bangladesh, Myanmar, Pakistan, and Vietnam have ranked better than India. In **EPI-2020, India was ranked 168th out of 180 countries.**

About EPI

Establishment	• The EPI was **first established in 2002** as an index that measures the environmental sustainability of various countries.
Partners	• It was established as a global parameter in association with the **World Economic Forum and Columbia University.**

Climate Change Performance Index (CCPI, 2023)

- India amongst **top 5 best performing countries on Climate Change.**
- **Climate Change Performance Index (CCPI 2023)** puts India at best among G-20 countries.
- India **improves 2 ranks in CCPI 2023,** which was released in COP 27, assessing 59 countries and the European Union on climate change policies and actions.
- India is now ranked at **8th in CCPI.**
- Report shows that Denmark, Sweden, Chile and Morocco are the only four small countries that were ranked above India as 4th, 5th, 6th and 7th respectively.
- The ranking given by CCPI places India as the **only G-20 country in the top 10 rank.**

About CCPI

Publication	• It is published **annually since 2005**
Countries Tracked	• The Climate Change Performance Index (CCPI) is an **independent monitoring tool for tracking the climate protection performance** of 59 countries and the EU
Categories	• It is assessed in **four categories: GHG Emissions (40% of overall score), Renewable Energy (20% of overall score), Energy Use (20% of overall score) and Climate Policy (20% of overall score).**

Conclusion

- India's flagship programs such as **UJALA, PAT Scheme and Standards and Labeling Programme** have contributed significantly to achievement in climate action areas. However India needs stringent action in the field of Air pollution, waste management, water scarcity and pollution, etc

5. 2   THE ENERGY PROGRESS REPORT 2023

Context
- As per the UN report World still off-track from achieving universal energy access to all.

About the report
- The report was a collaborative effort of the **International Energy Agency (IEA), International Renewable Energy Agency, United Nations Statistics Division, World Bank and the WHO.**
- It is released **every two years.**

Positives Outcomes of the report	• **Issue of Energy crisis appear likely to improve** the outlook for renewables and energy efficiency due to Certain policy responses to the global energy crisis • Globally, **access to electricity grew** by an annual average of 0.7 percentage points between 2010 and 2021, rising from 84 per cent of the world's population to 91 per cent. • The **number of people without electricity almost halved** during the period, from 1.1 billion in 2010 to 675 million in 2021.
Negatives outcomes of the report	• The **projections indicating that SDG 7 will not be reached by 2030** due to the concerns of lacking universal access to electricity and clean cooking in developing economies. • The target 7.3 which is **the rate of improvement in energy efficiency is not on track to double by 2030,** as the current rate is only 1.8 per cent falling short of the targeted increase of 2.6 per cent each year between 2010-2030. • Progress on target 7.a**international public financial flows supporting clean energy in developing countries began to decline** even before the onset of the COVID-19 pandemic. Financial flow is declining today. This decreasing trend in international public financial flows may delay the achievement of SDG 7, especially for the least-developed countries (LDCs), landlocked developing countries, and small island developing states. • Around 1.9 billion people **would still be without access to clean cooking in 2030.** • The IEA estimates show 100 million people who recently transitioned to clean cooking may revert to using traditional biomass due to the ongoing impact of COVID-19 and soaring energy prices • SDG target 7.3 which **calls for doubling the global rate of improvement in energy intensity** over the average rate during 1990–2010 aims at improving energy intensity by 2.6 per cent per year between 2010 and 2030. However, progress between 2010 and 2020 averaged only 1.8 per cent

Major economic factors which affected the realization of SDG 7 are
- Uncertain macroeconomic outlook
- High levels of inflation
- Currency fluctuations
- Debt distress in many countries
- Lack of financing
- Supply chain bottlenecks

- Tighter fiscal circumstances and
- Soaring prices for materials.

History of SDG

- The Sustainable Development Goals (SDGs) were born at the **United Nations Conference on Sustainable Development in Rio de Janeiro in 2012.**
- The objective was **to produce a set of universal goals** that meet the urgent environmental, political and economic challenges facing our world.
- The SDGs **replaced the Millennium Development Goals (MDGs),** which started a global effort in 2000.
- The MDGs established **measurable, universally-agreed objectives for tackling extreme poverty and hunger, preventing deadly diseases, and expanding primary education to all children,** among other development priorities.
- The SDGs coincided with the **COP21 Paris Climate Conference and together with the Sendai Framework for Disaster Risk Reduction,** signed in Japan in March 2015, they provide a set of common standards and achievable **targets to reduce carbon emissions, manage the risks of climate change and natural disasters, and to build back better after a crisis.**

About SDG7 and The 2030 Agenda for Sustainable Development

- It is also called the **2030 Agenda, was launched by a UN Summit in 2015** and is aimed at ending poverty in all its forms.
- There are 17 SDGs, which are an **urgent call for action by all countries in a global partnership.** 2023 marks the halfway point for achieving SDGs by 2030.

Fig: 17 goals of The 2030 Agenda for Sustainable Development. No copyright infringement is intended.

- SDG 7 includes reaching **universal access to electricity and clean cooking, doubling historic levels of efficiency improvements, and substantially** increasing the share of renewables in the global energy mix.

Conclusion

- Progress of SDG 7 is crucial for the overall achievement of SDGs in the world. The **uptake of renewable energy (target 7.2)** has grown since 2010, but efforts must be scaled up substantially.

5.3   BONN MEETING ON CLIMATE CHANGE

Context

- The climate meeting underway in Bonn has seen **old demands raised and old fault lines come up.**

About the Boon Meetings

- The negotiators from around the world meet in the **German city of Bonn** to discuss ways to strengthen their collective response to climate change.
- Bonn meetings happen **every year.**
- The work done and decisions taken here feed into the year-ending annual climate change conferences.

About Global Stocktake or GST

- The GST, as **mandated by the 2015 Paris Agreement**, is an exercise aimed at assessing the progress being made in the fight against climate change, and deciding ways and means to enhance the global effort to bridge the adequacy gap.
- The current stocktake has been going on for more than a year now and is **expected to conclude this year.**
- Current GST is the **first such exercise.**
- It is mandated by the Paris Agreement to happen **every five years hereafter.**

Agendas at the current meeting

Building adaptation and resilience
- The meeting aims at ensuring the survival of the most vulnerable communities and help them to deal with extreme weather events like frequent cyclones, droughts, floods.

Mobilization of finance
- Approximately US$1 trillion is needed for developing countries by 2030 in the mitigation of climate change challenges, to strengthen resilience, and to help in smooth energy transition.
- The meeting has an aim to amass $100 billion climate finance with discussions on the New Collective Quantified Goal (NCQG) on climate at the Sixth Technical Expert Dialogue.

Ecosystem regeneration
- Natural ecosystems like Forests, peatlands, mangroves are large storehouses of carbon stock and can help in effectively regulating climate.
- The Mitigation Work Programme will take discussions to the next level in Bonn with a Global Dialogue planned, followed by an Investment-Focused Event.

Loss and damage principle
- Few communities have undergone losses and damages due to climate change impacts such as cyclones, droughts, floods, wildfires, rising sea levels and other extreme weather events.
- The establishment of a loss and damage fund helps them in dealing with the negative climate impacts.
- The second Glasgow Dialogue is expected to take up discussions held in the two meetings and a workshop of the TC on Loss and Damage.

Importance

- Stocktake exercise is expected to **result in a significant increase in the global response to climate chang**e, not just in terms of reductions in greenhouse gas emissions, but also in terms of adaptation, provision for finance and availability of technology.
- It **provides an opportunity for course correction** for earlier stock take exercises.
- A major Accomplishment of the meeting is that Global Stock take, or **GST, has been agreed upon.**

Issues

- Inadequate actions: The current actions and plans being taken by the world are **inadequate to limit the global temperature rise to 1.5 degrees Celsius** from pre-industrial times.
- The sixth assessment report of the **Intergovernmental Panel on Climate Change (IPCC), recommended that the world must cut its emissions by almost half by 2030 from the 2019 levels** if it has to retain any realistic chances of achieving the 1.5-degree target.
- Voluntary clause: Under the Paris Agreement, countries are allowed to decide the level of their contribution to the global effort to contain climate change which implies that **every country is free to decide what climate actions they would take.**
- Issue of apportioning the responsibility: GST negotiations are plagued with the issue of apportioning responsibility for enhanced climate action. Rich and **developed countries want major emitters like China and India,** and others, to do more. **Developing countries,**

mainly China and India, have been reminding the developed countries of their unfulfilled commitments, and continued underperformance.
- Other issues: Several other points of discussion under GS like **finance, adaptation, technology transfer, etc.** are also heavily contested.

Way ahead

- Climate action plans finalized by countries **must have emission reduction contributions from all sectors of the economy.**
- The "**sovereign right**" to determine its climate **targets** in pursuit of its national goals must be respected.
- **Principles of common but differentiated responsibility** must be taken into account to assign proportional responsibility based on historical emissions.
- Concerns such as **productivity, income, and economic constraints of developing and underdeveloped countries** must be considered.
- As the collective effort of every country is now proving inadequate, some amount of imposition and binding norms seems necessary.

Conclusion

- As per the IPCC report at current levels of climate action, the world is headed to a nearly **3-degree Celsius warmer world by 2100.** A country must join hands to find concrete achievable targets with strong implementation frameworks towards climate mitigation.

5. 4   CMS REPORT ON NOISE POLLUTION IN OCEAN

Context

- The CMS has released **a "landmark report"** aimed at addressing a major threat to marine species - noise pollution.

Issue of Noise pollution

- Noise pollution is known to cause significant **disturbance to marine wildlife, including migratory species protected under the Convention on the Conservation of Migratory Species of Wild Animals (CMS)** such as whales and dolphins and their prey.
- Animals exposed to elevated or prolonged anthropogenic noise **can suffer direct injury and temporary or permanent auditory threshold shifts**, compromising their communication and ability to detect threats and find food, sometimes leading to death.
- Anthropogenic noise **can displace wild animals from critical habitats**, including from their migration routes, and mask important natural sounds, such as the call of a mate.

The report focuses on three major sources of noise pollution

- shipping
- seismic airgun surveys (used in oil and gas exploration)
- and pile driving (used for offshore wind farms and other marine infrastructure).

About CMS	- It is the **only global convention specializing in the conservation of migratory species**, their habitats and migration routes. **Appendix I:** Migratory species threatened with extinction are listed in Appendix I of the Convention. **Appendix II:** Migratory species that need or would significantly benefit from international cooperation are listed in Appendix II of the Convention. For this reason, the Convention encourages the Range States to conclude global or regional agreements. - CMS, thus, acts as a **framework Convention.** - The agreements may **range from legally binding treaties (called Agreements) to less formal instruments, such as Memoranda of Understanding**, and can be adapted to the requirements of particular regions.
Organizational Structure	- The **Conference of the Parties (COP) is the decision-making body** of the Convention. It meets at three-yearly intervals. - Its **Standing Committee (StC) gives policy and administrative guidance** between meetings. - The **Scientific Council (ScC) meets between COP sessions** to offer scientific advice and identify research and conservation priorities. - The **Secretariat develops and promotes Agreements, and services meetings, supports and supervises research and conservation projects and co-operates with governments and partner organizations.** - The **Secretariat is provided by the United Nations Environment Programme (UNEP)** and is based in Bonn, Germany and has an out-posted office in Abu Dhabi, United Arab Emirates.

Ways suggested by the report to mitigate the noise pollution

- provides practical guidance on the **Best Available Technology (BAT) and Best Environmental Practice (BEP)** to reduce noise from these activities.
- The application of BAT and BEP includes **alterations in ship design and propeller technology, and improving operating conditions.**
- **Reducing the speed of container and cargo ships, known as slow steaming,** not only lowers the acoustic footprint but also reduces fuel consumption and CO2 emissions.
- The report highlights the **application of quieting technologies** that reduce sound at the source as the most effective way to reduce the negative impacts of underwater noise on marine wildlife.
- These **quieting methods and practices also have additional benefits**, such as reducing greenhouse gas emissions and contributing to the mitigation of climate change — another major threat to marine wildlife.

Fig: Organizational structure of CMS, No copyright infringement intended.

- **As an alternative to Seismic airgun surveys**, which pose significant threats to marine life (primarily due to the loud, intense noises produced by airguns), the report highlights the **need for quieter alternatives like Marine Vibroseis, a technology designed to produce controlled, lower-frequency seismic signals.**
- Quieting technologies that reduce the noise at the source will go the furthest in reducing these impacts. **Governments, such as Germany,** that have set noise limits have spurred technological innovations for quieter alternatives.

Conclusion

- Marine wildlife, including both migratory species and their prey, rely on sound for vital life functions, including communication, prey and predator detection, and orientation. But our **oceans have become increasingly noisy, resulting in significant harm to marine species.** This new report provides essential guidance on how to reduce noise to safeguard our marine species

5. 5   MARINE BIODIVERSITY BEYOND NATIONAL JURISDICTION

Context

- The United Nations has adopted the **first-ever international treaty to govern the high seas and protect remote ecosystems vital to humanity**, after more than 15 years of discussions.

The Treaty on Biodiversity Beyond National Jurisdiction	• The treaty is officially known as the **Treaty on Biodiversity Beyond National Jurisdiction.** • It falls under the **UN Convention on the Law of the Sea**, which came into force in 1994. • It will be opened for signatures on September 20, during the annual meeting of world leaders at the UN General Assembly. • It will work into effect **once it is ratified by 60 countries.**
Provisions of the pact	• A legal **framework to protect high seas:** The pact will establish a legal **framework to extend environmental protections to international waters, known as the high seas.** • These high seas **cover more than 60 percent** of the earth's surface. • **environmental impact assessments:** The pact also establishes **ground rules for conducting environmental impact assessments** for commercial activities in the oceans. • **Activities covered:** The activities covered under the pact **include anything from fishing and maritime transport to more controversial pursuits, like deep-sea mining or even geoengineering programmes** aimed at fighting global warming. • **Protected marine areas:** There will be a **provision for the enabling countries to create protected marine areas** in international waters. • **Principle of shared benefits:** The treaty also establishes principles for sharing the benefits of "**marine genetic resources" (MGR) collected by scientific research in international waters"**

Challenges and the Needs for protecting our seas

- **Need to negate the impact of climate change:** Climate change is disrupting weather patterns and ocean currents, raising sea temperatures, "**and altering marine ecosystems and the species living there."**
- **The ocean as a tool for economic development:** The market value of marine and coastal resources and the developing industry is **estimated by UNDP to be US $3 trillion per year**, which is about **5 percent of total global gross domestic product.** The developing countries have access to the ocean and shorelines to develop and attract foreign direct investments and develop marine economies in their state.
  o Moreover, **80 percent of tourism happens in coastal area.**
  o With **ocean levels rising as the temperature of our planet increases, coastline-specific tourism and energy industries are at risk** along with the **680 million people who live in low-lying coastal areas.**
- **Unsustainable fishing practices:** Over one-third of fish stocks are being harvested at unsustainable levels. **It is not fishing itself, but rather the overfishing of fish populations that are causing a lot of damage to the ocean.** Organisms are being extracted at such a rapid rate in literally every part of the ocean, that **populations do not have the time or space to recover.** There is a need for **adopting sustainable fishing practices.**
- **Ocean pollution:** We are polluting our coastal waters with chemicals, plastics and human waste. **90% of hazardous chemicals and human waste end up in oceans.**
- **Provides jobs and livelihoods:** The blue economy provides livelihoods **to 3 billion people, nearly 50 per cent of the entire global population.**
  o **Marine fisheries provide 57 million jobs globally.** However, **over 60 per cent of the world's major marine ecosystems** that underpin these livelihoods are being **used unsustainably, with a significant portion being completely degraded.**

- **Protection of high seas:** Much of the world's oceans lie outside individual countries' **exclusive economic zones,** and thus there is no jurisdiction of any single state here. Hence protecting the "high seas" requires international cooperation.
  - Only about one per cent of the high seas are protected by any sort of conservation measures today.
- **Plastic garbage patches: More than 80% of plastics dumped in oceans** come from Asia and they are being spread all across the Ocean. The Great Pacific Garbage Patch is one such example.
  - According to UNEP data, **pollution from the 11 million tons of plastic that enters the ocean annually**, costs **an estimated US $13 billion,** including clean-up costs and financial losses from fisheries and additional ocean-based industries. It is critical time that we invest in stopping polluting our ocean.
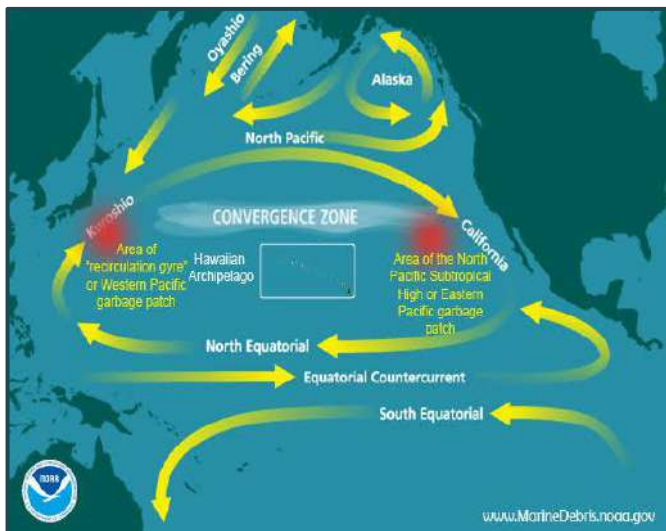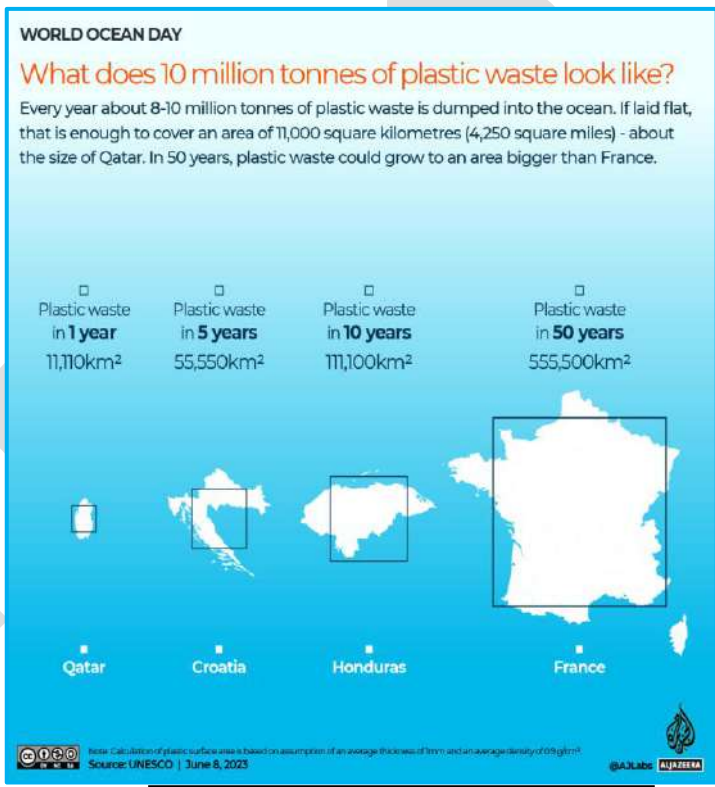

Fig: Great pacific garbage patch

Disclaimer: No copyright infringement is intended.

Way ahead

- **Adopting sustainable practices:** There is an urgent need to change our ways of production and consumption by adopting sustainable practices in the blue economy.
- **Marine protected areas (MPAs):** There is a need to rapidly and efficiently protect most marine life by creating marine protected areas (MPAs).It is a globally accepted idea and yet so little of the Earth's surface area is currently protected.
  - Less than 3% of the Ocean is currently protected from human activities.
  - Only 2 countries (the UK & Palau) have protected more than 30% of their waters under highly and fully MPAs and only 7 more have protected more than 10%.
- **Protection of seabed:** The seabed is one of the biggest pools of organic carbon on Earth as it accumulates sediments. When they are being disturbed (for example by trawling or mining), these sediments release huge amounts of carbon into the ocean, worsening the climate situation. However if left undisturbed, they will play the role of long-term carbon storage.

- **Protection of blue carbon ecosystems:** Seagrass meadows and mangrove forests are two marine ecosystems considered as blue carbon ecosystems. They capture and store huge amounts of carbon. When these ecosystems are disturbed or damaged, they release carbon. If they are protected, they will continue to capture and lock carbon for a long period of time.
  o These ecosystems are also important for coastal protection as they slow down the wave energy coming from the open ocean, protecting coastal populations from storms, erosion and sea-level rise all of which are supposed to increase in frequency and intensity with climate change.
- **International efforts:** Although the protection of biodiversity has been on the global political agenda for decades, little has been put in place to counterbalance the devastating effects of human populations on the planet. Therefore There must a global plan of action and a binding agreement like Montreal protocol for ocean to protect high seas.
- **Role of Governments**: Governments have a key role to play in bringing an effective and coherent policy mix to ensure the achievement of SDG 14, to conserve and sustainably use our ocean, seas, and marine resources, and the targets under the Convention on Biological Diversity. Policy instruments include regulatory, economic, and information and voluntary approaches should be taken.

United Nations Convention on the Law of the Sea
- The United Nations Convention on the Law of the Sea was **adopted in 1982.**
- It laid **down a comprehensive regime of law and order** in the world's oceans and seas establishing rules governing all uses of the oceans and their resources.
- **The Division for Ocean Affairs and the Law of the Sea (DOALOS)** of the Office of Legal Affairs of the United Nations serves as the **secretariat** of the Convention on the Law of the Sea.

Conclusion

- Oceans produce most of the oxygen we **breathe, limit climate change by absorbing CO2, and host rich areas of biodiversity, often at the microscopic level.** Thus the treaty is a step in the right direction to protect the high seas. Stakeholders must come together and support the treaty with the necessary amendments.

5. 6   GROUNDWATER EXTRACTION & EARTH'S ROTATION

Context

- According to a study published in **Geophysical Research Letters, the journal of the American Geophysical Union,** Humans have caused marked tilts in the Earth's axis by pumping water out of the ground and moving it elsewhere.

Major findings of the study	**Groundwater extraction and resulting tilt in planet's axis:** The **water circulated across the planet determines how mass is distributed.** In the past **50 years, humans have extracted 18 trillion tonnes of water** from aquifers without replacing it. - Scientists had predicted that between **1993 and 2010, people pumped 2,150 gigatons of groundwater.** - Such a high level of groundwater pumping has tilted the planet **nearly 80 centimeters east between 1993 and 2010 alone.** **Impact on climate change:** The excessive groundwater extraction and resulting pronounced shifts in the Earth's axis of rotation due to **groundwater extraction** can impact our planet's climate. Changes in **ocean circulation patterns,** changes in various weather phenomena etc leads to changes in rainfall patterns and subsequent events of **extreme weather events.**

	• **Sea level rise:** The tilt in the axis of the earth has led to **more than 6 millimeters (0.24 inches)of sea level increase.** • **Shift in direction of polar drift:** It was found that the **direction of polar drift moved from southward to eastward** in 1995 and that the average drift speed from **1995-2020 was 17 times quicker than from 1981-1995.**
Reasons for the tilt	• **Variations in the Earth's mass distribution:** The planet's **geographic north and south poles are where its axis intersects the surface;** however, the poles are not fixed. The axis and the poles **fluctuate due to variations in the Earth's mass distribution.** • **Groundwater extraction beyond the critical levels:** The **rotational pole normally changes by several meters** within about a year, so small changes due to groundwater pumping does not lead to the risk of high tilt. But **excessive groundwater extraction beyond the critical level** affects the tilt. • Most redistribution occurred in **western North America and northwestern India,** during the study period and both are located at mid-latitudes. The reason for that is most of the groundwater extraction happened in that region. • **The location of redistribution of water:** Redistributing water from the mid-latitudes **significantly influences polar drift; therefore,** the location of redistribution determines polar drift.
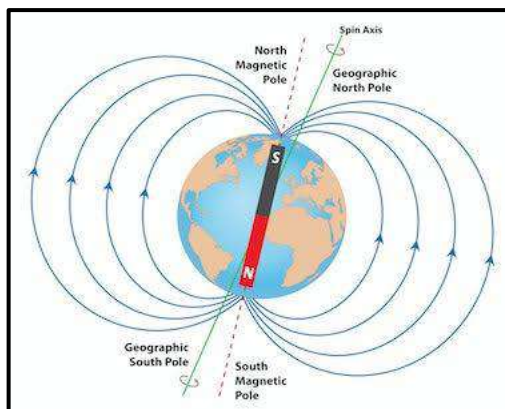
Fig: Axial tilt of Earth, No copyright infringement is intended.
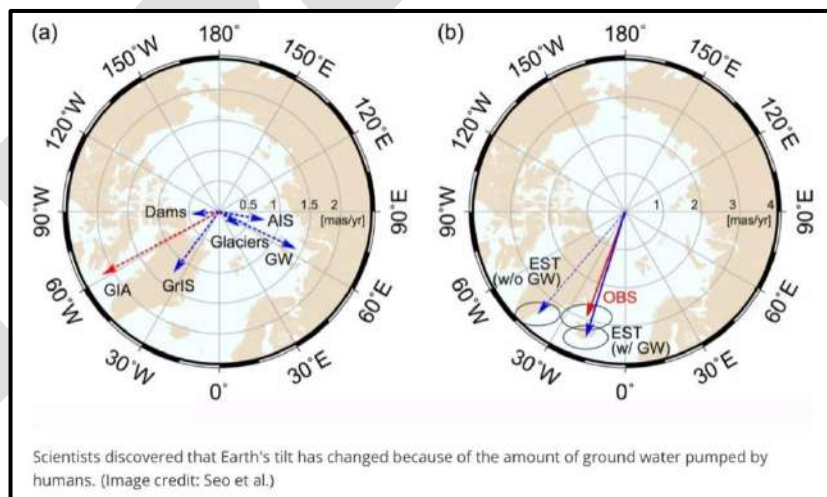
Scientists discovered that Earth's tilt has changed because of the amount of ground water pumped by humans. (Image credit: Seo et al.)

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Challenges Associated with Groundwater Use in India

• More than a third of India's population lives in water-stressed areas, a number set to increase with intensifying climate impacts and accelerated urbanization.

High groundwater. Dependency

• India is the **largest user of groundwater in the world.** It uses an estimated 230 cubic kilometers of groundwater per year - over a quarter of the global total. Groundwater extraction in India is **more than the combined extraction in China and the US**. More than 60% of irrigated agriculture and 85% of drinking water supplies are dependent on groundwater.

Unregulated extraction

- Triggered by the Green Revolution, groundwater use has exploded in India since the 1970s. Availability of cheap electricity **after the green revolution shifted farmers' dependency from surface water to groundwater.** For instance, of the total irrigated area in Punjab, only 26.2% is irrigated by surface water.

Excessive irrigation

- Irrigation alone accounts for **90% of the total groundwater used in India today.** Tube and well irrigation have been cheaper in India with subsidized electricity. This has resulted in above optional levels of groundwater extraction.

Comprehensive and integrated land use planning" framework

- There is a **lack of a "comprehensive and integrated land use planning"** framework in India , effects of which are seen in declining water tables. Irresponsible and unscientific land use planning leading to higher water consumption affects groundwater table. Thus there is a need for better agriculture planning and land use management.

individual "access" and lack of aquifer boundaries.

- There has been a **shift to individual "access" as opposed to a community model in government policies.** Shared water management by the community has declined. Moreover, a lack of clarity on the aquifer boundaries further makes it difficult to formulate clear guidelines for proper management of groundwater systems.

Role of panchayats

- Studies reveal that the **role of Panchayats in groundwater management has been negligible,** or at best, casual. Even with communities empowered with governance rights and awareness, success was limited due to weak local institutions. Moreover the expertise and ethnically know-how of gram panchayats are lacking in India.
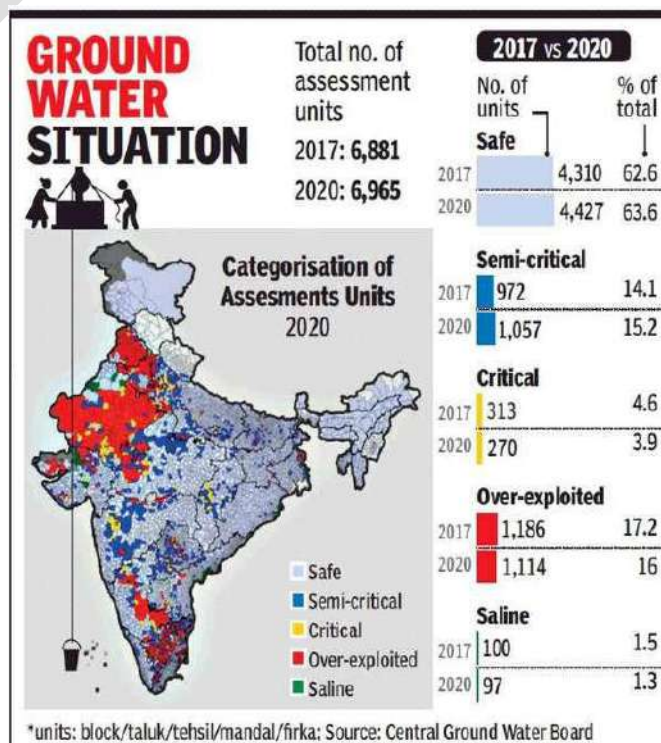
Issue of quality in groundwater

- A significant area of India is affected by groundwater pollution with heavy metals such as **arsenic, cadmium, lead etc.** The risk gets riskier with falling water tables as water becomes more concentrated with pollutants. With demand shooting up, deeper digging is inevitable. This further raises the level of contamination as heavy metal concentration in the earth's crust is higher than on the surface.

Percolation from surface water

- Surface water pollution also affects groundwater quality as pollutants at the water surface percolate through the layers of the land, contaminating groundwater, and may even alter the soil structure in case of oil leakages or spillage. **Excessive fertilizers and chemicals percolate down to the grounder.**

Present Status of Groundwater Depletion in India

- Data given by Central Ground Water Board (CGWB) shows that the stage of extraction in India has **disturbingly increased from 58% to 63% over 13 years.** The number has exceeded the 100% mark in 13 states/UTs.

GROUND WATER SITUATION

Total no. of assessment units
2017: 6,881
2020: 6,965

2017 vs 2020	No. of units	% of total
Safe		
2017	4,310	62.6
2020	4,427	63.6
Semi-critical		
2017	972	14.1
2020	1,057	15.2
Critical		
2017	313	4.6
2020	270	3.9
Over-exploited		
2017	1,186	17.2
2020	1,114	16
Saline		
2017	100	1.5
2020	97	1.3

Categorisation of Assesments Units 2020

Safe
Semi-critical
Critical
Over-exploited
Saline

*units: block/taluk/tehsil/mandal/firka: Source: Central Ground Water Board

- **More than 29% of groundwater blocks are semi-critical, critical, or overexploited**, and the situation is deteriorating rapidly (2004 nationwide assessment.). Moreover, aquifers are depleting in the most populated and economically productive areas. Climate change will further strain groundwater resources.

Stage of Ground Water Extraction	Category
≤ 70%	Safe
> 70% and ≤90%	Semi-critical
> 90% and ≤100%	Critical
> 100%	Over Exploited

Fig: stages of groundwater extraction as per CGWA

- The groundwater level in 33 per cent of the wells monitored by the Central Ground Water Board (CGWB) showed a **decline of more than 4 m of the water table in a few pockets of Delhi, Chennai, Indore, Coimbatore, Madurai, Vijayawada, Dehradun, Jaipur, Allahabad, Ghaziabad, Kanpur, and Lucknow over the years.**
- Aside from its diminishing quantity, the quality of the remaining groundwater is a significant concern. Water quality data obtained by the **Central Ground Water Board shows that groundwater in as many as 154 districts across 21 states has arsenic contamination.**

Metro cities with declining water tables

City	Decline in water table (in meter)	Since
Kolkata	7 to 20	2000
Ghaziabad	12	2016
Gurgaon	5	2018
Noida	17	2016
Greater Noida	6	2016
Delhi	0.5-2	Per year

Important initiatives on management of groundwater resources / Steps can be taken to improve Groundwater Use and Governance in India

- <u>National Water Policy (NWP) (2012):</u>**It** advocates for a number of policy interventions for sustainable management of water resources including efficient use of groundwater and surface water in the country. **Perspective for Water Resources Planning, robust data management and Information System, Water Resources Planning, ensuring environmental flow of rivers are few of them.**
- <u>The groundwater guidelines (with pan-India applicability):</u>**It was issued on 24.09.2020** by this Department for regulation and control of ground water extraction in the country advocates for use of treated sewage water for purposes other than drinking water.
- <u>Pradhan Mantri Krishi Sinchayee Yojana (PMKSY):</u> It along with component Accelerated Irrigation Benefits Programme (AIBP) was launched in 2015-16 with an aim to enhance physical access of **water on farm and expand cultivable area under assured irrigation, improve on farm water use efficiency, introduce sustainable water conservation practices etc. Major and Medium Irrigation Projects through** surface water sources at various places have been taken up under this scheme.
- <u>Jal Shakti Abhiyan (JSA):</u> **It** was launched in 2019, **to improve water availability by** harvesting the rainfall effectively in the water stressed blocks of 256 districts in India.
- <u>Model Building Bye Laws (MBBL):</u>It has been circulated to all States/UTs which has the provisions for Rainwater Harvesting and it has already been adopted by 32 States/UTs.
- <u>Master Plan for Artificial Recharge to Groundwater- 2020:</u> **It** has been prepared by CGWB in consultation with States/UTs which is a macro level plan indicating various structures for the different terrain conditions of the country.
- <u>National Aquifer Mapping and Management program (NAQUIM):</u> **It is** being implemented by CGWB as part of Ground Water Management and Regulation (GWM & R) Scheme, a Central Sector scheme. **NAQUIM envisages mapping of aquifers (water bearing formations), their characterization and development of Aquifer** Management Plans to facilitate sustainable management of groundwater resources in the country. NAQUIM outputs are shared with States/UTs for suitable interventions.

- **Initiatives by States:** States have done notable work in the field of water conservation/harvesting such as **'Mukhyamantri Jal Swavlamban Abhiyan'** in Rajasthan, **'Jalyukt Shibar'** in Maharashtra, **'Sujalam Sufalam Abhiyan'** in Gujarat, **'Mission Kakatiya'** in Telangana, **Neeru Chettu'** in Andhra Pradesh, **'Jal Jeevan Hariyali'** in Bihar, **'Jal Hi Jeevan'** in Haryana, and **'Kudimaramath scheme'** in Tamil Nadu.

Way Forward

- As hydrologic conditions vary intricately yet considerably at the local level, centralized approaches remain limited in their reach and impact. This unequivocally transfers the responsibility to local regulatory bodies at the block level, the Panchayat and Municipality, which are well-placed to address these issues. **Ensuring technical competence and financial sufficiency of gram panchayats are necessary.**
- For planning and management of groundwater, there is a need to focus on the **Integrated Water Resource Management framework**. It promotes the coordinated development and management of water, land and related resources.
- Provision for **wastewater recycle and its reuse to promote the circular economy** of one water cycle will also help in source sustainability and groundwater pollution mitigation. Further Biofertilizers and natural farming should be promoted.
- Interventions like **rainwater harvesting, stormwater harvesting, rain-garden and bioretention ponds that intercept rainfall with vegetated land are low-maintenance** alternatives to conventional systems. These help in groundwater recharge and urban flood mitigation.
- Finally, the **strengthening of regulatory frameworks and stakeholder participation** need to be formulated and imposed. Aquifer characterisation and robust monitoring of urban groundwater quality as well as quantity are imperative. Data collection, formulation of effective regulatory legal policies, laws and acts for better management will go a long way.
- **Public awareness and participation** as well as trust-building between formal water sector institutions and communities will further fill the void in urban groundwater management.

Conclusion

- The study is important in a way that **Water's role in altering the Earth's rotation was discovered in 2016**, and until now, the contribution of groundwater to drifts has been unexplored.

5. 7   HI-WISE REPORT BY ICIMOD

Context

- ICIMOD urged governments to ramp up **adaptation in Hindu Kush Himalayas which are changing rapidly.**

Water, ice, society, and Ecosystems in the Hindu Kush Himalaya (HI-WISE) report	- The report was **released by the International Centre for Integrated Mountain Development (ICIMOD).** - This Water, ice, society, and Ecosystems in the Hindu Kush Himalaya (HI-WISE) assessment report provides **a partial update to the first HKH assessment report**, focusing on the interlinkages between the cryosphere, water, ecosystems, and societies in the Hindu Kush Himalaya (HKH). - Funding **support for this report was provided by the governments of Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, Norway, Pakistan, Sweden, Switzerland, and the United Kingdom**, through core funding to ICIMOD.
Findings of the	- The Hindu Kush Himalayas (HKH) have seen **a 65 per cent faster loss of glacier**

report	mass than other areas.
	• The glaciers **lost a mass of 0.28 meters of water equivalent per year between 2010 and 2019** compared to 0.17 (m w.e.) per year between 2000 and 2009.
	• The Karakoram range, which is known to be stable, has also started showing a decline in glacier mass, **losing 0.09 m w.e. per year during 2010-2019.**
	• The average temperature in the region has **increased by 0.28°C per decade between 1951 and 2020.**
	• In a normal scenario, HKH glaciers could lose up to **80 percent of their current volume by 2100.**
	• It has been estimated that western Himalaya **lost 8,340 square km of permafrost area between 2002 and 2004 and 2018 and 2020,** and about 965 square km of area disappeared in Uttarakhand Himalaya between 1970 and 2000 and 2001 and 2017.
	• The study predicted a decline in **snowfall by 30-50 per cent in the Indus Basin, 50-60 per cent in the Ganges, and 50-70 per cent in the Brahmaputra between 2070 and 2100** compared to the average snowfall between 1971 and 2000.
	• **Nine out of 12 river basins have witnessed increased warming rates** at higher elevations. The strongest impacts are being felt in the Brahmaputra, Ganges, Yangtze, and Indus Basins.

Causes of Glacier melting in HKH region

- **Parts of the HKH region are at a lower elevation on the whole than those in the western part,** leaving them relatively more vulnerable to melting. It is called the Karakoram anomaly.
- The Hindu Kush Himalayan region has the **largest concentration of frozen water on Earth after the North Pole and South Pole, hence it is referred to as "the third pole".** As ice cover melts, it exposes larger areas to solar radiation, thus allowing greater absorption of heat. Since ice reflects light, as the ground is increasingly exposed this leads to greater heating. **Thus the large area of HKH is prone to melting faster than other regions.**
- The glaciers of the Hindu Kush Himalayas are facing another problem i.e. **black carbon, which are produced by a range of human activities, including biomass burning, brick factories, and coal-based electricity plants.** This is essentially soot from fires in the surrounding lowlands which rises in the air and settles on glaciers. Because of its dark color, black carbon absorbs solar radiation faster.
- Not all frozen water in the Hindu Kush Himalayas is in the form of glaciers. In the Hindu Kush Himalayan region, permafrost is found across **around 1,000,000 square kilometers, whereas glaciers occur across around 90,000 square kilometers**. Since permafrost melts faster than glaciers, HKH is melting fast.
- Countries surrounding HKH are **highly industrialized and the dust and carbon particles all settle in HKH.** Large accumulation of dust particles in the region hastens the glacier ice melts.

Impact of Glacier melting in HKH region

- **Increased flooding:** As more meltwater from glaciers enters the water system, proglacial glacial lakes form. However, these lakes are often unstable, and when the dams break, they can cause catastrophic glacier lake outburst floods (GLOFs). Moreover, more water in the glacier-fed rivers increases the risk of flooding downstream.
- **Affects freshwater sources:** Approximately 75% of all of the world's freshwater is locked up in the HKH glacier ice. The Glacial melt provides drinking water for people in India and various places around the world, including the Himalayas. Glacial Ice melt leads to seasonal floods as well as drying up of rivers.

- **More extreme weather events:** With more water and a warmer global temperature, the risk of extreme weather events increases. Scientists have already started to notice changes in temperature and precipitation extremes in recent decades.
- **Changes in the monsoon: I**n Asia, the monsoon helps to support the livelihoods of millions of people. The annual rains are crucial to agriculture and water supplies. The change in Temperature and pressure in Hindu Kush region changes pressure in the Tibetan plateau which leads to changes in the South West Monsoon pattern.
- **Lower agricultural yields:** HKH melts means that snow and glaciers melt earlier in the year, leading to floods in spring. However, by summer, when crops need more water, volumes of water are decreased. As a result, agricultural yields are lower, arid zones increase, and fishing in the region is affected.
- **Changes in energy production:** Large number of rivers are fed by HKH glaciers which includes Indus, Sutlej, Ganges, Brahmaputra, Mekong etc. A large number of hydroelectric projects have been built on those rivers. Further downstream, the volume of water in dams may impact the production of hydroelectricity.

Recommendations

- HKH melting is **driven by larger anthropogenic modifications of the atmosphere**. The HKH region lies downwind from some of the most heavily polluted places on Earth. This threatens agriculture, climate as well as monsoon patterns. Thus there is need to take following steps:
- There is a **need to shift away from fossil fuel use in energy, transport, and other sectors, while changing diets and agricultural practices to move to net-zero emissions of greenhouse gasses.** The countries in the region need to reduce emissions of black carbon and other air pollutants as well.
- The countries in the region **need to step up their efforts to adapt to the changing calendar of droughts, floods and unpredictable monsoon seasons,** and we call for increased regional cooperation to address fast-disappearing glaciers, with the well-being of two billion people at stake.
- Farmers will **need support to design and invest in locally-appropriate water storage solutions,** or to shift to agricultural practices that consume less water
- **Designs of new hydropower plants and grids** will need to take into account the changing climate and water availability.
- **Data and information, capacity-building and early warning systems** and infrastructure design will need to be improved. This calls for sufficient funding and large-scale coordination.

The Hindu Kush

- It stretches from **central and western Afghanistan into north western Pakistan** and far south eastern Tajikistan.
- The range forms the western section of the **Hindu Kush Himalayan Region (HKH).**
- The eastern end of the Hindu Kush in the north merges with the Karakoram Range.
- It connects with the **White Mountains near the Kabul River** towards its southern end.
- It divides the valley of the **Amu Darya (the ancient Oxus) to the north from the Indus River valley to the south.**
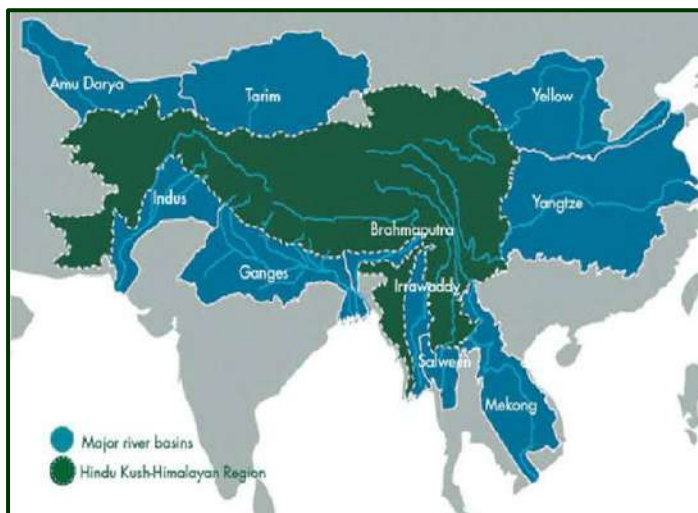
Importance of Hindus Kush Himalayas

- The glaciers of the Hindu Kush Himalaya are a **major component of the Earth system**. Two billion people

in Asia are reliant on the water that glaciers and snow here hold.

- Glaciers occupy an **area of approximately 73,173 square kilometers (km2)** in the HKH.
- Ice and snow in the HKH are an **important source of water for 12 rivers** that flow through 16 countries in Asia.
- About 240 million people are in the mountains and **1.65 billion downstream are dependent on them.**
- **Around 40 percent of the biosphere reserve i**s under protected areas is dependent on the cryosphere.

Conclusion

- Consequences such as **species migrating to higher elevations, ecosystem degradation and changes, decrease in habitat suitability, species decline and extinction, and invasion by alien species** might be seen in future. The mountain population is extremely vulnerable to the changing cryosphere (the frozen water part of the Earth system) and that urgent adaptation measures need to be adopted.There is need for more measurements, especially in regions where road construction projects are in the pipeline and if people reside near permafrost.

5. 8   INDIAN FOREST ACT & PROTECTION OF OFFICERS

Context

- Poachers gunned down a forester who was part of a six-member patrolling team in Odisha'sSimilipal tiger reserve.

Duty of forest officials

- Forest staff's job is to protect scarce and lucrative resources — endangered animals, trees, sand and boulders, minerals, and forest land.
- Data on Deaths of forest officials
- According to the International Ranger Federation, 31 forest field staff lost their lives on duty in India in 2021.
- Only eight were cases of homicide. Others were killed in forest fires, elephant and rhino attacks, and motor accidents.
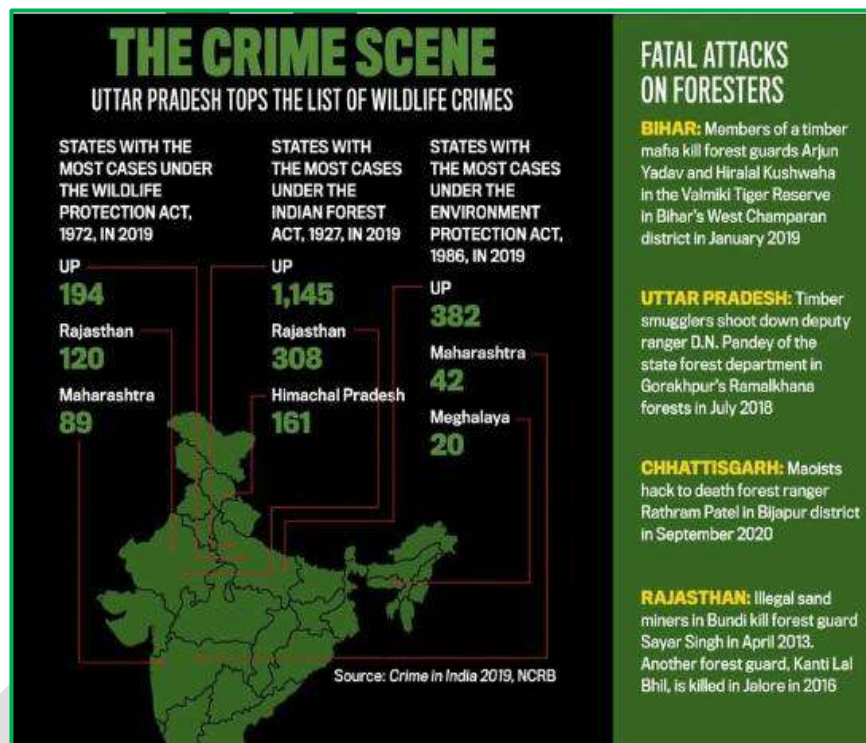
Issues of the forest officers

- **Varying rules in states:** Different states have different rules for issuing fire weapons to guards. However, uncertain law and order situations often prevent forest guards from carrying these weapons, particularly in insurgency-hit areas. Such a case happened in The Similipal TR.
- **The hostile relationship between forest guards and forest dwellers:** To the forest-living communities, frontline forest staff are the hostile people who guard the forest resources, on which their livelihood depends. Thus **the relationship between forest dwellers and forest guards is usually hostile.** In such situations The risk of misusing firearms or being framed for merely possessing one is high.
- **Limited power to use weapons:** Forest officials have no power to proactively use their weapons. Like other citizens, they can exercise their right of private defence under Sections 96 to 106 of the Indian Penal Code.
- "The main objective of arming the officials is self-defence" and to "provide psychological deterrent" to poachers and other offenders. In an inquiry, the onus would be on the forest official to justify the use of firearms.

Case study

- An early user of one of these guns, forest guard Badan Singh who came under attack for compounding livestock at Ranthambhore's Bhodal forest post, retired with multiple cases still pending against him.

- **Less manpower at ground level:**India's forest establishment often prioritizes bureaucracy over the frontline workforce.
- With too many vacancies across India, too few are left on the ground to defend the forests and themselves.
- **Human rights vacillations:**There are large allegations of human rights violations along with the killing of animals especially in Kaziranga. Between 2000 and 2010, 17 poachers were shot dead inside Kaziranga, while 68 rhinos were killed. Since the notification, between 2011 and 2016, the number of poachers killed jumped to 59 and the number of rhinos poached to 103.
- The BBC documentary explored what the broadcaster called the "dark secrets" of Kaziranga, examining its "ruthless anti-poaching strategy", where forest guards have powers "to shoot and kill".
- **Trial of forest officials under SC/ST Act:** The SC/ST Act is highly protective in favour of scheduled tribes and scheduled castes. Since most forest dwellers are STs, forest officials are often Reid under the said act.
  - o **Ex. 1:**In July 2019, the Supreme Court stayed proceedings initiated under the SC/ST Act against a woman forest officer in Telangana who was injured by a mob while on duty.
  - o **Ex. 2:**The top court intervened again after the deputy conservator of forests of Rajasthan's Mount Abu was brutally assaulted and also booked under the SC/ST Act in May 2020.

THE CRIME SCENE
UTTAR PRADESH TOPS THE LIST OF WILDLIFE CRIMES

STATES WITH THE MOST CASES UNDER THE WILDLIFE PROTECTION ACT, 1972, IN 2019
UP 194
Rajasthan 120
Maharashtra 89

STATES WITH THE MOST CASES UNDER THE INDIAN FOREST ACT, 1927, IN 2019
UP 1,145
Rajasthan 308
Himachal Pradesh 161

STATES WITH THE MOST CASES UNDER THE ENVIRONMENT PROTECTION ACT, 1986, IN 2019
UP 382
Maharashtra 42
Meghalaya 20

Source: Crime in India 2019, NCRB

FATAL ATTACKS ON FORESTERS

BIHAR: Members of a timber mafia kill forest guards Arjun Yadav and Hiralal Kushwaha in the Valmiki Tiger Reserve in Bihar's West Champaran district in January 2019

UTTAR PRADESH: Timber smugglers shoot down deputy ranger D.N. Pandey of the state forest department in Gorakhpur's Ramalkhana forests in July 2018

CHHATTISGARH: Maoists hack to death forest ranger Rathram Patel in Bijapur district in September 2020

RAJASTHAN: Illegal sand miners in Bundi kill forest guard Sayar Singh in April 2013. Another forest guard, Kanti Lal Bhil, is killed in Jalore in 2016

Initiatives from various states to enhance the legal powers of forest guards

- In **1994, Rajasthan issued weapons** to forest staff with the instruction that if they were carried to forests, there must be at least two persons with firearms lest they were snatched.
- In July 2010, Assam became the first state to make the provisions of **Section 197(2) CrPC**applicable to all forest officers.
- The provision gave them protection from arrest and criminal proceedings until and unless a magisterial probe had established that the use of firearms was **"unnecessary, unwarranted and excessive"**, and the conclusion had been "examined and accepted" by the state.
- In 2012, after a spate of tiger poaching cases, **Maharashtra issued a similar order.**

Way ahead

- <u>**Training and skilling:**</u> Forest officials need to be trained to use forewarns or to defend themselves without forearms. There are cases when forest guards were killed because of their inability to fire guns.
- <u>**Compensation:**</u> The compensation provided to the killed or injured staff should be increased to reward them for their valuable service.

- **Awareness:** Forest officials and NGOs such as **ADIVASI GRUP GRAM VIKAS MANDAL HINDOLIYA, BHARATIYA ADIMJATI SEVAK SANGH**, etc should spread awareness about the limits and the rights of forest dwellers.
- **Portraying a better picture:** Currently, forest officials are seen as hindrances to the forest dwellers and hostile to them. However, awareness programmes should ensure that the picture of forest guards is their protectors and enablers.
- **Legal frameworks:** Forest Act 1927 should be amended to ensure legal protection as well as adequate provisions with fair procedure for the use and misuse of firearms.

Forest act of 1927	• The **Indian Forest Act, of 1927**, provides a legal framework for the protection and management of forests, the transit of forest produce and timber, and duty that can be levied on forest produce and timber.
Aims of the act	**The preamble of the Indian Forest Act seeks:** • to consolidate the law relating to forests, • regulation of and the transit of forest produce, and • to levy duty on timber and other forest produce. • It also consists of the procedure followed in cases of declaring the area to be a **reserved, protected or village forest.**
Coverage	• The term 'forest' has a wider ambit when it comes to its definition as it **includes private lands, lands for pasture, cultivable lands etc.** • It also has a separate interpretation of the river including any stream, canal or other channels.
Classification of forests	• The Act is classified into 3 types of forests that are; reserved forests, protected forests and village forests. **Reserved forest** • These forests are restricted as the Government has proprietary rights over the land. The use of reserved forests is prohibited by the local people unless they have permission from the government. **Village forest** • When the Government assigns any reserved forest or any other land to the village community for their use that piece of land is classified under village forest lands. According to the Act, the State Government makes rules for regulating the management of these forests. • Note: The terms village forest and forest village are interchangeably used in certain cases but are eventually different in their meaning. **While village forest is a legal category under the Indian Forest Act, forest village is merely an administrative category.** Although the latter is recognised by the Forest Department, the revenue benefits cannot accrue to such villages as they are not technically under the revenue departments. **Protected forests** • The state government is empowered to constitute any land other than reserved forests as protected forests over which the Government has proprietary rights.

Conclusion

- A public notice for the decriminalization of the Indian Forest Act, of 1927 was issued in 2022 to decriminalize minor **sections of the law, including carrying timber into the forest, trespassing by cattle, and felling a tree.** However, there is a need to do more.

- Indeed, no other force faces the risk of getting killed by those whom they are trying to protect.
- India's frontline forest staff — **contract labourers, guards, foresters and rangers** — have long fought an unequal battle against poachers, illegal miners, and tree-fellers. They have also been targeted by mass encroachers and insurgents.

5. 9 CORPORATE GREENWASHING RULES

Context
- New rules backed by G20 aim to clamp down on corporate green washing.

About the norms	• The norms recently published have been written by **the International Sustainability Standards Board (ISSB).** • The standards are built on voluntary ones from the **G20's Task Force on Climate-related Financial Disclosures (TCFD).**
Applicability	• The standards can be used for **annual reports for 2024 onwards.** • It would be up to individual countries to decide whether to require listed companies to apply the standards.
Implementing body	• The global securities watchdog IOSCO is expected to "endorse" the new standards.
Importance	• **Greenwashing:** Trillions of dollars flow into investments that tout their environmental, social and governance credentials. But their **ESGs are often greenwashed, showing fake pictures to the public.** • **Non-disclosure of emission data:** 42% of the world's top 4,000 companies do not provide data on **Scope 1 and 2 carbon emissions.** It means capital markets are far less effective because they haven't got a full picture of companies. Under the ISSB rules, companies would need to disclose material emissions, with checks by external auditors. • **Emission from Banks: Financial sectors such as banks are often neglected in regard to emission standards.** ISSB requires more detailed disclosures from banks on carbon emissions related to individual sectors such as oil and gas. • The new norms bring more rigor to sustainability reporting, more aligned with financial reporting.
Initiatives from other Countries	• The **European Union will finalize its own disclosure rules next month** and it and the ISSB have sought to make each other's norms "interoperable" to avoid duplication for global companies. • **Britain was the first major economy to make TCFD disclosures** by listed companies mandatory.

Corporate Greenwashing
- Greenwashing is the process of conveying a **false impression or misleading information** about how a company's products are environmentally sound.
- Greenwashing involves making an **unsubstantiated claim to deceive consumers** into believing that a company's products are environmentally friendly or have a greater positive environmental impact than they do.
- They are performed through the use of **environmental imagery, misleading labels, and hiding tradeoffs among others.**

Examples of greenwashing

Example 1:

- An area rug is labelled "50% more recycled content than before." The manufacturer increased the recycled content to 3% from 2%. Although technically true, the message conveys the false impression that the rug contains a significant amount of recycled fiber.

Example 2:

- A trash bag is labeled "recyclable." Trash bags are not ordinarily separated from other trash at the landfill or incinerator, so they are highly unlikely to be used again for any purpose. The claim is deceptive because it asserts an environmental benefit where no meaningful benefit exists.

Issues of corporate greenwashing

- **Corporate ethics violation:** Greenwashing is deceitful and unethical. It goes against the ethical principles of justice, fairness and honesty. It is a complete violation of corporate ethics.
- **Misleads investors:** Green sectors of the economy are booming and investors are investing more in this sector. But corporate greenwashing portrays a misleading picture to attract investors, who in the long run might lose their investments.
- **Misleads consumers:** Consumers that are genuinely seeking environmentally friendly companies or products are misled.
- **Higher cost:** Often, green products can be sold at a premium, making them more expensive, which can lead consumers to overpay.
- **Difficult in evidencing:** If greenwashing is going on, there is often no evidence to back up the claims that a company is making. Sometimes verifying can be difficult.

Way ahead

- **Increase transparency and accountability:** Organizations need to publish all the details so that everyone can see what they are doing, their pledges, targets and plans.
- **The annual publication of emissions:** There should be an annual publication of each organization's greenhouse gas emissions alongside baseline data so people can see how well they are doing compared to other entities. The data should be in open formats that facilitate global comparisons.
- **Third-party research and analyst reports:** Investors, Government agencies, civil societies and consumers should frequently check the research and analysts' reports on companies. They portray various pictures of greenwashing.
- **Check the product's ingredients list:** The ingredient list of the products must be checked thoroughly and the testing, monitoring and quality control team must test if the ingredients are there as displayed on the label or not.
- **Certification:** True green products will often be certified by an official vetting organization, which will be clearly labelled. They should be checked.
- **Use voluntary carbon credits:** Voluntary carbon credits are used to offset emissions by paying another party to reduce their emissions. This can ensure companies who are not interested to do ESG on their own can offset it to a third party.

International Sustainability Standards Board (ISSB)	**About** - The formation of the International Sustainability Standards Board (ISSB) was **done on 3 November 2021 at COP26 in Glasgow.** - The ISSB is part of the independent International Financial Reporting Standards Foundation. - It also writes accounting rules used in more than 100 countries. - The ISSB has international support with its work to develop sustainability disclosure standards backed by the G7, the G20, the International Organization of Securities Commissions (IOSCO), the Financial Stability

	Board, African Finance Ministers and Finance Ministers and Central Bank Governors from more than 40 jurisdictions. • **The ISSB has set out four key objectives** • to develop standards for a global baseline of sustainability disclosures; • to meet the information needs of investors; • to enable companies to provide comprehensive sustainability information to global capital markets; and • to facilitate interoperability with disclosures that are jurisdiction-specific and/or aimed at broader stakeholder groups.
The International Organization of Securities Commissions (IOSCO)	• The International Organization of Securities Commissions (IOSCO) is an **association of organizations that regulate the world's securities and futures markets.** • Members are typically primary securities and/or futures regulators in a national jurisdiction or the main financial regulator from each country. • It has a permanent **secretariat in Madrid, Spain.** • **Its mandate is to:** • Develop, implement, and promote high standards of regulation to enhance investor protection and reduce systemic risk. • Share information with exchanges and assist them with technical and operational issues • Establish standards for monitoring global investment transactions across borders and markets.

5. 10   INC-2

Context

- Intergovernmental Negotiating Committee to prepare **zero draft of international agreement** on plastic pollution as Paris negotiations end.

About Intergovernmental Negotiating Committee

Establishment	• It was established under **United Nations Environment Assembly resolution 5/14** when requested by the Executive Director of UNEP to convene an intergovernmental negotiating committee.
Members	• It has 169 Member States and over 900 observers from NGOs.
Functions	• The INC is tasked with **developing an internationally and legally binding instrument on plastic pollution, including in the marine environment.**
Nature	• Instruments could include **both binding and voluntary approaches**, based on a comprehensive approach that addresses the full life cycle of plastic.

Second Session of Intergovernmental Negotiating Committee

- The second session of the Intergovernmental Negotiating Committee to develop an international legally binding instrument on plastic pollution.
- It was held in the **French Capital and hosted by France at the headquarters of the UN Educational, Scientific and Cultural Organisation (UNESCO) in Paris.**
- Next session is due to take place in Nairobi, Kenya.

5. 11 SHORT ARTICLES

Himalayan Brown Bear

Context
- A brown bear (Ursusarctosisabellinus) was captured by the **Jammu and Kashmir Wildlife Department at Rajwada i**n the North Kashmir district of Handwara.

Himalayan Brown Bears in India
- In India, brown bears are present in **23 protected areas (PA) in the Union Territory of Jammu and Kashmir, and the states of Himachal Pradesh and Uttarakhand.**
- Their global number is estimated to be less than 1,000 and possibly half that in India.
- As per the study carried out in the western Himalayas by scientists of **Zoological Survey of India in 2020, there will be a decline of about 73 per cent of the bear's habitat by 2050.**

Conservation Status

IUCN	They are listed as "**critically endangered**" in the **International Union for the Conservation of Nature Red List.**
CITES	**Appendix I**
Indian Wildlife Protection ACT, 1972	**First Schedule**

National Electricity Plan

Context
- Significant slowdown in coal production with respect to renewables was pointed out by the latest **National Electricity Plan (NEP) by the Central Electricity Authority (CEA).**

About National Electricity Plan (NEP)

Prepared by	• **NEP is prepared by The CEA,** the technical arm of the power ministry
Plan period	• NEP is prepared every **five years.**
Purpose	• It forecasts the country's power **generation, transmission, and demand trajectory for the coming decade.**

Findings of the report
- Generation planning studies were carried out for the **period of 2027-32.**
- The **installed capacity for 2031-32 is calculated to be 900.4 Gw.**
- India's power generation capacity is expected to touch 900 gigawatt (Gw) by the end of this decade, with major capacity addition coming from renewable energy sources.
- Conventional power **capacity comprising coal, gas, and nuclear would total up to 304 Gw.**
- The renewable energy capacity (including large hydro) is expected to touch 596 Gw in the given period.
- Several new energy sources, such as small hydro (5.4 Gw), biomass (15 GW), pump storage power (26 Gw), and battery energy storage (47 Gw) would also come up by 2032.
- **The share of coal capacity is likely to reduce to 39 per cent of the total installed capacity in 2026-27 from 52.8 percent in 2021-22.**
- The share of non-fossil based capacity is likely to increase to 57.4 per cent by the end of 2026-27 and may likely to further increase to 68.4 per cent by the end of 2031-32 from around 40 per cent currently.

India's International commitments
- Our nationally determined contributions to the **United Nations Framework Convention on Climate Change,** has committed to increase the share of **non-fossil fuel energy sources to 50 per cent by 2030 and be a net-zero economy by 2070.**

Earth System Boundaries (ESBs)

Context

- New study says **7 of 8 climate red lines crossed and India is a transgression hotspot.**

About Planetary Boundaries

Definition	• Planetary boundaries are a **framework to describe limits to the impacts of human activities on the Earth system.**
What if the boundary is crossed	• Beyond these limits, the **environment may not be able to self-regulate anymore.**
Number of the ESBs	• There are Nine planetary Boundaries and the eight earth system boundaries (ESBs) that are critical for stability of the planet's health and survival of species
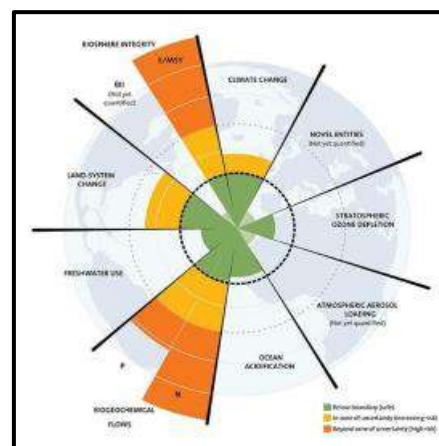
Fig: Nine planetary boundaries, No copyright infringement intended

Nine Planetary boundaries are

1. Climate change
2. Ocean acidification
3. Stratospheric ozone depletion
4. Biogeochemical flows in the nitrogen (N) cycle
5. Blobal freshwater use
6. The erosion of biosphere integrity
7. Chemical pollution
- For one process in the planetary boundaries framework, **the scientists are yet to specify a global boundary quantification**
8. Atmospheric aerosol loading

EIACP

Context

- EIACP Programme Centre at **Raipur , Chattisgarh creates a world record by taking LiFE pledge of over 12.38 lakh people** to conserve environment.

About EIACP	• The Environmental Information, Awareness, Capacity Building and Livelihood Programme (EIACP) was **part of the World Environment Day 2023.**
Mission	• It is a **month-long mass mobilization campaign** on Mission LiFE
Who organizes it?	• World Environment Day 2023 was celebrated with a thrust on the Mission LiFE by **The Ministry of Environment, Forest and Climate Change (MoEF&CC)**, Government of India.
Aims of EIACP	• To generate widespread awareness and advocacy for LiFE across India. • It follows the approach of "**whole of government" and "whole of society";** under which the Ministry has mobilized Central Ministries/ Departments, State/ UT Governments/ Administrations, Institutions, and private organizations to spread the message of Mission LiFE.

NHAI First Sustainability Report

Context

- NHAI releases its first sustainability report on environmental responsibility.

About Sustainability Report for FY 2021–22

- It is released by **NHAI (National Highway Authority of India)**
- Report showcases its dedication to **environmental sustainability and social responsibility.**

|	
Findings of the report	• FY 2019-20 to FY 2021-22, **direct emissions decreased by 18.44 per cent and 9.49 per cent** due to reduced fuel consumption. • The organization **continues to focus on reducing indirect emissions by transitioning to cleaner and greener energy sources.** • The report highlights a **decline in greenhouse gas (GHG) emissions** from energy consumption, operations, transport, and travel. • NHAI has been **actively using recycled materials for constructing national highways, including fly ash and plastic waste,** for the past three years. The use of recycled asphalt (RAP) and recycled aggregates (RA) has also increased. • NHAI has also achieved a substantial **decrease in energy intensity**, with a reduction of 37 per cent in FY 2020-21 and 27 per cent in FY 2021-22
Some recent Government initiatives towards road sector	• NHAI plans to **construct 25,000 kilometers of national highways in 2022-23** at a pace of 50 km per day. • The Indian government launched **Gati Shakti-National Master Plan,** which will help lead a holistic and integrated development of infrastructure generating immense employment opportunities in the country. • NHAI is planning to accelerate the**Trans-Arunachal Highway and Kaladan Multi-Model Transport Project,** as well as other roads development projects such as capital connectivity, district connectivity, connectivity to the international border, etc. • Govt. Provided**concessions under the Vehicle Scrapping Policy (effective from April 2022)** to encourage vehicle owners towards discarding old vehicles which have higher fuel consumption costs. • The government announced a plan to **install charging stations every 40 to 60 kilometres on national highways** to strengthen wayside amenities; in line with this, ~700 e-vehicle charging stations are expected to be installed by 2023. • Under **Phase-I of BharatmalaPariyojana, the Ministry has approved implementation of 34,800 km of national highways** in 5 years with an outlay of Rs. 5,35,000 crore (US$ 76.55 billion). Under this scheme, 22 greenfield projects are being constructed and A network of 35 Multimodal Logistics Parks are planned to be developed as part of BharatmalaPariyojana.

Arctic Sea Ice Melting

Context

- A recent study in the Nature journal says that the loss of Arctic sea ice is inevitable in the decades ahead.

Major findings of the report	• Arctic sea ice area (SIA) has been **declining rapidly throughout the year** during recent decades with a steeper decline since 2000. • **The sea ice-free Arctic could happen 10 years earlier than previously thought,** regardless of the greenhouse gasses (GHG) emissions scenario. • Report further noted that the **melting of ice would affect human society and the ecosystem both within and outside the Arctic,** through changing Arctic marine activities as well as further accelerating the Arctic warming and thereby altering Arctic carbon cycling

Why is Arctic ice important?

- **Albedo effect:** Albedo of the polar ice keeps the poles cold. But shrinking sea ice exposes more seawater to sunlight, the **ocean absorbs more heat,** which in turn melts more ice and curbs albedo even further. This creates a positive feedback loop leading to warming of oceans which in turn melts ice further.
- **It influences ocean currents:** Cold currents from poles moderates the temperatures of the oceans through thermohaline circulations.
- **Methane stock :** Scientists have long known **Arctic tundra and marine sediments contain large, frozen deposits of methane**, posing a climate risk if they thaw and release the potent greenhouse gas.
- **Permafrost:** They hold a **large sink of carbon** and when they melt carbon dioxide and methane is released which the cause of global is warming.

Thermohaline Circulation
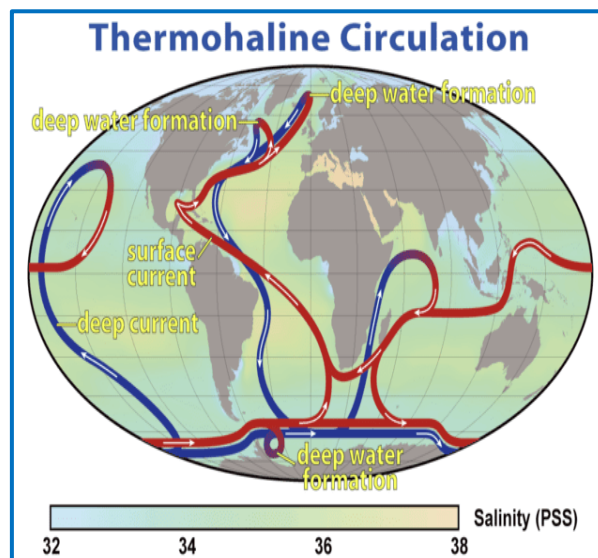
Conclusion

- The massive sheets of ice that pad the Arctic region play a major role in **influencing global climate and the rise and fall in global sea temperatures.** Therefore international efforts must be taken towards mitigation of the same.

Sagar Samriddhi System

Context

- Shri Sarbananda Sonowal launches **'SAGAR SAMRIDDHI' to bring transparency & efficiency.**

About 'SAGAR SAMRIDDHI'

- It is an **Online Dredging Monitoring System** aimed at accelerating the **'Waste to Wealth' campaign of MoPSW.**
- This system has been developed by **National Technology Centre for Ports, Waterways and Coasts (NTCPWC) the technological arm of MoPSW.**
- The new technology brings in marked improvement against the **old Draft & Loading Monitor (DLM) system.**

Capabilities of 'SagarSamriddhi'	1. Real time dredging progress report 2. Daily and monthly progress Visualisation 3. Dredger performance and downtime monitoring 4. Easy location track data with snapshot of loading, unloading and idle time
Dredging Guidelines for Major Ports' in 2021	• The guidelines were issued to address the **objective of carrying out dredging with essential technical investigation.** • The Dredging Guidelines outlined the procedure for planning and preparation, technical investigations, dredged material management, estimating the cost of dredging etc., **to enable the Major Ports to formulate the dredging projects** in order to complete in time. • Addendum to the Dredging Guidelines 2021 for Major Ports **for disposal of dredged material by incorporating a necessary provision in form of 'Waste to Wealth' was done.**

Importance of the system

- Now with implementation of the **Addendum of the Dredging guidelines** and by using the Sagar Samriddhi, online dredging monitoring system, **the dredging cost will be greatly reduced.**
- Along with This **more transparency and efficiency** will come in the overall system.
- This system strengthens the Atmanirbhar Bharat and Make in India vision of PM Modi.
- The system will **bring in synergy among** multiple input reports like daily dredging report, the pre and post dredging survey data before processing and producing real time dredging report.

Global Wind Day and India

Context

- The Ministry of New and Renewable Energy, Government of India joined the worldwide celebrations of **15th June as Global Wind Day at a day-long event in New Delhi.**

Global Wind Day 2023

- The event was organized in collaboration with the **National Institute of Wind Energy, Shakti Sustainable Energy Foundation, Indian Wind Turbine Manufacturers Association, Indian Wind Power Association, and Wind Independent Power Producers Association.**
- It was organized with the intent to celebrate the success so far made towards wind energy in India.
- It also discussed the potential ways forward for **accelerating wind energy adoption in India.**
- The event had the central theme of **"Pawan – Urja: Powering the Future of India".**

Current status of Wind Energy in India

- India stands **4th globally in Renewable Energy Installed Capacity (including Large Hydro) and 4th in Wind Power capacity (as per REN21 Renewables 2022 Global Status Report).**
- India's Installed Wind power capacity is 42.6 GW as of sept 2022.
- India has significant potential for **both onshore and offshore** wind energy production.
- The onshore wind potential of the country is now estimated at **1,164 GW at 150 meters above ground level.**

State	Wind Power Installed Capacity as on 28.02.2023 (In MW)
Tamil Nadu	9983.12
Gujarat	9925.72
Karnataka	5276.05
Maharashtra	5012.83
Rajasthan	4681.82

Fig; Wind energy capacity of top wind energy producing states.

- The commercially exploitable potential of wind energy in India is **estimated to be more than 200 gigawatts (GW).**
- As of December 2022, the total installed capacity of wind power was **41 GW, i.e., about 20% of the commercially exploitable potential.**
- India now ranks fourth in wind power capacity in the world.

Government Policies and initiatives to promote wind energy

- Government has extended **concessional custom duty exemption on certain components required for manufacturing of wind electric generators**, including some raw materials for blades of wind turbines, till 31.03.2025.
- Union Budget 2023 has identified Green Growth as **one of the nodes in the SAPTARISHI (7 priorities).**
- Green Energy Corridor Scheme for development of **intra-state transmission system for RE** projects have included wind energy along with solar energy inter state transmission systems.
- The **Ministry of New and Renewable energy encourages research and technology development proposals in collaboration** with the industry and provides upto 100% financial support to

Government/non-profit research organizations upto 50- 70% to Industry, Start-ups, Private Institutes, Entrepreneurs and Manufacturing units.

- **Permitting Foreign Direct Investment (FDI) up to 100 percen**t under the automatic route has been done in the Wind sector.

Apart from these intuitive government has taken following initiatives to promote wind energy in India:

- Declaration of trajectory for **Renewable Purchase Obligation (RPO) up to the year 2030,**
- Setting up of **Ultra Mega Renewable Energy Parks t**o provide land and transmission to RE developers on a plug and play basis,
- **Laying of new transmission lines and creating new substatio**n capacity for evacuation of renewable power,
- Setting up of **Project Development Cell** for attracting and facilitating investments,
- Standard Bidding Guidelines for tariff based competitive bidding process for procurement of Power from Grid Connected Solar PV and Wind Projects,
- Government has issued orders that power shall be dispatched against **Letter of Credit (LC) or advance payment to ensure timely payment by distribution licensees to RE generators**

Challenges in wind energy sector:

- **Shift in tariff system:** There is a **shift in the tariff system from feed-in-tariff (guaranteed above-market price for producers) to tariff determination** by competitive bidding. This has led to increased tariffs in the wind sector.
- **Aggressive bidding: Aggressive bidding by developers** as some developers resort to aggressive bidding, thus decreasing prices to unsustainable levels and eventually backing out of the project.
- **Issue of prioritization: I**t has been observed that **solar energy has been prioritized over wind energy,** despite import dependence on the solar sector. From March 2014 to May 2022, the installed **capacity of wind power increased by 93%** as compared to a 2064% increase in solar power. This shows the prioritization of solar energy over wind energy.
- **Inadequate grid and transmission infrastructure:** India's grid infrastructure and transmission lines are. Inadequate and does not cater to the remote locations. Wind power generation is often located at remote places.
- **Availability of land:** Land availability at lower cost is difficult while land acquisition at higher cost significantly increases the cost of the project and the energy. Only states such as Maharashtra and Gujarat has lands available at lowers costs.

Way ahead

- **Replace old and less efficient turbines:** The need is for **replacing old and less efficient turbines with advanced turbines.**
- **Repowering old turbines:** A policy for **repowering old turbines and issuing guidelines** for recycling old turbines should be formulated.
- **Penalty and blacklisting:** There need to be provisions for a **heavy penalty on developers backing out unilaterally and blacklisting of persistent defaulters.**
- **Coordination between center and states: The central and state governments must enhance consensus and coordination among various agencies. It can clarify project targets and procurement schedules, balancing of grids as well as composition and conditions for new tenders.**
- **wind-solar hybrid projects:** There is a need for promoting the **setting up of wind-solar hybrid projects to harness the installable potential of more than 50 GW.** Although The National Wind Solar Hybrid Policy, of 2018 provides for promoting large grid-connected wind-solar energy projects its implementation is low.
- **Technology exchange programs:** Develop a technology exchange program and align the Indian manufacturing base with the global wind supply chain to create export-oriented opportunities. The

government and industry can work together to secure strategic stocks of commodities and critical materials.

- **RPO compliance: The RPO compliance** should be ensured by all states and penalties against defaulting entities should be enforced.

Conclusion

- Wind energy is crucial to India's efforts to achieve its goal of having 50% of its electric power installed capacity from non-fossil fuel-based energy resources by 2030 and to achieve **Net Zero by 2070**. It has to be noted that India has strong domestic manufacturing in the wind energy sector. India must utilize the potential.

Production of Green Hydrogen

Context

- **Hardeep Singh Puri at a G20** event said that the Private sector is aggressively pursuing the production of green hydrogen.

Green hydrogen current status	- Green hydrogen currently accounts for **less than 1% of global hydrogen production** due to it being expensive to produce. **India's installed green hydrogen capacity accounts for less than 0.1%** of India's renewable energy basket currently. - The government has **proposed to produce 5 million tonnes/year** of "green" hydrogen by 2030 under the National Green Hydrogen Mission.
India's initiatives towards green hydrogen	**E20 fuels:** The government has committed that the Petrol **blended with 20 percent of ethyl alcohol, also called 'E20',** will be made available at 1,000 outlets of oil marketing companies (OMCs) across the country. E20 fuel is being dispensed at 600 retail outlets in India. **Involvement of various ministries:** The government has provided six centers where **six different ministries will look** at hydrogen production on their own. **The National Green Hydrogen Mission:** - The National Green Hydrogen Mission was approved by the **Union Cabinet in January 2022.** - It was launched with the objectives of making India a leading producer and supplier of **Green Hydrogen** in the world and creation of export opportunities for Green Hydrogen and its derivatives in India. - The Mission will facilitate demand **creation, production, utilization and export of Green Hydrogen.** - Under the Strategic Interventions for **Green Hydrogen Transition Programme (SIGHT)** component of the mission, two distinct financial incentive mechanisms – targeting domestic manufacturing of electrolysers and production of Green Hydrogen – will be provided under the Mission. - The Mission will also **support pilot projects in emerging end-use sectors and production pathways.**

Challenges with green hydrogen production

- The production of green hydrogen **requires vast amounts of resources such as land, water, and renewable energy.** This can fuel land-use and water conflicts, human rights violations, energy poverty, and the delay of the de-carbonisation of the electricity grid in producer countries.
- Some of the locations chosen suffer from **water scarcity**. For electrolysis, about 9 kilograms (kg) of water is required per kg of hydrogen. It is difficult to meet such a high requirement.

- The high cost of manufacturing green hydrogen using renewable energy is a major issue for India. **According to the European Commission, the cost of producing GH2 is between Rs 252-255/kg.**
- The energy produced using **green hydrogen will be costly for India and It will face astute competition** from other sectors such as solar energy
- **Due to its high cost and low production potential**, investment in the Green Hydrogen sector is lacking. Very few investors are interested to invest in green hydrogen economy.
- The production of hydrogen in general and green hydrogen in particular **requires more energy than other fuels.**
- **Hydrogen is a highly volatile and flammable element** and extensive safety measures are therefore required to prevent leakage and explosions.

What is green hydrogen?

- Green hydrogen is **hydrogen generated by renewable energy or from low-carbon power.** Green hydrogen has significantly lower carbon emissions than gray hydrogen, which is primarily produced by steam reforming of natural gas.

Types of hydrogen based on extraction methods

- Depending on the nature of the method of its extraction, hydrogen is categorized into three categories, namely, **Grey, Blue and Green.**
- **Grey Hydrogen:** It is produced via coal or lignite gasification (black or brown), or via a process called steam methane reformation (SMR) of natural gas or methane (gray). These tend to be mostly **carbon-intensive processes**.
- **Blue Hydrogen:** It is produced via natural gas or coal gasification combined with **carbon capture storage (CCS) or carbon capture use (CCU)** technologies to reduce carbon emissions.
- **Green Hydrogen:** It is produced using **electrolysis of water with electricity generated by renewable energy.** The carbon intensity ultimately depends on

the carbon neutrality of the source of electricity (i.e., the more renewable energy there is in the electricity fuel mix, the "greener" the hydrogen produced).
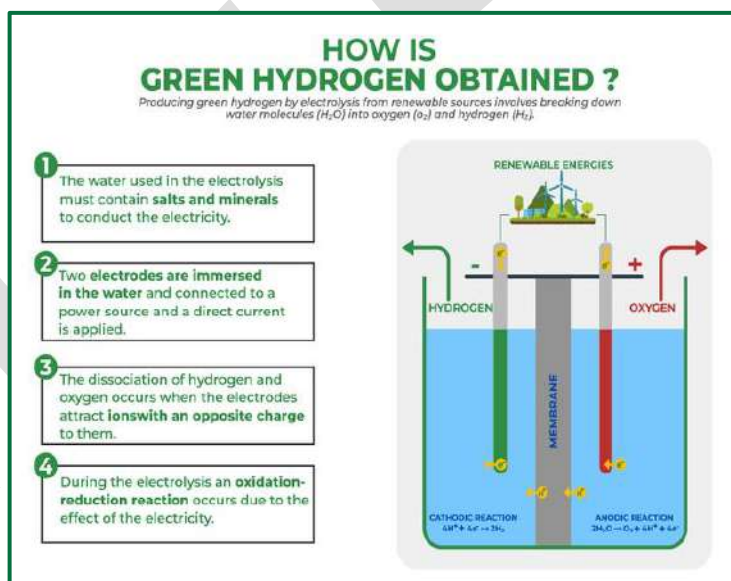
The importance of Green Hydrogen and Why is India pursuing green hydrogen?

- **Green economy:** The latest estimates by the International Energy Agency (IEA), published at the end of 2019, predict that global energy demand will increase by between 25 % and 30 % by 2040, which in an economy dependent on coal and oil would mean more CO2, exacerbating climate change. Green Hydrogen is suitable to move towards a green economy.
- **To cater to the growing demand:** Energy demand in India is expected to double by 2050 from present levels as. India becomes a 7 trillion dollar economy. To meet the demand for energy India needs green hydrogen.
- **100 % sustainable:** green hydrogen does not emit polluting gasses either during combustion or during production.
- **Storable:** hydrogen is easy to store, which allows it to be used subsequently for other purposes and at times other than immediately after its production.

- **Versatile:** green hydrogen can be transformed into electricity or synthetic gas and used for commercial, industrial or mobility purposes.
- **Net Zero emission Targets:** To meet Net Zero emission targets by 2070 and to meet the commitments under Intended Nationally determined contributions India needs to invest more on the green economy. Green hydrogen provides a promising sector towards that goal.

Conclusion

- During our G20 presidency, India is pushing for a global biofuel alliance, which not only includes countries like Brazil but also opens it up to others as well. India has set its sight on becoming energy **independent by 2047 and achieving Net Zero by 2070.** To achieve this target, increasing renewable energy use across all economic spheres is central to India's Energy Transition. Green Hydrogen is considered a promising alternative for enabling this transition.

GoI-UNSCDF 2023-2027

Context

- NITI Aayog and the United Nations in India signed the Government of India - **United Nations Sustainable Development Cooperation Framework 2023-2027.**

Government of India - United Nations Sustainable Development Cooperation Framework 2023-2027	• The formulation of the GoI-UNSDCF 2023-2027 was **led by NITI Aayog.** • The implementation, monitoring and reporting of GoI-UNSDCF 2023-2027 will be co-led by the Government of India and the United Nations, India through a **Joint Steering Committee.**
Pillars of The GoI-UNSDCF 2023-2027	• The GoI-UNSDCF 2023-2027 is built on four strategic pillars derived from the 2030 Agenda – People, Prosperity, Planet and Participation. • The four interlinked pillars have six outcome areas focusing on Health and Well Being; **Nutrition and Food Security; Quality Education; Economic Growth and Decent Work;** Environment, Climate, WASH and Resilience; and Empowering People, Communities, and Institutions.

Importance of GoI-UNSDCF 2023-2027

- GoI-UNSDCF 2023-2027 represents the **UN development system's collective offer to the Government of India.**
- It is in line with India's national vision for development, for the achievement of the Sustainable Development Goals, promoting gender equality, youth empowerment and human rights.
- The GoI-UNSDCF will for the **first time have a specific focus on SDG localisation and South-South cooperation,** in line with India's leadership towards the implementation and acceleration of the SDGs; and India's championing of **South-South cooperation.** Showcasing Indian models of development globally will be central to the effort of the programme.
- The new Framework comes at a critical juncture as the world reaches the halfway mark to achieve the **2030 Agenda for Sustainable Development,** and India envisions a 'Viksit Bharat' over the next 25 years.

United Nations Sustainable Development Cooperation Framework

- The **United Nations General Assembly Resolution A/RES/72/279** designates the United Nations Sustainable Development Cooperation Framework as the principal planning and implementation instrument for the UN Development System at the country level.
- Programme priorities of the UN entities working in the country are derived from the **GoI-UNSDCF.**
- A similar previous Cooperation Framework (2018-2022) was successful.

What is Sustainable Development?

- The concept of sustainable development is named after the **Brundtland report drawn up as part of the UN World Commission on Environment and Development in 1987.**
- Sustainable Development has been defined as the "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Core Elements of Sustainable Development:

- For sustainable development to be achieved, it is **crucial to harmonize three core elements:** economic growth, social inclusion and environmental protection.

Social pillar

- The social pillar of a company's sustainable development refers to values that **promote equality and respect for individual rights.**

Economic pillar

- This pillar is based on Industries ability to contribute to economic development and growth. In other words, they must encourage and promote the protection of the environment by limiting the risks posed by their production.

Fig: Three pillars of Sustainable development.

Environmental pillar

- The environmental pillar is founded on a **commitment to protect the environment** by reducing risks and measuring the environmental impacts of companies' activities.
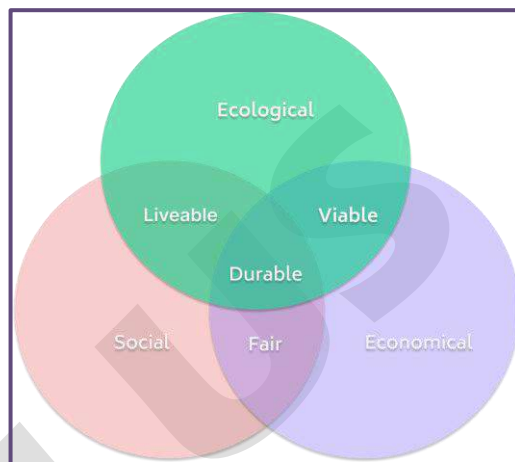

Global issues and roadblocks related to Sustainable Development

- **Delay in securing a consensus:** There is hardly any convergence on how to achieve sustainable development. This delay in securing a consensus is **leading to a delay in execution, which is causing substantial and sometimes irreparable ecological damage.**
- **Problem of inconsiderate growth:** Despite SDG goals countries still use GDP as a measure of development. However the **GDP falls short when it comes to measuring human welfare, environmental sustainability, or income disparity.** For instance, rising crime in a country will enhance GDP as it is

depicted as expenditure on surveillance and security measures. This paints the wrong picture that the economy is flourishing.

- **Trade-offs between SDGs:** while there are inter-linkages between the SDGs, the agenda also contains trade-offs. For example, the **trade-off between SDG 2 (Zero Hunger) and SDG 15 (Life on Land)** creates a land struggle between expanding agricultural areas to eliminate hunger and protecting natural ecosystems and biodiversity. This impedes the goal of achieving the SDGs in conjunction.

- **Environmental accounting :**It is **challenging to ascribe economic value to environmental threats such as overfishing, oil spills, and deforestation.** This subjectivity broadens the scope for political manipulation, deepening the divide between developed and developing nations over climate change.

- **Difficult to forecast future requirements:** it is **difficult to forecast what future generations' requirements will be.** The resources we conserve now may become obsolete in the future. For example, **preserving tungsten earlier to make bulbs would have been counterproductive** since energy-efficient and eco-friendly LEDs are now widely used, which do not require tungsten.

Progress in sustainable development

- This year is the halfway point in the implementation of the 2030 Agenda for Sustainable Development. The progress on important SDGs are:
  - o **No Poverty: UN Sustainable Development Goals 2022 report card** says four years of progress reducing poverty has been nullified by the COVID-19 pandemic. **Rising inflation and the war in Ukraine have caused further setbacks**. It's estimated that as many as 676 million people are living in extreme poverty worldwide, almost 100 million more than the pre-pandemic projection.
  - o **Zero Hunger:** The UN estimates as **many as 828 million people may have suffered hunger** in 2021. The Ukraine crisis has caused dangerous food shortages for the world's poorest people.
  - o **Quality Education:** The pandemic has caused **severe disruption to education systems**. An estimated 147 million children missed over half of in-person teaching in 2020 and 2021. As a result, this generation of children could lose $17 trillion in lifetime earnings.
  - o **Good Health and Well-Being:** COVID-19 is threatening decades of progress on global health. Consequent widespread disruption to health systems has also **derailed progress against preventable diseases such as HIV, TB and malaria.**
  - o **Gender Equality:** The UN says the world is **not on track to achieve gender equality by 2030. Progress in areas like unpaid care and domestic work and reproductive health is falling behind.** Violence against women remains endemic.
  - o **Clean Water and Sanitation:** Demand for water is rising due to rapid population growth and increasing pressure from agriculture and industry. Decades of poor management have increased water stress. At current rates, **by 2030, 1.6 billion people will lack safe drinking water and 2.8 million** people will be without adequate sanitation.
  - o **Affordable and Clean Energy:** A **projected 679 million people will still be without electricity** in 2030 at current rates. Slow progress towards clean cooking solutions means the health of 2.4 billion people is also at risk.

- Similarly A global **pandemic, conflicts, disasters and other crises** have set back progress towards the Sustainable Development Goals (SDGs) and reversed human development in terms of reduced employment, increased inequality, etc.

Conclusion

- The coming decade will be pivotal for **an innovation-driven, inclusive, resilient, and sustainable India.** For India, the principle of "**Leaving No One Behind**" is particularly important due to its vast and diverse demography, as well as its potential due to tremendous demographic dividend. The GoI-UNSDCF, through its agreed partnerships, outcomes and outputs will contribute towards the achievement of national development priorities ensuring a whole of society, whole of government and whole of UN approach.

World Desertification Day 2023

Context

- The UN said on **World Desertification Day 2023** that granting equal land rights to women can reduce world hunger significantly.

International Day Against Desertification, and Drought, 2023	• International Day Against Desertification, and Drought is **celebrated on June 17.** • This year's theme of the International Day Against Desertification, and Drought is "**Her land. Her rights".** • The theme emphasizes on investing in women's equal access to land and associated assets is a direct investment in their future and the future of humanity.
Definition of Desertification	• As defined by UNCCD "Desertification is **not the natural expansion of existing deserts but the degradation of land in arid, semi-arid, and dry sub-humid areas.** It is a gradual process of soil productivity loss and the thinning out of the vegetative cover because of human activities and climatic variations such as prolonged droughts and floods."
Causes of desertification	• **Overgrazing**: Overgrazing reduces the usefulness, productivity and biodiversity of the land and is one cause of desertification and erosion. Overgrazing is also seen as a cause of the spread of invasive species of non-native plants and of weeds. • **Deforestation:** Deforestation causes soil erosion or removal of the fertile top layer of the soil. As the upper fertile layer of soil is removed by erosion, the soil quality decreases day by day. And eventually converts it to a desert as the soil is no more suitable for plants. • **Farming Practices:** Unsustainable agriculture is a primary cause and erodes soil **100 times faster than it can be restored naturally.** • **Urbanization:** As areas become more urbanized, there are fewer places for plants to grow, thus causing desertification. • **Climate Change:** Desertification is attributed to soaring temperatures and/or drop in precipitation; this is **likely to result in the modification and replacement of plant communities by species** that are adapted to hotter and drier conditions. The **climate change accompanied by global warming has led to increase in temperature** and reduced precipitation in many parts of the world causing desertification.
Impact of desertification	• Desertification threatens the world with food insecurity and **impedes climate change mitigation.** • The women comprise "**nearly half the world's agricultural workforce and produce up to 80 percent of food in developing countries." This makes them prone to be affected by desertification.** • Women suffer the most because of the consequences of this **human-made crisis such as scarcity of food and water** as well as forced displacement. • **Only a fifth of the world's landowners are women.** Thus desertification will have a disproportionate impact on the women. • Women **have lower access to natural resources, financial services and technology,** among other things, compared to men. This further makes them major recipients of the impact of certification. • Desertification causes **loss of biodiversity** by worsening the living conditions of many species.

	• It also causes **food insecurity due to crop failure or reduced yields.** As there is a loss of vegetation cover and therefore of food for livestock and humans is affected.
	• There will be Increased **risk of zoonotic diseases,** such as COVID-19 as the zoonoses transmigrates out of the forest.

Status of Desertification in India

- **97.85 million hectares (mha) of India's total geographical area (TGA) of 328.72 mha underwent land degradation** during 2018-19, according to the **Desertification and Land Degradation Atlas of India.**
- **In 2003-05, 94.53 mha (28.76 per cent of the TGA) underwent land degradation.** The number increased to 96.40 mha (29.32 per cent of the TGA) in 2011-13.
- **83.69 mha underwent desertification in 2018-19.** This was greater than the 81.48 mha in 2003-2005 and 82.64 mha in 2011-13 that underwent desertification.
- Around 23.79 per cent of the area undergoing desertification / land degradation can be **contributed by Rajasthan, Maharashtra, Gujarat, Karnataka, Ladakh, Jharkhand, Odisha, Madhya Pradesh and Telangana.**
- However, land degradation and desertification was **declining in Uttar Pradesh, Rajasthan and Telangana in 2018-2019.**

Measures taken by India to Curb Desertification

- **Desert Development Program:** It was launched in 1977-78 with the aim to minimize the adverse impact **of drought and control desertification through rejuvenation of natural resources of the identified desert areas.** The desert areas of Rajasthan, Gujarat, Haryana, and the cold desert of Jammu & Kashmir were its primary focus.
- **Bonn challenge:** At the UNFCCC Conference of the Parties (COP) 2015 in Paris, **India joined the voluntary Bonn Challenge pledge to bring into restoration 13 million hectares of degraded and deforested land by the year 2020**, and additional 8 million hectares by 2030. India's pledge is one of the largest in Asia. The Bonn Challenge is a global effort to bring 150 million hectares of the world's deforested and degraded land into restoration by 2020, and 350 million hectares by 2030.
- **Integrated Watershed Management Program:** It was launched in 2009-10. It is being implemented by the **Department of Land Resources of the Ministry of Rural Development** with the aim to restore ecological balance by conserving natural resources such as forest, water, soil, and vegetative cover.
- **National Afforestation Program:** It was launched in 2000-01 by the **Ministry of Environment, Forest and Climate Change (MoEFCC).** It is aimed at the ecological restoration of degraded forest areas and to develop the forest resources with the participation of people, with a focus on improvement in livelihoods of the forest communities.
- **National Mission for Green India:** It was launched in 2014 and has an objective of protecting the biological resources against the adverse effect of climate change and recognizing the impact of forests on **ecological sustainability, biodiversity conservation, and livelihood security.** It aims to protect, restore and enhance India's diminishing forest cover within 10 years.
- **Drought Prone Area Program (DPAP):** It was launched by **the Government of India in 1973-74 with the objective of minimizing the adverse effects of drought** on the production of crops, livestock, and productivity of land which ultimately leads to drought-proof areas.

International Efforts

- In COP13 held in China in 2017, the UNCCD, drew up a **'Gender Action Plan'** mandating gender mainstreaming in efforts of countries to achieve their LDN targets. The action plan came into force in 1996.
- Some like Bosnia, Guyana, Senegal, Peru, Ethiopia, Indonesia have adopted the
- Gender Action Plan with **targets to provide additional benefits to advance gender equality,** increase women's access to and control over land and natural resources.

- National efforts such as the "**Great Green Wall of China"** which has aimed to plant 88 million acres of forests in a 3000-mile network with a goal to tackle deforestation, is under implementation.
- A similar anti-desertification tree planting ambition, "**Great Green Wall"** of Africa has also been going on since its inception in 2007.

Way ahead

- As per the UNCCD report **If women had equal rights to land, agricultural production in the poorest regions would increase by up to 4 per cent and malnourishment would decline by 12-17 per cent,** resulting in 150 million fewer hungry people globally. Thus efforts should be made by national governments to grant equal land grants to women.
- The **interplay between desertification and climate change** significantly affects the achievement of the targets of SDGs 13 (climate action) and 15 (life on land). Thus there is a need for efficient policy actions on land degradation neutrality and climate change mitigation.
- **Regeneration and multiplication** of valuable trees whose roots already lay underneath their land and encouraging significant tree growth needs to be done.
- Land degradation can be solved through **efficient problem-solving techniques** and the cooperation between local, governmental, and environmental bodies.
- Promoting **coordinated land-use planning, including the management of water resources, livestock and agricultural activities and preserving vegetation cover, which plays a key role in protecting the soil from wind and water erosion**, by building barriers and stabilizing dunes could prove to be effective tools against desertification.

Conclusion

- A call to action and risk management efforts should be at the forefront of every planned proposal to curb environmental degradation. Be it land, soil, or water, efficient cooperation, and **community efforts will certainly go a long way in mitigating the consequences of climate change and environmental degradation.**

Miyawaki Forests

Context

- PM Modi talks of Miyawaki forests in Mann kiBaat.

Miyawaki forests	- It is named after Japanese **botanist Akira Miyawaki.** - This method involves **planting two to four different types of indigenous trees within every square meter and the trees become self-sustaining and they grow to their full length within three years.** - Some of the common indigenous plants that are used for these forests include Anjan, Amala, Bel, Arjun and Gunj. - The methodology was developed in the 1970s, with the basic objective to densify green cover within a small parcel of land.
Importance of the Miyawaki forest	- The dense green cover of indigenous trees plays a key role in **absorbing the dust particles** of the area where the garden has been set up. - The plants used in the Miyawaki method are mostly **self-sustaining and don't require regular maintenance** like manuring and watering. - The Miyawaki method rapidifies forest development by **reconstructing the soil, utilizing the native plant diversity, growing healthy seedlings**, and thus planting them close together.This method gives a stepwise procedure for restoring native forests. - The surface temperature has increased with several infrastructure projects like **real**

| | estate metro rail construction in progress in Indian cities over the past few years. The Miyazaki forest helps absorb the temperature.Thus the plants also help in regulating surface temperature. |

Indian experiment with Miyazaki

- 64 Miyawaki forests have been planted in **Mumbai** so far. The Miyawaki drive was launched under **BMC's urban forest project on January 2, 2020.**
- In the next one year, the BMC **aims to create 14 more urban forests by planting 80,400 trees** of various indigenous species.
- **RaafiRamnath, who used the Miyawaki technique to transform a barren land** into a mini forest called Vidyavanam by planting 115 varieties of trees.
- **Sunpharma Road, a private farm, has** planted large number of trees using Miyawaki technique.
- **Bhoj village, padra, a forest department's demonstration area** has planted 831 saplings using the same technique.

LEEF Net Zero Certifications

Context

- **India has emerged as a top country with LEED Zero green building projects,** outperforming the United States of America and China.

Leadership in Energy and Environmental Design (LEED)

- Leadership in Energy and Environmental Design (LEED) is a green building certification program used worldwide developed by the **non-profit U.S. Green Building Council (USGBC).**

- LEED provides a framework for healthy, efficient, carbon and cost-saving green buildings.
- LEED certifications are **Certified (40-49 points), Silver (50-59 points), Gold (60-79 points) and Platinum (80+ points).**
- LEED Zero **has four categories which recognise net-zero status in carbon, energy, water, and waste** over a period of 12 months.

| Importance of LEED Zero projects | • LEED certification is a **globally recognized symbol of sustainability achievement.**
• The LEED Zero projects include **office spaces, hospitality facilities, retail malls, industrial manufacturing projects and data centers.**
• Nearly one-third of all carbon emissions in India come from the building and construction sector.
• LEED Zero recognises projects that have reached net zero or net positive status in the categories of carbon, energy, water, or waste. |

	• **Net zero refers to a state in which the greenhouse gasses going into the atmosphere are balanced by removal from the atmosphere.** • The term net zero is important because with regard to CO2 this is the state at which global warming stops.
India and LEED certified projects	• According to the GBCI's findings, **out of 150 LEED Zero certified projects, India has 45% or 73 such projects**, with Haryana and Tamil Nadu leading the race in certifications. • India's DLF group is the leader globally in total LEED Zero certifications with 45 certifications for its projects, followed by Kolkata-headquartered ITC Group with 15 certifications.

Conclusion

- As large emitters of carbon emissions, buildings **play a significant role in helping us achieve our global climate goals.** India's leadership position in LEED Zero projects reflects its commitment to sustainability and the adoption of innovative green building practices. It is also in line with India's ambitious target of achieving net zero **GHG emissions by 2070.**

Low-Cost Solution for Treatment of Textile Effluent Pollution

Context

- NIT Warangal along with Prime Textiles, Rampur located in **Kakatiya Mega Textile Park (KMTP), with support from IMPRINT,** a joint effort of MoE and SERB, developed a pilot-scale textile effluent treatment plant.

|	
About the new pilot-scale textile effluent treatment plant	• It was developed by the **NIT Warangal along with Prime Textiles,** Rampur located in Kakatiya Mega Textile Park (KMTP) with support from IMPRINT, a joint **effort of MoE and SERB.** • It is developed using biosurfactants (BS), cavitation, and membrane technology.
Need for efficient technology	• Textile effluent is heavily **contaminated with pollutants such as dyes, dissolved solids, suspended solids and toxic metals** and there is a need for robust, efficient technologies **to treat such effluent before they are discharged into the environment.**
Benefits of technology	• The use of BS in MBBR helped in dye removal and was effective in **reducing operational time and cost** (with respect to other biological treatment methods). • Cavitation (C), an advanced oxidation process (AOP), aided in **reducing installation cost as well as reducing carbon footprin**t. • The ability of the technology to **generate oxidizing radicals in-situ,** significantly reduced the reliance on external oxidizing agents. • Modifying the membrane (M) surface using boehmite sol synthesized using the sol-gel process, **decreased the pore size from micro-scale to nano-scale and led to a significant improvement in its performance.** • The treated water can be utilized for agricultural activities, and cleaning purposes.
Sequence of process	• **Step 1:** The coagulation removes turbidity caused by suspended solids by destabilizing the charges of the particles using a chemical coagulant. • **Step 2:** The biofilm grown on MBBR reduces the heavy metal content, and degrades the biodegradable pollutants. • **Step 3:** The cavitation phenomenon destroys all types of pollutants, resulting in the in-situ generation of radicals, and energy which are responsible for the pollutant degradation.

	• **Step 4:** Finally, a surface modified membrane separates all the pollutants present in the wastewater. With this sequence, the pilot **plant of 200 Litres Per Day** capacity removes pollutants and the treated water can be utilized for agricultural activities, and cleaning purposes.

Biosurfactants

- The term bio lubricants applies to all lubricants that are both rapidly biodegradable and non-toxic to humans and aquatic environments.
- Biolubricants are generally prepared by chemical modification of plant-based oils such as transesterification, epoxidation, and esterification reactions. The esterification reaction between fatty acid and polyol is done to obtain them.

Cavitation

- It is a process in which pressure variations in a liquid can in a short period of time cause countless small cavities to form and then implode.
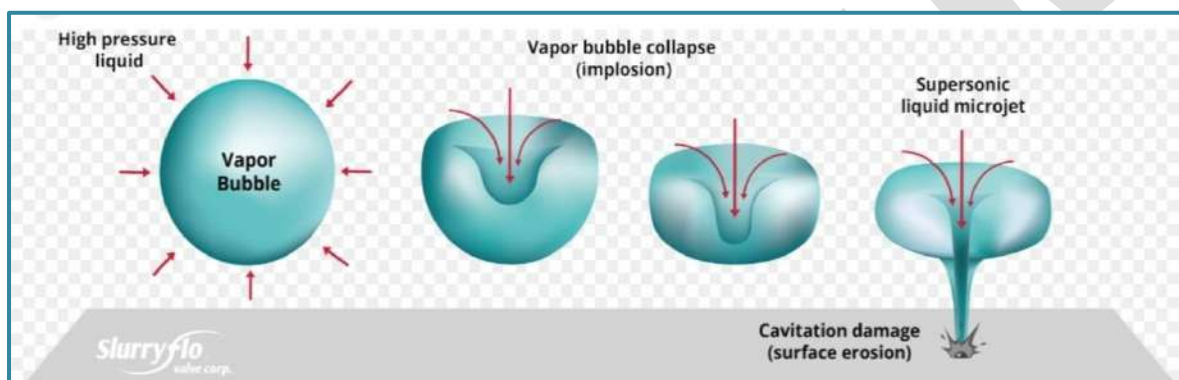

Membrane technology

- Membranes are used in water treatment to separate contaminants from water based on properties such as size or charge. Common membrane processes include microfiltration, ultrafiltration, nanofiltration, reverse osmosis, and electrodialysis

IMPacting Research INnovation and Technology (IMPRINT)

1. 'IMPRINT India' is a pan-IIT and IISc joint initiative **to develop a roadmap for research to solve major engineering and technology challenges** in ten technology domains relevant to India.
2. It was launched on **November 5, 2015.**
3. It was formulated and implemented by the Ministry of Human Resource Development (now renamed as Ministry of Education).
4. Now **The Science and Engineering Research Board (SERB) in the Department of Science & Technology (DST)**has been made the nodal agency for implementing IMPRINT-2.
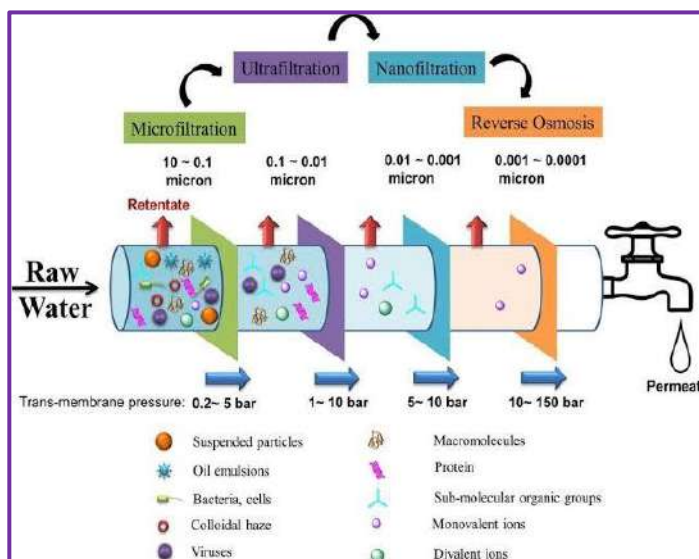
This novel initiative with a twofold mandate is aimed at:

5. Developing new engineering education policy
6. Creating a road map to pursue engineering challenges.

IMPRINT 2.0

- IMPRINT has now graduated into the next edition, IMPRINT-2, with a wider scope, simpler guidelines for participation and better synergy among investigators, partners and collaborators.

Important Features of IMPRINT-2

- The Principal objective is to translate knowledge into viable technology
- About 425 projects with up to Rs. 2 crore budget will be supported
- MHRD (now renamed as Ministry of Education) and DST are equal partners to steer the scheme
- IMPRINT-2 is open to all MHRD (now renamed as Ministry of Education) funded HEIs / CFTIs
- 27 ministries of GoI remain, partners of IMPRINT-2,
- Projects with industry support will be preferred.

Sagar Samajik Sahayyog

Context

- The Union Minister of Ports, Shipping & Waterways and AyushShriSarbanandaSonowallaunches New CSR guidelines 'SagarSamajikSahayog.'

About the new CSR guidelines 'SagarSamajikSahayog'

- It is the new guidelines of Corporate Social Responsibility (CSR) by the Ministry of Ports, Shipping & Waterways.
- New CSR guidelines is an attempt to empower ports to address issues of local communities in a more cooperative & swift manner
- The new guidelines empower ports to undertake CSR activities directly.
- It will impact projects and programmes relating to activities specified in Section 70 of the Major Port Authorities Act, 2021.

Broad provisions of the guidelines

Corporate social responsibility committee:

- To plan and implement CSR projects, a Corporate Social Responsibility Committee shall be constituted in each major port.
- The Committee shall be headed by the Dy. Chairperson of the Major Port and shall have 2 other Members.

Corporate social responsibility plan:

- Each major port shall prepare a Corporate Social Responsibility Plan for every financial year, and integrate its CSR in the Business Plan with the social and environmental concerns related to the business of the entity.

CSR Budget:

- CSR Budget will be mandatorily created through a **Board Resolution as a percentage of net profit.**
- A port with an annual **net profit of ₹100 crores or less** can fix between **3% - 5% for CSR expenses.**
- The ports with a net **profit between ₹100 crores to ₹500 crores** annually, can fix their CSR expenses **between 2% and 3% of their net profit,** subject to a minimum of ₹3 crores.
- For ports, whose annual net profit is **above ₹500 crores per year**, the CSR expenses can be **between 0.5% and 2% of its net profit.**
- **20% of CSR expenses** must be earmarked to **Sainik Kalyan Board** at the district level, National Maritime Heritage Complex and National Youth Development Fund.
- **78% of funds** should be released for the **social & environmental welfare** of the community in areas like drinking water, education, vocational training, skill development, electricity through non-conventional &renewable sources, health & family welfare, promotion of livelihood for economically weaker section of society, community centres, hostels etc.
- A sum of 2% of total CSR expense has been earmarked for **monitoring of the projects under the CSR programmes by the Ports.**

Red Eared Sliders

Context

- Customs Air Intelligence Unit seizes 6,850 live red-eared sliders at Tiruchi airport.

The red-eared slider	• **The red-eared slider or red-eared terrapin** is a subspecies of the pond slider. • It is a semi-aquatic turtle belonging to the family **Emydidae**. • They pile up on **top of one another when they are basking.** They however slide off their basking spot into the water upon the sight of the predator. **For that reason, they are called sliders.**
Habitat	• The red-eared slider is native from the **Midwestern United States to northern Mexico.**
Protection Status:	• The International Union for Conservation of Nature(IUCN)Red List: Least Concern • CITES: N/A • Wildlife Protection Act 1972: N/A
Threats	• It has become established in other places **because of pet releases** and has become invasive in many areas where it outcompetes native species. • The red-eared slider is included in the list of the **world's 100 most invasive species.**
Indian turtles	• There are five species in Indian waters — **Leatherback, Loggerhead, Hawksbill, Green and Olive Ridley.** • In India, sea turtles are protected under the Indian Wildlife Protection Act of 1972, under Schedule I Part II. ![Red-eared slider turtle]

Turtles face grave threats

- **Bycatch of turtles:** Bycatch is one such example, which is the name given to ocean animals that are unintentionally caught by fishing gear. Although scientists are now working on programmes such as new fishing nets and gear that reduce the amount of bycatch while fishing, bycatch is still increasing.
- **Mechanised boats:** Every year, thousands of sea turtles are accidentally captured, injured or killed by mechanised boats, operated and used by commercial fishermen.
- **Injuries from fishing hooks:**They can also sustain internal injuries from fishing hooks or suffer serious external injuries after becoming entangled in nets.
- **Once pollution:**Ocean pollution is killing turtles on a large scale. They are caught in toxic waters dumped in oceans. Each year, environmentalists record a high number of dead turtles washing up ashore. This heavy toll, of injuries and deaths, occurs when turtles begin migrating to their nesting grounds on beaches and in fishing areas that are their feeding grounds.
- **Grows into Invasive species:** Although Indigenous turtles are not allowed as pets under Indian law, the foreign breeds of turtles are kept in Indian families as a pet. But they are released in due time, which breeds further and expands their populations. Thus they soon become invasive.

Way ahead

- **Maintaining the health of the marine ecosystem:** Ocean pollution is at unprecedented levels today. There should be regular cleaning and absolute protection of those areas of the ocean where turtles migrate and nest.
- **Integrated conservation:** Coordinated response from state law enforcement agencies and respective fisheries departments, marine police and Indian Coast Guard, and wildlife officials is the need of the hour.
- **Preventing the release of pet turtles in the wild:** Pet turtles owners should be made mandatory to report to wildlife officials about their health. They should not be allowed to be released to the wildlife but to be deposited to the wildlife authorities.
- **Ban bottom trawling:** Bottom trawling where large fishing net trawls from the bottom of the sea to catch all the fish on its patch should be banned. It not only captures large amounts of fish but captures everything on its path, killing large amounts of other marine species.
- **Advanced technology:** Fishing nets should be designed with advanced material which does the least harm to marine species.

Abohar WLS

Context

- In a report submitted to the Punjab Forest and Wildlife Department recently, WII has stated that the blackbucks '**are on the verge of extinction in Punjab.**'

About the report	- Punjab's state animal blackbuck census was conducted by the **Wildlife Institute of India (WII) at Shri Guru Jambeshwar Wildlife Sanctuary** near Abohar in Fazilka district. - Blackbuck was **spotted at only up to 12 spots** in the sanctuary in two population estimation exercises since December 2021. - Wildlife should have been sighted at 40 places spread over 46,000 acres for fair population estimation. In this case, the sighting is so low that one could not give even a rough number.
Guru Jambeshwar / Abohar Wildlife Sanctuary	- It is located near **Abohar in Fazilka district of Punjab.** - A cluster of 13 villages was **declared a wildlife sanctuary in 1989** on the community's demand to protect wild animals in their private lands. - It is located in the heartland of the environment-loving community **of Bishnois.** - The sanctuary is unique as it is owned entirely by private individuals or panchayats. - The community reserve was home to hundreds of **endangered blackbucks, blue bull (nilgai), wild boars and other species** the previous censuses have shown. - It is known as a unique habitat of semi-arid plains with agricultural fields, intermittent fallow-barren land, scattered sand dunes and mounds, and ridges. - According to the **Wildlife Census 2011, there were about 3,500** animals in the reserve.

Reasons for the decline

- **Private ownership:** Since the land ownership inside the sanctuary is mostly private, sand dunes are being flattened to make way for agricultural fields and kinnow orchards and it has resulted in the loss of grassland habitats which are crucial for blackbucks.

- **Certification expansion:** Serious threat to the wildlife in this semi-arid region to the fast depletion of grassland due to desertification and rising arid areas.
- **Loss of mating environs:** Framing expansion has become rampant in the region. The farming expansion has led to the destruction of their mating environs.
- **Livestock overgrazing:** There is large-scale domestication of animals in the region and most of the animals are grazed in the grasslands which has led to overgrazing and encroachment on the wildlife habitats.
- **Rampant predation by feral dogs:** Feral dogs have increased significantly in the region which has led to an increase in predation of wild animals.
- **Migration:** Low detection in consecutive surveys could also be attributed to the migration of the resident Blackbuck to better areas.

Way ahead

- **Revisiting the National Highway:** Punjab authorities allowed underpasses on a national highway project crossing through the sanctuary. This project approval process of the National Highway should be revisited.
- **Grazing of the livestock:** Grazing areas should be demarcated and grazing in core areas should be prohibited in letter and spirit.
- **Ownership:** government should consider taking ownership of the sanctuary areas under its control as private ownership is causing a threat to wildlife.
- **Feral dogs:** Feral dogs should be sterilized and their pollution should be controlled to reduce their numbers.
- **Community involvement:** The community should be involved in the management of the wildlife and the forest under various schemes such as the Joint Forest Management provision of forest policy 1988.

Conclusion

- Punjab needs urgent steps to protect its state animal from vanishing in its natural habitat. owing to the **high reproductive potential of blackbucks, if proper** habitat conservation measures are put in place, they can thrive well in their present range.

5.12 SNIPPETS

SAL SEEDS

- Tribal Development Co-operative Corporation of Odisha Ltd (TDCCOL) decision to procure sal seeds (Shorea robusta) from nine Odisha districts came only after a gap of three years.
- Although it Intends to arrest the distress sale of the minor forest produce (MFP), tribal people were unhappy.
- Tribals protested that only a few districts would be benefitted while others would be deprived and the MSP for the MFP is too low.
- Under the scheme "Mechanism for Marketing of Minor Forest Produce through Minimum Support Price and development of Value chain for MFP", MSP has been fixed.
- Commodities such as wild honey, Tarind, Karaya, lac, sal leaves, Mahua Seeds, etc are covered under the scheme.
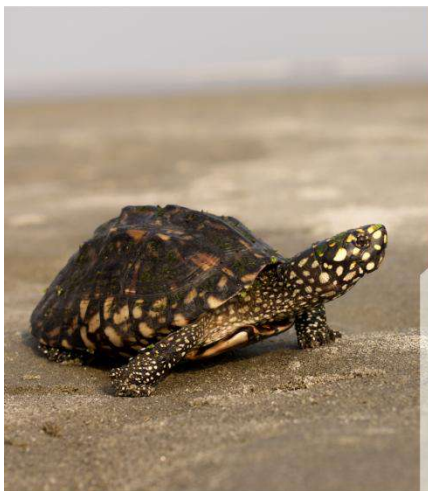
SPOTTED POND TURTLES

Context

- Three persons engaged as mahouts in the Kaziranga National Park and Tiger Reserve have been arrested for capturing and consuming a rare species of a freshwater turtle inside the one-horned rhino habitat.

Kaziranga National Park

- Kaziranga National Park represents one of the last unmodified natural areas in the north-eastern region of India. Covering 42,996 ha, and located in the State of Assam it is the single largest undisturbed and representative area in the Brahmaputra Valley floodplain.

- It is inhabited by the world's largest population of one-horned rhinoceroses, as well as many mammals, including tigers, elephants, panthers and bears, and thousands of birds.

Protection Status of one-horned rhinoceroses

- IUCN Red List: Vulnerable.
- CITES: Appendix I (Threatened with extinction).
- Wildlife Protection Act, 1972: Schedule I.

THE GREAT INDIAN BUSTARD

Context

- Cyclone Biporjoy which hit Gujarat coast in June affected the Great Indian Bustards (GIB) of Naliya near Jakhau as well as the famous Asiatic lions of the Gir forest.

Conservation status

- The Great Indian Bustard is listed in Schedule-I of the Wild Life (Protection) Act, 1972.

- The species is considered as "critically endangered" by the IUCN Red data list.

- They are in Appendix I of CITES.

- The species has been identified for conservation efforts under the component 'Species Recovery Programme' of the Centrally Sponsored Scheme- Development of Wildlife Habitats.

ASIATIC LION

Conservation effort

- It is included in a list of 21 critically endangered 'Species Recovery Programme' of the Centrally Sponsored Scheme- Development of Wildlife Habitats.

- Asiatic lions that once ranged from Persia (Iran) to Palamau in Eastern India were almost driven to extinction by indiscriminate hunting and habitat loss.

- It is now protected in Gir National Park, Gir Sanctuary, Pania Sanctuary, Mitiyala Sanctuary, etc in Gujarat.

Conservation status

- The International Union for the Conservation of Nature (IUCN) lists its status as Endangered.

- It is listed in Schedule I of the Wildlife (Protection) Act 1972.

- Listed in Appendix I of CITES.

DAITARI GREENSTONES

- Scientific examination of the volcanic and sedimentary rocks from the Daitari greenstone belt in the Singhbhum Craton in east India, formed approximately 3.5 billion years ago was done.

- The research concluded that South Africa, India and Australia shared similar volcanic activity 3.5 billion years ago.

- It was concluded that Ancient volcanism which is dating back to 3.5 billion years ago are common to Archaean cratons of South Africa, India, and Australia.

- It was also concluded that the Daitari greenstone belt shares a similar geologic make-up when compared to the greenstones exposed in the Barberton and Nondweni areas of South Africa and those from the Pilbara Craton of north-western Australia.

KARI ISHAD MANGO

- The Kari Ishad mango is prominently grown in Ankola taluk of Uttara Kannada.
- It is accepted as one of the finest quality mangoes due to its unique aroma, luscious taste, high amount of pulp, shape, and size.
- It recently got the Geographical Indication (GI) tag from the Geographical Indications Registry under the Union Government.
- Geographical Indications registration in India is governed by the Geographical Indications of Goods (Registration and Protection) Act, 1999.
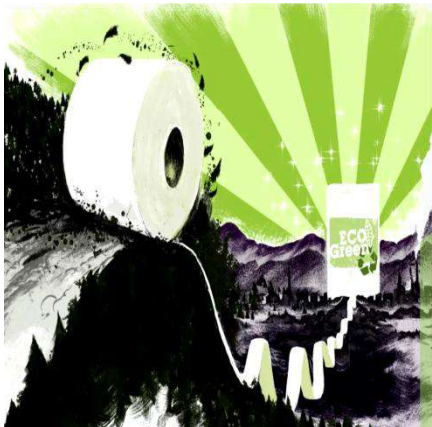
GREENWASHING

Definition
- Greenwashing is a marketing strategy where companies deceive consumers into believing that their products and services are environmentally friendly.
- It is used by companies to cater to the growing concern for the environment and the desire of consumers to make more sustainable choices.

Laws regarding Greenwashing in India
- There are no specific laws in India that regulate Greenwashing.
- The Securities and Exchange Board of India(SEBI) regulates green bond securities in the country through Regulation 2(1)(q) of the SEBI (Issue and Listing of Non-Convertible Securities) Regulations, 2021 ('NCS Regulations'). However it does not have any provision against greenwashing.
- Consumer protection act, 2019 has classified greenwashing as an unfair trade practice. However there is no provision for legal action for greenwashing.

5. 13   1 MAINS QUESTION AND 5 MCQS

Q1. What do you understand about corporate greenwashing? Examine the associated challenges or it and the ways to tackle the same. (25 words)

Ans:

Introduction

Corporate Greenwashing

- Greenwashing is the process of conveying a **false impression or misleading information** about how a company's products are environmentally sound.
- Greenwashing involves making an **unsubstantiated claim to deceive consumers** into believing that a company's products are environmentally friendly or have a greater positive environmental impact than they do.
- They are performed through the use of **environmental imagery, misleading labels, and hiding tradeoffs among others.**

Examples of greenwashing

Example 1:

- An area rug is labelled "50% more recycled content than before." The manufacturer increased the recycled content to 3% from 2%. Although technically true, the message conveys the false impression that the rug contains a significant amount of recycled fibre.

Example 2:

- A trash bag is labeled "recyclable." Trash bags are not ordinarily separated from other trash at the landfill or incinerator, so they are highly unlikely to be used again for any purpose. The claim is deceptive because it asserts an environmental benefit where no meaningful benefit exists.

Body

Challenges of corporate greenwashing

- **Corporate ethics violation:** Greenwashing is deceitful and unethical. It goes against the ethical principles of justice, fairness and

honesty. It is a complete violation of corporate ethics.

- **Misleads investors:** Green sectors of the economy are booming and investors are investing more in this sector. But corporate greenwashing portrays a misleading picture to attract investors, who in the long run might lose their investments.
- **Misleads consumers:** Consumers that are genuinely seeking environmentally friendly companies or products are misled.
- **Higher cost:** Often, green products can be sold at a premium, making them more expensive, which can lead consumers to overpay.
- **Difficult in evidencing:** If greenwashing is going on, there is often no evidence to back up the claims that a company is making. Sometimes verifying can be difficult.

Way ahead

- **Increase transparency and accountability:** Organizations need to publish all the details so that everyone can see what they are doing, their pledges, targets and plans.
- **The annual publication of emissions:** There should be an annual publication of each organization's greenhouse gas emissions alongside baseline data so people can see how well they are doing compared to other entities. The data should be in open formats that facilitate global comparisons.
- **Third-party research and analyst reports:** Investors, Government agencies, civil societies and consumers should frequently check the research and analysts' reports on companies. They portray various pictures of greenwashing.
- **Check the product's ingredients list:** The ingredient list of the products must be checked thoroughly and the testing, monitoring and quality control team must test if the ingredients are there as displayed on the label or not.
- **Certification:** True green products will often be certified by an official vetting organization, which will be clearly labeled. They should be checked.

- **Use voluntary carbon credits:** Voluntary carbon credits are used to offset emissions by paying another party to reduce their emissions. This can ensure companies who are not interested to do ESG on their own can offset it to a third party.

Conclusion

- Greenwashing is a serious challenge today as countries are moving onwards a green economy. Global communities must join hands to tackle the same.

Q2. Consider the following statements about Indian Forest Act of 1927
1. To consolidate the law relating to forests,
2. Regulation of and the transit of forest produce,
3. To levy duty on timber and other forest produce.
4. To allow the felling of trees and entry of corporate houses.

Which of the above statements are the aims of the act?
A. One only
B. Two only
C. Three only
D. Four Only

Ans: C

The preamble of the Indian Forest Act seeks to achieve following aims:
- *to consolidate the law relating to forests,*
- *regulation of and the transit of forest produce, and*
- *to levy duty on timber and other forest produce.*

*It also consists of the procedure followed in cases of declaring the area to be a **reserved, protected or village forest.***
(Hence statements 1,2 and 3 are only the aims)

Q3. Consider the following statements:
1. Indian forest act of 1927 classifies forests into two types.
2. Village Forest is merely an administrative category.

Which of the above statements is correct?
A. 1 only
B. 2 only
C. Both
D. None

Ans: D

Statement 1 is incorrect: *The Act is classified into 3 types of forests that are; reserved forests, protected forests and village forests.*

Statement 2 is incorrect: *The terms village forest and forest village are interchangeably used in certain cases but are eventually different in their meaning.* *While village forest is a legal category under the Indian Forest Act, forest village is merely an administrative category.*

Q4. Consider the following statements:

1. Green diamonds are manufactured using green-coloured diamonds.
2. Union Budget 2022 announced the elimination of a 5% customs duty on seeds used to manufacture rough lab-grown diamonds.

Which of the above statements is correct?

A. 1 only
B. 2 only
C. Both
D. None

Ans: D

Statement 1 is incorrect: Green diamonds are manufactured with green energy sources.

Statement 2 is incorrect:

In Union Budget 2023, the government announced the elimination of a 5% customs duty on seeds used to manufacture rough lab-grown diamonds.

Q5. Consider the following statements:

1. Abohar wildlife sanctuary is located in Rajasthan.
2. The Bishnoi tribal group lives in the Abohar wildlife sanctuary.
3. Blackbucks are Vulnerable under IUCN red list and they are found in the Abohar wildlife sanctuary.

Which of the above statements are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 2 only
D. None are correct

Ans: C

Statement 1 is incorrect: Abohar WLS is located near **Abohar in Fazilka district of Punjab.**

Statement 2 is correct: A cluster of 13 villages was **declared a wildlife sanctuary in 1989** on the community's demand to protect wild animals in their private lands.

It is located in the heartland of the environment-loving community **of Bishnois.**

Statement 3 is incorrect: The Bishnoi community reserve was home to hundreds of **blackbucks, blue bull (nilgai), wild boars and other species** the previous censuses have shown.

The Blackbucks are categorized as **least concern** *in the IUCN red data book.*

Q6. Consider the following statements:

1. 'IMPRINT India' is a pan-IIT and IISc joint initiative
2. The Science and Engineering Research Board (SERB) in the Department of Science & Technology (DST) is the nodal ministry for its implementation.
3. About 425 projects with up to Rs. 2 crorebudget will be supported under IMPRINT 2.0.

Which of the above statements are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. All of the above

Ans: D

Statement 1 is correct: 'IMPRINT India' is a pan-IIT and IISc joint initiative **to develop a roadmap for research to solve major engineering and technology challenges** in ten technology domains relevant to India.

It was launched on **November 5, 2015.**

Statement 2 is correct: It was formulated and implemented by the Ministry of Human Resource Development (now renamed as Ministry of Education).

Now **The Science and Engineering Research Board (SERB) in the Department of Science & Technology (DST)**has been made the nodal agency for implementing IMPRINT-2.

Statement 3 is correct: The IMPRINT 2.0 the principal objective is to translate knowledge into viable technology

Under this **about 425 projects with up to Rs. 2 crore budget will be supported.**

6. SOCIAL ISSUES

6. 1   WEF GLOBAL GENDER GAP 2023

Details

- India was ranked at 127 out of 146 countries in terms of gender parity — an improvement of eight places from last year, according to the annual Gender Gap Report, 2023 of the World Economic Forum (WEF).

Key findings of the report

- India was ranked at 127 out of 146 countries in terms of gender parityan improvement of eight places from last year.
- India had attained parity in enrolment across all levels of education, it said.
- The index ranked India's neighbours Pakistan at 142, Bangladesh at 59, China at 107, Nepal at 116, Sri Lanka at 115 and Bhutan at 103.
- Iceland is the most gender-equal country in the world for the 14th consecutive year and the only one to have closed more than 90% of its gender gap.
- India had closed 64.3% of the overall gender gap, the report said. However, it underlined that India had reached only 36.7 % parity on economic participation and opportunity

Wages and income

- The share of women in senior positions and technical roles had dropped slightly since the last edition, the report pointed out.
- On political empowerment, India has registered 25.3% parity, with women representing 15.1% of parliamentarians — the highest for the country since the inaugural report in 2006.
- Out of the 117 countries with available data since 2017, 18 countries — including Bolivia (50.4%), India (44.4%) and France (42.3 %) — have achieved women's representation of over 40% in local governance.

Skewed sex ratios

- Compared with top scoring countries that register a 94.4% gender parity at birth, the indicator stands at 92.7% for Indiaand below 90% for Vietnam, China and Azerbaijan," it said.
- Overall, the Southern Asian region has achieved 63.4% gender parity, the second-lowest of the eight regions.
- The score in South Asia has risen by 1.1 percentage points since the last edition on the basis of the constant sample of countries covered since 2006. The improvement is partially attributable to the rise in scores of populous countries such as India, Pakistan and Bangladesh.

About Gender Gap Report

About	• **The Global Gender Gap Report is an index designed to measure gender equality.**
Publishing Body	• It was first published in 2006 by the World Economic Forum.
Mandate by	• It assesses countries on how well they are dividing their resources and opportunities among their male and female populations, regardless of the overall levels of these resources and opportunities.
Score	• The highest possible score is 1.0 (equality or better for women, except for lifespan (106% or better for women) and gender parity at birth (94.4% or better for women) and the lowest possible score is 0.

Overall Gender Gap

- The report found that the overall gender gap has closed by 0.3 percentage point from last year.

Reasons behind overall progress in 2023

- The overall progress in 2023 is partly due to the improvement in closing the educational attainment gap, with 117 out of the 146 indexed countries now having closed at least 95 per cent of the gap.
- For the 146 countries covered in the 2023 index, the Health and Survival gender gap has closed by 96 per cent, the Educational Attainment gap by 95.2 percent, Economic Participation and Opportunity gap by 60.1 per cent, and the Political Empowerment gap by 22.1 percent.

Closing the overall gender gap

- Parity has advanced by only 4.1 percentage points since the first edition of the report in 2006, with the overall rate of change slowing significantly.
- Closing the overall gender gap will require 131 years. At the current rate of progress, it will take 169 years for economic parity and 162 years for political parity, the report stated.

Most prevalent

The countries estimated to have the highest prevalence of modern slavery tend to be conflict-affected, have state-imposed forced labour, and have weak governance.

	Rank	Prevalence Rate*	# of People
North Korea	1	104.6	2,696,000
Eritrea	2	90.3	320,000
Mauritania	3	32.0	149,000
Saudi Arabia	4	21.3	740,000
Türkiye	5	15.6	1,320,000
Tajikistan	6	14.0	133,000
United Arab Emirates	7	13.4	132,000
Russia	8	13.0	1,899,000
Afghanistan	9	13.0	505,000
Kuwait	10	13.0	55,000

*Estimated number of people in modern slavery per 1,000 population

Least prevalent

The countries with the lowest prevalence of modern slavery are those with strong governance and strong government responses to modern slavery.

	Rank	Prevalence Rate*	# of People
Switzerland	160	0.5	4,000
Norway	159	0.5	3,000
Germany	158	0.6	47,000
Netherlands	157	0.6	10,000
Sweden	156	0.6	6,000
Denmark	155	0.6	4,000
Belgium	154	1.0	11,000
Ireland	153	1.1	5,000
Japan	152	1.1	144,000
Finland	151	1.4	8,000

*Estimated number of people in modern slavery per 1,000 population

- While there have been encouraging signs of recovery to pre-pandemic levels, women continue to bear the brunt of the current cost of living crisis and labor market disruptions.

6. 2 SHORT ARTICLES

Global Slavery Index 2023

Context

- **The Global Slavery Index 2023 shows the world's 20 richest countries account for more than half the estimated 50 million people living in 'modern slavery'.**

Details

About	- **It isa global study of modern slavery published by the Minderoo Foundation's Walk Free initiative. Four editions have been published: in 2013, 2014, 2016 and 2018.** - **The Index targets private citizens, non-governmental organisations, businesses and public officials so that they can work to end modern slavery**
Published by	- Released by <u>Rights group Walk Free Foundation.</u> - The index uses data released by the **International LabourOrganisation (ILO),Walk Free**, and **the International Organisation for Migration (IOM)** last year to illustrate how "modern slavery is hidden in plain sight

Dimensions	- <u>The Index provides rankings across three dimensions:</u>
	  o **Size of the problem:** estimated prevalence in terms of percentage of population and absolute numbers (by country)
	  o **Government response**: How governments are tackling the problem
	  o **Vulnerability**: Factors that explain or predict prevalence.

Significance	- It provides an assessment of the extent to which a country's population is vulnerable to modern slavery for 160 countries.

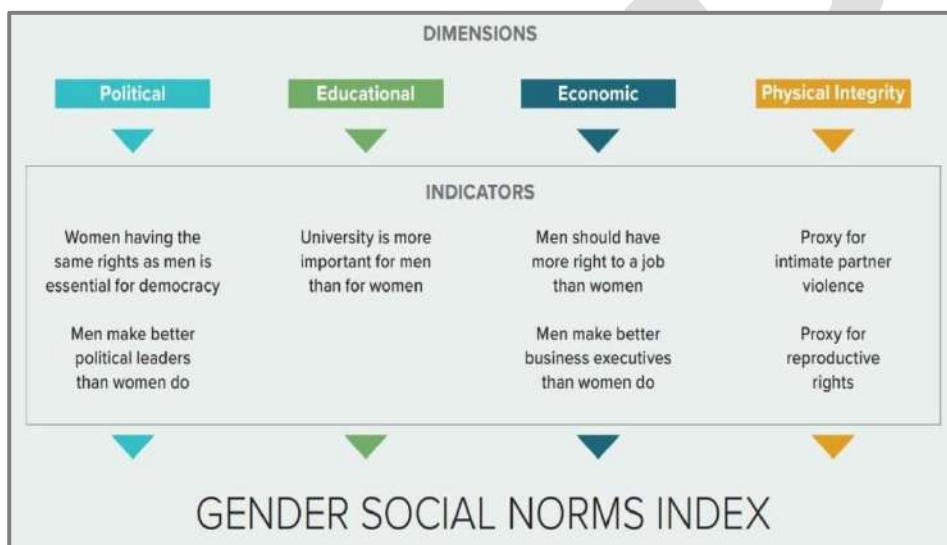| |
|---|
| • These national assessments of vulnerability help to inform our estimates of the **prevalence of modern slavery, can inform the allocation and direction** of **anti-slavery efforts, and help to identify future areas of research**. |

Gender Social Norms Index by UNDP

Context

- **Recently, United Nations Development Programme (UNDP's) 2023 Gender Social Norms Index (GSNI) was released.**

Details

Key findings of the report

- The latest GSNI report capturing data up to 2022 showed little overall progress, despite global and local campaigns for women's rights in recent years such as **Me Too, Ni UnaMenos, Time's Up and Un VioladorenTu Camino.**

- **Nearly 90% of people** still hold at least one bias against women.

- Around half the **world's population believe that men make better political leaders** than women, and two in five believe that men make better business executives than women.

- On average, the share of heads of state or government who are women has remained **around 10 per cent worldwide since 1995**, and women hold just over a quarter of parliament seats globally.

- **A staggering 25 per cent of people believe** it is justified for a man to beat his wife.

- The report authors emphasize that to drive change towards greater gender equality, the focus needs to be on expanding human development through investment, insurance, and innovation.

- Even though the **GSNI value changed** little over the past decade, data has shown an increase in the share of people with no bias in any indicator, and this was evident in **27 of the 38 countries surveyed**.

- **Persistent biased gender social norms violate human rights** and limit the enlargement of well-being by impeding women from acting on behalf of their own values and interests.

- **By excluding women from decision-making**, the world will lose out on perspectives, experiences, abilities, voices and ideas, UNDP noted.

About UNDP

About	• The United Nations Development Programme (UNDP) provides expert advice, and training grants support to developing countries, with an increasing emphasis on assistance to the least developed countries. It promotes technical and investment cooperation among nations.
Funded by	• It is funded entirely by **voluntary contributions** from member nations.
Headed by	• It is headed by an Administrator.
Significance	• UNDP is **central to the United Nations Sustainable Development Group** (UNSDG), a

network that spans almost **170 countries and unites the 40 UN funds, programmes**, specialized agencies and other bodies working to advance the **2030 Agenda for Sustainable Development**.

QS World University Ranking 2024

Context

- Indian Institute of Technology (IIT) Bombay has achieved a significant milestone by breaking into the world's top 150 universities in the latest edition of the Quacquarelli Symonds (QS) World University Ranking.

Details

Key findings of the report

- After eight years, an Indian institute entered into the top 150.
- Indian Institute of Technology (IIT), Bombay which ranked 149 in the list, a significant jump from its previous ranking of 172. Following, IIT Bombay, was IIT Delhi at 197. However, IIT Delhi saw a sharp drop from 174th rank in 2023 to 197, this year.
- IIT Guwahati secured 364th rank, an improvement of 20 ranks from last year while IIT Roorkee maintained its spot at 369. IIT Indore slipped 42 ranks from its previous rank. The institute secured 396th rank in 2023 to 454th rank in 2024.
- IIT Kanpur too slipped, from 268th rank last year to 278th rank this year. Following IIT Kanpur, is IIT Madras which probably had the sharpest fall among first generation

THE REPORT CARD

Institution	World Rank 2024	World Rank 2023
IIT-Bombay (highest ranked Indian institute)	149	172
Chandigarh University, Mohali	771-780	800-1000
Shoolini University of Biomedical & Management Sciences, Solan, HP	771-780	800-1000
Thapar Institute of Engineering and Technology, Patiala	951-1000	1000-1200
OP Jindal Global University, Sonipat, Haryana	951-1000	651-700
Panjab University, Chandigarh	1001-1200	1201-1400
Chitkara University, Rajpura	1201-1400	New entrant

IITs. IIT Madras fell from the 250th rank in 2023 to the 285th rank in 2024. Interestingly, IIT Madras secured the top position in this year's domestic NIRF overall ranking.

Global Rankings Overview

- Massachusetts Institute of Technology (MIT) tops the World University Ranking for the twelfth consecutive time.
- National University of Singapore becomes the first Asian university to enter the top 10.

International Day against Drug Abuse and Illicit Trafficking

Context

- Recently, United Nations Development Programme (UNDP's) 2023 Gender Social Norms Index (GSNI) was released.

Details

- The International Day against Drug Abuse and Illicit Trafficking is observed to honour Lin Zexu, who played a key role in the demolition of opium trade in Guangdong region of China.
- World Drug Day or International Day against Drug Abuse and Illicit Trafficking, is **marked**

on June 26 every year to strengthen action and cooperation in achieving a world free of drug abuse.

- Drug abuse and illicit trafficking continue to pose a significant threat to individuals, families, and communities across the world. To combat this threat, the International Day against Drug Abuse and Illicit Trafficking is observed.

- At the International Conference on Drug Abuse and Illicit Trafficking held in Vienna on June 26, 1987, it was recommended that a day should be observed to commemorate the struggle against drug abuse.

- The United Nations General Assembly on December 7, 1987, decided to observe June 26 as International Day against Drug Abuse and Illicit Trafficking.

Aim

- It aims to raise awareness about the importance of treating people who use drugs with respect and empathy; providing evidence-based, voluntary services for all; offering alternatives to punishment; prioritizing prevention; and leading with compassion.

- The campaign also aims to combat stigma and discrimination against people who use drugs by promoting language and attitudes that are respectful and non-judgmental.

6.3 SNIPPETS
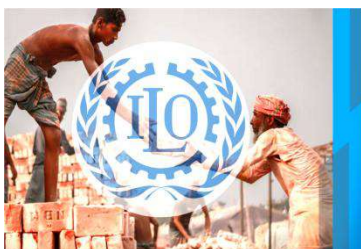
ILO'S THE WORLD OF WORK REPORT

▪ The International Labour Organization (ILO) will publish the 11th edition of its Monitor report series that tracks the impact of mutually reinforcing crises on workers and businesses worldwide. The report provides an overview of global and regional unemployment, the impact of rising debt levels on labour markets and analyses social protection policy gaps in developing countries.

MEIRA PAIBI

▪ Meira Paibi (Women torch bearers) is a women's social movement in the Indian state of Manipur.

▪ Referred to as the "guardians of civil society", Meira Paibi dates to 1977 in the present Kakching district. It derives its name from the flaming torches which the women carry while marching through city streets.

▪ The Meira Paibis, also known as Imas or Mothers of Manipur, are Meitei women who come from all sections of society in the Imphal valley.
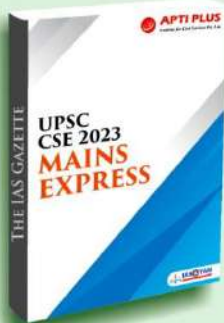
6. 4 1 MAINS QUESTION AND 5 MCQS

Q1. *Global Gender Gap Report catalyst for greater awareness as well as greater exchange between policymakers. Analyse its significance and India specific findings of 2023. (10 M)*

Answer:

- *India was ranked 127 out of 146 countries in the annual Gender Gap Report, 2023*. It assesses countries on how well they are dividing their resources and opportunities among their male and female populations, regardless of the overall levels of these resources and opportunities.

Significance

- It is the longest-standing index which **tracks progress on closing these gaps since its inception in 2006.**
- It also **explores the impact of recent global shocks on the gender gap crisis in the labour market.**
- The Report serves as a **catalyst for greater awareness as well as greater exchange between policymakers.**

India specific findings

- **India has ranked at 127 out of 146** countries in terms of gender parity -- an improvement of eight places from last year -- according to the World Economic Forum's annual Gender Gap Report, 2023.
- **India has improved by 1.4 percentage** points and eight positions since the last edition, marking a partial recovery toward its 2020 parity level.
- **India has attained parity** in enrolment across all levels of education.
- India has closed 64.3 percent of the overall gender gap.
- **India has reached only 36.7 percent** parity on economic participation and opportunity.
- Closing the overall gender gap will require 131 years. At the current rate of progress, it will take 169 years for economic parity and 162 years for political parity, the report stated. While there have been encouraging signs of recovery to pre-pandemic levels, women continue to bear the brunt of the current cost of living crisis and labor market disruptions.

Q2. *Consider the following statements about MeiraPaibi:*

1. MeiraPaibi (Women torch bearers) is a women's social movement in the state of Nagaland.
2. One of the largest grassroots movements in the world, its initial focus of fighting alcoholism and drug abuse has now expanded to countering human rights violations and the development of society at large.
3. They are widely respected and represent a powerful moral force.

Which of the above statements is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. All of the above
D. None

Answer: B

- *Meira Paibi (Women torch bearers) is a women's social movement in the Indian state of Manipur.**Statement 1 is incorrect.***
- *They are widely respected and represent a powerful moral force. **Statement 3 is correct.***
- *One of the largest grassroots movements in the world, its initial focus of fighting alcoholism and drug abuse has now expanded to countering human rights violations and the development of society at large. **Statement 2 is correct.***
- *Over the decades, the MeiraPaibis have led numerous social and political movements in the state, including some powerful protests against alleged atrocities by Indian security forces, leveraging their strong position in society in the interest of the causes they have espoused.*

Q3. Consider the following statements about Global Gender Gap Report:

1. The Global Gender Gap Report is an index designed to measure gender equality published by UN Women.
2. India has attained parity in enrolment across all levels of education in the Gender Gap Report, 2023.

Which of the above statements is/are correct?

A. 1 only
B. 2 only
C. Both
D. None

Answer: B

- The Global Gender Gap Report is an index designed to measure gender equality. **Statement 1 is incorrect.**

- India has attained parity in enrolment across all levels of education. **Statement 2 is correct.**

- India has closed 64.3 percent of the overall gender gap.

- India has reached only 36.7 percent parity on economic participation and opportunity.

- In India, while there has been an uptick in parity in wages and income, the share of women in senior positions and technical roles has dropped slightly since the last edition, the report pointed out.

Q4. Recently, United Nations Development Programme (UNDP's) 2023 Gender Social Norms Index (GSNI) was released. How many of the given indicators are included in it?

1. Women having same right as Men.
2. University is more important for men than women.
3. Proxy for intimate partner violence.

Select the correct option using the code given below:

A. Only One
B. Only Two
C. Only Three
D. None

Answer: C

- The latest GSNI report capturing data up to 2022 showed little overall progress, despite global and local campaigns for women's rights in recent years such as Me Too, Ni UnaMenos, Time's Up and Un VioladorenTu Camino.

- Nearly 90% of people still hold at least one bias against women.

- Around half the world's population believe that men make better political leaders than women, and two in five believe that men make better business executives than women.

Q5. The University of Delhi achieves a ranking of 407, reflecting its academic excellence and diverse offerings. With respect to this which among the following is not the objective of National education policy 2020?

A. Reform in the overall assessment process
B. Ensure effective governance of schools.
C. Restructuring of institutions.
D. Funding to higher institutions to promote other languages

Answer: D

Objectives of NEP 2020

- Reforms in curriculum content.

- The medium of instruction should be in the local language/mother tongue of the child. The current three language formula will continue to be implemented.

- Reform in the overall assessment process

- Teacher training and management.

- Ensure effective governance of schools.

- Increasing Gross Enrolment Ratio to 50% by 2035 (It was 26.3% in 2018).

- Restructuring of institutions.

- Multidisciplinary education.

- Improving research.

- Promoting Digital education.

Q6. Consider the following statements about Global Gender Gap Report:

1. The Global Slavery Index is published by International Labour Organization.
2. The schematic provides a broad framework of what all modern slavery covers.

Which of the above statements is/are correct?

A. 1 only
B. 2 only
C. Both
D. None

Answer: B

- GSI is published by Walkfree Group of Mindaroo's Foundation. Walk Free is a human rights organization. Also, it is based on data provided by the Global Estimates of Modern Slavery, which, in turn, is produced by the International Labour Organisation (ILO), Walk Free, and the International Organisation for Migration (IOM).**Statement 1 is incorrect.**

- According to the Global Slavery Index, "modern slavery" refers to situations of exploitation that a person cannot refuse or leave because of threats, violence, coercion, deception, or abuses of power. Modern slavery is an umbrella term and includes a whole variety of abuses such as forced labour, forced marriage, debt bondage, sexual exploitation, human trafficking, slavery-like practices, forced or servile marriage, and the sale and exploitation of children.

- The schematic provides a broad framework of what all modern slavery covers. **Statement 2 is correct.**

7. SCIENCE & TECHNOLOGY AND HEALTH

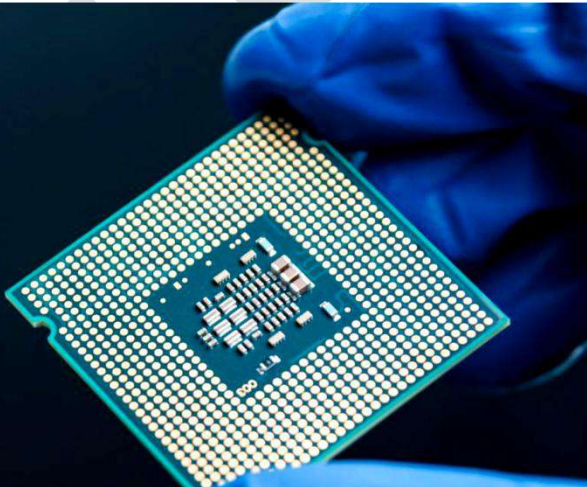## 7. 1   SEMICONDUCTOR MANUFACTURING IN INDIA

Context

- The Ministry of Electronics and IT (MeitY) has reopened the application window for its ambitious Program for Development of Semiconductors and Display Manufacturing Ecosystem in India, which has an outlay of Rs 76,000 crore.

Details

- This program was launched **to attract investments in the field of semiconductors and display manufacturing**, which are crucial for the growth of the electronics system design and manufacturing (ESDM) sector.
- The first application window for this program closed on December 31, 2022, but did not receive any proposals from major global players. The MeitY has now decided to reopen the application window till June 30, 2023, with some modifications in the eligibility criteria and evaluation process.

Semiconductors

- Semiconductors are materials that have an electrical conductivity between that of a conductor and an insulator.
- They are used to make various kinds of electronic devices, such as diodes, transistors, and integrated circuits.
- Semiconductors can be made of single elements, such as silicon or germanium, or compound elements, such as gallium arsenide or mercury indium telluride.
- The electrical properties of semiconductors can be modified by doping, temperature, light, or magnetic fields.

Semiconductors Market

- Semiconductors are essential components of electronic devices, such as mobile phones, computers, TVs, and electric vehicles. They are also used in various sectors, such as aerospace, defence, healthcare, and renewable energy.
- The global semiconductor market is expected to reach $1 trillion by 2030, driven by the increasing demand for digital technologies and innovations.
- India is one of the largest consumers of semiconductors in the world, with an estimated consumption of $80 billion by 2026. However, India does not have any domestic semiconductor fabrication plants (fabs) that can produce chips.

- India relies heavily on imports from countries like China, Taiwan, South Korea, and the US for its semiconductor needs. This makes India vulnerable to supply chain disruptions, geopolitical tensions, and cyberattacks.

India has launched several initiatives to promote domestic semiconductor manufacturing. These include:

Semicon India Program - India Semiconductor Mission

- This is a flagship program approved by the Union Cabinet with a total outlay of INR 76,000 crore (US$ 10.2 billion) for the development of the semiconductor and display manufacturing ecosystem in India. The program consists of four schemes:

- o **Scheme for setting up Semiconductor Fabs in India**: This scheme provides financial support of up to 50% of the project cost to eligible applicants for setting up semiconductor fabs in India.
- o **Scheme for setting up of Display Fabs in India:** This scheme provides financial support of up to 50% of the project cost to eligible applicants for setting up display fabs in India.
- o **Scheme for Development of Semiconductor Design Ecosystem:** This scheme provides financial assistance of up to INR 500 crore per project to eligible applicants for developing semiconductor design capabilities in India.
- o **Scheme for Development of Semiconductor Equipment and Material Ecosystem:** This scheme provides financial assistance of up to INR 100 crore per project to eligible applicants for developing semiconductor equipment and material capabilities in India.

Production Linked Incentive (PLI) Scheme for Electronics Manufacturing

- The scheme provides an incentive of 4% to 6% on incremental sales (over a base year) of goods manufactured in India and covered under target segments such as mobile phones, electronic components and semiconductors.

Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECS)

- The scheme provides a financial incentive of 25% on capital expenditure for electronic components and semiconductors manufacturing units.

Modified Electronics Manufacturing Clusters (EMC 2.0) Scheme

- The scheme provides financial assistance up to 50% of the project cost subject to a ceiling of INR 70 crore per 100 acres of land for setting up world-class infrastructure along with common facilities and amenities for electronics manufacturing units including those related to semiconductors.
- These projects are expected to boost India's semiconductor capabilities and reduce its

dependence on imports. However, there are still many challenges that need to be overcome for India to become a global semiconductor powerhouse.
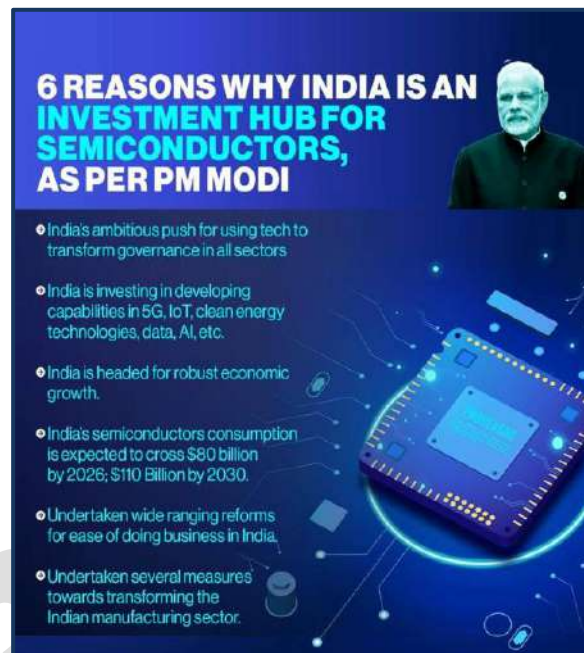
Some of these challenges are:
Lack of infrastructure

- India lacks adequate infrastructure for semiconductor manufacturing, such as water supply, power supply, land availability, transportation, and logistics. Semiconductor fabs require huge amounts of water and electricity to operate and maintain high standards of cleanliness and quality.
- India also needs to develop its road and rail networks to facilitate the movement of raw materials and finished products.

Lack of skilled manpower

- India faces a shortage of skilled manpower for semiconductor manufacturing, especially engineers and technicians who can design, operate, and maintain fabs.
- India also needs to train its workforce in advanced technologies like nanotechnology, artificial intelligence, quantum computing, and biotechnology that are driving innovation in the semiconductor industry.

Lack of research and development

- India lags in research and development (R&D) in the semiconductor sector. India spends only about 0.7% of its GDP on R&D,

compared to 2-3% by countries like the US, China, Japan, and South Korea.

- India also lacks a strong ecosystem of universities, research institutes, startups, and industry associations that can collaborate and innovate in the semiconductor domain.

Lack of market access

- India faces stiff competition from other countries that have established themselves as major players in the semiconductor industry. India needs to create a conducive environment for attracting foreign direct investment (FDI) and technology transfer in the sector.
- India also needs to improve its trade relations and market access with other countries that are major consumers or suppliers of semiconductors.
- To overcome these challenges, India needs to adopt a holistic and long-term approach that involves collaboration among various stakeholders such as the government, industry, academia and civil society.

Some of the possible steps that can be taken are:

Developing human capital

- The industry should partner with educational institutions and training centres to create a pipeline of skilled workforce that can meet the current and future needs of the semiconductor sector. The government should also support skill development programs and scholarships for students and professionals who want to pursue careers in semiconductors.

Fostering collaboration

- The government should encourage collaboration among different players in the semiconductor value chain such as chip designers, manufacturers, suppliers, customers and end-users. The government should also facilitate cross-border partnerships with other countries that have complementary strengths and interests in semiconductors.

Strengthen the policy framework

- India needs to streamline its policies and regulations to create a conducive environment for semiconductor

manufacturing and design. This includes simplifying the approval processes, providing tax benefits, ensuring land availability, facilitating technology transfer and protecting intellectual property rights.

Enhance the infrastructure

- India needs to upgrade its infrastructure to meet the requirements of semiconductor manufacturing and design. This includes ensuring uninterrupted power supply, water availability, transportation and logistics, as well as developing SEZs with dedicated facilities and incentives for semiconductor investors.

Develop the skill base

- India needs to build its human capital for semiconductor manufacturing and design. This includes increasing the enrollment and quality of engineering education, providing vocational training and certification programs, creating centres of excellence and innovation hubs, and attracting and retaining talent from abroad.

Boost the innovation ecosystem

- India needs to foster a culture of innovation and R&D in the semiconductor sector. This includes increasing public and private spending on R&D, promoting industry-academia collaboration, supporting startups and incubators, and encouraging patent filing and commercialization.

Leverage the competitive advantages

- India needs to leverage its competitive advantages in the semiconductor sector, such as its large domestic market, its low-cost labour force, its strong software capabilities, its strategic location and its geopolitical ties. India also needs to focus on niche segments where it can create differentiation and value addition, such as automotive, medical, defence and aerospace.

Conclusion

- Semiconductor manufacturing is a strategic sector that can have a significant impact on India's economic growth, national security and technological leadership. India has taken some positive steps to enter this sector, but it

still has a long way to go to catch up with the global leaders. India needs to overcome the challenges and seize the opportunities in this sector by adopting a holistic approach that involves collaboration among various stakeholders. By doing so, India can realize its potential as a semiconductor powerhouse in the world.

7.2   HUNGER HOTSPOTS REPORT

Context
- A new report by the United Nations has revealed the alarming extent of the hunger crisis that is affecting millions of people around the world.

Details
- The report was jointly produced by the Food and Agriculture Organization (FAO) and the World Food Programme (WFP), identifies 18 hunger hotspots in 22 countries where acute food insecurity is likely to worsen in the next six months due to various factors, such as conflict, climate shocks, economic shocks and the COVID-19 pandemic.

Highlights of the Report
- The report warns that some of these hotspots, such as Sudan, Haiti, Burkina Faso and Mali,**Madagascar**, have reached the highest level of concern, which means that they are facing a risk of famine or widespread death.
- Other hotspots, such as Afghanistan, Nigeria, Somalia, South Sudan and Yemen, have remained at the highest level of concern for a long time, as they have been suffering from prolonged crises that have undermined their ability to cope and recover.
- The report includes Pakistan, Afghanistan and Myanmar among the hunger hotspots. These countries are neighbours of India and have a large number of people who are facing critical levels of hunger.
- The report urges the international community to **take urgent action to prevent a humanitarian catastrophe in these hotspots and to address the root causes of food insecurity**. The report calls for **more funding and access to deliver life-saving assistance** to

those in need and to support their resilience and livelihoods.

The report raised several concerns
- It highlighted how hunger **fuels violence and instability**, as people resort to desperate measures to survive, such as joining armed groups, engaging in illegal activities or migrating to unsafe areas.
- It emphasized how **hunger undermines human dignity and rights**, as people are deprived of their basic needs and opportunities, such as health, education and livelihoods.
- It pointed out how **hunger hampers development and progress**, as people are unable to reach their full potential and contribute to their societies.

The potential impact of an El Nino
- The report also highlighted the potential impact of an El Nino climatic phenomenon on vulnerable countries around the globe. **El Nino is associated with droughts, floods and storms that can disrupt agricultural production and food security.**
- The report urged for increased preparedness and early action to mitigate the risks of El Nino, such as enhancing weather monitoring and forecasting, strengthening resilience and adaptation measures, and providing social protection and safety nets.

Need urgent humanitarian action
- The report calls for urgent humanitarian action to save lives and livelihoods in these hotspots, as well as long-term solutions to address the root causes of food insecurity.
- The report also urges for increased funding and access to deliver life-saving assistance to those in need.
- The FAO and the WFP estimate that they will**require $5.5 billion to avert famine and**

hunger in these hotspots until November 2023.

- The report appeals to the international community, governments, donors, civil society and the private sector to join forces and act now to prevent a catastrophe.

The report identifies major factors that have contributed to the global hunger crisis:

Conflict

- Conflict is still the biggest driver of hunger, with 70% of the world's hungry people living in areas afflicted by war and violence. Conflict disrupts food production, distribution and access, forces people to flee their homes and livelihoods, and damages economies and infrastructure.

Climate change

- The climate crisis is one of the leading causes of the steep rise in global hunger. Climate shocks such as droughts, floods, storms and wildfires destroy crops, livestock and natural resources, and undermine people's ability to feed themselves. Hunger will spiral out of control if the world fails to take immediate climate action.

Economic shocks

- The **COVID-19 pandemic** has plunged the world's economy into a downward spiral, affecting millions of people's incomes, jobs and purchasing power. The pandemic has also disrupted global food supply chains, trade and markets, leading to higher food prices and reduced availability of nutritious food.

Fertilizer prices

- Global fertilizer prices have climbed even faster than food prices, which remain at a ten-year high themselves. Fertilizer is essential for increasing crop yields and quality, but its

production and export have been affected by events such as the war in Ukraine and higher natural gas prices.

- High fertilizer prices could turn the current food affordability crisis into a food availability crisis, with the production of staple crops such as maize, rice, soybean and wheat falling in 2022.

- The report urges governments and other stakeholders to act now to save lives and invest in solutions that secure food security, stability and peace for all.

Some of the key recommendations include:

- Scaling up humanitarian assistance to reach those most in need of food aid, especially in conflict-affected areas.

- Supporting smallholder farmers and rural communities to increase their resilience to shocks and stresses through improved access to inputs, technologies, markets and social protection.

- Promoting sustainable agricultural practices that enhance productivity while protecting the environment and biodiversity.

- Reducing food loss and waste along the entire food system, from production to consumption.

- Improving nutrition outcomes by ensuring access to diverse, safe and nutritious food for all, especially for women, children and other vulnerable groups.

- Repurposing current support to agriculture to help make healthy and nutritious food cheaper and more accessible for consumers.

- Strengthening multilateral cooperation and coordination to address the root causes of hunger and foster a more inclusive, equitable and resilient food system.

- As many as 828 million people were affected by hunger in 2021 – 46 million people more than a year earlier and 150 million more from 2019.
- After remaining relatively unchanged since 2015, the proportion of people affected by hunger jumped in 2020 and continued to rise in 2021, to 9.8% of the world population.
- Nearly 12% of the global population faced food insecurity at severe levels, an increase of 207 million in two years.
- The gender gap in food insecurity continued to rise in 2021, nearly 32% of women in the world were moderately or severely food insecure, compared to 27.6% of men.
- Almost 3.1 billion people could not afford a healthy diet in 2020, up 112 million from 2019, reflecting the effects of inflation in consumer food prices stemming from the economic impacts of the COVID-19 pandemic and the measures put in place to contain it.
- An estimated 45 million children under the age of five were suffering from wasting, the deadliest form of malnutrition, which increases children's risk of death by up to 12 times. Furthermore, 149 million children under the age of five had stunted growth and development due to a chronic lack of essential nutrients in their diets, while 39 million were overweight.

Key Facts on the Hunger Crisis
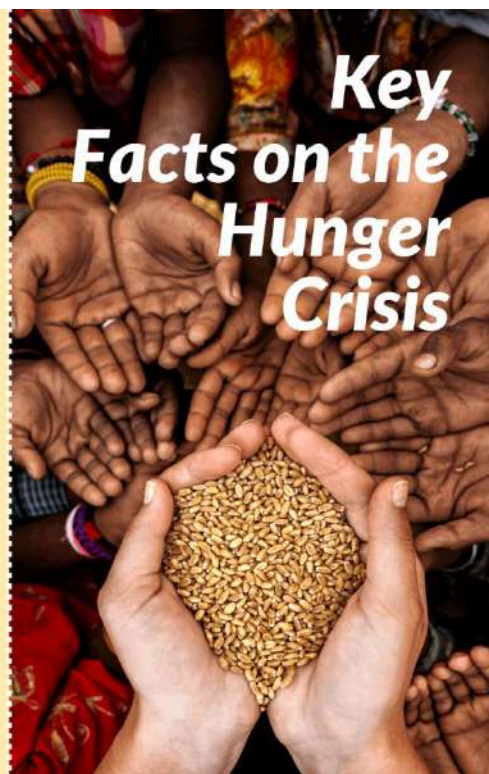
The Hunger Crisis in India

- India is facing a serious hunger problem that needs urgent policy intervention. **According to the Global Hunger Index 2022, India ranks 107 out of 121 countries,** below its neighbours Bangladesh and Pakistan. The COVID-19 pandemic has exacerbated the situation by disrupting livelihoods, supply chains and access to food for millions of people.
- **Hunger is caused by low-level dietary energy due to insufficient consumption**. A certain amount of calorie intake is required to lead a normal, active and healthy life; regular deficiency makes it chronic. The Food and Agriculture Organisation (FAO) of the United Nations defines hunger as undernourishment.

Many factors contribute to hunger in India, such as:

Poverty

- According to the World Bank, 71 million people will be pushed into extreme poverty across the globe as a result of the pandemic. India has a large population of poor people who struggle to afford adequate food and nutrition.

Inequality

- Hunger is also a result of the unequal distribution of resources and opportunities. Marginalised groups such as women, children, Dalits, Adivasis and Muslims face higher levels of food insecurity and malnutrition than others.

Agriculture

- Agriculture is the primary occupation in rural India, but it faces many challenges such as climate change, water scarcity, soil degradation, pests and diseases, low productivity and market volatility. Farmers often incur losses and debts due to these factors and a lack of adequate support from the government.

Food wastage

- India wastes about 40% of its food production every year due to poor storage, transportation and distribution infrastructure. This leads to huge losses of food that could have fed millions of hungry people.

Addressing hunger in India is not an easy task. Some of the challenges are:

Data

- There is a lack of reliable and timely data on hunger and malnutrition in India. Without accurate data, it is difficult to design and implement effective policies and programmes.

Governance

- There is a need for better governance and accountability in the delivery of food security schemes such as the Public Distribution System (PDS), Mid-Day Meal Scheme (MDMS) and Integrated Child Development Services (ICDS). These schemes often suffer from corruption, leakage, exclusion and inefficiency.

Awareness

- There is a low level of awareness among people about their rights and entitlements under various food security schemes. Many people do not have access to information or grievance redressal mechanisms. There is also a lack of awareness about the importance of nutrition and dietary diversity among people.

Behaviour

- There are deep-rooted social and cultural norms that affect food choices and consumption patterns among people. For example, gender discrimination leads to women and girls eating less or last; caste discrimination leads to exclusion and stigma; religious beliefs lead to dietary restrictions, and preferences lead to the consumption of unhealthy foods.

Some of the possible ways forward are:

Universalisation

- There is a need to universalise access to food security schemes for all people without any discrimination or exclusion. This would ensure that no one is left behind or hungry in times of crisis or otherwise.

Diversification

- There is a need to diversify the food basket provided by food security schemes to include more nutritious and locally available foods such as millet, pulses, fruits and vegetables. This would improve the quality and quantity of food intake among people.

Decentralisation

- There is a need to decentralise the procurement, storage and distribution of food grains under food security schemes to involve local communities, farmers' organisations and self-help groups. This would reduce wastage, leakage and corruption; enhance local production and consumption; and empower people.

Integration

- There is a need to integrate food security schemes with other social protection programmes such as Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Pradhan Mantri Awas Yojana (PMAY), Pradhan Mantri Ujjwala Yojana (PMUY) etc. This would provide multiple benefits such as income generation, asset creation, fuel efficiency and environmental protection.

Innovation

- There is a need to innovate new solutions and technologies to address the challenges of hunger and malnutrition in India. For example, using digital platforms, artificial intelligence, blockchain, biotechnology etc. to improve data collection, monitoring, evaluation and feedback; using solar energy, cold storage, biodegradable packaging etc. to reduce food wastage; using biofortification, fortification, supplementation etc. to enhance food quality and nutrition.

Conclusion

- Hunger is a complex and multidimensional problem that affects the lives and livelihoods of millions of people in India. It is also a violation of human rights and dignity. The COVID-19 pandemic has made the situation even more urgent and critical. There is a need for a holistic and comprehensive approach to address the root causes and consequences of hunger in India. The government, civil society, private sector and international organisations must work together to achieve the goal of zero hunger by 2030.

7. 3   INDIA'S ANAEMIA POLICY

Context

- According to the National Family Health Survey (NFHS-6), questions related to anaemia are slated to be dropped from the survey.

Details

- According to the National Family Health Survey (NFHS-6), which is scheduled to begin in July 2023, questions related to anaemia are slated to be dropped from the survey. The reason for this omission is that health experts have questioned the efficacy of the method being used to estimate haemoglobin levels.
- This decision has raised concerns among some researchers and activists, who argue that anaemia is a serious public health challenge in India and that accurate estimates are needed to tackle the crisis.
- **The NFHS-5 (2019-21) found that 57% of women in the age group 15-49 and 67% of children between six months and 59 months are anaemic in India.** This was an alarming increase from the corresponding 53% and 58.6% respectively in NFHS-4 (2015-16).

Anaemia

- According to the World Health Organization (WHO), anaemia is a condition in which the number of red blood cells or the haemoglobin concentration within them is lower than normal, resulting in the reduced oxygen-carrying capacity of the blood.
- It can cause various symptoms such as fatigue, weakness, dizziness and shortness of breath, and can also increase the risk of infections, maternal and child mortality, poor cognitive development and low productivity.
- It is a serious public health problem in India, affecting millions of people across different age groups, especially women and children.

India's Anaemia Policy

- India has had programmes to fight anaemia since 1970 when the National Anaemia Prophylaxis Programme was launched. It focused on distributing iron and folic acid (IFA) tablets to pregnant women and children under five.
- **In 2013, the government launched the weekly IFA supplementation programme for adolescents.** However, these programmes had limited impact due to various factors such as low coverage, poor compliance, inadequate supply chain management, lack of awareness and counselling, and side effects of IFA tablets.
- **In 2018, the government launched the AnaemiaMukt Bharat (AMB) strategy under POSHAN Abhiyaan with the target of reducing anaemia in six population groups**; Children (6-59 months), Children (5-9 years), Adolescents girls and boys (10-19 years), Pregnant women, Lactating women and Women of Reproductive Age (WRA) group (15-49 years) in a life cycle approach.
- The AMB strategy adopts a six-point action plan that includes:
  o Prophylactic IFA supplementation
  o Deworming
  o Intensified year-round behaviour change communication campaign
  o Testing and treatment of anaemia using digital methods
  o Mandatory provision of IFA tablets during antenatal check-ups
  o Monitoring of anaemia reduction using national portals
- **6 institutional mechanisms:** National anaemia helpline, National centre of excellence for anaemia control, National anaemia dashboard, State-level technical support units, district-level quality assurance cells and convergence with other ministries and departments.
- The 6x6x6 strategy emphasizes convergence, coordination and collaboration among various stakeholders at different levels of governance and service delivery. The strategy also leverages digital technology to monitor and evaluate the progress and impact of the initiative.

The AMB strategy has several features that make it different from previous programmes. Such as:

- It covers a wider range of population groups than before, including adolescent boys and the WRA group who were previously neglected.
- It uses a **convergence approach** that involves multiple ministries and departments such as Health and Family Welfare, Women and Child Development, Education, Rural Development, Panchayati Raj etc. to ensure coordinated action at different levels.
- It **leverages existing platforms** such as Anganwadi centres, schools, health facilities etc. to deliver IFA tablets and other interventions to the beneficiaries.
- It **uses innovative tools** such as point-of-care devices for haemoglobin testing, mobile applications for data capture and reporting etc. to improve the quality and efficiency of service delivery.
- It **focuses on behaviour change communication through mass media campaigns** such as the Anemia Mukt Bharat anthem song, social media platforms etc. to create awareness and demand for anaemia prevention and control.
- It **monitors the progress and performance** of the strategy using dashboards such as the AMB portal, POSHAN tracker etc. that provide real-time data and feedback.

Challenges that hinder the effective implementation of anaemia prevention and control programmes are:

- **Lack of awareness and demand for anaemia services** among the population, especially in rural areas and among disadvantaged groups.
- **Poor compliance and adherence** to IFA supplementation and deworming among beneficiaries due to factors such as side effects, myths, misconceptions, and lack of counselling and follow-up.
- **Inadequate supply chain management and quality assurance** of IFA tablets and other commodities at various levels of the health system.
- **Insufficient human resources**, training, supervision and monitoring for anaemia service delivery at the grassroots level.

- **Limited convergence and coordination** among different sectors and departments such as health, nutrition, education, water and sanitation, agriculture and social welfare for addressing the underlying determinants of anaemia.
- **Lack of reliable data** on anaemia prevalence, causes, risk factors and outcomes at disaggregated levels for evidence-based planning, implementation and evaluation.

To achieve the Anemia Mukt Bharat (AMB) targets, the following recommendations are suggested:

- **Strengthen advocacy and social mobilization** for creating awareness and demand for anaemia services among the population, especially among women and adolescents.
- **Enhance behaviour change communication strategies** for promoting positive dietary practices, iron-rich foods, food fortification, hygiene and sanitation, antenatal care and institutional delivery.
- **Improve supply chain management and quality assurance systems** for ensuring timely availability and distribution of IFA tablets and other commodities at all levels.
- **Build the capacity and motivation of frontline health workers** such as ASHAs, for providing quality anaemia services to the beneficiaries.
- **Foster convergence and collaboration** among different sectors and departments for addressing the multisectoral causes and consequences of anaemia.
- **Generate reliable data on anaemia** through regular surveys, surveillance systems and research studies for informing policy decisions and programme interventions.
- The way forward for tackling anaemia in India requires a holistic and multisectoral approach that involves not only the health sector but also the education, agriculture, water and sanitation, social welfare, and women and child development sectors.

Some of the key strategies that need to be implemented are:

- Improving dietary diversity and consumption of iron-rich foods such as green leafy

vegetables, legumes, nuts, seeds, eggs, meat, and fish.

- Promoting breastfeeding for at least six months and complementary feeding with iron-fortified foods for infants and young children.
- Providing deworming tablets and malaria prevention measures to children and adolescents living in endemic areas.
- Screening for anaemia and treating underlying causes such as infections or genetic disorders.
- Educating parents, teachers, and community workers about the signs and symptoms of anaemia and the importance of timely diagnosis and treatment.
- Empower girls and women to make informed choices about their health and nutrition, especially during adolescence and pregnancy.
- Strengthening the supply chain management, quality assurance, data collection, and

feedback mechanisms of the existing anaemia control programmes.

- Conduct regular surveys and research to monitor the trends and determinants of anaemia in different age groups and regions.

Conclusion

- Anaemia is a preventable and treatable condition that can be effectively tackled with concerted efforts from all stakeholders. By reducing anaemia in India, we can improve the health and well-being of millions of people and contribute to the achievement of Sustainable Development Goals. The AMB strategy is a commendable initiative by the government to tackle one of the most pervasive health problems in India. It requires concerted efforts from all stakeholders including government, civil society, private sector, media etc. to ensure its successful implementation and impact.

7.4   ISSUE OF RURAL DOCTOR SHORTAGE

Context

- The idea of creating a three-year diploma course for medical practitioners to work in primary health centres (PHCs) has been revived by the West Bengal Chief Minister.

Details

- The idea of creating a cadre of medical practitioners with a shorter duration of training has been debated in India for a long time.
- Recently, West Bengal Chief Minister revived the proposal by asking the Health Department to explore the possibility of starting a three-year diploma course for such practitioners, who would then be posted in primary health centres (PHCs) in rural areas.
- The aim is to address the acute shortage of doctors in remote and underserved regions of the country, where many PHCs function without a single qualified doctor.
- According to a 2019 report by the World Health Organization, India has only 8.6 doctors per 10,000 population, which is lower

than the global average of 15.6. Moreover, only 19% of doctors work in rural areas, where 71% of the population lives.

Shortage of Doctors in Rural India
About

- **India is facing a serious challenge of providing adequate and quality health care to its rural population**, which constitutes about 66% of the total population.
- According to the National Health Profile 2019, there is **only one allopathic doctor for every 10,926 people in rural areas, as compared to one doctor for every 1,457 people in urban areas.**
- This means that the **rural-urban ratio of doctors is 1:7.5, which is far below the World Health Organization's (WHO) recommended norm of 1:1.**

Factors contributing to this problem
Lack of infrastructure and facilities

- Many rural health centres **lack basic amenities such as electricity, water, equipment, drugs, and staff**. This makes it

difficult for doctors to provide quality care and discourages them from working in such conditions.

Poor incentives and recognition

- Doctors working in rural areas often face **low salaries, delayed payments, lack of career progression, and social isolation.** They also receive less recognition and respect from their peers and patients, who may prefer private or urban practitioners.

Safety and Security issues

- Doctors working in rural areas may face **threats and violence from local politicians, criminals, or disgruntled patients.** They may also have to deal with difficult terrain, extreme weather, and poor transport and communication facilities.

Lack of training and support

- Doctors working in rural areas may have **limited opportunities to update their skills and knowledge, as they have less access to continuing medical education, mentoring, and peer networks.** They may also face challenges in referring patients to higher levels of care or consulting specialists.

Impact of the Rural Doctor Shortage

Reduced access to healthcare

- According to a 2019 report by the National Health Systems Resource Centre (NHSRC), there is a **shortfall of 76.1% of specialists, 40.2% of medical officers and 25.6% of auxiliary nurse midwives (ANMs)** at the community health centres (CHCs) in rural areas.
- Many people have to travel long distances, incur high costs or forego treatment altogether due to the lack of available doctors.
- Reduced productivity and income, due to loss of workdays, increased expenditure on health care, and reduced human capital formation.

Increased burden of disease

- The rural doctor shortage also **affects the quality and effectiveness of health care, as many doctors have to deal with a large number of patients, diverse health problems and limited resources**. This leads to compromised diagnosis, treatment and

follow-up, resulting in poor health outcomes, increased morbidity and mortality, and a higher risk of complications and infections.

Worsened health inequalities

- The rural doctor shortage also exacerbates the existing disparities in health status and access between rural and urban areas, as well as between different socio-economic groups.
- According to the National Family Health Survey (NFHS) 2015-16, **the infant mortality rate (IMR) in rural areas was 46 per 1000 live births, compared to 27 in urban areas.** Similarly, the **maternal mortality ratio (MMR) in rural areas was 188 per 100000 live births, compared to 77 in urban areas.**

Others

- **High burden of disease and mortality**, especially among women, children, and marginalized groups, due to a lack of timely diagnosis, treatment, and prevention of common and communicable diseases.
- **Low utilization and satisfaction of health services**, due to long distances, high costs, poor quality, and lack of trust in the health system.
- **Increased dependence on unqualified and informal providers**, such as quacks, faith healers, and traditional healers, who may offer substandard or harmful services.
- **Increased inequality and social injustice**, due to differential access to health care based on socio-economic status, caste, gender, religion, and geography.

Initiatives taken by the Government

National Rural Health Mission

- The National Rural Health Mission (NRHM), launched in 2005, aimed **to provide accessible, affordable and quality health care to the rural population**, especially the poor and vulnerable.
- **It focused on strengthening the public health system at various levels**, improving human resources for health, enhancing community involvement and convergence with other sectors.

Pradhan Mantri Swasthya Suraksha Yojana

- The Pradhan Mantri Swasthya Suraksha Yojana (PMSSY), launched in 2006, aimed **to**

correct the regional imbalances in the availability of tertiary healthcare services by setting up new AIIMS-like institutions and upgrading existing medical colleges in underserved areas.

National Health Mission

- The National Health Mission (NHM), launched in 2013, subsumed the NRHM and added a new component of urban health. It aimed **to provide universal health coverage to the entire population, with a special focus on the rural and urban poor, women and children.**

- It also introduced new schemes such as the National Health Insurance Scheme (NHIS), the Rashtriya Bal Swasthya Karyakram (RBSK) and the Rashtriya Kishor Swasthya Karyakram (RKSK).

Ayushman Bharat Yojana

- The Ayushman Bharat Yojana, launched in 2018, aimed **to provide comprehensive primary health care through health and wellness centres (HWCs) and secondary and tertiary health care through a health insurance** scheme called Pradhan Mantri Jan ArogyaYojana (PMJAY).

- It aimed to create a cadre of mid-level health providers called community health officers (CHOs) to bridge the gap between doctors and ANMs at the HWCs.

National Medical Commission

- The National Medical Commission (NMC) Act, passed in 2019, aimed **to reform the medical education system and the regulation of the medical profession in India.**

- It replaced the Medical Council of India (MCI) with a new body called the National Medical Commission (NMC), which would oversee the admission, curriculum, accreditation, assessment and ethics of medical education and practice.

- It also allowed for the **recognition of alternative systems of medicine** such as Ayurveda, Yoga, Unani, Siddha and Homeopathy (AYUSH) and their integration with modern medicine.

- These steps have not been sufficient or effective enough to overcome the challenge of rural doctor shortage. There is **still a huge** gap between the demand and supply of doctors in rural areas, and the quality and equity of health services remain poor. Therefore, there is a need for a more holistic and sustainable way forward to address this issue.

Steps need to be taken

Creating a conducive work environment

- There is a need to **create a positive work environment for doctors working in rural areas**, by ensuring adequate infrastructure and facilities, fair compensation and recognition, career development opportunities, and professional support and guidance.

Promoting community participation

- There is a need to promote community participation in rural health care, by involving local leaders, NGOs, self-help groups, and volunteers in awareness generation, health education, disease prevention, and patient feedback. This can help build trust and rapport between doctors and patients and reduce the demand for unnecessary referrals or private care.

Strengthening primary health care

- There is a need to strengthen primary health care in rural areas, by improving the quality and coverage of services such as maternal and child health, immunization, family planning, nutrition, sanitation, and mental health. This can help reduce the burden on secondary and tertiary levels of care and improve the health outcomes of the rural population.

Incentives and support

- Rural doctors should be offered adequate compensation, benefits, and recognition for their work. They should also receive financial and logistical support to cover their travel, housing, and equipment costs. Moreover, they should be provided with opportunities for professional development and career progression, as well as access to peer networks and mentors.

Recruitment and retention

- Rural doctors should be recruited from rural backgrounds or trained in rural settings, as they are more likely to stay and serve in rural areas. They should also be exposed to rural health issues and realities during their education and training and encouraged to develop a sense of commitment and responsibility towards rural communities.

Collaboration and integration

- Rural doctors should work in multidisciplinary teams with other health professionals, such as nurses, midwives, pharmacists, and community health workers. They should also **collaborate with local authorities, organizations, and leaders** to ensure that their services are aligned with the needs and preferences of rural populations.

Conclusion

- The issue of rural doctor shortage is not only a health problem, but also a development problem. It requires a multi-sectoral and multi-stakeholder approach, involving the government, the private sector, the civil society, and the media. Only then can we ensure that every citizen of India has access to quality and affordable health care, regardless of where they live.

Must Read:

Healthcare sector in India:
https://www.iasgyan.in/daily-current-affairs/healthcare-sector-in-india
RURAL HEALTH STATISTICS REPORT:
https://www.iasgyan.in/daily-current-affairs/rural-health-statistics-report

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7.5   SHORT ARTICLES

Kerala Fibre Optical Network (KFON)

Context

- The Kerala government officially launched the Kerala Fibre Optical Network (KFON) on 5 June 2023, making it the first Indian state to have its Internet service provider.

Details

- KFON is a public-funded project that aims to provide high-speed Internet connectivity to the entire state, especially to economically backward households and government institutions.

KFON

- KFON is a joint venture of the Kerala State Electricity Board (KSEB), Kerala Infrastructure Investment Fund Board (KIIFB), Bharat Electronics Limited (BEL), and KSITI.
- KFON uses optical fibre cables that are installed through KSEB's transmission line infrastructure, which minimizes the need for digging roads. The project covers more than 30,000 km of fibre route and 375 points of presence across the state.

- It **aims to provide free Internet access to 20 lakh below-poverty-line (BPL) families in Kerala**, as well as to over 30,000 government offices, hospitals, schools and other public institutions.
- The project also intends **to offer affordable Internet plans to other households and businesses in the state.**
- It received the Internet Service Provider Licence from the Department of Telecommunications in 2022, enabling it to offer Internet services directly to end consumers.

KFON has several advantages

- It can help bridge the digital divide and ensure universal Internet access for all sections of society.
- It can enable e-governance, e-education, e-health and e-commerce services to reach every corner of the state.
- It can boost the IT sector and attract more investments and innovations in the state.
- It can also support emerging technologies such as blockchain, artificial intelligence and cloud computing.

KFON also faces some challenges and limitations

- The maintenance and security of the network infrastructure, which requires constant monitoring and upgrading.
- The quality and speed of the Internet service, which may vary depending on the location and demand of the users.
- The competition from other Internet service providers in the market, who may offer cheaper or faster plans to lure customers.
- It has to ensure that its Internet service is accessible and affordable for everyone in the state.
- KFON is a landmark project that can transform Kerala into a digital state and a leader in IT innovation. It can also empower millions of people with Internet access and enable them to access various online services and opportunities. KFON is a testament to Kerala's vision and commitment to creating a digital society that is inclusive, progressive and sustainable.

Electronics Repair Services Outsourcing (ERSO)

Context

- The Ministry of Electronics and Information Technology (MeitY) has launched a pilot project on Electronics Repair Services Outsourcing (ERSO) to promote the development of a skilled workforce for repairing electronic devices and equipment.

Details

- India is on its way to becoming the global electronics repair powerhouse with the launch of the Electronics Repair Services Outsourcing (ERSO) pilot project.
- The project aims to validate the transformational policy and process changes that have been introduced by the Government in collaboration with the industry to make India the most attractive destination for repairing ICT products.

Some of the key features and benefits of the ERSO pilot project are:

- It is aligned with the vision of the Prime Minister to make India a global electronics

leader and to support Mission LiFE (Lithium-ion battery Fabrication and Environmental sustainability).
- It will extend device life globally by providing cheap and reliable repair services for ICT products.
- It will **generate revenue and employment opportunities** for India and contribute to global environmental sustainability.
- The pilot is being held in Bengaluru and will run for a period of three months.

ERSO has multiple benefits for India, such as:

- **Revenue potential:** The policy changes are expected to create a robust domestic ERSO industry in India and generate annual revenue of $20 billion and millions of jobs. India aims to capture 20% of the global ERSO market within five years.
- **Extension of device life:** ERSO will enable the extension of electronic device life globally by providing cheap and reliable repair of ICT products. This will reduce e-waste generation and promote environmental sustainability and a circular economy. India generated more than 16 lakh tonnes of e-waste in 2022, of which only 33% was processed.
- **Employment intensity:** A repair-based economic system has higher employment intensity as compared to a manufacturing-based ecosystem, as product manufacturing is increasingly being mechanised due to technologies like additive manufacturing, robotics etc.It will generate more than five million direct jobs and millions of indirect ones.
- **Boosting domestic manufacturing:** ERSO will incentivise electronic manufacturers to expand their production capabilities in India. It will also boost the manufacturing of components and spare parts and ensure resilience to supply chain shocks.

The main bottlenecks in developing the ERSO hub in India are:

- **E-waste rules:** E-waste rules dealing with electronic goods ban companies from disposing of non-repairable products locally. This adds to the logistics costs as these

electronic goods need to be sent back to their original countries.

- **Import-export rules:** Currently, permissions for imports and exports of faulty electronics products take a long time. This makes it unfeasible for companies to import electronic devices for repair.

The pilot project on ERSO has introduced policy and process changes after in-depth discussions with the repair industry. These changes are:

- **Relaxation of e-waste rules:** The pilot project allows companies to dispose of non-repairable products locally after obtaining necessary permissions from the authorities. This will reduce the logistics costs and time involved in re-exporting them.

- **Fast-track approval of import-export:** The pilot project enables companies to get approval for the import and export of electronics products within a day as part of the pilot. This is down from the current timescale of around 10 days and will make it feasible for companies to import electronic devices for repair.

- The project involves policy and process changes by the relevant ministry in consultation with the repair industry to make India the most attractive destination for outsourced repair services. Post the pilot, a detailed assessment will be carried out and modifications will be made in the process and policy as necessary.

Cyber Safety for Payment System Operators

Context

- The Reserve Bank of India (RBI) has issued draft Master Directions on Cyber Resilience and Digital Payment Security Controls for Payment System Operators (PSOs) to enhance the safety and security of payment systems in the country.

Details

- According to the Reserve Bank of India (RBI), the volume of digital transactions in India increased by 58% in 2020-21 compared to the previous year. However, **with the**

convenience and benefits of digital payments come various risks and challenges, such as cyberattacks, frauds, data breaches, and operational failures.

- To address the risks and ensure the safety and security of digital payment systems, the **RBI issued a draft of 'Master Directions on Cyber Resilience and Digital Payment Security Controls for Payment System Operators' (PSOs).**

- The draft directions **aim to establish robust governance mechanisms** and baseline security measures for all authorized non-bank PSOs, such as card networks, payment aggregators, prepaid payment instrument issuers, ATM operators, and money transfer operators.

The draft covers various aspects of cyber resilience and digital payment security controls, such as:

- **Governance:** The Board of Directors of the PSO is responsible for ensuring **adequate oversight** over information security risks, including cyber risk and cyber resilience. The PSO should also have a dedicated Chief Information Security Officer (CISO) and a Cyber Security Operations Centre (CSOC) to monitor and manage cyber threats and incidents.

- **Risk assessment:** The PSO should conduct regular risk assessments to **identify, assess, monitor, and mitigate cyber and technology-related risks** arising out of its operations as well as its linkages with unregulated entities, such as payment gateways, third-party service providers, vendors, and merchants.

- **Cyber crisis management plan:** The PSO should develop an approved Cyber Crisis Management Plan (CCMP) to detect, contain, respond to, and recover from cyber threats and attacks. The CCMP should include roles and responsibilities, an escalation matrix, a communication plan, an incident response plan, a recovery plan, and a testing plan.

- **Data security:** The PSO should implement a comprehensive data leak prevention policy to ensure the confidentiality, integrity, availability, and protection of business and

customer information. The PSO should also comply with the data localization norms prescribed by the RBI and ensure that sensitive data is not stored or processed outside India.

- **Network security:** The PSO should implement appropriate network security measures to prevent unauthorized access, modification, or disruption of its network infrastructure. The PSO should also ensure that its network is segmented into different zones based on the level of sensitivity and criticality of the data and systems.

- **Application security:** The PSO should follow a secure application development life cycle (ASLC) to ensure that its applications are free from vulnerabilities and defects. The PSO should also conduct regular security testing and audits of its applications using internal or external experts.

- **Vendor risk management:** The PSO should establish a vendor risk management framework to assess and monitor the security posture of its vendors and third-party service providers. The PSO should also ensure its vendors comply with the relevant contractual obligations and regulatory requirements.

- **Business continuity plan:** The PSO should develop a business continuity plan (BCP) to ensure that its critical functions and processes can be restored within a reasonable time frame in the event of a disruption or disaster. The BCP should include backup arrangements, disaster recovery sites, alternate communication channels, and testing scenarios.

- The draft directions are open for public consultation until June 30, 2023. The RBI has proposed a phased implementation approach for different categories of PSOs based on their size and complexity. The RBI expects that these directions will help enhance cyber safety and strengthen the resilience of the digital payment ecosystem in India.

Treaty for Outer Space Governance

Context

- The United Nations (UN) has recommended a new treaty for ensuring peace and security as well as preventing an arms race in outer space.

Details

- The negotiations should lead to the development of international norms, rules and principles to address threats to space systems, according to a UN policy brief, For All Humanity —The Future of Outer SpaceGovernance, released in May 2024.

- The brief also recommended "a combination of binding and non-binding norms" to address emerging risks to outer space security, safety and sustainability. The recommendations come ahead of the **UN Summit of the Future, which will be held on September 22-23, 2024, in New York.**

- At the Summit of the Future, member states will agree on multilateral solutions for a better tomorrow and to strengthen global governance. The brief takes stock of the ongoing changes in outer space and assesses how they impact present and future governance.

Existing treaties

- In 1959, the **United Nations established the Committee on the Peaceful Uses of Outer Space** to review and enable international cooperation in the peaceful uses of outer space.

- In 1963, countries agreed to **prohibit testing nuclear weapons in outer space.**

- In 1977, the **prohibition of altering the space environment as a weapon was agreed upon.**

- **The Outer Space Treaty of 1967 binds the parties to use outer space only for peaceful purposes**, bans the stationing of weapons of mass destruction in outer space, and prohibits military activities on celestial bodies.

There are still many challenges and gaps in the governance of outer space. Such as:

- There is **no clear definition of what constitutes a weapon in outer space** or what activities are considered hostile or peaceful.

- There is no mechanism to verify compliance with existing norms or to enforce them in case of violations.

- There is no comprehensive framework to address the **growing amount of space debris** that poses a threat to operational satellites and human spaceflight.

- There is no consensus on how to **balance the rights and responsibilities of different actors in outer space**, especially with the increasing involvement of private sector and non-state actors.

- There is **no mechanism to ensure that outer space is used for peaceful purposes** and the benefit of all humanity, especially developing countries.

- These challenges and gaps create uncertainty and instability in outer space, which could lead to conflict or escalation. They also undermine the potential of outer space for advancing sustainable development and human well-being. Therefore, a new treaty is needed to address these issues and to establish a clear and comprehensive framework for the governance of outer space.

A new treaty would:

- Define what constitutes a weapon in outer space and what activities are prohibited or permitted.

- Establish a verification and enforcement mechanism to ensure compliance with the treaty obligations and to resolve disputes peacefully.

- Provide a coordinated approach to mitigate and prevent space debris and enhance the safety and sustainability of outer space activities.

- Ensure that outer space is used for peaceful purposes andthe benefit of all humanity, especially developing countries.

- Achieving a new treaty on outer space governance will require political will, diplomatic skill and inclusive participation from all stakeholders.

The UN policy brief suggests some steps that to facilitate a new treaty

- Building trust and confidence among states **through dialogue, transparency and confidence-building measures**.

- **Engaging with non-state actors** such as the private sector, civil society, and academia.

- **Developing common principles and objectives** for outer space governance that reflect the interests and concerns of all parties.

- Identifying areas of convergence and divergence among existing proposals and initiatives on outer space governance.

- Exploring various options for negotiating a new treaty, such as through an ad hoc committee, a working group or a conference of parties.

- The UN Summit of the Future in 2024 provides an opportunity for member states to agree on a mandate and a roadmap for negotiating a new treaty on outer space governance. The new treaty on outer space governance would be a significant contribution to enhancing peace and security as well as advancing sustainable development and human well-being. It would also be a testament to the value and relevance of multilateralism in addressing global challenges and shaping our common future.

Centralized Laboratory Network (CLN)

Context

- India has recently become a member of the Centralized Laboratory Network (CLN), **a global network of laboratories** that tests vaccines for pandemic and epidemic diseases.

Details

- The CLN is part of the Coalition for Epidemic Preparedness Innovations (CEPI), an international alliance that aims to accelerate the development of vaccines against emerging infectious diseases and enable equitable access to them.

Centralized Laboratory Network (CLN)

- The CLN consists of 15 partner facilities in 13 countries and uses standardized methods and materials to evaluate vaccine candidates against known and unknown pathogens.

- The network is a key enabler of CEPI's 100 Days Mission, which seeks to reduce vaccine development timelines to just 100 days in the face of a future **'Disease X'** - **a newly identified pathogen with epidemic or pandemic potential**.

India Joined CLN

- By joining the CLN, India's Indian Council of Medical Research-National Institute of Virology (ICMR-NIV) will contribute to the global efforts to test and compare vaccine candidates against various diseases, such as Lassa fever, Nipah, Rift Valley Fever, and COVID-19.

- The ICMR-NIV will also benefit from the shared expertise and resources of the other members of the network, which include laboratories from Africa, Europe, North America, and Asia.

- The CLN is an example of how global cooperation and coordination can advance scientific research and innovation for public health. By joining this network, India has demonstrated its commitment and leadership in tackling the challenges posed by pandemic and epidemic diseases.

- The expansion of the CLN to include more facilities from the Global South will help to reduce sample transfer and testing times, potentially accelerating the development of vaccines against emerging infectious diseases. It will also support sustainable regional outbreak preparedness infrastructure, by enhancing the capacity and collaboration of laboratories in different parts of the world.

Deepfakes

Context

- Deepfake is in the news after the wrestler protesting at JantarMantar was arrested, and boarded in a van. Shortly after, a photo appeared to show the wrestlers posing with wide smiles for a selfie in the van.

Details

- Deepfake is a term that refers to the use of artificial intelligence (AI) to create realistic images, videos, or audio of people or events that never happened. For example, a deepfake video could show a politician saying something they never said, or a celebrity doing something they never did.

How do deepfakes work?

- Deepfakes are **created by using machine learning algorithms to manipulate or replace parts of an original video or image**, such as the face of a person.
- The goal of deep fake creation is to make the manipulated content look as realistic and convincing as possible so that it can fool human viewers or automated systems.

Why deepfakes are dangerous?

- Deepfakes pose a **serious threat to our society and democracy, as they can be used for malicious purposes** such as spreading misinformation, defaming celebrities or politicians, blackmailing individuals or organizations, impersonating identities or voices, or creating non-consensual pornography.
- Deepfakes can also undermine our trust in digital media and information sources, as we may not be able to verify what is real and what is not.

How we can detect deepfakes

- Deepfake detection is the task of identifying fake videos or images that have been generated using deep learning techniques. The methods can be based on different features or clues that reveal the presence of manipulation, such as facial expressions, eye reflections, head poses, or environmental cues.
- Many tools and platforms can help us detect deepfakes using these methods or others. By using these tools and platforms, we can protect ourselves from being deceived by deepfakes and verify the authenticity of digital media content.

What more can be done?

- Develop and implement technical solutions to detect and verify deepfakes content, such as digital watermarking, blockchain, or biometric authentication.
- Establish and enforce legal and ethical frameworks to regulate the production and distribution of deepfake content, such as laws on data protection, intellectual property, defamation, and consent.
- Educate and empower the public to be critical and responsible consumers and producers of digital media, such as by promoting media literacy, digital citizenship, and ethical awareness.
- Deepfake technology is not inherently good or bad. It is a powerful tool that can be used for good or evil. The way forward is to ensure that we use it wisely and responsibly, with respect for human dignity and social justice.

Higgs Boson Decay

Context

- Physicists at the European Council for Nuclear Research (CERN) reported finding a Higgs boson decaying into a Z boson particle and a photon at the Large Hadron Collider (LHC). This is a very unusual decay process that reveals critical information about the Higgs boson and our cosmos.

Details

- The Higgs boson is a type of boson, **a subatomic particle that carries force**. It carries the force that a particle feels as it goes through an energy field known as the Higgs field, which is thought to exist throughout the cosmos. When an electron interacts with the Higgs field, the effects it encounters are said to be the result of its interaction with Higgs bosons.

Higgs bosons

- The Higgs boson, also known as the God particle, is a fundamental particle that arises from the Higgs field, a field that fills the entire universe and gives mass to other particles.
- It decays quickly into other particles, which can be detected by sophisticated instruments. Scientists are now studying the properties of the Higgs boson to see if it matches the predictions of the Standard Model or if it reveals new physics beyond it
- The Higgs boson is a key component of the Standard Model of particle physics, which describes how all matter and forces interact at the smallest scales. Without the Higgs field, particles would be massless and zip around at

the speed of light, making atoms and molecules impossible.

- The Higgs boson has a very large mass, about 125 billion electron volts (GeV), which is comparable to an entire atom of gold. It also has **no electric charge and no spin**, which means it **does not rotate around its axis** as other particles do.
- The Higgs boson is the **only elementary particle with these properties**, making it a unique and mysterious object in nature.

Decay of the Higgs boson

- At the Large Hadron Collider Physics (LHCP) research teams reported how they discovered evidence of the Higgs boson decaying into a Z boson and a photon.
- The Z boson is the electrically neutral carrier of the weak force and the photon is the carrier of the electromagnetic force.
- The Higgs boson particle's decay into a Z boson and photon is similar to that of decay into two photons.
- In these cases, the particle does not directly decay into these pairs of particles. Instead, it happens through, an "intermediate loop of virtual particles" that come into and out of existence but cannot be detected directly.
- These "virtual" particles could include new and so far unknown particles that interact with the Higgs boson.
- Therefore, this decay mode could offer a window into physics beyond the Standard Model, by revealing possible deviations from the expected behaviour or by hinting at new phenomena that could be explored further.

Pet Coke in Lithium-Ion Batteries

Context

- The government allowed the import of pet Coke as a fuel for the production of graphite anode material for lithium-ion batteries.

Details

- Pet coke, or petroleum coke, is a **by-product of oil refining that can be used as a raw material for making graphite anode material for lithium-ion batteries.** Graphite anodes are one of the key components of lithium-ion

batteries, which are widely used in electric vehicles, smartphones, laptops and other devices.

Needle Pet Coke (NPC)

- Not all types of pet coke are suitable for making graphite anodes. **The government of India has recently permitted the import of a specific type of pet coke, known as needle pet coke (NPC), for this purpose**. NPC has high carbon content and a needle-like structure that makes it ideal for producing high-quality graphite anodes.
- The import of NPC is restricted to the production of graphite anode material only and not for any other purposes or as fuel. This is because **pet coke is a highly polluting substance that emits large amounts of sulphur dioxide and other harmful gases when burned.**

Lithium-ion batteries

- Lithium-ion batteries are widely used in electric vehicles, smartphones, laptops and other devices that require portable and rechargeable power sources. One of the key components of these batteries is the anode, which is the negative electrode that stores and releases lithium ions during charging and discharging cycles. **Graphite is commonly used as an anode material because of its high electrical conductivity, stability and low cost.**
- Graphite production requires a raw material called needle pet coke (NPC), which is a type of petroleum coke derived from oil refining. It is used to make synthetic graphite through a process called graphitization, which involves heating NPC at high temperatures and pressures in the presence of a catalyst.
- **NPC is not easily available in India and has to be imported from countries like China, Japan and the US**. The import of NPC for fuel purposes or trade is banned in India due to its high sulphur content and environmental concerns. The government has recently permitted the import of NPC as a raw material for making graphite anode material specifically for lithium-ion batteries. This decision is expected to boost the domestic

production of graphite anode material and reduce the dependence on imports.

The import of NPC for lithium-ion batteries is subject to certain conditions, such as:

- The **sulphur content in the NPC should be less than 0.8%**, which would be **monitored by state pollution control boards**.
- The NPC should be used only for making graphite anode material for lithium-ion batteries as a feedstock or raw material and not for any other purposes or as fuel.
- The import of low-sulphur pet coke (LSPC) is restricted and requires authorisation from the directorate general of foreign trade (DGFT) for use in integrated steel plants only for blending with coking coal in recovery-type coke ovens equipped with desulphurisation plants. LSPC should not be used by the steel industry as fuel or for trade.
- Import is free for making graphite anode material for Li-ion batteries but use is restricted – banned for fuel use.
- The government's move to allow the import of NPC for lithium-ion batteries is seen as a positive step towards promoting the electric vehicle industry and reducing carbon emissions. It is also in line with the National Mission on Transformative Mobility and Battery Storage, which aims to create a comprehensive ecosystem for the development and deployment of clean mobility solutions in India. By enabling the domestic production of graphite anode material, the government hopes to reduce the cost of lithium-ion batteries and make them more affordable and accessible for consumers.

Norovirus

Context

- Recently, two cases of norovirus infection were confirmed in Kerala, among students of a veterinary college in the Wayanad district. The health department has issued an alert and advised people to be vigilant and follow preventive measures to avoid the infection.

Details

- Norovirus is a highly contagious virus that causes acute gastroenteritis, **also known as stomach flu**. It is one of the most common causes of diarrhoea and vomiting in the world.
- It was first identified in 1968 as the cause of an outbreak of gastroenteritis in Norwalk, Ohio. Since then, it has been recognized as a major public health problem that affects millions of people every year.
- According to a report, globally, norovirus is estimated to cause over 200 million cases and 200,000 deaths per year.
- It belongs to the family Caliciviridae, which includes seven genogroups (GI to GVII). However, only GI and GII are responsible for most human infections. This strain also evolves rapidly and produces new variants every few years that can evade the immune system and cause more severe disease.
- It can survive on surfaces for a long time and is not easily killed by most disinfectants. It can withstand temperatures up to 60°C.

Some of the common sources of norovirus contamination are:

- Food that has been handled by someone who has the virus or has been in contact with contaminated water or surfaces.
- Shellfish and other seafood are naturally contaminated with norovirus.
- Water that has been contaminated by sewage or runoff from farms or animals.
- Surfaces or objects that have been touched by someone who has the virus or vomit or faeces.

Symptoms

- The symptoms of norovirus infection usually start 12 to 48 hours after exposure to the virus and last 1 to 3 days. The **main symptoms are**; Nausea, Vomiting, Abdominal pain or cramps, Watery or loose diarrhoea, Feeling ill, Low-grade fever, and Muscle pain.
- **Some people may not have any symptoms** but can still spread the virus to others. The symptoms are usually mild and self-limiting, but they can cause dehydration and electrolyte imbalance, especially in children and older adults.

Norovirus cases may be on the rise due to several factors, such as:

- The emergence of new norovirus strains that can infect more people and cause more severe disease.
- The lack of immunity against norovirus strains due to short-lived and strain-specific protection after infection.
- The lack of a vaccine or specific treatment for norovirus infection.
- The increased global travel and trade can introduce new norovirus strains into different regions.
- The decreased hygiene practices and social distancing measures during the COVID-19 pandemic can increase exposure to norovirus.
- There is no specific treatment for norovirus infection. The main goal of treatment is to prevent dehydration and restore fluid and electrolyte balance.

Some of the treatment options are:

- Drinking plenty of water or oral rehydration solutions.
- Avoiding fizzy drinks or fruit juice as they can worsen diarrhoea.
- Eating bland and easy-to-digest foods, such as soups, rice, pasta and potatoes.
- Taking over-the-counter medications, such as ibuprofen for pain, paracetamol for fever and loperamide for diarrhoea.
- Seeking medical attention if symptoms are severe, persistent or accompanied by bloody stools, stomach pain or signs of dehydration.
- Norovirus is a common and highly contagious virus that causes gastroenteritis. It can be spread through contaminated food, water, surfaces or contact with an infected person. The symptoms are usually mild and last for a few days, but they can cause dehydration and complications in some people. The best way to prevent norovirus infection is to practice good hygiene and avoid exposure to the virus. There is no specific treatment for norovirus infection, but supportive care can help relieve the symptoms and prevent dehydration.

From Plastic Pollution to Fuel - Apada Me Awasar

Context

- A series of innovations backed by the Department of Science and Technology (DST) will enable us to combat plastic pollution by addressing the growing problem by reducing, reusing, and recycling plastic, paving the way for sustainable development.

Details

- Many of these technologies are being used at a pilot scale and scaling them up could bring relief from the ever-growing plastic pollution challenge. The technology development and transfer division of the department funds technology development projects including materials, devices and processes.
- One of the most promising projects is the **conversion of plastic waste into fuel, which can not only reduce the environmental impact of plastic waste but also provide a valuable source of energy.**

Pilot plant converts plastic waste into fuel

- A pilot-scale vehicle-mounted mobile plant has been developed using an indigenously designed process **to convert various types of plastic waste into carbon-densified HC-Oil (Hydrocarbon Oil) with maximum carbon recovery**, converted through the process of ICT-Poly Urja)
- The plant which operates under low stringent conditions in the presence of a selective, recyclable, reusable, robust, non-toxic, inexpensive catalyst brings a low-cost option to convert waste plastic to fuel.

ICT-Poly Urja

- ICT-Poly Urja which uses indigenously prepared patented $Cu@TiO_2$ catalyst for CTL (Catalytic Thermo Liquefaction) of several types of poly-olefinic plastic waste into HC-Oil 300 C in 30 min.
- The **process leads to more than 85% feedstock conversion**, and high-quality C and H elements enriched HC-Oil with a calorific value of 42 MJ/kg.
- The **fuel can be burned to generate steam and power**.

- A series of mixed poly olefinic plastic waste samples with varying compositions were examined for CTL and it was discovered that all combinations of plastic wastes can be liquefied using the CTL process with more than 80% HC-Oil production

Advantages of this process are:

- It can handle mixed and contaminated plastic waste without pre-treatment.
- It can produce high-quality fuel oil with low sulfur and nitrogen content.
- It can operate at low temperatures and pressure.
- It can use a cheap and recyclable catalyst.
- It can be easily scaled up and deployed in different locations.

The CTL process has several advantages over other technologies

- It requires significantly less energy due to moderate operating conditions.
- It produces high-quality oil with low sulphur and nitrogen content.
- It can handle mixed and contaminated plastic waste without pre-treatment or sorting.
- It has a high conversion efficiency of up to 90%.
- It has low greenhouse gas emissions and minimal solid residue.

Methods to convert plastic waste into different forms of energy

Formic acid production

- Researchers have found a way to **convert plastic into formic acid, a chemical that can be used to generate electricity in power plants and electric cars.** They use a **catalyst made of vanadium, a cheap and environmentally friendly metal, and expose the plastic to artificial sunlight in a solution**. The process breaks down the plastic into formic acid, which can be stored and transported easily.

Pyrolysis

- Pyrolysis is the **process of heating plastic in the absence of oxygen, resulting in the production of gas, oil, or char.** The gas and oil can be used as fuels for electricity generation, while the **char can be used as a soil amendment or carbon source.**

Gasification

- Gasification is similar to pyrolysis, but **it involves the partial oxidation of plastic with a controlled amount of oxygen or steam. The result is a mixture of gases called syngas, which consists mainly of hydrogen and carbon monoxide**. Syngas can be burned directly for electricity generation or converted into other fuels or chemicals.

Combustion

- Combustion is the **process of burning plastic with excess oxygen, producing heat and carbon dioxide**. The heat can be used to generate steam and drive turbines for electricity generation. It is the most common method of waste-to-energy (WtE) implementation, but it requires strict emission standards and proper management of residues such as fly ash and bottom ash.

Conclusion

- The conversion of plastic waste into fuel is a win-win solution for both the environment and the economy. It can help reduce the burden of plastic waste on landfills and oceans, while also providing a renewable source of energy that can reduce our dependence on fossil fuels. It can also create employment opportunities for waste collectors and entrepreneurs who can operate mobile plants.

AI for Health - Abaucin Antibiotics

Context

- In a breakthrough for the use of Artificial Intelligence (AI) in the field of medicine, scientists from the United States and Canada have found a new antibiotic – powerful enough to kill a superbug – using AI.

Details

- **Superbugs are bacteria that are resistant to several types of antibiotics**. Each year these drug-resistant bacteria infect more than 2 million people in the US and kill at least 23,000, according to the US Centers for Disease Control and Prevention (CDC).
- The study "Deep learning-guided discovery of an antibiotic targeting

Acinetobacterbaumannii" published in the journal Nature Chemical Biology dealt with the bacterium Acinetobacterbaumannii.

Acinetobacterbaumannii

- Acinetobacterbaumannii is one of the most dangerous superbugs, **causing infections in the lungs, blood and urinary tract**. It is associated with **high mortality rates,** especially among patients in intensive care units.
- The World Health Organization (WHO) has listed it as a **priority pathogen that poses a significant threat to human health**.
- The researchers used a deep learning algorithm to screen more than 100 million chemical compounds for their potential to fight Acinetobacterbaumannii. **The algorithm identified a molecule called halicin, which had previously been investigated as a possible treatment for diabetes but not for its antibacterial properties.**
- The team then tested halicin against Acinetobacterbaumannii and found that it was able to kill 35 different strains of the bacterium, including some that were resistant to all known antibiotics.
- Halicin also proved effective against other superbugs such as E. coli, Klebsiella pneumonia and Mycobacterium tuberculosis.
- This study demonstrates how AI can accelerate the discovery of new antibiotics and help combat the global threat of antimicrobial resistance. By harnessing the power of AI, we may be able to find novel solutions to some of the most challenging problems in medicine.

AI for Health

About

- AI for Health is a term that encompasses the **use of artificial intelligence (AI) techniques and tools to improve healthcare delivery, research, and public health.** It has the potential to enhance the quality, efficiency, and accessibility of health services, as well as to advance the discovery of new treatments and interventions.

- AI for Health also poses significant ethical, social, and technical challenges that need to be addressed by all stakeholders.

Key features of AI for Health include:

- **Machine learning (ML):** training algorithms using data sets, such as health records, to create models capable of performing such tasks as categorizing information or predicting outcomes.
- **Natural language processing (NLP):** analyzing and generating natural language texts, such as medical reports or patient queries.
- **Computer vision:** processing and interpreting visual data, such as medical images or videos.
- **Speech recognition:** converting spoken words into text or commands.
- **Robotics:** designing and operating machines that can perform physical tasks, such as surgery or rehabilitation.

Significances

- **Improving diagnosis and screening:** AI can help detect diseases or conditions earlier and more accurately, such as cancer or diabetes.
- **Enhancing clinical care:** AI can assist clinicians in decision-making, treatment planning, and monitoring, as well as provide personalized recommendations and feedback to patients.
- **Accelerating research and innovation:** AI can facilitate the analysis of large and complex data sets, such as genomic or epidemiological data, and generate new hypotheses and insights.
- **Supporting public health:** AI can enable better surveillance and response to outbreaks, epidemics, or pandemics, as well as improve health system management and resource allocation.

Challenges

- **Ensuring ethics and human rights:** AI for Health should respect the principles of beneficence, non-maleficence, autonomy, justice, and solidarity, and protect the privacy, dignity, and agency of individuals and communities.
- **Addressing bias and fairness:** AI for Health should avoid reproducing or amplifying existing inequalities or discriminations based

on factors such as gender, race, ethnicity, age, or socio-economic status.

- **Guaranteeing safety and quality:** AI for Health should adhere to rigorous standards of validation, verification, and evaluation, and ensure the reliability, robustness, and accountability of its outputs.
- **Promoting collaboration and participation:** AI for Health should foster the engagement and empowerment of all relevant stakeholders, including health professionals, researchers, policymakers, patients, and the public.

Way Forward

- The way forward for AI for Health is to harness its opportunities while mitigating its risks.
- This requires a holistic and multidisciplinary approach that balances innovation with regulation, collaboration with competition, and human-centeredness with technological advancement.
- AI for Health is not a goal in itself, but a means to achieve better health outcomes for all.

Ban on Fixed-Dose Combination Drugs

Context

- The Central Government issued a gazette notification to ban fourteen fixed-dose combinations (FDC) medicines that have no therapeutic relevance. These FDCs are products that contain more than one active ingredient for a specific indication(s).

Details

- Some of these banned FDCs are used for cough, fever and infections, and can be bought without a prescription. However, industry experts say that some of these combinations are not currently available in the market.
- The **ban is based on the recommendations of an expert committee that examined the efficacy of these drug combinations.** The committee found that these FDCs have no therapeutic justification and may pose a risk to human beings.

- The notification states that the ban will take effect immediately and **prohibits the manufacture, sale or distribution of these FDCs for human use.** It also says that the ban is necessary and expedient in the public interest.

Fixed-dose combinations (FDC)

- FDC medicines are pharmaceutical products that **contain two or more active ingredients in a single dosage form, such as a tablet or a capsule.**
- They have several **advantages over separate formulations, such as improved adherence, reduced pill burden, simplified logistics, and lower costs.**
- They are widely **used for the treatment of chronic conditions**, such as HIV/AIDS, tuberculosis, diabetes, hypertension, and cardiovascular diseases.
- They also pose some challenges and risks, such as potential drug interactions, adverse effects, inappropriate dosing, irrational prescribing, and regulatory issues.
- Therefore, FDC medicines should be carefully evaluated for their safety, efficacy, quality, and rationality before they are approved and marketed. They should also be prescribed and used according to the current guidelines and evidence-based practices.

Must Read

Fixed-dose combinations (FDC) medicines:https://www.iasgyan.in/daily-current-affairs/fixed-dose-combination-fdc-medicines

MAHIR

Context

- The Government of India has announced the launch of the Mission on Advanced and High-Impact Research (MAHIR) to harness the potential of emerging technologies in the power sector.

Details

- The world is facing an unprecedented challenge of meeting the growing energy demand sustainably and securely. According to the US Energy Information Administration, global energy demand is expected to increase

47% by 2050, driven by population and economic growth, particularly in developing Asian countries. This will require increased oil and natural gas production, absent technological breakthroughs or significant policy changes.

- India, as one of the fastest-growing economies and the third-largest energy consumer in the world, has a crucial role to play in shaping the future of global energy markets and transitions. The India Energy Outlook 2021 by the International Energy Agency (IEA) provides a comprehensive analysis of the opportunities and challenges for India's energy sector in different scenarios.

- One of the key initiatives taken by the Government of India to address the energy challenge is the Mission on Accelerating Hydrogen Innovation and Research (MAHIR).

MAHIR

- This mission aims to promote research and development (R&D) on hydrogen production, storage, distribution and utilization technologies, as well as to create an enabling ecosystem for hydrogen-based applications in various sectors.

- It will be **jointly funded by the Ministry of Power, the Ministry of New and Renewable Energy** and the PSUs under their respective domains.

- The **mission has identified four priority areas for R&D:**

- Green hydrogen production from renewable sources such as solar, wind and biomass.

- Hydrogen storage systems using metal hydrides, carbon nanotubes, metal-organic frameworks and other materials.

- Hydrogen distribution networks using pipelines, trucks or ships.

- Hydrogen utilization in transport, industry, power generation and other end-use sectors.

- It will facilitate indigenous research, development and demonstration of the latest and emerging technologies in the power sector.

Emerging technologies in the power sector

- **Digital and advanced analytics:** These technologies enable data-driven decision-making, optimization, and automation of various aspects of power plant operations, such as heat rate, dispatch, maintenance, and mode selection.

- **Artificial intelligence and machine learning:** These technologies enable **more accurate modelling and forecasting of power demand and supply, as well as improved integration of renewable energy sources**. They also enable intelligent load management, demand response, grid stability, and customer engagement.

- **Energy storage:** This technology enables storing excess electricity generated from renewable sources or during off-peak hours, and releasing it when needed. It also enables grid balancing, frequency regulation, peak shaving, and backup power.

- **Smart grid:** This technology **enables two-way communication and interaction between power producers, consumers, and grid operators.** It also enables distributed generation, microgrids, smart metering, smart appliances, electric vehicles, and grid resilience.

How will MAHIR facilitate the development and deployment of these technologies?

- MAHIR will **identify the most promising technologies and areas of future relevance** for the power sector through collective brainstorming and synergetic technology development among various stakeholders.

- It will then **provide funding and support for indigenous research and development** of these technologies through academic institutions, research organizations, industry partners, start-ups, etc.

- It will **devise pathways for the smooth transfer of technology** from the lab to the field through demonstration projects, pilot testing, scaling up, standardization, etc.

- It will facilitate the dissemination and adoption of these technologies within and outside India through policy advocacy, regulatory reforms, market creation, capacity building, etc.

Expected Outcomes and Benefits of MAHIR

- Enhancing the efficiency and performance of existing power plants and grids.
- Reducing the carbon footprint and environmental impact of power generation.
- Increasing the share and integration of renewable energy sources in the power mix.
- Improving the quality and reliability of power supply.
- Reducing the cost and increasing the accessibility of electricity.
- Creating new opportunities for innovation, entrepreneurship, employment, and exports.
- Strengthening India's position as a global leader in power technology.

Conclusion

- MAHIR is a visionary initiative that aims to leverage emerging technologies in the power sector to transform India's energy landscape and economy. It is a mission that can make India a powerhouse of innovation and a manufacturing hub of the world.

Must Read:

Mission on Advanced and High-Impact Research (MAHIR): *https://www.iasgyan.in/daily-current-affairs/mahir*

Performance-Based Navigation for Helicopters

Context

- GAGAN — GPS-Aided GEO Augmented Navigation — is a cutting-edge space-based augmentation system that improves the accuracy of the GPS Navigation system by providing local geographical positioning for better location of aircraft for more efficient traffic management.

Details

- GAGAN reduces the errors caused by atmospheric disturbances, clock inaccuracies, and satellite orbit deviations that affect the GPS signals.

GAGAN — GPS-Aided GEO Augmented Navigation

- GAGAN is a **satellite-based augmentation system (SBAS) that enhances the accuracy and reliability of GPS signals**.

- It is **developed by the Indian Space Research Organisation (ISRO) and the Airports Authority of India (AAI)** as part of a collaborative project that started in 2002.
- It **provides two levels of service**: the Standard Positioning Service (SPS) and the Precision Approach Service (PAS).
  - The SPS is available to all users and provides a horizontal accuracy of less than 8 meters.
  - The PAS is available to certified users and provides a horizontal accuracy of less than 1 meter.
- To use GAGAN, helicopters need to be equipped with SBAS-capable avionics that can receive and process GAGAN signals.
- The Indian civil aviation authorities have also issued guidelines and procedures for GAGAN-based helicopter operations.

GAGAN can benefit helicopter operations in several ways;

- It can enable more direct and efficient routes, saving time and fuel.
- It can enhance situational awareness and reduce workload for pilots, especially in low visibility conditions.
- It can improve access to remote and challenging areas, such as mountains, islands and offshore platforms, where conventional navigation aids are not available or reliable.
- It can increase safety and reduce the risk of accidents by providing more accurate and reliable guidance for landing and obstacle avoidance.
- GAGAN can help unlock the full potential of helicopters as a versatile and efficient mode of transportation for various sectors such as tourism, healthcare, disaster management, law enforcement and defence.
- All registered aircraft in India will have to comply with GAGAN by December 2025. This will ensure that all aircraft can benefit from the enhanced navigation services provided by GAGAN. The system will also improve the safety and efficiency of air traffic management in India, which is one of the fastest-growing aviation markets in the world.

CSIR-IIIm Cannabis Research Project

Context

- India's first Cannabis Research Project is in CSIR-IIIM Jammu.

Details

- India is witnessing remarkable growth in research and development (R&D) in the field of medicine. One of the noteworthy projects being conducted in this domain is the 'Cannabis Research Project' of CSIR-IIIM Jammu, which is the first of its kind in India.

Cannabis Research Project

- The 'Cannabis Research Project' of CSIR-IIIM Jammu **aims to explore the medicinal potential of cannabis, a plant that has been used for centuries in various traditional systems of medicine.**

- Cannabis contains several active compounds, such as cannabinoids and terpenes, that have shown promising effects in treating various diseases, such as neuropathies, cancer, and epilepsy.

- The project was initiated in collaboration with a Canadian company, IndusScan, which has expertise in extracting and purifying cannabis compounds.

- The **project involves cultivating cannabis plants in controlled conditions, screening them for their chemical profiles, and evaluating their biological activities in preclinical models.**

- This project can boost the economy of Jammu and Kashmir by attracting investments and creating employment opportunities.

- The 'Cannabis Research Project' of CSIR-IIIM Jammu is an example of how India is harnessing its rich biodiversity and indigenous knowledge for developing innovative and affordable medicines for the benefit of humanity.

Ethical Framework for Neurotech Devices

Context

- The rapid advancement of neurotechnology poses new challenges and opportunities for the protection of human rights and dignity. To address these issues, UNESCO is organizing an international conference on the ethical implications of neurotech devices that can access and manipulate brain activity data.

Details

- The conference will bring together experts from various disciplines and sectors to discuss the current state of the art, the potential benefits and risks, and the ethical principles and guidelines that should govern the development and use of such devices.

- It will take place on 13th July 2023 at UNESCO Headquarters in Paris, France.

Neurotechnology

- Neurotechnology is an **emerging field that combines neuroscience, engineering, digitalisation and artificial intelligence (AI) to develop devices and applications that can monitor and intervene in human brain activity.**

- Neurotech devices have great potential for improving health, well-being and productivity, but they also raise ethical, legal and social challenges that need to be addressed by a common ethical framework.

- It also poses significant ethical challenges, as it can access and manipulate the most intimate aspects of our minds, such as our thoughts, emotions, memories and identity.

Some of the challenges include:

- The **protection of personal brain wave data and other information generated by neurotech devices** from unauthorized access, misuse or manipulation.

- The **respect for human dignity, autonomy and identity in the use of neurotech devices** that can influence or alter cognitive, emotional and behavioural states.

- The **promotion of inclusivity, diversity and accessibility in the development and deployment of neurotech devices** that can affect social interactions, communication and learning.

- The fostering of scientific collaboration, transparency and accountability in the research and innovation of neurotech devices

can have significant impacts on individuals and society.

- The **anticipation and monitoring of potential unintended use and/or misuse of neurotech devices** that can pose risks to safety, security and human rights.

Some examples of neurotechnology applications are:

Brain imaging

- Brain imaging maps brain activity by recording magnetic fields produced by electrical activity within the brain.
- It can be used for research purposes, such as studying mental illness or sleep patterns, or for practical purposes, such as diagnosing brain tumours or monitoring brain function during surgery.

Neuroprostheses

- Neuroprostheses act as "prosthetic" brain functions, in that they replace or restore sensory, motor, or cognitive functions that the subject has lost.
- Cochlear implants, which restore hearing in people with profound hearing loss, are perhaps the most prominent example of neuroprostheses in everyday life.
- Other examples include retinal implants for restoring vision, brain-computer interfaces for controlling robotic limbs or wheelchairs, and memory implants for enhancing memory recall.

Neuromodulation

- Neuromodulation technologies use neural interfaces to stimulate nervous system structures to influence neural activity. This can be done for therapeutic or rehabilitative purposes, such as deep brain stimulation for reducing tremors in Parkinson's disease, spinal cord stimulation for treating chronic pain, or transcranial magnetic stimulation for treating depression.
- It can also be done for enhancing or altering cognitive functions, such as attention, learning, creativity or mood.

Conclusion

- UNESCO believes that neurotechnology can be a powerful tool for human development, but it must be used with respect for human

dignity, freedom of thought and privacy. By engaging all relevant stakeholders in a constructive and inclusive dialogue, UNESCO hopes to foster a common ethical vision for the future of neurotechnology.

Country's First Dimethyl Ether Fuelled Tractor

Context

- India's first 100% Dimethyl Ether (DME) - fuelled tractor/ vehicle for on- and off-road applications has been developed for a sustainable alternate fuel-based transport system.

Details

- The country imports most of its crude oil requirements to energise various sectors of the domestic economy. **Dimethyl ether (DME) is a suitable alternative since it is renewable**. It can be produced indigenously, and several countries, like Japan, the USA, China, Sweden, Denmark, and Korea, are already using DME to power their vehicles.
- To bring the country up to speed in the renewable energy sector, researchers at **IIT Kanpur developed a 100% DME-fuelled engine with a mechanical fuel injection system**. It exhibited higher thermal efficiency and lower emissions than the baseline diesel engine.

DME-fuelled engine

- The DME-fuelled engine **emits extremely low particulate and soot emissions and almost no smoke without using expensive exhaust gas after-treatment devices and advanced engine technologies**, making it a viable alternative fuel and engine technology to adapt to conventional diesel engines used in our economy's agricultural and transport sectors.
- The research supported by the Science and Engineering Research Board (SERB), an attached institution of the Department of Science and Technology (DST), was dove-tailed into the 'Methanol Economy' program of NITI Ayog.
- It **could reduce India's oil import bill and greenhouse gas (GHG) emissions by**

converting vast domestic coal reserves, low-value agricultural biomass waste, and municipal solid waste into methanol and DME for a variety of applications including powering tractors/ vehicles.

Benefits of using DME

- One of the benefits of using DME as an alternative fuel is its environmental performance.
- It has a **very high cetane number, which means it can ignite easily in compression ignition engines without producing much noise or vibration.**
- It has no carbon-carbon bonds, which means **it burns completely without leaving any soot or particulate matter**.
- It **contains about 35% oxygen by weight, which helps reduce carbon monoxide and unburned hydrocarbon emissions.**
- It can meet stringent emission standards without requiring costly diesel particulate filters or NOx after-treatment systems.
- Its compatibility with existing infrastructure and vehicles. DME has similar physical properties to propane, which is widely used as a liquefied petroleum gas (LPG) for heating and cooking.
- It **can be stored and transported in pressurized tanks at ambient temperature**, using similar equipment and facilities as LPG.
- It **can be used in diesel engines with minor modifications to the fuel system**, such as replacing injectors, pumps, and seals with DME-compatible materials.
- It can leverage the existing LPG and diesel networks to reach potential customers.
- The DME-fuelled tractor/ vehicle is a breakthrough innovation that can revolutionize the renewable energy sector in India and pave the way for a cleaner and greener future.

Generative AI and Hiroshima AI Process

Context

- The Hiroshima AI Process (HAP) is a new initiative by the G7 countries to address the

challenges and opportunities of generative AI, which can create realistic content such as text, images, and audio.

Details

- The **Hiroshima AI Process (HAP) was launched at the Group of Seven (G7) summit in Japan** in May 2023, where the leaders agreed to work together to ensure that AI development and deployment align with the shared democratic values of the G7 nations.
- The HAP will involve a working group of relevant ministers, in cooperation with the Organisation for Economic Co-operation and Development (OECD) and the Global Partnership on AI (GPAI), to discuss topics such as governance, intellectual property rights, transparency, and response to foreign information manipulation.
- The **HAP aims to conclude by the end of 2023 with a set of recommendations for inclusive and trustworthy AI governance**.

Generative AI

- Generative AI is a **branch of artificial intelligence that uses algorithms to generate new data or content from existing data or content.** For example, generative AI can produce realistic faces of people who do not exist, write coherent texts on any topic, or compose original music.
- Generative AI has many potential applications in various domains such as entertainment, education, health care, and security.

Generative AI poses significant risks and challenges for society

- The misuse of generative AI to create fake or misleading information, such as deepfakes, disinformation, or propaganda.
- The infringement of intellectual property rights and ethical principles by generative AI, such as plagiarism, impersonation, or manipulation.
- The **lack of transparency and accountability of generative AI systems** and their developers, such as the source, quality, and purpose of the generated content.
- The impact of generative AI on human creativity, identity, and dignity, such as the loss of originality, authenticity, or agency.

- These risks require a global and coordinated response from governments, industry, academia, civil society, and other stakeholders. The Hiroshima AI Process (HAP) aims to establish a common framework for the governance and interoperability of generative AI based on shared democratic values and human-centric principles.

The HAP will also explore topics such as:

- The promotion of trustworthy and responsible use of generative AI technologies.
- The protection of intellectual property rights and ethical standards in generative AI.
- The enhancement of transparency and accountability of generative AI systems and their developers.
- The response to foreign information manipulation and interference using generative AI.
- The support for innovation and collaboration in generative AI research and development.

Conclusion

- The G7 Hiroshima Summit showed that the G7 are more united than ever on AI governance. They recognized that AI is not only a source of innovation and opportunity, but also a potential threat to human dignity and security if not governed properly. They also acknowledged that AI governance is not only a technical or legal issue, but also a political and ethical one that requires collective action and leadership. By launching the HAP, the G7 has taken a significant step towards ensuring that AI serves humanity and not vice versa.

3D Digitization of Museums using Jatan

Context

- The Culture Ministry of India has announced its ambitious plan to complete 3D digitisation of all museums under its administrative control by the end of 2023.

Details

- This project **aims to enhance the conservation and accessibility of the rich cultural heritage of the country**. Some of the

prominent museums that will be digitised include the Salar Jung Museum in Hyderabad, the Allahabad Museum in Prayagraj, the Indian Museum in Kolkata, the Victoria Memorial Hall, the National Museum and the National Gallery of Modern Art.

3D digitisation project

- The 3D digitisation project is being carried out **by the Ministry of Electronics and Information Technology (MeitY) in collaboration with the Culture Ministry.**
- 3D digitisation is a process that **involves capturing the shape and appearance of real-world objects or environments using 3D scanning technologies.** The resulting data is then used to create realistic digital 3D models that can be viewed, manipulated and printed.
- The project will use the JATAN virtual museum builder software, which has been developed by Human Centres Design and Computing Group, Centre for Development of Smart Computing, Pune.
- **JATAN is a comprehensive digital collection management system for Indian museums that supports** features such as image cropping, watermarking, unique numbering, and management of digital objects with multimedia representations and the creation of 3D virtual galleries.

It offers many benefits for museums and their visitors, such as:

- Improving the preservation and documentation of artefacts by creating accurate and detailed records of their condition and provenance.
- Enhancing the exhibition and interpretation of artefacts by **enabling interactive and immersive experiences using augmented reality and virtual reality technologies.**
- Increasing the outreach and engagement of museums by providing online access to their collections through web, mobile or touchscreen kiosks.
- Promoting the research and education of cultural heritage by facilitating the sharing and analysis of 3D data among scholars, students and enthusiasts.

Conclusion

- The 3D digitisation project is expected to be completed by December 2023. It will be a significant milestone in the preservation and promotion of India's cultural heritage. It will also showcase the potential of 3D technologies for enhancing the museum experience for visitors across the world.

Coronal Mass Ejections

Context

- A coronal mass ejection (CME) from the Sun on May 7 is expected to cause a minor geomagnetic storm on Earth, according to the Space Weather Prediction Center (SWPC) of the United States.

Details

- A geomagnetic storm is a **disturbance in the Earth's magnetic field caused by the interaction of solar wind and plasma** with the planet's magnetosphere.
- The SWPC said that the CME could have some **effects on power grids, spacecraft operations and radio communications, especially at high latitudes.**
- The SWPC warned that **migratory birds** could be **affected by the geomagnetic disturbance, as they use the Earth's magnetic field for navigation.** Some studies have suggested that geomagnetic storms can disrupt the birds' orientation and cause them to fly off course or lose their way.

Coronal mass ejections (CMEs)

- Coronal mass ejections (CMEs) are **large eruptions of plasma and magnetic fields from the Sun's corona**, the outermost layer of its atmosphere. They can travel at speeds ranging from 250 to 2500 km/s.

Impacts

- They are a **major source of the solar wind**, which is the stream of charged particles that flows from the Sun into interplanetary space. The solar wind affects the environment of all planets and objects in the solar system, including Earth.
- They are a **key component of space weather**, which is the variation of the conditions in near-Earth space due to solar activity. **Space weather can have various effects on human activities and technologies**, such as satellite communications, navigation systems, power grids, aviation and astronaut health.
- They can cause geomagnetic storms, which can disrupt power grids, communication networks, navigation systems, and satellites.
- They can enhance the auroras, or northern and southern lights, which are beautiful displays of colourful lights in the sky.
- They can **affect the radiation environment in space**, which poses a hazard to astronauts and spacecraft.

Challenges

- The main challenge in dealing with CMEs is to **predict their occurrence and impact accurately and timely**. This requires continuous monitoring and modelling of the Sun-Earth system using various instruments and methods.

Spacecraft that observe the Sun and its activity

- The **Solar Dynamics Observatory (SDO)** provides high-resolution images and measurements of the Sun's surface and atmosphere.
- The **Solar Terrestrial Relations Observatory (STEREO)** provides stereoscopic views of CMEs from two vantage points.
- The **Solar and Heliospheric Observatory (SOHO)** provides observations of the Sun and the solar wind from a point between the Sun and the Earth.
- The **Advanced Composition Explorer (ACE) and the Deep Space Climate Observatory (DSCOVR)** provide measurements of the solar wind and the interplanetary magnetic field near the Earth.
- These spacecraft provide valuable data for forecasting and understanding CMEs. However, they also have limitations, such as gaps in coverage, limited resolution, ageing instruments and finite lifetimes. Therefore, there is a need for more advanced and robust missions to improve our capabilities and knowledge of CMEs.

Conclusion

- CMEs are fascinating and important phenomena that affect our planet and

beyond. They are also challenging and complex to observe, model and predict. By using a combination of current and future missions, we can improve our understanding and preparedness for CMEs and their effects on space weather.

Must Read:

Geomagnetic Storm: https://www.iasgyan.in/daily-current-affairs/geomagnetic-storm-48

Solar Corona: https://www.iasgyan.in/daily-current-affairs/solar-corona

Health implications of the Bhopal Gas Disaster

Context

- The report, which was made public on June 13, 2023, mentioned several health problems linked to the 1984 Bhopal Gas Tragedy that still plague generations who were not directly exposed to the deadly gas.

Details

- According to a new study, **future generations are affected by cancer and disability** nearly four decades after the disaster that took at least 30,000 lives.
- The researchers stated in a statement that their findings "indicate social costs arising from the Bhopal gas disaster that extends far beyond the mortality and morbidity experienced in the immediate aftermath."

Bhopal Gas Disaster

- The Bhopal gas disaster, which occurred on December 3, 1984, is considered one of the worst industrial accidents in history.
- A **leak of methyl isocyanate (MIC) gas from a pesticide plant** in Bhopal, India, exposed over half a million people to toxic fumes, resulting in thousands of deaths and injuries.
- Following the disaster, there was a **four-fold rise in miscarriages**, as well as an increased chance of stillbirth and neonatal mortality (death during the first 28 days of life).
- **Menstrual irregularities and early menopause** have become widespread among exposed women and their progeny decades later.
- **Male foetuses are more vulnerable to harmful shocks**, such as illness, natural

disasters, and stressful experiences during pregnancy, according to a study.

- The survivors had problems with their respiratory systems, nervous systems, musculoskeletal systems, eyes, and endocrine systems.
- The long-term health implications of the disaster are still being studied and debated.

Common and Severe effects are:

Respiratory problems

- Many survivors suffered from acute respiratory distress syndrome (ARDS), chronic obstructive pulmonary disease (COPD), asthma, bronchitis, and pulmonary fibrosis. Some of these conditions are irreversible and require lifelong medication and oxygen therapy.

Eye damage

- The MIC gas caused severe irritation and inflammation of the eyes, leading to blindness, cataracts, glaucoma, and corneal ulcers. Some survivors also developed photophobia, or sensitivity to light, which affects their daily activities and quality of life.

Neurological disorders

- The exposure to MIC gas damaged the nervous system of many survivors, causing headaches, memory loss, cognitive impairment, depression, anxiety, insomnia, and seizures. Some of these disorders are progressive and degenerative, meaning they worsen over time and have no cure.

Reproductive and developmental issues

- The MIC gas affected the reproductive health of men and women, causing infertility, impotence, miscarriages, stillbirths, and birth defects. Some of the birth defects include spina bifida, hydrocephalus, cerebral palsy, and mental retardation. Children born after the disaster also face higher risks of cancer, growth retardation, and learning disabilities.

Cancer

- The MIC gas is a known carcinogen or a substance that can cause cancer. Several studies have found increased rates of lung cancer, oral cancer, breast cancer, ovarian cancer, and leukaemia among the survivors of the disaster. The latency period for cancer

development can range from a few years to several decades after exposure.

Conclusion

- The Bhopal gas disaster is a tragic example of how industrial negligence and environmental injustice can have devastating consequences for human health. The survivors of the disaster continue to struggle with physical and mental health problems, as well as social and economic challenges. The compensation and rehabilitation efforts have been inadequate and delayed, leaving many survivors in poverty and despair.

Must Read:

Bhopal Gas Tragedy: https://www.iasgyan.in/daily-current-affairs/bhopal-gas-tragedy

Vaibhav Scheme

Context

- The Government has announced a new initiative to foster research collaborations between the Indian Science, Technology, Engineering, Mathematics and Medicine (STEMM) diaspora and Indian academic and R&D institutions in the emerging fields of science & technology.

Details

- The Vaishvik Bhartiya Vaigyanik (VAIBHAV) fellowships programme will **be implemented by the Department of Science and Technology (DST), Ministry of Science and Technology.**
- It will **offer 75 fellowships to outstanding scientists/technologists of Indian origin (NRI/OCI/PIO) who are working in research activities outside India.**
- Non-resident Indians (NRIs), Overseas Citizens of India (OCIs) and Persons of Indian Origin (PIOs) are three categories of people who have a connection to India but live abroad.

NRI	OCIs	PIOs
• NRIs are Indian citizens who reside outside India for more than 182 days in a year. • They are eligible to vote in Indian elections, hold an Indian passport, and enjoy certain benefits such as lower tax rates, access to bank accounts and property rights in India. • They also have to comply with Indian laws and regulations, such as filing income tax returns and reporting foreign assets.	• OCIs are foreign nationals who have a lifetime visa to live and work in India without any restrictions. • They are eligible for most benefits that are available to Indian citizens, except for the right to vote, hold public office, join the armed forces or buy agricultural land. • They are also exempt from registering with the Foreigners Regional Registration Office (FRRO) or the Foreigners Registration Office (FRO) in India.	• PIOs are foreign nationals who have at least one parent, grandparent or great-grandparent who was born in India or was an Indian citizen. • They can apply for a PIO card that grants them visa-free entry to India for 15 years, as well as some other benefits such as the right to purchase non-agricultural property and open bank accounts in India. • They are not eligible for the benefits that OCIs enjoy, and they have to register with the FRRO or FRO if they stay in India for more than 180 days.

Note: The Government of India merged the PIO and OCI schemes in 2015, and all existing PIO card holders are deemed to be OCIs.

Features of the VAIBHAV fellowships programme are:

- Indian STEMM Diasporawill have the **opportunity to work in 18 identified knowledge domains** such as quantum technology, health, pharma, electronics, agriculture, energy, computer sciences, and material sciences among others.

- The fellowship programme is a follow-up action to further the efforts of the VAIBHAV Summit, which was inaugurated by the Hon'ble PM and witnessed the participation of more than 25,000 attendees from more than 70 countries.
- It will **select an Indian Institution for collaboration and may spend up to two months a year for a maximum of 3 years.**
- It will include a **fellowship grant (INR 4,00,000 per month),** international and domestic travel, accommodation and contingencies.
- The VAIBHAV fellows are expected to collaborate with their Indian counterparts and help initiate research activities in the host institution in the cutting-edge areas of Science and Technology.

Rise of Non-Communicable Diseases Burden

Context
- According to the most recent official estimates for diabetes and other NCDs, 31 million more Indians developed the condition during the course of four years (2019–2021).

Details
- The study is a landmark in epidemiology as it covers participants from 31 States and some Union Territories.
- Non-communicable diseases (NCDs) are **chronic conditions that are not caused by infectious agents and do not spread from person to person.** They include diabetes, cardiovascular diseases, cancers, chronic respiratory diseases, and mental disorders.
- NCDs are the **leading cause of death and disability worldwide,** accounting for 71% of all deaths and 85% of the global burden of disease in 2019.
- Some of the **main causes of NCDs are unhealthy lifestyles, environmental factors, genetic predisposition and ageing.**
- Unhealthy lifestyles include tobacco use, physical inactivity, poor diet and harmful use of alcohol. Environmental factors include air pollution, exposure to chemicals and climate change.
- Genetic predisposition refers to the inherited risk of developing certain diseases.
- Aging increases the likelihood of developing NCDs as the body's functions decline over time.

Findings of the Study

- India has 136 million individuals with prediabetes and 101 million people with diabetes as of 2021.
- 254 million people had generalised obesity, 351 million had abdominal obesity, and 315 million had excessive blood pressure.
- 185 million people had high levels of low-density lipoprotein (LDL) cholesterol, and 213 million had hypercholesterolemia, a condition where fat builds up in the arteries and increases the risk of heart attacks and strokes.
- The study indicates that the **diabetes epidemic is stabilising in some of the more developed States of the country, but it is still increasing in most of the other States**. This has serious implications for the nation and calls for urgent State-specific policies and interventions to curb the rapidly rising epidemic of metabolic NCDs in India.

It reveals two major trends in the country
- Metabolic non-communicable diseases (NCDs) such as diabetes, hypertension, obesity and dyslipidemia are more prevalent than previously estimated in India.
- **Urban areas have higher rates of all metabolic NCDs** except prediabetes, but rural areas will face a diabetes surge in the next five years without proper regulation.

It shows interstate and inter-regional differences
- Goa, Puducherry and Kerala had the highest diabetes prevalence.
- Sikkim had the highest prediabetes prevalence, while Punjab had the highest hypertension prevalence.
- Puducherry had the highest generalised obesity and abdominal obesity prevalence, while Kerala had high hypercholesterolemia and high LDL cholesterol prevalence.

- The lowest prevalence of NCDs was found in U.P., Mizoram, Meghalaya and Jharkhand.

Study's findings about India

- While the number of diabetics, hypertensives, and people with generalised and abdominal obesity in India has increased significantly over the past four years, the study provides an early warning that this population is inclined to NCDs and life-altering illnesses like strokes if they are not controlled.

- According to experts, **malnutrition and obesity are two problems that India is now dealing with**. There is an abundance of food available, but being exposed to fast food, lack of sleep, inactivity, and stress provides the ideal environment for NCDs to take hold.

- The study also revealed that **diabetes is more common among urban residents, older adults, males, and those with higher socioeconomic status.**

Way Forward

- The study highlighted the **need for urgent action to prevent and control NCDs in India**, as they pose a serious threat to the health and well-being of millions of Indians.

- It suggested some possible strategies to address the NCD epidemic, such as strengthening the primary health care system, promoting healthy lifestyles, increasing taxation on tobacco and alcohol products, regulating food labelling and advertising, improving access to affordable medicines and technologies, and enhancing surveillance and monitoring of NCDs.

Some of the possible strategies include

- **Promoting healthy lifestyles and behaviours among the population**, such as physical activity, balanced diet, tobacco cessation, and alcohol moderation.

- **Strengthening the primary health care system** and ensuring universal health coverage for all people.

- **Improving the surveillance and monitoring** of NCDs and their risk factors.

- **Enhancing the prevention and management** of NCDs at all levels of care, from primary to tertiary.

- Increasing the investment and allocation of resources for NCDs in the health budget.

- **Implementing effective policies and regulations** to reduce the exposure of people to harmful substances and environments.

- Fostering research and innovation on NCDs and their solutions.

Conclusion

- NCDs are preventable and treatable, but they require a multisectoral and coordinated response from all stakeholders, including the government, civil society, the private sector, media, academia, and individuals. By working together, the burden of NCDs in India can be reduced and it will also improve the quality of life of millions of Indians.

Must Read:

Status of Non-communicable diseases in India: *https://www.iasgyan.in/daily-current-affairs/status-of-non-communicable-diseases-in-india*

Spaceflight and Fluid Changes in the Brain

Context

- Space travel can cause various changes in the human brain, such as the expansion of ventricles, which are fluid-filled spaces in the brain. However, it is not well understood how these changes are influenced by the duration and frequency of space missions.

Details

- Spaceflight is a challenging and rewarding experience for astronauts, but it also comes with some health risks. One of the most intriguing and poorly understood effects of spaceflight is the fluid shift that occurs in the body.

- In a study published in Scientific Reports, Rachael Seidler and colleagues used MRI scans to examine the brains of 30 astronauts before and after spaceflight, ranging from two weeks to more than six months.

Key findings of the report

- The time interval between successive missions was an important factor in brain recovery.

- For astronauts who had completed more than one mission, longer gaps between missions were associated with larger increases in the volume of the left and right lateral and third ventricles after spaceflight.
- However, the opposite pattern was observed for the fourth ventricle, which showed larger decreases in volume after spaceflight with longer inter-mission intervals.
- These results suggest that the brain may not fully recover from fluid shifts induced by spaceflight before the next mission, especially if the gap is less than three years.

SpaceflightImpact on Brain

- The **brain is surrounded by cerebrospinal fluid (CSF), which cushions and protects it from injury**. CSF also helps regulate the pressure inside the skull, which is important for maintaining normal brain function.
- **In space, the fluid shift may alter the CSF dynamics and cause increased intracranial pressure (ICP).** This could lead to various symptoms, such as headaches, vision problems, nausea, and cognitive impairment.
- It causes a **reduction in brain volume and an enlargement of the ventricles**. This suggests that some of the brain tissue is replaced by CSF during spaceflight.
- It causes an increase in ICP, which may persist for several months after returning to Earth. This may explain why some astronauts experience vision changes or other neurological symptoms after spaceflight.
- It causes **changes in the retina and optic nerve sheath**, which correlate with the changes in ICP. These changes may be reversible or irreversible depending on the duration and severity of spaceflight.
- These findings have important implications for astronaut health and performance, as well as for future exploration missions. By understanding how spaceflight affects the brain and CSF, researchers can develop countermeasures to prevent or mitigate these effects.

Some possible countermeasures include:

- **Artificial gravity:** Artificial gravity can simulate Earth's gravity and prevent or reduce

the fluid shift in space. Artificial gravity can be achieved by rotating spacecraft or habitats, or by using centrifuges or short-arm human centrifuges.
- **Lower body negative pressure (LBNP):** LBNP can create a vacuum around the lower body and draw fluids back to the lower body. LBNP can be applied by using a specially designed suit or chamber.
- **Medications:** Medications can modulate the production or absorption of CSF, or reduce the symptoms of increased ICP. Some examples of medications are acetazolamide, mannitol, furosemide, or topiramate.

Conclusion

- Spaceflight and fluid changes in the brain is a fascinating topic that requires further research and innovation. By advancing our knowledge and technology in this field, we can ensure that astronauts can safely and successfully explore the final frontier.

Leptospirosis Disease

Context

- Leptospirosis is a bacterial infection that can affect humans and animals. It is more common in tropical and subtropical regions, especially during the rainy season. It can cause serious complications, such as kidney failure, liver damage, meningitis, and even death.

Details

What causes leptospirosis?

- Leptospirosis is **caused by bacteria called leptospira, which are found in the urine of infected animals**, such as rats, dogs, cattle, pigs, and horses. The bacteria can survive in water and soil for long periods.
- **People can get infected by coming into contact with contaminated water, soil, urine or animal tissues**. For example, farmers, veterinarians, slaughterhouse workers, sewer workers, and people who participate in outdoor activities such as swimming, kayaking, or hiking are at higher risk of exposure.

Which people are at risk?

- **Anyone can get leptospirosis**, but some people are more vulnerable than others.
- People who have a weak immune system, such as those with HIV/AIDS, cancer, diabetes, or chronic liver disease are more likely to develop severe complications.
- Pregnant women and children are also at higher risk of infection and complications.
- People who live in crowded or unsanitary conditions are more prone to exposure to infected animals or water sources.

What are the symptoms of leptospirosis?

- The symptoms of leptospirosis **usually appear within two weeks after exposure, but they can vary from person to person**.
- **Some people may have no symptoms** at all, while others may experience mild flu-like symptoms, such as fever, headache, muscle pain, chills, nausea, vomiting, diarrhoea, and rash. These symptoms usually last for a few days and then go away.
- **Some people may develop a more severe form of the disease**. This can cause jaundice (yellowing of the skin and eyes), bleeding, kidney failure, liver failure, meningitis (inflammation of the membranes around the brain and spinal cord), respiratory distress syndrome (difficulty breathing), and shock. These symptoms can be fatal if not treated promptly.

What are the misconceptions about leptospirosis?

- Many myths and misconceptions about leptospirosis can prevent people from seeking timely diagnosis and treatment.
- **Leptospirosis only affects animals:** This is false. Leptospirosis can affect both humans and animals. Humans can get infected from animals or the environment.
- **Leptospirosis is not contagious:** This is partly true. Leptospirosis is not transmitted from person to person through casual contact or respiratory droplets. However, it can be transmitted through sexual contact or blood transfusion from an infected person.
- **Leptospirosis can be cured by herbal remedies or homoeopathy**: This is false. Leptospirosis is a serious bacterial infection

that requires medical attention and antibiotics. Herbal remedies or homoeopathy may not be effective or safe for treating leptospirosis.
- **Leptospirosis can be prevented by drinking boiled water or alcohol:** This is false. Boiling water may kill the bacteria in the water, but it does not eliminate the risk of exposure from other sources such as soil or animal tissues. Alcohol does not protect against leptospirosis either. Alcohol may impair the immune system and increase the risk of complications.

How can we prevent leptospirosis?

- The best way to prevent leptospirosis is to **avoid exposure to contaminated water, soil, or animal tissues.**
- **Wearing protective clothing** such as gloves, boots, masks, and goggles when working in high-risk occupations or environments.
- **Avoid swimming or wading in potentially contaminated water** sources such as ponds, lakes, rivers, or flooded areas.
- Avoid contact with wild or stray animals or their urine.
- Washing hands thoroughly with soap and water after handling animals or soil.
- Cleaning and disinfecting wounds promptly if exposed to contaminated water or soil.
- Seeking medical attention if experiencing any symptoms of leptospirosis.
- Getting vaccinated against leptospirosis if available and recommended by a health care provider.

Conclusion

- Leptospirosis is a serious but preventable disease that can affect anyone who lives in or travels to tropical or subtropical regions. Early diagnosis and treatment can prevent serious complications and improve chances of recovery.

World Sickle Cell Awareness Day 2023

Context

- World Sickle Cell Awareness Day is observed every year on 19th June to spread awareness

about sickle cell disease (SCD) and its impact on millions of people around the world.

Details

- World Sickle Cell Awareness Day is an annual event that aims to raise awareness and understanding of sickle cell disease, a genetic disorder that affects millions of people around the world.
- **Sickle cell disease causes red blood cells to become abnormally shaped**, which can lead to various complications such as pain, infections, anaemia, organ damage and stroke.
- The disease is most prevalent in Africa, where about 70% of the global cases occur, but it also affects people of other ethnicities and regions.

World Sickle Cell Awareness Day

- The World Health Organization (WHO) declared June 19 as World Sickle Cell Awareness Day in 2008, in recognition of the urgent need to address the burden of this disease and to improve the quality of life of those living with it.
- The **theme of World Sickle Disease Day 2023 is 'Building and strengthening global sickle cell communities, formalizing newborn screening and knowing your sickle cell disease status'.**

Sickle Cell Disease (SCD)

About

- Sickle cell disease (SCD) is a **group of inherited blood disorders that affect the shape and function of red blood cells**. Red blood cells are normally round and flexible, allowing them to travel through the blood vessels and deliver oxygen to the tissues.
- However, in people with SCD, some of the red blood cells become rigid and sickle-shaped, resembling a crescent or a sickle. These **abnormal cells can get stuck in the blood vessels, blocking the blood flow and causing pain**, inflammation, organ damage and increased risk of infection.
- SCD is **caused by a mutation in the gene that codes for haemoglobin**, the protein that carries oxygen in the blood. The mutation results in the production of an abnormal type of haemoglobin called haemoglobin S (HbS),

which makes the red blood cells sickle when they lose oxygen.

- It affects millions of people worldwide, especially those of African, Mediterranean, Middle Eastern and Asian descent.

Common symptoms include:

- **Anaemia:** A condition in which the blood has a low number of red blood cells or haemoglobin, resulting in fatigue, weakness and pale skin.
- **Pain crises:** Episodes of severe pain in the chest, abdomen, joints or bones, caused by the blockage of blood flow by sickle cells. Pain crises can last from hours to days and may require hospitalization and pain medication.
- **Infections:** Sickle cells can damage the spleen, an organ that helps fight infections. People with SCD are more prone to infections by bacteria, viruses and fungi, and may need to take antibiotics and vaccines regularly.
- **Organ damage:** Sickle cells can impair the function of various organs, such as the kidneys, liver, lungs and heart. This can lead to complications such as kidney failure, liver cirrhosis, pulmonary hypertension and stroke.
- **Growth and development:** SCD can affect the growth and development of children and adolescents, causing delayed puberty, stunted growth and learning difficulties.
- **Psychosocial issues:** SCD can affect the quality of life of people with the disease and their families, causing emotional distress, depression, anxiety, stigma and discrimination.
- There is no cure for SCD, but treatments are available to manage the symptoms and prevent complications.

Some of the treatments include:

Blood transfusions

- Replacing sickle cells with normal red blood cells from a donor can improve oxygen delivery and reduce pain crises and organ damage. However, blood transfusions also carry risks such as infections, allergic reactions and iron overload.

Bone marrow transplant

- A procedure that replaces the bone marrow (the source of blood cells) of a person with SCD with healthy bone marrow from a compatible donor. A bone marrow transplant can cure SCD in some cases, but it is also a risky and expensive procedure that requires a matched donor (usually a sibling) and lifelong immunosuppression.

Gene therapy

- A novel approach that aims to correct or replace the mutated gene that causes SCD using viral vectors or gene editing tools. Gene therapy is still in experimental stages and has not been approved for clinical use yet.

Way forward

- The way forward for SCD is to improve the diagnosis, treatment and care of people with the disease and their families. This requires increased awareness, education and advocacy among health professionals, policymakers and the general public. It also requires more research and innovation to develop new therapies that are safe, effective and accessible for all people with SCD.

Must Read:

India's Anaemia Policy:

https://www.iasgyan.in/daily-current-affairs/indias-anaemia-policy

Artemis Accords

Context

- Ecuador, a South American country became the 26th nation to join the Artemis Accords.

Details

- The Artemis Accords are a set of principles and guidelines for the peaceful and sustainable exploration of the Moon and beyond. They were developed by NASA and its international partners in the Artemis program, which **aims to land the first woman and the next man on the lunar surface by 2024.**

Artemis Accords

- The Artemis Accords are **based on the Outer Space Treaty of 1967**, which establishes that outer space is the common heritage of humankind and should be used for peaceful purposes only.

- The Accords reaffirm the commitment of the signatories to transparency, cooperation, interoperability, safety, and environmental protection in their lunar activities.

- They are **not legally binding, but rather a political commitment** to adhere to a common set of principles and best practices. They are open to any nation or entity that wishes to join the Artemis program and contribute to its goals.

Objectives

- **Enhance cooperation and coordination** among spacefaring nations and entities.

- **Ensure transparency and openness** in lunar exploration activities.

- Protect the scientific, historical, and cultural value of lunar sites and artefacts.

- **Promote the responsible use** and sharing of lunar resources.

- Minimize the creation and impact of orbital debris.

- **Mitigate the risks of harmful interference** and conflicts in outer space.

- Support the long-term sustainability and safety of lunar operations.

It covers 10 main topics:

- **Peaceful Exploration**: All activities conducted under the Artemis program must be for peaceful purposes.

- **Transparency:** All signatories must publicly disclose their policies and plans for lunar exploration and cooperate to avoid conflicts and misunderstandings.

- **Interoperability:** All signatories must strive to support interoperable systems and standards to enhance the safety and efficiency of lunar operations.

- **Emergency Assistance:** All signatories must commit to assisting personnel in distress on the Moon or in orbit.

- **Registration of Space Objects:** All signatories must register any spacecraft or other space object they launch or operate on or around the Moon with the United Nations.

- **Release of Scientific Data:** All signatories must publicly share their scientific data and

discoveries from lunar exploration to benefit all humankind.

- **Preserving Heritage:** All signatories must respect the historical and cultural significance of sites and artefacts on the Moon, such as the Apollo landing sites.
- **Space Resources:** All signatories affirm that the extraction and utilization of space resources are permissible under the Outer Space Treaty, and agree to conduct such activities safely and sustainably.
- **Deconfliction of Activities:** All signatories must provide advance notice of their planned activities on or around the Moon to prevent harmful interference or collisions.
- **Orbital Debris:** All signatories must take measures to mitigate orbital debris and ensure the long-term sustainability of lunar orbit.

Conclusion

- The Artemis Accords represent a new era of international cooperation and collaboration in space exploration. They aim to foster a spirit of partnership and trust among all participants, as well as to inspire future generations of explorers and innovators. By signing the Artemis Accords, the signatories affirm their commitment to advancing humanity's presence and potential in outer space.

Must Read:

Artemis Accords: https://www.iasgyan.in/daily-current-affairs/artemis-accords-31

Implication of Medicines Patent Pool

Context

- The Medicines Patent Pool (MPP) has taken a significant step towards making cancer drugs more affordable and available for patients in low- and middle-income countries (LMICs) by signing sub-licence agreements with India and Indonesia.

Medicines Patent Pool

- The **Medicines Patent Pool (MPP) is a global health initiative that aims to improve access to affordable and quality medicines for** **people living with HIV, hepatitis C, tuberculosis and other diseases** in low- and middle-income countries (LMICs).
- One of the main strategies of MPP is to **negotiate voluntary licences with patent holders of essential medicines, which allow generic manufacturers to produce and sell** these medicines in LMICs at lower prices.
- Recently, MPP has taken a significant step towards making cancer drugs more affordable and available for patients in LMICs by **signing sub-licence agreements with four generic manufacturers from India and Indonesia.**
- These agreements cover innovative cancer drugs; Nilotinib, lenalidomide and ixazomib, which are used to treat multiple myeloma, a type of blood cancer that affects plasma cells.
- By signing sub-licence agreements, MPP has enabled them to produce and supply lenalidomide and ixazomib at significantly lower prices.
- The sub-licences also allow the generic manufacturers to develop fixed-dose combinations and paediatric formulations of these drugs, which could further improve their efficacy and safety for patients.
- By making cancer drugs more affordable and available for patients in LMICs, MPP hopes to reduce the burden of cancer and improve health outcomes and quality of life for millions of people. MPP also hopes to stimulate innovation and competition in the market for cancer drugs, which could lead to further price reductions and increased access.

Challenges and barriers that need to be overcome

Regulatory approval

- The generic manufacturers **need to obtain regulatory approval from the relevant authorities in each country where they intend to supply the drugs.** This could take time and resources, especially if there are different standards and requirements for each country.

Quality assurance

- The generic manufacturers need to **ensure that their products meet the same quality and safety standards as the originator drugs.**

This could require additional investments in manufacturing facilities, equipment and personnel.

Supply chain management

- Generic manufacturers need to establish efficient and reliable supply chains that can deliver the drugs to the end-users in a timely and cost-effective manner. This could involve dealing with logistical issues such as transportation, storage, distribution and customs clearance.

Demand generation

- The generic manufacturers need to **create awareness and demand for their products among patients, healthcare providers and policymakers in LMICs.** This could involve conducting market research, developing marketing strategies, providing education and training, and engaging with stakeholders.

Intellectual property rights

- The generic manufacturers need to respect the intellectual property rights of the patent holders and abide by the terms and conditions of the sub-licences. This could involve paying royalties, reporting sales data, complying with audits and avoiding infringement.

Way Forward

- The way forward for MPP and its partners is to work together to address these challenges and barriers and to monitor and evaluate the impact of their sub-licences on cancer care in LMICs. By doing so, they can ensure that their sub-licences are not only legal agreements but also effective tools for improving access to affordable and quality medicines for people living with cancer in LMICs.

Significance of Photon for Quantum Computing

Context

- IBM announced a breakthrough in quantum computing, showing that a quantum device could perform a task beyond the reach of classical computers.

Details

- The paper, published in the journal Nature, described how IBM's quantum processor solved a problem related to the verification of random numbers, which has applications in cryptography and security.

- The quantum device achieved this feat with high fidelity, despite the challenges of noise and errors that plague quantum systems.

Quantum computing

About

- Quantum computing is a field of computer science that **exploits the quantum-mechanical properties of particles to encode and process information.**

- **The basic unit of information in quantum computing is called a qubit**, which can be any particle, or system that behaves like a particle, such as an electron, a photon, or an engineered quantum system.

- Unlike classical bits, which can only have the values 0 or 1, **qubits can exist in a superposition of both values at the same time, giving them more computational power.**

- There are different ways to implement quantum computing using different types of qubits. For example, some quantum computers use electrons as qubits and manipulate their spin states to perform operations.

- Others use photons as qubits and use optical devices such as mirrors, lenses, and splitters to control their paths and polarizations.

- The **advantage of using photons is that they are less prone to decoherence, which is the loss of quantum information** due to interaction with the environment.

- Quantum computers are expected to solve problems that are too complex or time-consuming for classical computers, such as factoring large numbers, simulating quantum systems, or optimizing combinatorial problems. However, there are many challenges and limitations to building and operating quantum computers, such as scalability, error correction, and algorithm design.

Photons for Quantum Computing

- Photons are particles of light that have no mass and travel at the speed of light. They are also immune to many sources of noise and

decoherence that affect other qubits, such as magnetic fields and temperature fluctuations.

Photons have several advantages for quantum computing

- They **can be easily generated and detected using optical devices**, such as lasers, mirrors, lenses, filters and detectors.
- They can **carry quantum information over long distances** using optical fibres or free space, enabling quantum communication and networking.
- They can interact with other physical systems, such as atoms or molecules, through optical transitions, enabling quantum sensing and metrology.
- They can be entangled with each other or with other qubits using linear optical elements, such as beam splitters and phase shifters, enabling quantum logic gates and algorithms.

Photons for quantum computing have some drawbacks

- They are **difficult to store and retrieve without losing their quantum state**, limiting their use as memory devices.
- They are **weakly interacting with each other**, requiring nonlinear optical elements or ancillary qubits to perform two-qubit gates, increasing the complexity and resource requirements of quantum circuits.
- They are subject to lose and decoherence due to absorption, scattering and dispersion in optical media, reducing the fidelity and coherence time of quantum information.
- Therefore, photon-based quantum computing is an active area of research that explores the trade-offs between the advantages and disadvantages of photons as qubits.
- **Some of the current research topics include:**
- Developing novel methods and technologies for generating, manipulating and detecting single photons and entangled photon pairs with high efficiency and quality.
- **Designing and implementing scalable architectures and protocols for photonic quantum computation**, communication and networking using linear optical elements or hybrid systems.

- Demonstrating proof-of-principle experiments and applications of photonic quantum computing in various domains, such as cryptography, machine learning, simulation and metrology.

Conclusion

- Photon is a significant physical system for quantum computing that offers unique features and challenges for encoding, manipulating and transmitting quantum information. Photonic quantum computing is a promising field that has the potential to enable new capabilities and breakthroughs in computer science and beyond.

Must Read:

QUANTUM COMPUTING:

https://www.iasgyan.in/daily-current-affairs/quantum-computing-38

National Quantum Mission:

https://www.iasgyan.in/daily-current-affairs/national-quantum-mission

Biodegradable Paper Made from Seaweed

Context

- The researchers at Gujarat Energy Research and Management Institute (GERMI) have created a paper-based supercapacitor that is thin, light and biodegradable.

Details

- The **supercapacitor is made from seaweed-derived cellulose nanofibers that are coated with graphene oxide and zinc oxide nanowires.** The device has a high power density and a long lifespan and can charge a device in just 10 seconds.
- The seaweed-based supercapacitor **can be used for various applications**, such as electronics, memory backup systems, airbags, heavy machines, electric vehicles, etc. The device is also **environmentally friendly and cost-effective**, according to the scientists.

What is a Supercapacitor?

- A supercapacitor is an **electrochemical charge storage device that can store and release energy quickly and efficiently.**

- Unlike batteries, which rely on chemical reactions to generate electricity, **supercapacitors use electrostatic forces to store electric charges on the surface of electrodes.** This means **they can charge and discharge much faster than batteries, have a higher power density and have a longer lifecycle.**

How does Seaweed make a Supercapacitor?

- Seaweed, or marine macroalgae, is a **renewable and abundant source of biomass that can be used to make various materials, such as paper, films, gels and composites.**
- The researchers at GERMI used a type of green seaweed to extract cellulose nanofibers, which are tiny strands of plant material with high strength and flexibility. They then coated these nanofibers with manganese dioxide, a metal oxide that has good electrical conductivity and capacitance. The result was a thin, flexible and porous paper that can act as an electrode for the supercapacitor.

Features and benefits of the seaweed supercapacitor

- It is **very thin and lightweight**, which makes it suitable for portable and wearable devices.
- It is **biodegradable and eco-friendly**, which reduces the environmental impact of electronic waste.
- It has a **high capacitance and power density**, which means it can store more energy and deliver more power than conventional supercapacitors.
- It has a **fast charging/discharging cycle**, which means it can fully charge a device within 10 seconds.
- It has a **long lifespan**, which means it can withstand more than 10,000 cycles of charging/discharging without losing much performance.

Applications and prospects

- **Electronics:** It can power devices such as smartphones, laptops, cameras, sensors, etc.
- **Memory backup systems:** They can provide backup power for data storage devices such as hard disks, flash drives, etc.
- **Airbags:** They can trigger the inflation of airbags in case of accidents.
- **Heavy machines:** They can provide peak power for machines such as cranes, lifts, etc.
- **Electric vehicles**: They can enhance the performance and efficiency of electric vehicles by providing fast charging and regenerative braking.
- The seaweed supercapacitor holds huge business potential as it offers a low-cost, high-performance and green alternative to conventional supercapacitors. The researchers at GERMI have filed a patent for their invention and are looking for industrial partners to commercialize their product.

Conclusion

- The seaweed supercapacitor is an innovative and promising invention that can revolutionize the field of energy storage and conversion. It can offer a fast, efficient and sustainable way of powering various devices and applications. It can also contribute to the development of a circular economy and a greener future.

Substandard Cough Syrups

Context

- The World Health Organisation (WHO) has reported that at least 300 children have lost their lives in three African countries since August 2022, after consuming contaminated cough syrups manufactured in India.

Details

- The WHO reported that the **syrups contained diethylene glycol, a toxic substance used in antifreeze and brake fluid, which can cause kidney failure, neurological damage and death.**
- It has issued a global alert for seven brands of cough syrups produced in India and urged countries to recall and destroy them immediately.
- It has also advised consumers to avoid buying or using these products and to seek medical attention if they experience any symptoms such as nausea, vomiting, abdominal pain, drowsiness or difficulty breathing.

Steps Taken by the Indian Government

- The **Indian authorities have launched an investigation into the matter**, and have **suspended the licenses of four pharmaceutical companies** involved in the scandal.
- The **Drugs Controller General of India (DCGI) has also ordered that all cough syrups exported from India must undergo testing** by accredited laboratories before they are shipped.
- The DCGI has assured that the domestic market is safe, as the syrups sold in India are subject to stringent quality checks.

Substandard cough syrups

- The crisis of substandard cough syrups is not an isolated incident. It is **part of a larger problem of substandard and falsified (SF) medicines that affects millions of people around the world,** especially in low- and middle-income countries (LMICs).
- **SF medicines are products that do not meet quality standards or specifications**, or that deliberately misrepresent their identity, composition, or source. They can be ineffective, harmful, or even deadly.
- According to the WHO, **SF medicines account for up to 10% of all medicines in LMICs, compared to less than 1% in high-income countries.**
- SF medicines **can affect any type of medicine, from antibiotics and antimalarials to vaccines and cancer drugs**. They can undermine public health efforts, waste resources, erode trust, and fuel antimicrobial resistance.

Concern

- This is not the first time that India's pharmaceutical industry has been accused of producing substandard or counterfeit drugs. In 2019, a study by the London School of Hygiene and Tropical Medicine found that **one in five drugs sold in India was fake or substandard, posing a serious threat to public health.**
- The study also estimated that poor-quality drugs could be responsible for up to 116,000 deaths from malaria and 42,000 deaths from tuberculosis every year in India.

- It has exposed the **loopholes and corruption in India's drug regulatory system, which allows unscrupulous manufacturers to cut corners and compromise on safety standards.**
- It has also tarnished India's reputation as a global leader in generic drug production and could affect its exports to other countries.

Factors that contribute to the proliferation of SF medicines

Weak regulatory systems

- Many countries lack the capacity or resources to monitor and enforce quality standards for medicines. They may have inadequate laws, regulations, or penalties for SF medicines. They may also have **gaps or corruption in their inspection, registration, or licensing processes.**

Poor supply chain management

- Many countries have complex and fragmented supply chains for medicines, involving multiple actors and intermediaries. There may be poor storage, transportation, or distribution practices that compromise quality or allow for tampering or diversion. There may also be **insufficient traceability or verification mechanisms to track products from source to destination.**

High demand and low access

- Many countries face a high burden of disease and low availability of essential medicines. This creates a gap between supply and demand that can be exploited by unscrupulous sellers who offer cheap or counterfeit products. **Many people also have limited access to reliable information or health services,** making them vulnerable to misinformation or deception.

Low awareness and reporting

- Many people are unaware of the risks or signs of SF medicines. They may not know how to check for the quality or authenticity of products. They may also not report any adverse effects or suspicions to authorities or health providers. This limits the detection and response to SF medicine incidents.

WHO has proposed a global strategy to combat SF medicines that involve four pillars:

Prevention

- Strengthening regulatory systems and supply chain management to ensure quality standards and specifications for medicines. Promoting good manufacturing practices (GMP) and good distribution practices (GDP) among producers and distributors. **Enhancing traceability and verification systems** using technologies such as barcodes or blockchain.

Detection

- Improving surveillance and monitoring systems to detect and report SF medicine incidents. **Developing and deploying rapid and reliable testing methods and tools**. Increasing awareness and education among health professionals and the public on how to identify and avoid SF medicines.

Response

- Establishing and implementing effective laws, regulations, and penalties for SF medicines. **Enhancing collaboration and information sharing among national and international stakeholders**, such as regulators, law enforcement, customs, health providers, and civil society. Providing timely and appropriate treatment and support for victims of SF medicines.

Innovation

- Encouraging research and development of new and better medicines, especially for neglected or emerging diseases. Supporting innovation and access to quality-assured generic medicines. Fostering innovation and adoption of new technologies and solutions to improve quality assurance and control of medicines.

Conclusion

- The substandard cough syrups crisis is a tragic reminder of the importance of ensuring safe and effective medicines for all. It is also an opportunity to galvanize action and cooperation to tackle the problem of SF medicines. The need of the hour is to strengthen regulatory systems, enhance surveillance and monitoring, improve quality assurance and control, promote awareness and education, and foster collaboration and coordination among all stakeholders to ensure

that everyone has access to quality-assured, safe, effective and affordable medicines.

Cell-Cultivated Meat

Context

- "Cell-cultivated chicken" – that's the official name for chicken meat that is grown in a laboratory for human consumption. Recently, two California-based companies were cleared to make and sell cell-cultivated chicken in the country in what is being hailed by stakeholders in the concept as a major step forward for reducing the carbon emissions associated with the food industry worldwide.

Cell-cultivated meat

- **Cell-cultivated meat, also known as cultured meat, lab-grown meat, or clean meat,** is a novel technology that produces animal-derived meat without slaughtering animals.
- **It involves extracting stem cells from animals, proliferating them in bioreactors**, and differentiating them into muscle, fat, and connective tissue cells. **The resulting tissue is then harvested, processed, and shaped into various meat products.**
- It is a **form of edible meat that has the same taste, texture and nutritional value as conventional chicken.**
- Besides chicken, other types of cell-cultivated meat are being developed by various companies around the world. Some examples are beef, pork, seafood, duck and even foiegras.
- **The process of making cell-cultivated meat is similar for all animals**, but the specific cells, nutrients and bioreactors may vary depending on the species and the desired product.

Why was cell-cultivated meat created?

- The main motivation behind cell-cultivated meat is **to address some of the environmental, ethical and health issues that arise from the current animal agriculture system.**
- According to some estimates, **animal agriculture accounts for about 14.5% of global greenhouse gas emissions, uses 70%**

of agricultural land and consumes 8% of global water.

- Animal welfare is also a concern, as billions of animals are raised and slaughtered every year in often crowded and unsanitary conditions.

- **Animal products can carry pathogens, antibiotics and hormones that can pose risks to human health.** Cell-cultivated meat aims to provide a more sustainable, humane and safe alternative to conventional meat.

Significance

- The technology has several potential benefits for human health, animal welfare, and environmental sustainability.

- **For human health**, cell-cultivated meat could reduce the risk of foodborne diseases, antibiotic resistance, and zoonotic diseases. It could also be tailored to have optimal nutritional profiles, such as lower fat, cholesterol, and calories, and higher protein, vitamins, and minerals.

- **For animal welfare**, cell-cultivated meat could eliminate the need for animal farming, which causes immense suffering and death for billions of animals every year.

- **For environmental sustainability**, cell-cultivated meat could reduce greenhouse gas emissions, land use, water use, and energy use associated with conventional meat production.

What are the challenges?

- Despite the potential benefits of cell-cultivated meat, there are still many challenges that need to be overcome before it can become widely available and affordable.

Technical

- Cell-cultivated meat **requires complex and expensive processes to produce large-scale and high-quality products.** For instance, it needs a suitable growth medium that provides nutrients and oxygen to the cells, a scaffold that supports the structure and texture of the meat, and a bioreactor that maintains the optimal temperature, pH and pressure for the cell growth.

- It needs to replicate the sensory attributes and nutritional value of conventional meat, such as taste, smell, colour and texture.

Regulatory

- Cell-cultivated meat is a **novel food that does not fit into existing regulatory frameworks in most countries**. Therefore, it needs to undergo rigorous safety and quality assessments to demonstrate its equivalence or superiority to conventional meat.

- It also needs to comply with relevant labelling and marketing standards to inform and educate consumers about its origin, production method and characteristics.

Social

- Cell-cultivated meat may **face consumer acceptance issues due to ethical, cultural or religious concerns**. Some consumers may perceive it as unnatural, artificial or unappetizing, while others may question its moral implications for animals and humans.

- It may encounter resistance from stakeholders in the conventional meat industry who may perceive it as a threat to their livelihoods and traditions.

- To overcome these challenges and realize the potential of cell-cultivated meat, various stakeholders need to collaborate and coordinate their efforts. These include researchers, entrepreneurs, investors, regulators, policymakers, educators, media, consumers, and civil society organizations.

Steps to facilitate the development and adoption of cell-cultivated meat

- **Increasing funding and support** for research and innovation in cell-cultivated meat.

- **Establishing clear and consistent regulatory frameworks** and standards for cell-cultivated meat.

- **Educating and engaging the public** about the benefits and challenges of cell-cultivated meat.

- **Conducting consumer studies and market research** to understand and address consumer preferences and expectations.

- **Developing effective communication and marketing strategies** to promote cell-cultivated meat.

- **Fostering dialogue and cooperation among different stakeholders** to address ethical,

social, and economic issues related to cell-cultivated meat.

Way Forward

- The way forward for cell-cultivated meat is to address the challenges through multidisciplinary collaboration and innovation. This involves engaging with various actors in the scientific, regulatory, industrial and social domains to advance the research and development, standardization and regulation, production and distribution, and communication and education of cell-cultivated meat. By doing so, cell-cultivated meat can become a viable and sustainable alternative to conventional meat that benefits the environment, animals and humans alike.

Y Chromosome Implication on Cancer in Men

Context

- A new study has revealed a surprising link between the loss of the Y chromosome in men's blood cells and their worse outcomes from cancer.

Details

- The researchers found that **men who had lost the Y chromosome in a higher proportion of their blood cells had a lower survival rate and a higher risk of relapse after cancer treatment.**
- They discovered that the **loss of the Y chromosome was associated with a weaker immune response to cancer**, suggesting a possible mechanism for this phenomenon.

Chromosome

- A chromosome is a long, thread-like structure that **contains the genetic material of an organism.**
- **Chromosomes are made of DNA and proteins**, and **they are located in the nucleus of a cell**. It plays a vital role in inheritance, cell division, and gene expression.
- There are different types of chromosomes depending on the number, shape, and location of the centromere, which is the point where two chromatids (identical copies of a chromosome) are joined together.

- The **number and type of chromosomes vary among different species**. **Humans have 46 chromosomes in each somatic cell (body cell), which are arranged in 23 pairs.** Out of these, 22 pairs are called autosomes and **one pair is called sex chromosomes.**
- The sex chromosomes determine the biological sex of an individual: females have two X chromosomes and males have one X and one Y chromosome.

Y chromosome

- The **Y chromosome is one of the two sex chromosomes that determine the biological sex of a person. It is present only in males** and contains genes that are essential for male development and fertility.
- However, previous studies have shown that the **Y chromosome can be lost from some blood cells as men age, a process known as mosaic loss of Y (mLOY).**
- The causes and consequences of mLOY are not fully understood, but it has been linked to various age-related diseases, such as Alzheimer's disease, cardiovascular disease and diabetes.

Recent Study

- The new study, published in Nature Genetics, is the first to investigate the relationship between mLOY and cancer outcomes in men. The researchers analyzed genomic data from more than 3,000 male patients with different types of cancer, such as leukaemia, lymphoma, prostate cancer and bladder cancer.
- They measured the proportion of blood cells that had lost the Y chromosome and compared it with the patient's clinical outcomes, such as survival rate, relapse rate and response to treatment.
- The research found that **men who had mLOY in more than 10% of their blood cells had a significantly worse prognosis than men who had mLOY in less than 10% of their blood cells**. Specifically, they had a 44% lower overall survival rate, a 35% higher relapse rate and a 39% lower complete response rate to treatment. These results were consistent

across different types of cancer and different treatment regimens.

Evolution of Eukaryotes

Context
One group of prokaryotes were shown to have proteins that closely resembled eukaryotic proteins.

Details
- Organisms on planet Earth are broadly divided into prokaryotes and eukaryotes.
- **Prokaryotes are unicellular, they do not have any organelles** such as mitochondria, and their DNA is not packaged into a nucleus.
- **Eukaryotes have mitochondria, their DNA is packaged into a nucleus**, and most eukaryotes are complex, multicellular beings.
- About 50 years ago, a subset of unicellular organisms, the Archaea, was shown to have a different line of descent as compared to bacteria. The two differ in the composition of their cell walls and the sequence of some of their genes.

Archaea
- **The term Archaea, suggesting ancient**, was used because the first members of this domain **were found living in extreme environments of very high temperatures or very high salt.**
- **One group of archaeawere shown to have proteins that closely resembled eukaryotic proteins**. These organisms are found in a geological formation where geothermally heated water is forced out of a ridge in the Atlantic Ocean floor at a depth of 2400 meters below sea level.
- Many other related members were later found in unusual ecosystems and came to be collectively called the Asgard, which is the home of the Gods in Norse mythology.

Mitochondria as endosymbionts
- The **mitochondria, which are the energy-generating organelles of eukaryotic cells**, and the photosynthesizing chloroplasts found in plant cells, have evolved from free-living bacteria.

- The **ancestor of mitochondria was a proteobacterium that was engulfed by an Asgardarchaean organism**. Descendants of this endosymbiotic union gave rise to animals, fungi and plants.
- In plants, the Asgard-mitochondrial union was followed by the intake of a photosynthesizing cyanobacterium, which became the chloroplast.
- A few years ago, Indians had seen complicated mergers of some public-sector banks, brought about to optimize their operations. In a similar vein, we can think of these **endosymbiotic events as mergers of different types of cells that resulted in more efficient and diverse forms of life.**

Origin of eukaryotes
- The question that remains is how did the Asgardarchaea become eukaryotes? What were the factors that led to the emergence of a nucleus and other organelles? How did multicellularity evolve from unicellularity? These are some of the most intriguing questions in biology today. There are many hypotheses, some of which are explained below;

Infected by a large DNA virus
- Ahypothesis is that the **Asgardarchaea were infected by a large DNA virus that inserted its genome into the host cell.** This virus may have provided some advantages to the host cell, such as protection from other viruses or predators.
- Over time, the viral genome may have integrated with the host genome and formed a nucleus-like structure. This structure may have allowed for more complex gene regulation and expression.

Environmental stress forced them to adapt and innovate
- A hypothesis is that the **Asgardarchaea were subjected to environmental stress or competition that forced them to adapt and innovate.**
- They may have developed membrane invaginations or folds that increased their surface area and allowed for more interactions with their surroundings. These

folds may have eventually enclosed some parts of the cytoplasm and formed organelles such as endoplasmic reticulum or Golgi apparatus.

Involved in horizontal gene transfer with other organisms

- A hypothesis is that the **Asgardarchaea were involved in horizontal gene transfer with other organisms, such as bacteria or other archaea.** They may have acquired genes that enabled them to perform new functions or exploit new niches. These genes may have required new compartments or structures to function properly.

- These hypotheses are not mutually exclusive and may have occurred in combination or sequence. The origin of eukaryotes is still an active area of research and debate among scientists.

Conclusion

- Prokaryotes are the oldest and most abundant forms of life on Earth. They have given rise to eukaryotes through a series of remarkable events involving symbiosis, infection, adaptation and innovation. Eukaryotes are more complex and diverse than prokaryotes, but they owe their existence to their prokaryotic ancestors.

Chandrayaan - 3

Context

- India is preparing to launch its third mission to the moon, Chandrayaan-3, in mid-July. The mission will use the same Lander and Rover names as the previous Chandrayaan-2 mission, which failed to land softly on the lunar surface in 2019.

Details

- The mission aims to achieve a successful soft landing on the moon and deploy a rover to conduct scientific experiments.

- **Chandrayaan-3 is a follow-up mission to Chandrayaan-2,** which failed to land its lander and rover on the lunar surface in September 2019 due to a software glitch.

- The **Lander module of Chandrayaan-3 will be called 'Vikram',** after the father of India's space programme, Vikram Sarabhai.

- The **Rover module will be called 'Pragyan',** which means Wisdom in Sanskrit. Both modules will carry scientific instruments to study the moon's geology and chemistry.

- The main objective of Chandrayaan-III is **to explore the lunar South Pole region**, where water ice and other resources may be present.

Features

- Chandrayaan-3 will consist of two modules: a propulsion module and a lander module.

- **The propulsion module** will carry the lander from launch injection to lunar orbit and also act as a communications relay satellite.

- **The lander module** will house the rover, which will be similar to the Pragyan rover of Chandrayaan-2.

- The mission will **use the Launch Vehicle Mark-3 (LVM 3) rocket, which is India's most powerful launcher capable of lifting to 8 tonnes of payload to low Earth orbit.** The launch will take place from the SatishDhawan Space Centre in Sriharikota, Andhra Pradesh.

- The mission will target a landing site near the lunar South Pole, which is of high scientific interest due to the presence of water ice and other resources.

Scientific Experiments

- The payloads of the lander, rover, and propulsion module will enable scientists to gain new insights into the characteristics of the Earth's sole natural satellite.

- The **mission will carry seven scientific payloads**: four on the lander and three on the rover.

The lander payloads are:

- **Radio Anatomy of Moon Bound Hypersensitive Ionosphere and Atmosphere (RAMBHA)**, which will study the plasma environment around the moon.

- **Chandra's Surface Thermo Physical Experiment (ChaSTE),** will measure the thermal conductivity and temperature gradient of the lunar surface.

- **Instrument for Lunar Seismic Activity (ILSA),** which will detect and characterize lunar quakes and other seismic events.
- **Laser Retroreflector Array (LRA**), which will serve as a passive reflector for laser ranging measurements from Earth or other orbiters.

The rover payloads are:

- **Alpha Particle X-Ray Spectrometer (APXS),** which will determine the elemental composition of the lunar rocks and soil.
- **Laser Induced Breakdown Spectroscope (LIBS),** which will perform chemical analysis of the lunar surface using laser pulses.
- **Spectro-polarimetry of Habitable Planet Earth (SHAPE),** which will observe the Earth from the lunar orbit and measure its spectral and polarimetric properties.

Significances

- Chandrayaan-3 is a significant mission for India as it will demonstrate its capability to achieve a soft landing on the moon, which is a prerequisite for future human and robotic exploration missions.
- **Only three countries have successfully landed on the moon** so far: the United States, Russia and China.
- The mission is important for advancing India's scientific knowledge of the moon, especially its south polar region, which is largely unexplored and holds potential for future resource utilization. The mission will collect valuable data on the lunar topography, geology, mineralogy, atmosphere and plasma environment.
- The mission is a precursor to India's planned Lunar Polar Exploration Mission (LUPEX), which is a joint mission with Japan scheduled for 2025. LUPEX will aim to land near the lunar South Pole and conduct more detailed studies using an advanced rover and a sample return system.

Challenges

- Chandrayaan-3 faces several technical and operational challenges that need to be overcome for a successful mission.
- Achieving a precise and safe landing on a rugged and shadowed terrain near the lunar South Pole, requires high accuracy in navigation, guidance and control systems.
- Surviving the harsh lunar environment, includes extreme temperature variations, radiation exposure, dust accumulation and impact hazards.
- Communicating with the lander and rover from Earth or orbit requires reliable and robust communication systems and protocols.
- Ensuring the optimal performance and longevity of the payloads, which requires careful design, testing and calibration.

Way Forward

- Chandrayaan-3 is an ambitious and challenging mission that will test India's technological and scientific prowess in lunar exploration. The mission will also pave the way for more advanced and collaborative missions in the future, such as LUPEX and the International Lunar Research Station (ILRS).
- The mission is a testament to India's commitment and contribution to the global endeavour of exploring and understanding the moon, which is a common heritage and a source of inspiration for humanity. The mission will also foster public awareness and interest in space science and technology among the Indian masses, especially the youth.
- The mission will not only enhance India's prestige and pride but also enrich its knowledge and experience, which will benefit its society and economy in the long run.

Solar Mean Magnetic Field

Context

- Scientists have made significant progress in understanding the origin and influence of the Solar Mean Magnetic Field (SMMF), which is the average of the solar magnetic field component that points towards or away from the Earth, measured over the entire visible surface of the Sun. The SMMF also affects the Interplanetary Magnetic Field (IMF), which is the magnetic field carried by the solar wind in space.

Details

- The Sun has a complex magnetic field that is generated by electric currents flowing in the plasma inside the Sun. These currents are driven by the movement of hot, charged gases in the convection zone, which is the outer layer of the Sun's interior.

- The Sun's magnetic field extends beyond its surface and forms the corona, the photosphere, and the chromosphere, which are different layers of the Sun's atmosphere.

- The SMMF is an important parameter to study because it can influence the IMF and thus affect the space weather, which is the variety of conditions in the space environment that can impact human activities and technologies. However, most of the previous studies on SMMF have focused on measuring it in the photosphere, which is the visible surface of the Sun.

Recent Study

- A team of scientists from the Indian Institute of Astrophysics (IIA), an autonomous institute of the Department of Science and Technology, has investigated how the SMMF at the chromosphere, which is a thin and transparent layer above the photosphere, relates to the SMMF at the photosphere.

- They found that there is a **high similarity between them, but the SMMF at the chromosphere is lower than that at the photosphere.** This suggests that there might be a primordial magnetic field inside the Sun that is responsible for creating the SMMF.

- The scientists used data from two instruments: Synoptic Optical Long-term Investigations of the Sun (SOLIS)/Vector Spectromagnetograph (VSM) and Wilcox Solar Observatory (WSO).

Solar Mean Magnetic Field (SMMF)

- The Sun is not only a giant ball of plasma that emits light and heat, but also a **powerful magnet that influences the solar system and beyond.**

- The solar magnetic field is **generated by the dynamo process in the Sun's interior**, and it manifests itself in various forms on the solar surface and the heliosphere.

- One of the simplest ways to describe the solar magnetic field is by its mean value, which is the **average of the magnetic field over the entire solar disk. This quantity is called the solar mean magnetic field (SMMF).**

- It is **not constant but varies with time and solar activity. It follows an 11-year cycle that is synchronized with the sunspot cycle**, reaching a maximum value around the sunspot minimum and a minimum value around the sunspot maximum.

- It shows long-term variations that are related to changes in the solar dynamo and the global magnetic polarity of the Sun. The SMMF can be measured by different methods, such as using magnetographs, spectrographs, or radio telescopes. Each method has its advantages and limitations, and they may not always agree with each other.

Cross Section of the Sun

Moving from the center out:
- Core
- Radiation zone
- Convection zone
- Photosphere
- Chromosphere
- Corona
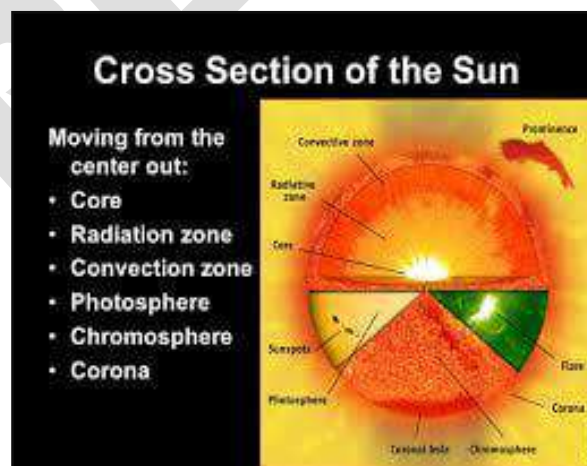
SMMF is important for several reasons

- **It reflects the strength and structure of the solar dynamo**, which is responsible for generating and maintaining the solar magnetic field. By studying the SMMF, we can learn more about how the Sun works and how it evolves.

- **It affects the solar wind,** which is the stream of charged particles that flows from the Sun into interplanetary space. The SMMF determines the polarity and intensity of the interplanetary magnetic field (IMF), which in turn influences the interaction between the solar wind and the Earth's magnetosphere.

- **It may have an impact on the Earth's climate**, as some studies have suggested a correlation

between the SMMF and global temperature anomalies.

Challenges and uncertainties in measuring and understanding the SMMF

- How reliable are the historical records of the SMMF? How do we compare and calibrate different instruments and methods? How do we account for the effects of noise, projection, and resolution?
- How do we model and interpret the physical processes behind the SMMF variations?
- How do we predict the future behaviour of the SMMF and its implications for space weather and climate change?

Way forward

- The way forward for studying the SMMF is to combine observations from multiple sources, such as ground-based and space-based telescopes, with theoretical models and numerical simulations. By doing so, we can improve our accuracy and consistency in measuring the SMMF, as well as our understanding of its origin and evolution. We can also explore new aspects of the SMMF, such as its spatial distribution, its relation to other solar parameters, and its connection to other stars. The SMMF is a key component of the solar magnetic field, and it deserves more attention and research in the future.

Light Detection and Ranging (LiDAR)

Context

- Purana Qila, an ancient fort in Delhi, is the site of ongoing excavations by the Archaeological Survey of India (ASI). The ASI director said that they plan to use a Light, Detection and Ranging (LiDAR) survey to map the archaeological mounds and locate the buried structures.

Details

- The LiDAR survey will help the ASI to target the areas where they can conduct a dig and uncover the earliest cultural deposits at the site. **The site has revealed artefacts from various periods, ranging from 1,200 B.C. to the Mughal era.**

- Some of the notable artefacts found at the site are 136 coins, 35 seals and sealings, **a stone carving of Vaikuntha Vishnu, a terracotta plaque of GajaLaxmi, a stone image of Ganesha, terracotta figurines of humans and animals**, beads made of different stones and a bone needle.
- These artefacts suggest that PuranaQila was an important trade centre in the past. ASI has identified nine levels of cultural deposits at the site, belonging to the pre-Mauryan, Mauryan, Sunga, Kushana, Gupta, post-Gupta, Rajput, Sultanate and Mughal periods.
- The current excavation, which began in January 2023, aims to establish the complete chronology of the cultural deposits at the site and shed more light on its history.

Light Detection and Ranging (LiDAR)

- Light Detection and Ranging (LiDAR) is a **remote sensing technology that uses laser pulses to measure distances and create three-dimensional maps of objects and terrain.**
- LiDAR has many applications in various fields, such as autonomous driving, atmospheric science, geology, archaeology, and the military.

Background

- LiDAR was developed in the 1960s, shortly after the invention of the laser. The first LiDAR systems were used to measure the distance to the moon and other planets. Later, LiDAR was mounted on aircraft and satellites to map the Earth's surface and atmosphere.
- In recent years, LiDAR has become more compact, affordable, and versatile, enabling new uses in various domains.

Features

- **LiDAR works by emitting a short laser pulse and detecting the reflected light from a target**. The time of flight (TOF) of the light pulse is used to calculate the distance to the target.
- By scanning the laser beam across a scene, LiDAR can generate a point cloud of distance measurements that can be processed into a 3D model.

- It can use different wavelengths of laser light, depending on the purpose and the target. For example, some LiDAR systems use infrared light to measure hard surfaces, such as buildings, roads, and rocks. Other LiDAR systems use ultraviolet or visible light to measure soft targets, such as clouds, aerosols, and vegetation.

- It can also **measure the velocity of a target by using the Doppler Effect** or by comparing successive distance measurements. This can be useful for detecting wind speed, traffic flow, or moving objects.

Significances

- LiDAR has many advantages over other remote sensing methods, such as radar or optical imaging.

- It can **provide high-resolution, accurate, and detailed 3D data** that can reveal features that are otherwise hidden or obscured by vegetation, clouds, or darkness.

- It can also operate in all weather conditions and at long ranges.

LiDAR has many applications in various fields

- **Autonomous driving:** LiDAR can help self-driving cars navigate safely and efficiently by detecting obstacles, lanes, traffic signs, pedestrians, and other vehicles.

- **Atmospheric science:** LiDAR can measure the concentration, distribution, and movement of atmospheric particles and molecules, such as dust, smoke, water vapour, ozone, and greenhouse gases.

- **Geology:** LiDAR can map the topography and morphology of the Earth's surface and subsurface, revealing features such as faults, landslides, volcanoes, glaciers, and caves.

- **Archaeology:** LiDAR can uncover ancient structures and settlements that are buried or covered by vegetation or soil.

- **Military:** LiDAR can provide situational awareness and target recognition for defence and security purposes.

Challenges

- **Cost:** LiDAR systems are still relatively expensive compared to other sensors, especially for high-performance and compact models.

- **Size:** LiDAR systems are still bulky and heavy compared to other sensors, limiting their portability and integration with other devices.

- **Power:** LiDAR systems consume a lot of power to generate and detect laser pulses, which can affect their battery life and performance.

- **Interference:** LiDAR systems can be affected by ambient light sources or jamming signals that can reduce their accuracy or reliability.

- **Safety:** LiDAR systems can pose a risk to human eyesight if they use high-power or non-eye-safe laser wavelengths.

Innovations to expand the potential of LiDAR technology

- **Quantum LiDAR:** Quantum LiDAR is a novel technique that uses quantum properties of light to enhance the performance and security of LiDAR systems. Quantum LiDAR can achieve higher resolution, sensitivity, range, and immunity to interference than conventional LiDAR.

- **Solid-state LiDAR:** Solid-state LiDAR is a type of LiDAR that does not use any moving parts to scan the laser beam. Instead, it uses electronic or optical components to steer or modulate the beam. Solid-state LiDAR can reduce the size, weight, cost, power consumption, and mechanical complexity of LiDAR systems.

- **Multi-modal LiDAR:** Multi-modal LiDAR is a type of LiDAR that combines different wavelengths or modalities of laser light to measure different properties or targets. For example, multi-modal LiDAR can use infrared light for hard targets and visible light for soft targets in the same system. Multi-modal LiDAR can increase the versatility and functionality of LiDAR systems.

Conclusion

- LiDAR is a powerful and promising technology that has many applications and benefits in various fields. As LiDAR technology advances and improves, it will enable new possibilities and discoveries in the future.

7.6   SNIPPET

FOUCAULT PENDULUM

- One of the most striking features of India's new Parliament building is a Foucault pendulum that swings from the ceiling to the floor.
- It symbolizes the connection between India and the cosmos, as it demonstrates the rotation of the Earth.
- The Foucault pendulum was invented by French physicist Léon Foucault in 1851, and it was the first device to show the Earth's rotation without relying on astronomical observations.
- The pendulum in the Parliament Building has a brass bob that moves along a circular path on the floor, which is marked with 24 segments representing the hours of the day.
- In the northern hemisphere, a Foucault pendulum swings in a clockwise direction, while in the southern hemisphere, it swings in a counter-clockwise direction.
- The rate of rotation depends on the latitude of the location where the pendulum is installed. At the poles, it completes one full rotation in 24 hours, while at the equator, it does not rotate at all.
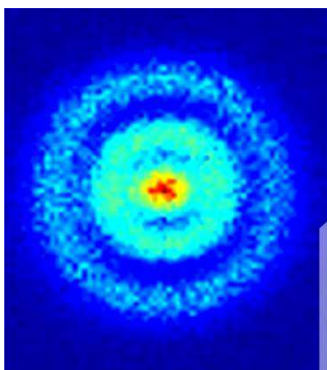
WORLD'S FIRST X-RAY OF A SINGLE ATOM

- Scientists have captured the world's first X-ray of a single atom, revealing its chemical state and elemental identity.
- This technique, called synchrotron X-ray scanning tunnelling microscopy (SX-STM), combines high-energy X-rays with a sharp metal tip to detect the X-ray signal of just one atom at a time.
- The researchers demonstrated this method on an iron atom and a terbium atom, both embedded in molecular hosts.
- This discovery opens new possibilities for studying matter at the smallest level and understanding its properties and interactions.
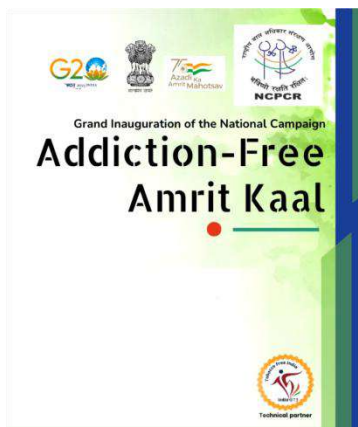
NATIONAL CAMPAIGN ON ADDICTION-FREE AMRIT KAAL

- On World Tobacco Day, 31st May 2023, the National Commission for Protection of Child Rights (NCPCR) launched a national campaign called "Addiction Free Amrit Kaal".
- The campaign aims to encourage a healthy and addiction-free lifestyle among the citizens of India, especially the children and youth.
- The campaign is part of the NCPCR's vision to create a healthier and addiction-free India by preventing and reducing tobacco and drug use among children and adolescents.
- It involves various activities such as awareness programs, counselling sessions, peer education, life skills training, and community mobilization.
- It collaborates with other stakeholders such as schools, parents, NGOs, media, and health professionals to spread the message of "Addiction Free Amrit Kaal".
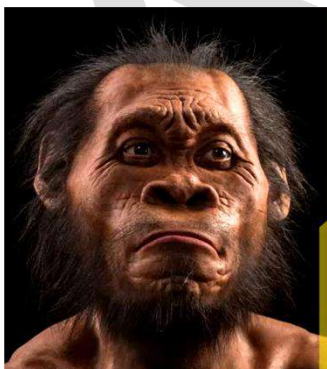
HOMO NALEDI

- A recent study has proposed that Homo naledi, an extinct human species with a small brain size, was capable of complex behaviours such as creating rock art and performing ritual burials.
- The study relies on indirect and circumstantial clues, such as the presence of ochre and bones in deep caves, rather than direct proof of artistic or symbolic activities.
- The study has been met with criticism from other experts, who argue that the evidence is insufficient and inconclusive.
- The study also faces methodological and ethical challenges, such as dating the fossils and obtaining permission from local communities.
- Therefore, the claim that Homo naledi was a sophisticated and cultural species remains highly speculative and controversial.

SOUL OF STEEL HIMALAYAN ENDURANCE CHALLENGE

- The 'Soul of Steel Himalayan Challenge' is a unique event that aims to test the physical and mental limits of participants in the high-altitude Mountains of Uttarakhand, India.
- The challenge is backed by the Indian Army and CLAW Global, a group of Special Forces veterans who provide training and guidance to the participants.
- The challenge was inaugurated by the Union Defense Minister on January 14, 2023, at Dehradun. The final phase of the challenge began on June 10.
- The participants will compete as teams of three along a rugged course of 65 km through glaciers, ice walls, rock faces and snow-capped peaks at an altitude of 17,000 feet.
- The challenge is also aimed at promoting tourism and development in the border areas of Uttarakhand by showcasing the potential of the Himalayas.

AIIMS e-HOSPITAL SERVICES

- AIIMS New Delhi, India's premier health institution, announced that it successfully neutralised a malware attack on its hospital services and that no data breach occurred.
- AIIMS said that all hospital services, including outpatient, in-patient, laboratories, etc., were running on manual mode as a precautionary measure.
- AIIMS e-Hospital Services is a digital platform that provides online registration, appointment booking, payment gateway and other services to patients and visitors.
- It enables patients to book appointments, view lab reports, pay bills, access medical records, and consult doctors online.
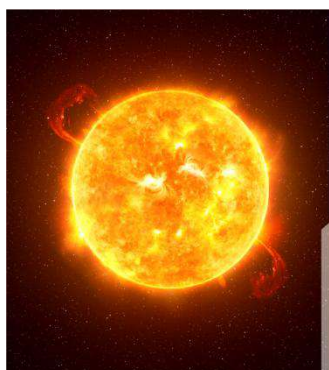
BETELGEUSE

- Betelgeuse is one of the brightest stars in the night sky and a prominent feature of the constellation Orion. However, in recent years, it has been exhibiting unexpected behaviour that has puzzled astronomers and sparked many hypotheses.
- It is a red supergiant star that is nearing the end of its life and may explode as a supernova in the near future. But its exact fate is uncertain, as it has been dimming and brightening irregularly and unpredictably.
  - Some scientists have suggested that this could be due to dust clouds obscuring the star's light, while others have proposed that it could be a sign of internal changes in the star's structure or nuclear reactions.
- It is a fascinating object of study for astrophysicists, as it offers a rare opportunity to observe a star in its final stages of evolution and to learn more about the mechanisms and processes that govern stellar death.
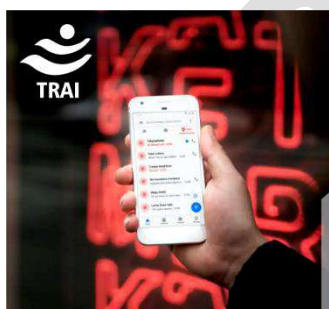
UCC DETECT SYSTEM

- The Telecom Regulatory Authority of India (TRAI) has issued a direction to all access providers to implement an artificial intelligence and machine learning-based system to detect unsolicited commercial communication (UCC) from unregistered telemarketers (UTMs).
- The UCC detect system is designed to identify and take action against the entities who send commercial messages or calls without registering as per the Telecom Commercial Communication Customer Preference Regulations, 2018 (TCCCPR-2018).
- The direction aims to curb UCC which causes inconvenience and fraud to the customers.

INDIGENOUSLY DEVELOPED ANIMAL-DERIVED PRODUCT "CHOLEDERM"

- Cholederm is a collagen-based biomaterial that can be used for wound healing, skin regeneration, and cosmetic applications. It is the most abundant protein in the animal kingdom and plays a vital role in maintaining the structure and function of various tissues.

- It has been developed indigenously by a team of researchers from the Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), an autonomous institution under the Department of Science and Technology (DST).
  - It is India's first institute to create Class D medical devices that meet the Central Drugs Standard Control Organisation's (CDSCO) criteria.

- It has several advantages over conventional animal-derived products. It is safe, biocompatible, and biodegradable. It has high tensile strength, elasticity, and stability.

- It can promote wound healing by providing a scaffold for cell migration and tissue regeneration. It can also enhance skin quality by stimulating collagen synthesis and reducing wrinkles.

- Medical devices are categorised into four classes based on their risk level, according to the Medical Devices Rules, 2017: Class A (low risk), Class B (low moderate risk), Class C (moderate high risk), and Class D (high risk).

SOLAR ULTRAVIOLET IMAGING TELESCOPE (SUIT)

- A team of researchers from the Inter-University Center for Astronomy and Astrophysics (IUCAA) in Pune has developed a special space telescope called the Solar Ultraviolet Imaging Telescope (SUIT).

- SUIT is designed to observe the Sun in the ultraviolet (UV) wavelength range, which is not accessible from the ground due to atmospheric absorption.

- By studying the UV emission from the Sun, SUIT will help reveal the dynamics and heating of the solar chromosphere and corona, the outer layers of the Sun that are responsible for producing solar flares, coronal mass ejections, and other phenomena that can affect Earth's climate and technology.

- SUIT is one of the seven instruments that will be onboard the ADITYA-L1 mission, India's first dedicated solar observatory in space. It will orbit around the L1 point, a stable location between the Earth and the Sun that offers a continuous view of the solar disk.

GEMCOVAC-OM

- India has achieved a major milestone with the approval of its first homegrown mRNA vaccine, GEMCOVAC-OM.

- The vaccine, developed by Pune- based Gennova Biopharmaceuticals Ltd, received the green light from the Drug Controller General of India (DCGI).

- It is a modified version of GEMCOVAC-19, the country's first mRNA vaccine against COVID-19. Both vaccines use messenger RNA (mRNA) technology, which instructs the body's cells to produce a harmless spike protein that mimics the coronavirus and triggers an immune response.

- It has been designed to target the Omicron variant, which has multiple mutations in its spike protein that make it more transmissible and potentially more resistant to existing vaccines.

GEMINID METEOR SHOWER

- Geminid meteor shower lights up the winter sky with its brilliant display every year.

- Most meteor showers are caused by comets, which are icy bodies that orbit the Sun and release dust and gas as they get closer to it. The dust particles form a stream that follows the comet's path, and when the Earth crosses this stream, some of the particles enter our atmosphere and burn up, creating meteors.

- The Geminid meteor shower is an exception. It seems to come from an asteroid, not a comet. The asteroid is called 3200 Phaethon, and it has a very eccentric orbit that brings it very close to the Sun every 1.4 years.

- NASA's Parker Solar Probe is on a mission to explore the Sun's corona, or outer atmosphere, and to understand how the solar wind and energy affect our solar system. By analyzing the data from the FIELDS instrument, scientists were able to study the Geminid stream in unprecedented detail.

NATIONAL FLORENCE NIGHTINGALE AWARDS

- The President of India conferred the National Florence Nightingale Awards for the years 2022 and 2023 to the nursing professionals at the Rashtrapati Bhavan.
- The Awards were instituted in the year 1973 by the Ministry of Health and Family Welfare as a mark of recognition for the meritorious services rendered by nurses and nursing professionals to society.
- The awards are given in honour of Florence Nightingale who is revered as the founder of modern nursing.
  - They received a medal, a certificate and a cash prize of Rs. 50,000 each.
- The awards were given in various categories such as public health nursing, clinical nursing, nursing education, nursing research, nursing administration and nursing leadership.

NATIONAL EXIT TEST

- The National Medical Commission (NMC) has announced a tentative schedule for the National Exit Test (NExT), a common qualifying exam for medical graduates.
- According to the NMC, NExT will be conducted in two phases in India. The first phase will consist of Multiple Choice Questions (MCQs).
- The second phase, after the completion of the internship, will be a comprehensive practical/clinical examination.
  - It will assess competencies in clinical diagnosis, patient examination and clinical decision-making, and practical and communication skills required for the practice of modern medicine.
- NExT will serve as a licentiate exam to practice modern medicine and for merit-based admission to postgraduate courses and a screening exam for foreign medical graduates who want to practice in India.
- Until now, all MBBS graduates had to clear a final exam which included both theory and practical. It was conducted by colleges/universities. NExt will be a centralised exam.
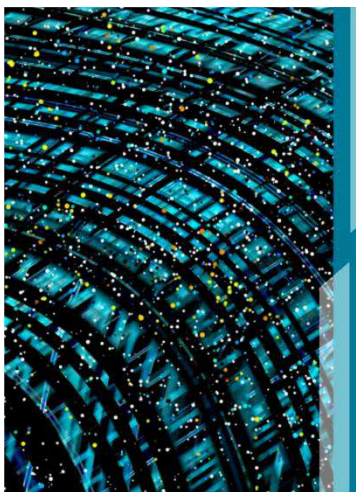
CHIRAL BOSE-LIQUID

- The chiral Bose-liquid state is a novel quantum state of matter that was recently discovered by researchers.
- Its state is different from the usual states of matter, such as solid, liquid, or gas, that we encounter in everyday life. It only emerges at very low temperatures or at the atomic scale, where matter behaves in strange and unexpected ways.
- It was created by using a device that consists of two layers of semiconducting material. The top layer has many electrons that can move around freely, while the bottom layer has many holes that can be occupied by electrons.
  - When the two layers are brought very close together, a local imbalance occurs, meaning that there are not enough holes for all the electrons to fill.
  - This triggers the formation of the chiral Bose-liquid state, where electrons form patterns that are resistant to changes in spin and coordinate their movements with each other.
- The word "chiral" describes anything that cannot be superimposed on its mirror image. For example, your left hand and your right hand are chiral, because they are not identical.

Take A Demo

Subject wise Demo Tests for UPSC CSE 2024

Subjects
Polity, Geography, Economy, History, Science & Technology and Environment

7. 1   1 MAINS QUESTION AND 5 MCQS

Q1. *Sickle cell Anaemia is a major health concern that affects millions of people in India, yet the burden of this hereditary blood disorder remains largely unacknowledged. What are the challenges in tackling the menace of Sickle cell Anaemia? Suggest measures that can pave the way to the elimination of the disease by 2047, the goal outlined as a national mission in the Union budget 2023 by the Government of India.*

Answer:

- Sickle cell Anaemia is a condition where the red blood cells become abnormally shaped and sticky, causing blockages in the blood vessels and reducing oxygen supply to the organs. This can lead to severe pain, infections, organ damage and even death. Sickle cell Anaemia is inherited from both parents and mainly affects people of African, Asian and Mediterranean origin.

- In India, Sickle cell Anaemia is prevalent among tribal and backward communities, who often face social stigma, discrimination and lack of awareness about the disease. The challenges in tackling the menace of Sickle cell Anaemia include:
  - Inadequate screening and diagnosis facilities, especially in rural and remote areas.
  - Lack of access to quality and affordable treatment options, such as blood transfusions, hydroxyurea therapy and bone marrow transplantation.
  - Poor compliance to treatment and follow-up care due to socio-economic and cultural barriers.
  - Low awareness and education among the general public and healthcare providers about the prevention, management and complications of the disease.
  - Absence of a national registry and surveillance system to monitor the prevalence, incidence and outcomes of the disease.

- To achieve the goal of eliminating Sickle cell Anaemia by 2047, as outlined by the Government of India in its Union Budget 2023, the following measures are suggested:
  - Implement a universal newborn screening program for Sickle cell Anaemia across the country, along with genetic counselling and carrier testing for high-risk groups.
  - Strengthen the existing network of Sickle cell Anaemia clinics and centres, and establish more such facilities in underserved regions.
  - Provide free or subsidized treatment and care for patients with Sickle cell Anaemia, including regular blood transfusions, hydroxyurea therapy, bone marrow transplantation and pain management.
  - Promote awareness and education campaigns among the public and health care providers about the causes, symptoms, diagnosis, treatment and prevention of Sickle cell Anaemia.
  - Develop a national registry and surveillance system for Sickle cell Anaemia, to collect data on the epidemiology, clinical features, complications and outcomes of the disease.
  - Encourage research and innovation in finding new and effective ways to prevent, treat and cure Sickle cell Anaemia.

- Sickle cell Anaemia is a serious but preventable and treatable disease that affects millions of lives in India. By addressing the challenges and implementing the suggested measures, we can hope to achieve the ambitious goal of eliminating Sickle cell Anaemia by 2047 and improving the quality of life of those living with this condition.

Q2. **How many of the following were associated with the production of the Hunger Hotspots report?**

1. The Food and Agriculture Organization (FAO)
2. The World Food Programme (WFP)
3. World Health Organization (WHO)
4. International Monetary Fund (IMF)

A) Only 1
B) Only 2
C) Only 3

D) All

Answer: B

Explanation: *The HUNGER HOTSPOTS REPORT was jointly produced by the Food and Agriculture Organization (FAO) and the World Food Programme (WFP), identifies 18 hunger hotspots in 22 countries where acute food insecurity is likely to worsen in the next six months due to various factors, such as conflict, climate shocks, economic shocks and the COVID-19 pandemic.*

Q3. Which of the following is/are the main applications of deepfakes technology?

1. Entertainment and art, such as creating realistic animations, movies, games, or memes.
2. Education and research, such as creating virtual tutors, simulations, experiments, or demonstrations.
3. Journalism and activism, such as creating documentaries, interviews, testimonies, or campaigns.

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

Answer: D

Explanation: *Deepfakes can be used for various purposes, both positive and negative. Some of the positive applications include entertainment and art, education and research, journalism and activism, where deepfakes can enhance creativity, engagement, learning, and awareness. However, deepfakes can also be used for malicious purposes, such as spreading misinformation, propaganda, harassment, blackmail, or identity theft.*

Q4. Consider the following statements in the context of interventions being undertaken under AnaemiaMukt Bharat Strategy: (UPSC 2023)

1. It provides prophylactic calcium supplementation for preschool children, adolescents and pregnant women.
2. It runs a campaign for delayed cord clamping at the time of childbirth.
3. It provides for periodic deworming to children and adolescents.
4. It addresses non-institutional causes of anaemia in endemic pockets with a special focus on malaria, hemoglobinopathies and fluorosis.

How many of the statements given above are correct?

A) Only one
B) Only two
C) Only three
D) All four

Answer: C

Explanation:

Only Statement 1 is Incorrect: It provides prophylactic calcium supplementation for preschool children, adolescents and pregnant women.

The AnaemiaMukt Bharat (AMB) Strategy has six key interventions:

1. Prophylactic iron and folic acid (IFA) supplementation for preschool children, adolescents and pregnant women.

2. Periodic deworming to children and adolescents.

3. Intensified year-round behaviour change communication (BCC) campaign to improve awareness and compliance of IFA supplementation, dietary diversification, and antenatal care.

4. Testing of anaemia using digital methods and point-of-care treatment at all levels of health care.

5. Mandatory provision of IFA tablets during antenatal check-ups and postnatal care.

6. Addressing non-nutritional causes of anaemia in endemic pockets with a special focus on malaria, hemoglobinopathies and fluorosis.

Q5. Consider the following statements in relation to Norovirus:

1. It is a highly contagious virus often known as the "stomach flu" or the "winter vomiting bug."
2. Vaccination is the only available treatment for Norovirus illness.
3. Common hand sanitisers are ineffective against the infection.

Which of the above Statement is/are correct?

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

Answer: C

Explanation:

Statement 1 is correct: Norovirus is a highly contagious virus that is also known as the stomach flu or the 'winter vomiting bug'.

Statement 2 is incorrect: The disease is self-limiting. The infection usually only lasts two or three days. There are no vaccinations

available for the disease. The most fundamental precaution is to wash hands with soap after using the restroom or changing diapers. Before eating or preparing food, it is critical to thoroughly wash your hands.

Statement 3 is correct: *Many disinfectants are resistant to norovirus, and they can withstand heat up to 60°C. As a result, just heating food or chlorinating water will not destroy the virus. The virus is also resistant to many standard hand sanitisers.*

Q6. **Recently the term "Betelgeuse" was frequently seen in the news, it is related to;**

A) Galaxy
B) Snake species
C) Star
D) Malware

Answer: C

Explanation: Betelgeuse is one of the brightest stars in the night sky and a prominent feature of the constellation Orion. However, in recent years, it has been exhibiting unexpected behaviour that has puzzled astronomers and sparked many hypotheses. It is a red supergiant star that is nearing the end of its life and may explode as a supernova in the near future.

8. CULTURE & HISTORY

8. 1   RELEVANCE OF MAURYAN ADMINISTRATION

Context

- The government dismissed a brewing controversy around a mural in the newly inaugurated Parliament building that has drawn some angry reactions from Nepal's political leaders.
- The mural - which represents the resolve for an 'Akhand Bharat' - marks important kingdoms and cities of the past, including Takshashila (presently in Pakistan) and Lumbini (in Nepal).
- "The mural in question depicts the spread of the Ashokanempire. It's people-centric," the Ministry of External Affairs said.

Mauryan Administration

- The Mauryan administration system **was a highly centralized and highly bureaucratized one**. The Mauryanempire was divided into 4 provinces, which were further divided into Aharas, which are very much similar to the present day districts. Aharas were further divided into Gramas. There were separate departments, each of which was headed by an officer.

Central Administration of Mauryan Empire

- Samaharta in Mauryan administration is the Chief Revenue collector and Sannidhata is the Chief Treasury officer. In addition to Samaharta and Sannidhata in Mauryan administration, there were a number of departments were present and each department was being headed by an Adhyaksha. Some important Adhyakshas are mentioned below:
  - o AkaraAdhyaksha - Head of Mining
  - o AkahapalaAdhyaksha - Head of Accounts
  - o SitaAdhyaksha - Head of Agriculture
  - o KupyaAdhyaksha - Head of Forest Products
  - o KosthagaraAdhyaksha - Head of Stores
  - o LakshanaAdhyaksha - Head of Minting

  - o TulamanapautavaAdhyaksha - Head of Weights & Measurements
  - o PanyaAdhyaksha - Head of Trade & Commerce
  - o SuraAdhyaksha - Head of Excise
  - o PattanaAdhyaksha – In-charge of Seaports
  - o Provincial Administration of Mauryan Empire
- The Mauryanempire was divided into 4 provinces with the central headquarters lying at Pataliputra. These provinces of Mauryan empire along with their headquarters are
  - o Uttarapada (Northern province) – Taxila
  - o Avanti pada (Western province) - Ujjain
  - o Dakshinapada (Southern province) - Suvarnagiri
  - o Prachyapada (Eastern province) - Toshali (Modern Dhauli)
  - o Governor of the province was called "Kumara" if any son of the king was appointed and was called "Aryaputra" if any other officer was appointed.
- Provinces are further divided into Aharas similar to districts. There were two officers appointed for each Ahara. They are
  a) Pradesika (Police officer) comparable to present day Superintendent of Police (SP)
  b) Rajuka (Revenue officer) comparable to District Collector
- Last unit of provincial administration of the Mauryanempire was Grama and it was headed by Gramani.

City Administration of Mauryan Empire

- Municipal or City administration of Mauryanempire was very well organized and very efficient in nature. According to Indica, written by Megasthenes, there was municipal council of 30 members which was divided into 6 boards each having 5 members looking after 6 important activities in the city administration.

Military Administration of Mauryan Empire

- Chaturangabala was present in Mauryan administration consisting of Infantry, Cavalry, Chariotry and Elephantry. According to Indica, effective intelligence department (espionage system) was also present.

Judicial Administration of Mauryan Empire

- In Arthashastra, it is mentioned that civil and criminal courts were present. Civil court during Mauryan period was known as Dharmasthiya and Criminal court was called Kantakashodana. Megasthenes mentioned about rarity of crimes and thefts were unknown. People never lock their doors while going out. This is because of severe penal code. Death penalty was given even for petty crimes. Trial by ordeal was prevalent in the administration of Mauryanempire.

How is it relevant in the present-day scenario?

- The nuances presented in the Arthashastra can be seen in various fields related to social science and diplomacy. Many political and economic theories are derived from this. Also, the diplomacy explained in it has relevance in International Relations as well.

Administrative Law

- To see that today the administrative law which is governed by a similar system of division of our various organs is inspired from this. We have seen the instance of administrative law for this instance. And it is a surprise that we tend to follow the British model blindly not knowing that the Indian system was also praise-worthy. How can we be so sure about this?

- We have seen an excellent instance of administrative law in the era of the Mauryan Empire. If we talk about the definition of administrative law, it says that:

- "Administrative law is the law relating to the administrative operation of the government. it is with the powers and duties of the administration, the procedure one has to follow in exercising the powers and discharging the duties and remedies available to the aggrieved person when his rights are affected by any other administrative action.'

According to Robson:

- 'Administrative law should be regarded as the law relating to public administration, in the same way as the commercial or concept of law relating to commerce or land law related to land.'

According to Dicey:

- 'Administrative law is denoted as that portion of a national legal system which determines the legal status and liabilities of all state officials i.e., bureaucrats.'

According to Sir Ivor Jennings:

- Administrative law is law related to administration i.e. It determines the organization, powers, and duties of the administrative authorities.'

- According to Jain and Jain:

- Administrative law deals with the structure, powers, and function of the organs of administration.

- The limit of their powers

- The method and procedure followed by them in exercising their powers and function

- The method by which their parts are controlled including legal remedies available to the person against them;

- when their rights are increased by the operation of law exercised by these bureaucratic authorities.

According to Justice Bhagwati, former CJ;

- 'Administrative law is that branch of law which seeks to ensure the observance of rule of law.'

- From the instances, it is very clear that administrative law has been an important part and has gained more attention in recent times. However critical analysis of Arthashasthra written by Kautilya shows the prevalence of Administrative Law back in the ages of the Mauryan Administration. The proper balance of powers and division of labour with the proper strategy such that the king was all-powerful. However, he administered with the help of due diligence on the part of the Council of Ministers and their advice.

Constitutional Law

- Similar to the administration of the Mauryan Empire today, there is a system of Council of

Ministers headed by the Prime Minister. This is governed under Article 74. This shows that apart from the contribution Apart from the Government of India Act 1935 there are many background sources on which the system of governance is dependent. Today also we see the judicial system, which was prevalent even at that time.

73rd Amendment Act, 1993

- The 73rd amendment of the constitution which was related to the village administration was present even back then in the Mauryan Period. It is no surprise that at that time Arthashastra was the governing body according to which the rules were made and administered. today we see the Constitution of India, Part IX under Article 243 to 243O governing the village administration.

74th Amendment Act, 1994

- In a similar way, we see the 74th Amendment which deals with the administration at the urban level and the Municipalities.
- Thus, we see that Indian brains were also master strategists. The Mauryan Empire was the first consolidated Empire in ancient history. Those who do not learn from history are doomed to repeat it. And we have seen this naturally in the modern era, that due to internal disturbances and disunity among various small kingdoms resulted in the expansion of the East India Company.
- Arthashastra: The Bible of Administration
- Arthashastra demarcates that the administration should contain the following basic requirements without which it would be disastrous to have it. Its Saptanga Theory says that the following elements are necessary for a stable administration. These are as follows:
  o Raja [king]
  o Amatya [the secretaries]
  o Janapadas [territory]
  o Durg [fort]
  o Kosha [the treasure]
  o Sena [Army]
  o Mitra [Friend]
- In the above system of saptanga theory, the government is having a centralized

bureaucracy with a king in its nucleus. The king was regarded as a soul among the seven elements of the state. Apart from all the necessities which are discussed above, it has been observed that 'mitra' which is defined as a friend is elaborated in a wider sense. Here, it refers to foreign diplomacy in times of crisis or war.

Nuances in the Saptanga Theory: Relation with Political Science
According to the Max Weber:

- 'A compulsory political organization with continuous operations will be called a 'state' in so far as its administrative staff successfully uphold the claim to the monopoly of the legitimate use of physical force in the enforcement of its order.'
- Also, according to Political Theory by JS Badyal: A State is defined as the one which constitutes four basic elements of fixed territory, population, government, and sovereignty.
- It is again evident that Chanakya, who was an ancient jurist, was able to explain such complex theories way back in ancient Indian times.
- Even from the Harappan Civilization, the ancient Indian civilization was far more developed than its western counterparts. The well-developed system of drainage, Great Bath, intricately carved architecture are good examples to explain how Indian Culture was far more developed. However, it is because of the colonial mindset that we are more inclined to read modern history far more than ancient and medieval history. Furthermore, the importance of a good mentor, confidant and guide is emphasised in an implicit manner here.
- In terms of geography, the Indian republic is a much smaller entity than the Mauryan empire. But the core remains intact and that's what matters. While the civilisational ethos is the foundation of the country's re-rise, the Mauryan military system also needs to be studied and its strategies adapted to make India great again.
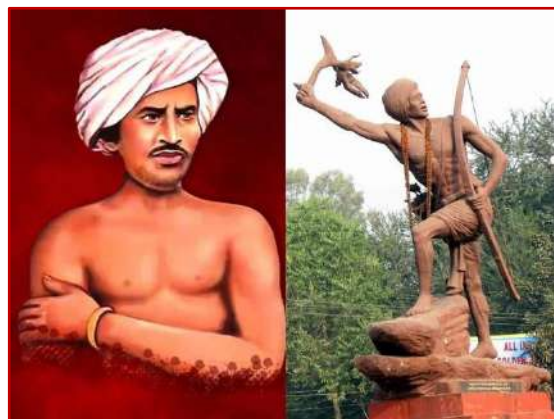
8. 2   SHORT ARTICLES

Birsa Munda

Context

- BirsaMunda is always remembered as a national hero and an icon for the tribal rights movement. His life, actions, and teachings continue to inspire millions today.

About BirsaMunda

- He was an **Indian tribal freedom fighter**, reformer and religious leader.
- He was nicknamed as 'Dharti Abba' or Father of the Earth, by his followers.
- He rallied the tribes against the unjust British colonial policies and the local landlords who exploited their labor and resources.

His contributions

Religion	• **Renounced Christianity and protested against conversion of Tribals by Christian missionaries.** • **Created a new religion called** "Birsait", **which worshipped only one god.** • **Birsait soon became the popular religion among the** Mundas and Oraons. • **Preached a strong anti-British sentiment through his religion.**
Reformer	• Stressed on the need of the tribals to study their own religion and not forget their cultural roots. • Convinced people to give up superstition, alcohol, theft, lying, murder and begging under his new religion.
Munda Rebellion	**Background** • Mundatribals practiced **Khuntkatti system** (joint holding by tribal lineages). • However, British colonial system intensified the transformation of the tribal agrarian system into a feudal state by introducing **Zamindari-tenancy system.** • **Outsiders (Dikus)** were invited by the Brtitish to settle on and cultivate the tribal land. • Thus, the various tribes, who were the original owners of the land, were left bereft of land and any means of livelihood. **'Ulgulan' or the 'Great Tumult' (1899-1900)** • Birsa infused in tribals the values to love, respect, support and safeguard their land from outsiders. • He used traditional symbols and language to rouse people, urging them to destroy "Ravana" (**dikus** and the Europeans) and establish a kingdom under his leadership. • He mobilised thousands of tribal folk to form guerrilla armies to attack the British Raj. • He declared that the reign of Queen Victoria was over and the Munda Raj had begun. • He gave orders to the raiyats (tenant farmers) to pay no rents. • The people attacked police stations and churches, and raided the property of moneylenders and zamindars. They raised the **white flag** as a symbol of Birsa Raj. • The attacks were launched not only on the moneylender-landlord-mahajan-contractor combine, but directly against the British. • The **massacre at Dumbri Hill** made it a "hill of the dead" when hundreds of tribals lost their lives for the cause of freedom against the modern ammunition of the British.

- The Great Tumult against Britishers sought to establish Munda Raj and independence.
- The slogan of the movement was "Abua Raj etejana, Maharani Raj Tundu Jana" which means "Let the kingdom of queen be ended and our kingdom established".

Outcome

- The Britishers were forced to abolish the feudal system that plagued the Adivasi lands in Jharkhand and Bihar.
- Birsa compelled the Britishers to introduce new legislation - the **Chota Nagpur Tenancy Act, 1908**. This Act prohibited the transfer of tribal land to non-tribal parties.
- Government recognized Khuntkatti rights and banned Beth Begari (forced labour).

Sant Tukaram Maharaj and Sant Dnyaneshwar Maharaj

Context

- The Palkhis, or the procession of the palanquins carrying the Paduka or revered symbolic footwear of SantTukaramMaharaj and SantDnyaneshwarMaharaj, got started.

About Sant Tukaram

- SantTukaramMaharaj was a 17th-century Marathi Saint, popularly known as Tuka, Tukobaraya, Tukoba in Maharashtra.
- He was a Sant of **Varkarisampradaya (Marathi-Vaishnav tradition)** - that venerates the God Vitthal - in Maharashtra.
- God Vitthal - was an incarnation of Lord Krishna, who in turn, is considered to be an incarnation of Lord Vishnu.
- He was **part of the egalitarian, personalized Varkaridevotional tradition.**
- SantTukaramMaharaj is **best known for his devotional poetry called Abhanga** and community-oriented worship with spiritual songs known as kirtan. He is quite renowned for his **contribution to the Bhakti Movement of Maharashtra.**
- In his work of Abhangas, Tukarama repeatedly refers to four other persons who had a primaryinfluence on his spiritual development, namely the **earlier Bhakti SantsNamdev, Dnyaneshwar, Kabir and Eknath.**

- Tukaram**pointed out the evil of wrongdoings of society, social system** by his kiratans and abhangs.
- Tukaram**opposed mechanical rites, rituals, sacrifices, and vows**, favouring a direct type of bhakti instead (devotion). In one of his verses, he declares that Bhaktimarg is "the only way to God in this age".

Sant Dnyaneshwar

- Sant Dnyaneshwar also referred to as Jnaneshwar, Jnanadeva, Dnyandev (1275–1296) **was a 13th-century Indian Marathi saint, poet, philosopher and yogi of the Nath and Varkari tradition.**
- In his short life of 21 years, **he authored Dnyaneshwari (a commentary on the Bhagavad Gita) and Amrutanubhav.** These are **the oldest surviving literary works in the Marathi language**, and considered to be milestones in Marathi literature.
- SantDnyaneshwar's ideas reflect the **non-dualistic Advaita Vedanta philosophy** and an **emphasis on Yoga and bhakti towards Vithoba**, an incarnation of Lord Vishnu.
- His **legacy inspired saint-poets such as Eknath and Tukaram,** and he is one of the founders of the Varkari (Vithoba-Krishna) Bhakti movement tradition of Hinduism in Maharashtra.

Ram Prasad Bismil

Context

- Ram Prasad Bismil is one of India's most revered freedom fighters, known as much for his revolutionary zeal as for his poetic profundity.

- On his 126th birth anniversary, we remember Ram Prasad Bismil, who has inspired generations of Indians.

Contribution

- Ram Prasad Bismil was **involved in the Mainpuri Conspiracy of 1918** as well as the more famous Kakori Train Action of 1925.
- He **founded the Hindustan Republican Association** (HRA, later Hindustan Socialist Republican Association).
- He **penned patriotic verses in Hindi and Urdu under pen names like 'Agyat', 'Ram', and the one that is most known – 'Bismil'**.
- He **penned the poem MeraJanm (My Birth),** venting out his anger over the death sentence handed out to AryaSamaj missionary BhaiParmanand.
- One of his most famous poems, **GhulamiMitaDo** illustrates.

  "Duniya se ghulamika main naam mita doonga,
  Ekbaar zamaane ko azaad bana doonga."

- He **started a revolutionary organization called Matrivedi** (The Altar of the Motherland) and joined forces with fellow revolutionary GendaLal Dixit.
- In 1918, Bismil**wrote arguably his most famous poem, MainpurikiPratigya.**
- He **released a collection of poems called Man ki Lahar** and also **translated works such as BolshevikonkiKartoot (from Bengali).**
- **Hindustan Republican Association was formed with Bismil, Ashfaqullah Khan, SachindraNathBakshi and Jogesh Chandra Chatterjee** as founding members. Figures such as Chandra Shekhar Azad and Bhagat Singh would also later join the HRA.

- The **train robbery at Kakori in August 1925 was HRA's first major action.**
- After an eighteen-month long trial, Bismil, Ashfaqullah and RajendranathLahiri were sentenced to death.
- In his last letter, written just before his hanging, Bismil made an enduring call for Hindu-Muslim unity in the service of the nation.

Dr. M. Emperumal Naidu

Context

- Naidu Hospital, in Kottar (Nagercoil, Tamil Nadu), is drenched in the freedom movement and the struggle for social justice.

Details

- Its founder was **Dr. M. Emperumal Naidu, a freedom fighter, an associate of Mahatma Gandhi, and one of the leading lights of the Vaikom temple street entry movement.**
- He spearheaded all the campaigns in the Kanniyakumari district launched by Gandhi and visited across the country to take part at Congress meetings. He also drew a lot of youths towards the freedom movement and Gandhij's principles, and one of them was G. Ramachandran, the founder of Gandhigram.
- When the **Vaikom temple street movement was launched in March 1924**, Naidu went there with his wife, GandhidasMuthusamy, S.V. MuthukaruppaPillai and others and theyplayed pivotal roles in the struggle.
- Naidu relentlessly fought for the temple entry and welfare of Dalits and the Travancore government issued a proclamation on November 12, 1936, throwing open the doors of temples and streets to all communities.

Gandhi Peace Prize

Context

- The Gandhi Peace Prize for 2021 will be conferred on Gita Press, Gorakhpur, one of

the largest publishers of religious texts such as the Bhagavad Gita, the Ramayana and the Upanishads.

About	• **The International Gandhi Peace Prize, named after Mahatma Gandhi, is awarded annually by the Government of India.**
Launch	• As a tribute to the ideals espoused by Gandhi, the Government of India launched the International Gandhi Peace Prize **in 1995** on the occasion of **the 125th birth anniversary** of Mohandas Gandhi.
Purpose	• This is an **annual award given to individuals and institutions** for their **contributions towards social, economic and political transformation** through non-violence and other Gandhian methods.
Award	• The **award carries ₹1 crore in cash**, convertible in any currency in the world, a plaque and a citation. • It is open to all persons regardless of nationality, race, creed or gender.
Jury deciding the awardee	• A jury consisting of the **Prime Minister of India, the Leader of the Opposition in the LokSabha, the Chief Justice of India, the Speaker of the LokSabha** and one other eminent person decides the awardee each year.
Proposal of Nominees	• Nominees must be proposed either by former jury members, former awardees, members of Parliament, Nobel

	laureates for the last five years, Secretary-General of the United Nations or heads of other international peace organizations, Vice-Chancellors of universities, Chief Ministers, or Governors. • Work achieved **within the ten years preceding the nomination** is considered for the award. • The decision of the jury is **final and cannot be challenged or appealed.**

International Day of Yoga

Context
• People worldwide recently observed the 9th International Yoga Day.

Details
• **Genesis:** The International Day of Yoga is **marked annually on June 21** on a global scale **since 2015**.
• **Designation:** The United Nations designated 21 June as the International Day of Yoga **by resolution 69/131 on 11 December 2014** to recognize yoga's widespread appeal.
• **Aim:** The aim of Yoga is **to join or to unite, it symbolizes the union of body and consciousness.**
• **Theme:** This year, the theme for International Yoga Day is **"Yoga for Vasudhaiva Kutumbakam,"** which beautifully encapsulates our collective aspiration **for "One Earth, One Family, One Future."**
• **Yoga- A Gift to the World:** An invaluable gift of ancient Indian tradition, yoga has emerged as one of the most trusted means to boost physical and mental well-being.

Lord Jagannath's Annual 'RathaJatra'

Context

- Thousands of devotees have congregated at this seaside pilgrim town for Lord Jagannath's annual 'RathaJatra'.

About Jagannath Puri Rath Yatra

- Jagannath Puri Rath Yatra is one of the biggest Hindu festivals and it's organized every year at the famous Jagannatha temple in Puri, Odisha.
- JagannathRathYatra is a **nine-day festivity marked by various rituals and traditions.**
- Every year, the JagannathPuriRathYatra begins on DwitiyaTithi of ShuklaPaksha of Ashadh month and concludes 8 days later on DashamiTithi with the homecoming of ShriJagannathji, Balabhadraji, and Subhadraji.

Traditions and Procession

- On this day, Lord Jagannath, Balbhadra and Subhadra proceed towards the Gundicha temple from the Puri shrine on their giant wooden chariots.
- The fourth day is celebrated as Hera Panchami. On this day, Goddess Lakshmi, the consort of Lord Jagannatha, visits Gundicha temple in search of Lord Jagannatha.
- **Lord Jagannatha**, after resting for eight days in **Gundicha temple**, returns to his main abode. **This day is known as BahudaYatra or Return Yatra. It is observed on the eighth day after RathaYatra on DashamiTithi.**
- Lord Jagannath's chariot is known **as Nandighosha** and which has 16 wheels, Lord Balabhadra's chariot is known as Taladhwaja and it has 14 wheels and the chariot of Goddess Subhadra is called as Darpadalan, which has 12 wheels. It is believed that Arjun becomes the Sarathi of Subhadra's chariots and it remains in between the two chariots.

About Jagannath temple:

Location

- The Shree Jagannath Temple is an important Hindu temple dedicated to Jagannath, a form of Vishnu, in Puri in the state of Odisha.

- Puri is **one of the four Dhams**or most sacred places of pilgrimages for the Hindus in the country.

Founder

- The temple was built by the **Ganga dynasty king AnantavarmanChodaganga in the 12th century CE**, as suggested by the **Kendupatna copper-plate inscription**of his descendant Narasimhadeva II.

Festival

- The Puri temple is famous for its **annual Rathayatra**, or chariot festival, in which the three principal deities are pulled on decorated temple cars.

Saints associated

- Many great Vaishnava saints, such as **Ramanujacharya, Madhvacharya, Nimbarkacharya, Vallabhacharya and Ramananda were closely associated with the temple**.
- Ramanuja established the Emar Mutt near the temple and AdiShankaracharya established the Govardhana Mutt, which is the seat of one of the four Shankaracharyas.
- It is also of particular significance to the followers of GaudiyaVaishnavism whose founder ChaitanyaMahaprabhu, was attracted to the deity, Jagannath, and lived in Puri for many years.

Temple architecture

- The **Odisha style of temple architecture is** also accorded as KalingaNagara style. It is known as **White Pagoda.**
- The KalingaNagara style comprises three typologies i.e. **RekhaDeula, PidhaDeula, and KhakhraDeula.**

- The **RekhaDeula**-those having an arched ceiling above the inner sanctum that resembles a peak called a shikhara)
- The **PidhaDeula**-those having a stacked pyramidal roof over the assembly hall. It is topped by an Amalaka as a rule.
- The **KhakharaDeula**- those having a barrel-vaulted roof with an inner sanctum)
- The famous temple of **Lingaraja at Bhubaneshwar and Jagannatha at Puri** are two prominent and gigantic examples of RekhaDeula.
- The PidhaDeula is etymologically called **a "flat seat temple"** because the Shikhara here is like a stepped but compressed pyramid. It is marked by a series of flat platforms placed one over the other, in diminishing order, each one representing a storey.
- KhakhraDeula is an **elongated, barrel-roof-shaped shrine**. This could be called the Kalingan interpretation of Vallabhi shrines.
- This form is **inspired by the Shala element seen in Buddhist architecture.**

Kamala Sohonie
Context
- The Google Doodle recently honored scientist **Kamala Sohonie on her 112th birth anniversary.**
About Kamala Sohonie
- Dr. Kamala Sohonie**was a biochemist born in Indore, Madhya Pradesh in 1911.**
- Kamala Sohonie was the **first Indian woman to get a PhD degree in a scientific discipline.**
- She went on to win the Rashtrapati Award for her work **on Neera** ---**a palm extract that could fight malnutrition among children from tribal communities in India.**
- In 1937, Sohonie got a research fellowship to pursue her Ph.D. at the University of Cambridge. In a record 14 months, **she completed her thesis work on Cytochrome C**, which is **an enzyme responsible for energy generation.**
- After coming back to India, **Kamala Sohonie continued her research work on developing healthy and affordable dietary supplements.**

Rock Painting of the Mesolithic Period
Context
- A **Mesolithic Period Rock Painting** depicting a person tilling a piece of land has been at Guntur in Andhra Pradesh.
Mesolithic Period
- The period between the Paleolithic Age and the Neolithic Age is known as the Mesolithic Period.
- While the start and end dates of the Mesolithic Period vary by geographical region, it **dated approximately from 10,000 BCE to 8,000 BCE.**
- It roughly corresponds to the time in Northern Europe **during which the climate began to warm and the glaciers to recede.**
- Some characteristics of the Mesolithic Age are a transition **from large chipped stone tools and hunting in groups of large herd animals** to **smaller (microliths) chipped stone tools** and a more hunter-gatherer culture.
- It **ends with the introduction of the growing of crops and husbandry of animals in the Neolithic.**
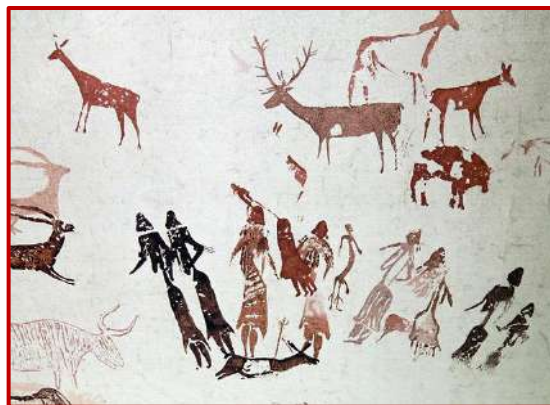
Mesolithic Period Rock Painting
- The Mesolithic is the first era of the Holocene epoch, which **succeeded the Pleistocene**, and **it ushered in a new approach to Stone Age** art: for example, with the arrival of a warmer climate, **cave art starts to disappear as rock art takes to the open air**
- These Mesolithic rock paintings have been discovered in numerous locations across Spain, Asia, Africa, Australasia and the

Americas. The largest grouping of this ancient art can be found in eastern Spain, while other famous examples are listed in chronological order below:

- Pre-Estuarine X-Ray paintings (c.9,000 BCE) Ubirr, Arnhem Land, Australia.
- Bhimbetka rock paintings (9,000 BCE) India.
- Pachmarhi Hills paintings (9,000 BCE), central India.
- TadrartAcacus paintings/petroglyphs (c.9,000 BCE), Libya.
- Tassili-n-Ajjer rock art (c.8,000 BCE), Algerian Sahara.
- San bushman rock paintings (c.8,000 BCE) Waterberg area, South Africa.
- Rock art of the Iberian Mediterranean Basin (8,000 BCE).
- Whereas Paleolithic cave paintings and engravings mostly depicted animals, **Mesolithic painters, and engravers tended to focus on humans** - usually groups of humans engaged in hunting, dancing, and various other rituals, as well as everyday activities.
- Painting tools adopted were **feathers, reeds, pads/brushes.**
- The humans looked more like **stick figures or matchstick men.**
- Other figures seen in Mesolithic tribal art include various anthropomorphic hybrid figures, as well as **X-ray style figures characteristic of aboriginal rock art of the late Stone Age.**
- The painting known as **The Dancers of Cogul** is a good example of the depiction of movement in static art.

Ancient Mayan City
Context
- Archaeologists have discovered the remains of an ancient Mayan city deep in the jungle of the Yucatán Peninsula in southern Mexico.
Details
- The site has been an important center of the Central Lowlands during the Classic period dating back between **A.D. 250 and A.D. 1000.**
- Several cylindrical columns were found scattered throughout the pre-Hispanic

ancient settlement, thought to be part of entrances to the upper rooms of the buildings.
- The Team **named the city Ocomtun**, meaning 'stone column' in the Yucatec Maya language.

Maya Civilization
- The Maya civilization developed in the Maya Region, **an area that today comprises southeastern Mexico, all of Guatemala and Belize, and the western portions of Honduras and El Salvador.**
- The Mayas are **renowned for their pyramid temples and great stone buildings.**
- While the origins of Maya culture remain murky, it's thought to have first emerged between **7000 B.C. and 2000 B.C.**
- The Mayan Empire, reached the peak of its power and influence around the **sixth century A.D**. The Maya excelled at agriculture, pottery, writing, calendars and mathematics, and left behind an astonishing amount of impressive architecture and symbolic artwork.

Sahitya Akademi
Context
- Writer Priya AS has won Kendra Sahitya Akademi's Bal Sahitya Puraksar for the year 2023.
Details

About	• **The Sahitya Akademi, India's National Academy of Letters, is an** organisation dedicated to the promotion of literature in the languages of India.
Genesis	• It was founded on 12th

	March 1954.
Office	• Its office is located in **Rabindra Bhavan near Mandi House in Delhi.**
Mandate and Functions	• It preserves and promotes literature contained in twenty-four Indian languages recognized by it through **awards, fellowships, grants, publications, literary programs, workshops and exhibitions**. • The Akademi **undertakes literary exchange programs** with various countries across the globe to promote Indian literature. • The Sahitya Akademi organizes national and regional workshops and seminars; provides research and travel grants to authors; publishes books and journals, including the Encyclopaedia of Indian Literature; and **presents the annual Sahitya Akademi Award of INR. 100,000 in each of the 24 languages it supports**, as well as the Sahitya Akademi Fellowship for lifetime achievement.
Journals	• It publishes two bimonthly literary journals: **Indian Literature in English and Samkaleen Bharatiya Sahitya in Hindi.**
Languages	• The SahityaAkademi supports work in the following 24 languages, 22 of which are included in the Eighth Schedule to the Constitution of India alongside **English and**

	Rajasthani.

Chola-Era Temples

Context

• Tamil Nadu Police, has taken a major step in retrieving 16 high-value antique idols that went missing from four Chola-era temples.

Details

• The idols were taken from the **Veeratteswarar Swami temple** and **Nattadreeswarar Temple.**

Veerateswarar Temple

• Thiruvathigai Veerateswarar Temple is a Hindu temple **dedicated to Shiva** situated in Thiruvathigai village, Tamil Nadu.

• The presiding deity is revered in the 7th-century Tamil Saiva canonical work, **the Tevaram**, written by Nayanars.

> **NAYANARS**
> • The Nayanars were a group of **63 Tamil Hindu saints** living during the 6th to 8th centuries CE who were devoted to the Hindu God Shiva. Along with the Alvars, their contemporaries who were devoted to Vishnu, they **influenced the Bhakti movement** in early medieval South India. The names of the Nayanars were **first compiled by Sundarar**. The list was expanded by **NambiyandarNambi.**

• The temple is considered the place where the Saiva saint poet Appar (Thirunavukkarasar) converted back to Saivism, and attained final salvation.

Nattadreeswarar Temple

• Nattadreeswarar Temple is a Hindu temple dedicated to **Lord Shiva.**

• It is located **on a hillock island within River Kaveri, near Erode**, off the Erode-Karur Highway.

• In the 10th century, Chola kings constructed the temple and dedicated it to Agastheeswarar.

Great Living Chola Temples

• The Great Living Chola Temples is a **UNESCO World Heritage Site** designation for a group of Chola dynasty-era Hindu temples in the

Indian state of Tamil Nadu. Completed between the early 11th and the 12th century CE, the monuments include:

o Brihadisvara Temple at Thanjavur
o Brihadisvara Temple at GangaikondaCholapuram
o Airavatesvara Temple at Kumbakonam.

Kharchi Puja

Context

- Kharchi Puja is observed on the eighth day of the new moon in July or August every year.

About	• **Also called the** 'Festival of 14 Gods', **Kharchi Puja is celebrated in the Northeastern state of Tripura.**
Deity	• The festival is centred around the **worship of ChaturdasaDevata,** the ancestral deity of the Tripuri people.
Belief	• It is believed that the **Mother Goddess or Tripura Sundari**, the presiding deity of the land who protects the people of Tripura, menstruates during the time of Ambubachi, which is observed in June. • There is a popular belief that the Earth becomes impure during the menstruation period of the Goddess. • Hence, **Kharchi Puja is observed to ritualistically clean the Earth** after her menstruation is over and wash away the sins of the people in the land.
Ritual	• Construction of the **Chaturdasha Mandapa,** which symbolizes the royal palace of the Tripuri kings and is constructed by traditional artisans who

	craft the structure out of bamboo and thatched roofs.
Festival and Significance	• **Vibrant folk dances, traditional music**, and performances by local artistes add to the charm of the festival. • It holds immense religious and cultural importance and showcases the rich history and traditions of the community.

Sarkaradevi Temple

Context

- A plea has been filed in the Kerala High Court against the alleged weapon training activities in the SreeSarkara Devi temple.

Details

- **Location:**Sarkaradevi Temple is situated in Thiruvananthapuram district, Kerala.
- **Deity:**Its main deity is **Bhadrakali (Goddess Durga).**
- **Associated Festival:**The Sarkaradevi Temple assumed significance mainly with the introduction of the famous **Kaliyoot festival by Anizham Thirunal Marthanda Varma, the Travancore sovereign, in 1748.**
- **Decoding Kaliyoot:** Kaliyoot is the **dramatic presentation of the genesis of Bhadrakali and Darika** the representatives of good and evil respectively, their confrontation and later the extermination of Darika.

Rani Durgawati

Context

- Madhya Pradesh launched the six-day Rani DurgavatiGauravYatra.

About

- Rani Durgavati was born in the family of the **Chandela Rajput king Shalivahan**, who ruled the **Mahoba kingdom.**
- In 1542, she was married to Dalpat Shah, the son of the king Sangram Shah of **the Garha Kingdom.**
- Rani Durgavati was the ruling **Queen of Gondwana from 1550 until 1564.**

- She is chiefly remembered for **defending her** kingdom against the Mughal Empire.

8. 3   SNIPPETS
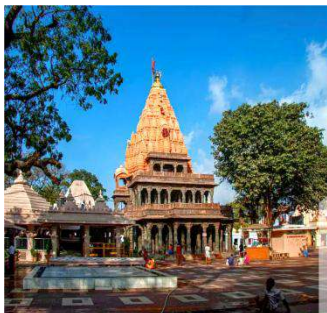
MAHAKALESHWAR TEMPLE

- Recently, Nepal PM Pushp Kamal Dahal reached Mahakaleshwar temple.
- Mahakaleshwar Jyotirlinga is a Hindu temple dedicated to Shiva and is one of the twelve Jyotirlingas, shrines that are said to be the most sacred abodes of Shiva. It is located in the ancient city of Ujjain in the state of Madhya Pradesh.
- The temple is situated on the side of holy river Shipra.
- Madhya Pradesh has two Jyotirlingas, the second one, Omkareshwar Jyotirlinga.

GOLCONDA FORT

- The Union Ministry of Culture celebrated Telangana state formation day with festivities at the historic Golconda Fort in Hyderabad.
- The fort was originally built by Kakatiya ruler Pratāparudra in the 11th century out of mud walls.
- The fort was later developed into a fortified citadel in 1518 by Sultan Quli of the Qutb Shahi Empire.
- The Bahmani kings took possession of the fort after it was made over to them by means of a sanad by the Rajah of Warangal.
- Under the Bahmani Sultanate, Golconda slowly rose to prominence.
- Because of the vicinity of diamond mines, especially Kollur Mine, Golconda flourished as a trade centre of large diamonds known as Golconda Diamonds.

AHILYADEVI HOLKAR

- The Ahmednagar district in western Maharashtra will be renamed after Ahilyadevi Holkar.
- Ahilya Bai Holkar was the hereditary noble queen of the Maratha Empire, in early-modern India.
- She established Maheshwar (in Madhya Pradesh) as the seat of Holkar Dynasty.
- After the demise of her husband Khande Rao Holkar, Ahilya Bai herself undertook the affairs of Holkar dynasty.
- She defended the Malwa state against intruders and personally led armies into battle, with Tukoji Rao Holkar as her military commander
- Ahilya Bai was a great pioneer and builder of Hindu temples who constructed hundreds of temples and Dharmashalas throughout India.

LAVENDER FESTIVAL

- Union Minister Jitendra Singh inaugurated the two-day "Lavender Festival" in Jammu and Kashmir's Bhaderwah Valley.
- Lavender Revolution is celebrated as a festival in the district of Doda, Jammu and Kashmir.
- Lavender dominates the global perfume industry.
- Lavender cultivation is practised in almost all the 20 districts of Jammu & Kashmir. Particularly, the districts of Kathua, Udhampur, Doda, Ramban, Kishtwar, Rajouri, Srinagar, Pulwama, Kupwara, Bandipora, Budgam, Ganderbal, Anantnag, Kulgam, and Baramulla have made huge progress in this direction.
- The mission's focus was to take advantage of the geographical conditions and increase the homegrown market along with farmers' income.

SARKARADEVI TEMPLE

Context

- A plea has been filed in the Kerala High Court against the alleged weapon training activities in the SreeSarkara Devi temple.

Details

- Location: Sarkaradevi Temple is situated in Thiruvananthapuram district, Kerala.
- Deity: Its main deity is Bhadrakali (Goddess Durga).
- Associated Festival: The Sarkaradevi Temple assumed significance mainly with the introduction of the famous Kaliyoot festival by AnizhamThirunalMarthanda Varma, the Travancore sovereign, in 1748.
- Decoding Kaliyoot: Kaliyoot is the dramatic presentation of the genesis of Bhadrakali and Darika the representatives of good and evil respectively, their confrontation and later the extermination of Darika.

KARI ISHAD MANGO

- The Kari Ishad mango is prominently grown in Ankola taluk of Uttara Kannada.
- It is accepted as one of the finest quality mangoes due to its unique aroma, luscious taste, high amount of pulp, shape, and size.
- It recently got the Geographical Indication (GI) tag from the Geographical Indications Registry under the Union Government.
- Geographical Indications registration in India is governed by the Geographical Indications of Goods (Registration and Protection) Act, 1999.

8. 4   1 MAINS QUESTION AND 5 MCQS

Q1. *The magnificent Jagannath temple stands as a testimony to the city's rich cultural heritage and architectural brilliance. Comment.*

Ans:

- The Shree Jagannath Temple is an important Hindu temple dedicated to Jagannath, a form of Vishnu, in Puri in the state of Odisha.Puri is **one of the four Dhams**or most sacred places of pilgrimages for the Hindus in the country.The temple was built by the **Ganga dynasty king AnantavarmanChodaganga in the 12th century CE**, as suggested by the **Kendupatna copper-plate inscription** of his descendant Narasimhadeva II.

Temple architecture

- The **Odisha style of temple architecture is** also accorded as KalingaNagara style. It is known as **White Pagoda.**
- The KalingaNagara style comprises three typologies i.e. **RekhaDeula, PidhaDeula, and KhakhraDeula.**

- The **Rekha Deula**-those having an arched ceiling above the inner sanctum that resembles a peak called a shikhara)
- The **Pidha Deula**-those having a stacked pyramidal roof over the assembly hall. It is topped by an Amalaka as a rule.
- The **Khakhara Deula**- those having a barrel-vaulted roof with an inner sanctum)
- The famous temple of **Lingaraja at Bhubaneshwar and Jagannatha at Puri** are two prominent and gigantic examples of RekhaDeula.

- The PidhaDeula is etymologically called **a "flat seat temple"** because the Shikhara here is like a stepped but compressed pyramid. It is marked by a series of flat platforms placed one over the other, in diminishing order, each one representing a storey.
- KhakhraDeula is an **elongated, barrel-roof-shaped shrine**. This could be called the Kalingan interpretation of Vallabhi shrines.
- This form is **inspired by the Shala element seen in Buddhist architecture.**

Q2. Consider the following statements:

1. Nattadreeswarar Temple is a Hindu temple dedicated to Lord Shiva located on a hillock island within River Kaveri, near Erode.
2. Jagannath temple was built by the Ganga dynasty king NarsimhavarmanChodaganga in the 12th century CE, as suggested by the Kendupatna copper-plate inscription.
3. The Great Living Chola Temples is a UNESCO World Heritage Site designation for a group of Chola dynasty-era Hindu temples in Tamil Nadu.
4. MahakaleshwarJyotirlinga is a Hindu temple dedicated to Shiva located in the ancient city of Ujjain in the state of Madhya Pradesh.

Which of the above statements is/are correct?

(a) 1 and 3 only
(b) 1, 3, and 4 only
(c) 2 and 4 only
(d) None of the above.

Correct Answer: b

Explanation: Jagannath temple was built by the Ganga dynasty king AnantavarmanChodaganga in the 12th century CE, as suggested by the Kendupatna copper-plate inscription of his descendant Narasimhadeva II.

Q3. Consider the following statements:

1. Nayanars were a group of 63 Tamil Hindu saints living during the 6th to 8th centuries CE who were devoted to the Hindu God Vishnu.

2. The names of the Nayanars were first compiled by Sundarar.
3. The 7th-century Tamil Saiva canonical work, the Tevaram, was written by Nayanars.
4. The four foremost NayanarsAppar, Sundarar, Sambandar and Manikkavaasagar.

Which of the above statements is/are correct?

(a) 1 and 3 only
(b) 2, 3, and 4 only
(c) 2 and 4 only
(d) None of the above.

Correct Answer: b

Explanation: Nayanars were a group of 63 Tamil Hindu saints living during the 6th to 8th centuries CE who were devoted to the Hindu God Shiva.

Q4. Consider the following statements:

1. Golconda Fort was originally built by Kakatiya ruler Pratāparudra in the 11th century out of mud walls.
2. The fort was later developed into a fortified citadel in 1518 by Sultan Quli of the QutbShahi Empire.
3. Under the Bahmani Sultanate, Golconda slowly rose to prominence.
4. Because of the vicinity of diamond mines, especially Kollur Mine, Golconda flourished as a trade centre of large diamonds known as Golconda Diamonds.

Which of the above statements is/are incorrect?

(a) 1 and 3 only
(b) 1, 3, and 4 only
(c) 2 and 4 only
(d) None of the above.

Correct Answer: (d)

Q5. Consider the following statements:

1. Ram Prasad Bismil was involved in the Mainpuri Conspiracy of 1918.
2. He founded the Hindustan Republican Association (HRA, later Hindustan Socialist Republican Association).
3. He penned the poem MeraJanm (My Birth), venting out his anger over the

death sentence handed out to AryaSamaj missionary BhaiParmanand.

4. He started a revolutionary organization called Matrivedi (The Altar of the Motherland) and joined forces with fellow revolutionary GendaLal Dixit.

Which of the above statements is/are correct?

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

Correct Answer: d

9. GEOGRAPHY & DISASTER MANAGEMENT

9. 1   HEATWAVE CONDITIONS IN INDIA

Context
- Odisha has been reeling under heatwave conditions since April 2023.

What is a Heat Wave?
- According to the World Meteorological, **a heat wave is when the daily maximum temperature for more than five consecutive days exceeds the average maximum temperature by 9 degrees Fahrenheit.**

Heatwave in India
- In India, **a region or locality is considered to be under the influence of a heatwave if the maximum temperature reaches or exceeds**;
  - o 40 degrees Celsius in the plains.
  - o 30 degrees Celsius in hilly regions.
  - o 37 degrees Over the coastal regions
- When the maximum temperature departure ranges between 4.5 and 6 degrees, the India Meteorological Department (IMD) declares a heatwave.

Why India is experiencing more Heat Waves?
- Magnified effect of paved and **concrete surfaces in urban areas and a lack of tree cover.**
- **Urban heat island effects can make ambient temperatures feel 3 to 4 degrees more than they are.**
- **Higher daily peak temperatures** and longer, more intense heat waves are becoming increasingly frequent globally due to climate change.
- More heat waves were expected as **global temperatures had risen by an average of 0.8 degrees in the past 100 years**. Night-time temperatures are rising too.
- **High intensity of UV rays** in medium-high heat wave zone.
- Combination of exceptional heat stress and a predominantly rural population makes India vulnerable to heat waves.

Implications of Heat Waves

Social impacts

- Extreme heat can lead to heat-related illness and death, particularly in elderly populations, the poor, outdoor workers, and urban areas.
- Heatwaves exacerbate the urban heat island effects, amplifying temperatures in built environments, and resulting in poorer air quality due to the creation of ozone that negatively impacts health.
- Heat-related mortality is expected to be higher in cities, particularly those characterised by high population density, inequalities, limited access to health care, high pollution levels and fewer green spaces.

Economic impacts

- Multiple areas of the economic sector experience reduced worker productivity during heatwaves, especially agriculture and construction.
- Globally, 2% of total working hours are projected to be lost every year, either because it is too hot to work or because workers have to work at a slower pace.
- Lost productivity from heat stress at work, particularly in developing countries, is expected to be valued at $ 4.2 trillion per year by 2030, driving more inequality.
- The agricultural sector, where 940 million people earn their livelihood, is set to be harder hit by hotter temperatures, pushing workers, crops and livestock past their physiological heat and drought tolerances.
- This will result in lost labour, smaller harvests for farmers and higher prices for consumers, and negative impacts on livelihoods.
- A World Bank Report suggests that by 2050, about 600 million Indians will live in places that could experience a loss of living standards, which could cost 2.8% of the GDP, stalling efforts to pull large parts of the population out of poverty.
- Increasing energy demand for cooling also comes as an extensive economic cost to residents, businesses, and governments.
- With these extreme heat events, the need for access to cooling should be viewed as a basic necessity – not just for health and productivity reasons but, in some cases, even for survival.

Ecological impacts

- Heatwaves, without concomitant increases in precipitation, can lead to water shortages and increased stress for plants, particularly in arid regions.
- This has the effect of reducing plant growth, the basis of energy production and the food chain, with an overall drying-out of the landscape.
- For example, the 2003 European heatwave resulted in a 10% loss in glacier mass in Europe, which was five times more than the average annual loss.
- Similar impacts were reported for the French Alps in 2019.
- Over time, such deep permafrost warming and thawing could cause landslides and rockfalls, continuing the negative ecological impacts.

Mitigation and Adaptation Strategies

- **Establish an Early Warning System and Inter-Agency Coordination to** alert residents on predicted high and extreme temperatures.
- **Capacity building/training programme for health care professionals at** the local level to recognize and respond to heat-related illnesses, particularly during extreme heat events.

- These training programmes should focus on medical officers, paramedical staff and community health staff so that they can effectively prevent and manage heat-related medical issues to reduce mortality and morbidity.
- **Collaboration with non-government and civil society to** improve bus stands, build temporary shelters, wherever necessary, improve water delivery systems in public areas and other innovative measures to tackle Heatwave conditions.
- **Identifying heat hot spots through appropriate tracking of meteorological data and** promoting timely development and implementation of local Heat Action Plans with strategic inter-agency coordination, and a response which targets the most vulnerable groups.
- **Review of existing occupational health standards, labour laws and sectoral regulations** for worker safety in relation to climatic conditions.
- Policy intervention and coordination across three sectors health, water and power are necessary.
- Expedite the rollout of the **National Action Plan on Climate Change and Health.**
- Preventing temperature-related morbidity and mortality could be a key programme under this mission.
- Ensure an adequate supply of water. Timely access to drinking water can help mitigate this escalation.
- Further research using sub-district level data to provide separate indices for urban and rural areas to enable more targeted geographical interventions.
- **Provision of public messaging (radio, TV),** mobile phone-based text messages, automated phone calls and alerts.
- Promotion of traditional adaptation practices, such as **staying indoors and wearing comfortable clothes.**
- Popularisation of simple design features such as **shaded windows, underground water storage tanks and insulating housing materials**.
- **Advance implementation of local Heat Action Plans**, plus effective inter-agency coordination is a vital response that the government can deploy to protect vulnerable groups.

Solar Storm

Context
- Recently, an M2.5-class solar flare eruption was spotted by the NASA.
- It also released a coronal mass ejection (CME) cloud into space.

Solar Storm
- A solar storm is a **disturbance on the Sun**, which can emanate outward across the heliosphere, affecting the entire Solar System, including Earth and its magnetosphere.

Types
Solar storms include:
- **Solar flare,** a large explosion in the Sun's atmosphere caused by tangling, crossing or reorganizing of magnetic field lines.
- **Coronal mass ejection (CME),** a massive burst of plasma from the Sun, sometimes associated with solar flares.
- **Geomagnetic storm,** the interaction of the Sun's outburst with Earth's magnetic field.
- **Solar particle event (SPE),** proton or energetic particle (SEP) storm.

Impact of Solar Storm on Earth
- *Not all solar flares reach Earth, but solar flares/storms, solar energetic particles (SEPs), high-speed solar winds, and coronal mass ejections (CMEs) that come close can impact space weather in near-Earth space and the upper atmosphere.*
- **Space-dependent services:**Solar storms can hit operations of space-dependent services like global positioning systems (GPS), radio, and satellite communications.
- **Radio communication:**Geomagnetic storms interfere with high-frequency radio communications and GPS navigation systems.
- **Magnetosphere:** CMEs, with ejectiles loaded with matter travelling at millions of miles an hour, can potentially create disturbances in the magnetosphere, the protective shield surrounding the Earth.
- **Astronauts:**Astronauts on spacewalks face health risks from possible exposure to solar radiation outside the Earth's protective atmosphere.
- **Other:**Aircraft flights, power grids, and space exploration programmes are vulnerable.

ENSO

Context
- This year's Indian monsoon is progressing under the cloud of an El Nino in the Pacific Ocean.

El Nino, La Nina and ENSO
- El Nino, as is commonly known, refers to an **abnormal warming of surface waters in equatorial Pacific Ocean**. It is known to **suppress monsoon rainfall in India.**
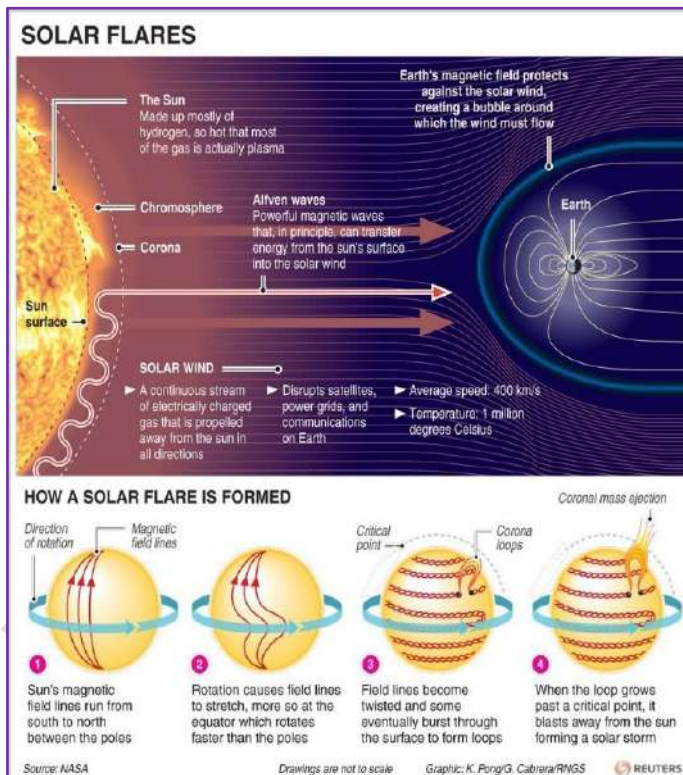
- The opposite phase, La Nina, which is the **abnormal cooling of sea surface waters in the same region, is** known **to aid rainfall over India.**
- There is a third, neutral phase, as well in which the sea surface temperatures remain roughly in line with long-term averages. Together, these three phases in the Pacific Ocean are referred to as El Nino Southern Oscillation, or **ENSO.**

Decoding El Nino

- In some years, for reasons that are not fully understood, the **trade winds get weakened**. It affects the ability of the trade winds to push warmer surface waters towards the Indonesian coast. Not enough warmer water is swept towards western Pacific Ocean.
- That means the central and eastern Pacific Ocean, off the **coasts of Ecuador and Peru**, becoming warmer than normal. This is the El Nino phase. Because the sea-level at the Indonesian coast is higher, and the trade winds are not very strong to resist the motion, some accumulated warm water begins to flow backwards towards the South American coast under the influence of gravity. This further adds to the warming in the eastern Pacific Ocean.
- The air circulation loop also gets affected, as a result. That, in turn, reduces the amount of precipitation over Indonesia and neighbouring regions, and impacts the Indian monsoon as well.

El Niño–Southern Oscillation (ENSO): **El Niño**

El Niño–Southern Oscillation (ENSO): **La Niña**
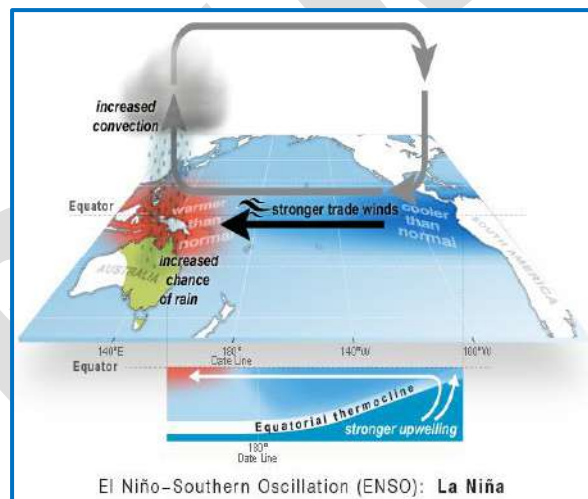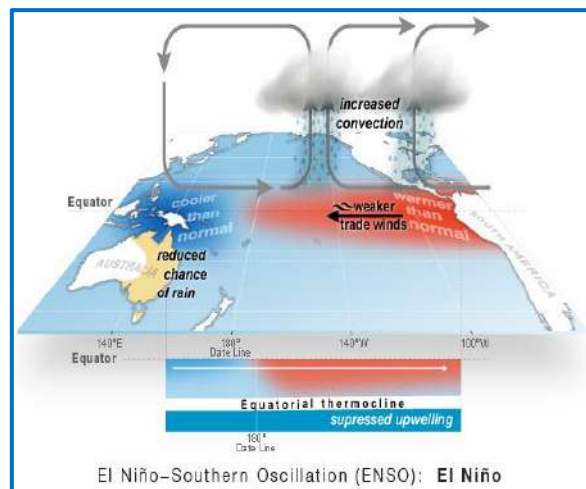
Decoding La Nina

- The opposite happens during a La Nina event. The trade winds become stronger than usual, pushing more warmer waters towards the Indonesian coast, and making the eastern Pacific Ocean colder than normal.
- Though the most profound impacts of ENSO events are seen in the tropical regions, weather patterns across the world get affected.

Impact of La Nina

The Global Impact of El Niño
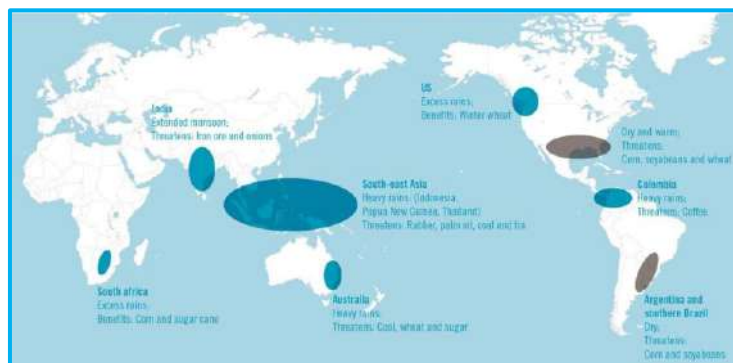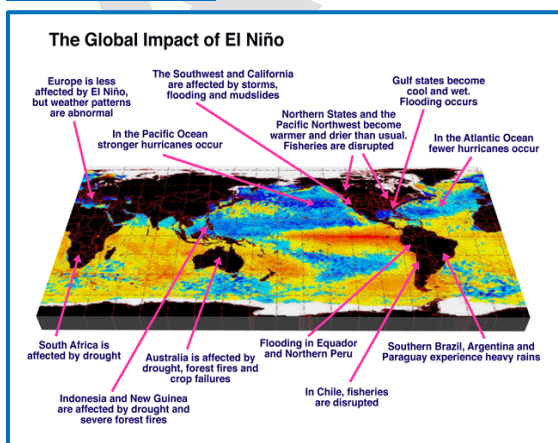
Occurrence of El Nino and La Nina

- Both El Nino and La Nina usually begin to develop in the March to June season, reach their peak strength in the winters and then begin to dissipate in the post winter season.Both these phases typically last for a year, though La Nina, on average, lasts longer than El Nino.
- While these phases alternate over a period of two to seven years, with the neutral phase thrown in between, it is possible for two consecutive episodes of El Nino or La Nina to occur.

ENSO and Climate Change

- In general, **El Nino has a warming effect on the planet**, while La Nina tends to cool it down.
- The warmest years in a decade are usually the El Nino years. The warmest-ever year on record, **2016, was part of one of the longest and strongest El Nino episodes ever, dubbed the Godzilla El Nino.**

Mahadayi River

Context

- The tenders are open for bidding **Kalasa Banduri Project** on the **Mahadayi River.**

About

- **The Mahadayi/Mandovi Riveris described as the lifeline of the Indian state of Goa.**

Origin

- Mahadayiriver rises in the Western Ghats, from the Bhimgad Wildlife Sanctuary in Khanapurtaluk of Karnataka's Belagavi district.

Tributaries

- The Tributaries of Mandovi or Mhadei include **Nerul River, St Inez Creek, Rio de Ourém, Mapusa River, Valvanti River, Udnai River, Dudhsagar River, Ragada River and Kotrachi Nadi.**

Importance

- The Mandovi is important for Goa also **because it is one of the few sweet-water sources at the state's disposal.**

Kalasa-Banduri Nala

Under the Kalasa Bandura project, the Karnataka government has proposed dams and canals to divert the Mahadayi's water to address the water deficit in the Malaprabha basin

- The Kalasa-BanduriNala is a project undertaken by the Government of Karnataka to improve the drinking water supply to the Districts of **Belagavi, Bagalkot, Dharwad and Gadag.**
- It involves building across Kalasa and Banduri, two tributaries of the **Mahadayi river to divert 7.56 TMC of water to the Malaprabhariver,** which supplies the drinking water needs of 4 districts.
- But experts raised objections to the project claiming that the project **could harm Goa's flora and fauna.**
- Following this, Karnataka and Goa have since then been at loggerheads over the project.
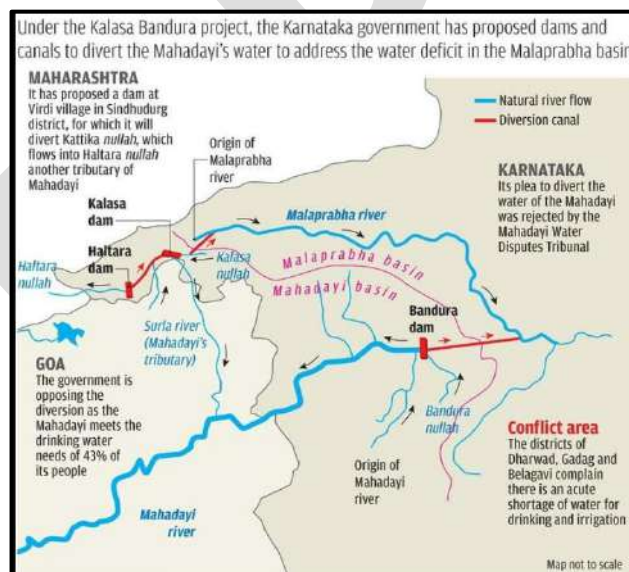
Canary Islands

Context

- More than 30 migrants may have drowned after their boat sank in the Atlantic Ocean off the Canary Islands.

Canary Islands

- The Canary Islands are a **Spanish autonomous archipelago** in Macaronesia in the Atlantic Ocean.

- The island group is on the **west coast of continental Africa**, approximately 100 km from Morocco and **southwest of Spain**. The archipelago is approximately 1,300 km southeast of Gibraltar.
- The **archipelago is part of continental Africa**, but politically and economically it is part of Europe.
- Because of their location, the Canary Islands have historically been **considered a link between the four continents of Africa, North America, South America, and Europe.**
- The Canary Islands' climate is described as **desertic and tropical, moderated by trade winds** and the surrounding sea.

Titan Tragedy - A Lesson for Matsya-6000

Context

- Scientists in India, preparing to undertake a dive similar to the one with the Titan submersible in an indigenous vehicle, say that multiple backup safety measures for the crew are already in place, though there may be reviews of the safety systems employed.

About TITAN Tragedy

- On 18 June 2023, Titan, a submersible operated by American tourism and expeditions company OceanGate, imploded during an expedition to view the wreck of the Titanic in the North Atlantic Ocean off the coast of Newfoundland, Canada.
- The pressure hull had imploded while Titan was descending, resulting in the instantaneous deaths of all five occupants.

Matsya 6000

- Matsya 6000 is an Indian crewed deep-submergence vehicle intended to be utilized **for deep-sea exploration of rare minerals under the Samudrayaan Project of Deep Ocean mission.** The vehicle would **consist of a Titanium Alloy** sphere of 80mm thickness.
- It will be **capable of taking three humans to a depth of 6 km.**
- It will have systems to support emergency endurance up to 96h for deep ocean exploration of non-living resources such as **polymetallic manganese nodules, gas hydrates, hydro-thermal sulphides and cobalt crusts, located at a depth between 1,000 and 5,500 meters.**
- MATSAY-6000 vehicle, has **an endurance of 12 hours in case of emergency for human safety.**

DEEP OCEAN MISSION
- Deep Ocean mission is an initiative to undertake deep ocean exploration focused on India's exclusive economic zones and continental shelf. It is under Ministry of Earth Sciences (MoES).It aims to search for deep-sea resources and minerals, flora and fauna, including microbes, and studying ways to sustainably utilise them.

Indian Ocean Dipole (IOD)

Context

- With the El Nino phenomenon almost certain to affect the Indian monsoon this year, high hopes are pinned on the development of a positive Indian Ocean Dipole (IOD) and its ability to counterbalance the El Nino effect.

The Indian Ocean Dipole (IOD)

- The Indian Ocean Dipole (IOD) is an **irregular oscillation of sea surface temperatures between two areas** (or poles, hence a dipole) – a western pole in the Arabian Sea (western Indian Ocean) and an eastern pole in the eastern Indian Ocean south of Indonesia.

Implications

Positive event:

- Warmer sea surface temperatures in the western Indian Ocean relative to the east.
- Easterly wind anomalies across the Indian Ocean and less cloudiness to Australia's northwest.
- Less rainfall over southern Australia and the Top End.
- This phase of the Indian Ocean Dipole is very favorable and beneficial for higher monsoons in the Indian regions.
- Thus, a positive IOD helps rainfall along the African coastline and also over the Indian sub-continent while suppressing rainfall over Indonesia, southeast Asia and Australia.

Negative event:

- Cooler sea surface temperatures in the western Indian Ocean relative to the east.
- Winds become more westerly, bringing increased cloudiness to Australia's northwest.
- More rainfall in the Top End and southern Australia.
- The negative phase of the IOD brings about the opposite conditions, with warmer water and greater precipitation in the eastern Indian Ocean, and cooler and drier conditions in the west. The IOD thus affects the strength of monsoons over the Indian subcontinent.
- A negative IOD suppresses rainfall along the African coastline and also over the Indian sub-continent while causing rainfall over Indonesia, Southeast Asia and Australia.

IOD and ENSO

- A positive IOD event is **often seen developing at times of an El Nino**, while a negative IOD is sometimes **associated with La Nina.**
- During El Nino, the **Pacific side of Indonesia is cooler than normal** because of which the Indian Ocean side also gets cooler.
- That helps the development of a positive IOD. Studies suggest that IOD events are actually induced by ENSO.
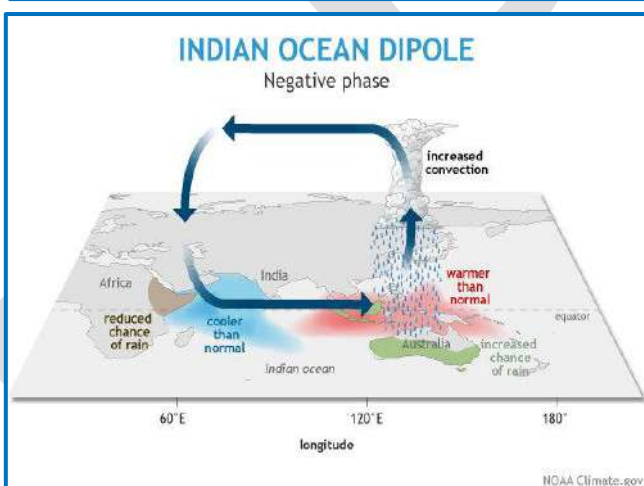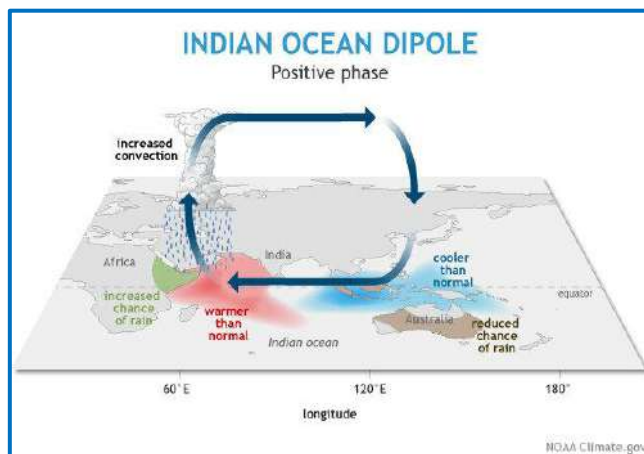
9.3   SNIPPETS

QUASI MOON

- The newfound asteroid 2023 FW13 circles the sun in sync with Earth, making it our planet's "quasi-moon."
- A quasi-moon, is a term that describes an asteroid that's caught in a synchronized orbit with a planet.
- It's not a true moon because it doesn't orbit the planet in a simple, closed path. Instead, it moves in a complex, looping orbit that takes it around the planet, but also away from it.
- Quasi-moons, also known as 'quasi-satellites', often look like they are orbiting our planet much like our natural satellite the moon (affectionately known as 'Luna').
- But they are given the prefix 'quasi' because they are gravitationally bound to the sun rather than Earth, rather than the other way around.
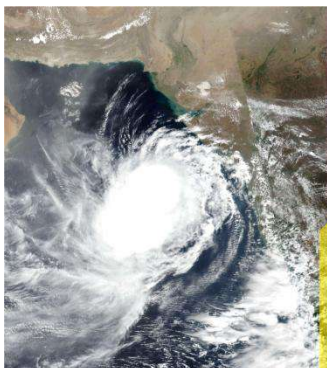
CYCLONE BIPARJOY

Context
- Recently, Cyclone Biparjoy, struck India.

About
- Biparjoy is a tropical cyclone that is forming over the Eastern Arabian Sea.
- It made landfall near Naliya, in Gujarat.
- The Bengali word "biparjoy" translates to "calamity," and it was recommended as the name for the cyclonic storm by Bangladesh.
- This is the second storm of the year in the North Indian Ocean, following Cyclone Mocha in the Bay of Bengal.
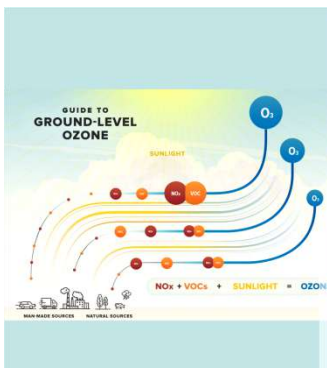
GROUND LEVEL OZONE

- The ground-level ozone pollution affecting parts of the Delhi-National Capital Region (NCR) was lower this year than in the last five years.
- Ground-level ozone is a colourless and highly irritating gas that forms just above the earth's surface.
- It is called a "secondary" pollutant because it is produced when two primary pollutants react in sunlight and stagnant air.
- These two primary pollutants are nitrogen oxides (NOx) and volatile organic compounds (VOCs).
- Nox and VOCs come from natural sources as well as human activities.

LAKE VICTORIA

Context
- Heavy rains, wind storms, and floods threaten the survival and water access of the communities living in the Lake Victoria Basin.

About
- Lake Victoria is one of the African Great Lakes.
- Lake Victoria is Africa's largest lake by area, the world's largest tropical lake, and the world's second-largest fresh water lake by surface area after Lake Superior in North America.
- The lake is divided among three countries: Kenya, Uganda and Tanzania(49%).
- It is the source of the longest branch of the Nile River, the White Nile.
- The introduction of invasive species (the Nile perch and the water hyacinth) and pollution have had a harmful effect on the lake's ecology and biodiversity.

ANAK KRAKATOA

Context

- Recently, Indonesia's Anak Krakatoa volcano got erupted.

About

- Anak Krakatoa is located in the Sunda Strait—between the islands of Java and Sumatra—in the Indonesian province of Lampung.
- The volcano is contained within the Ujung Kulon National Park and is part of the Pacific Ring of Fire.
- Anak Krakatau, which means "child of Kratakau," is the offspring of the famous Krakatau, whose monumental eruption in 1883 triggered a period of global cooling.
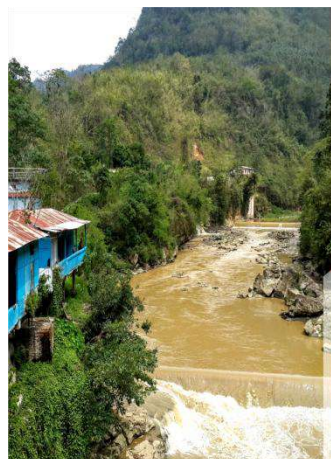
CHITE LUI RIVER

Context

- Chite Lui River is in danger as it turns into a dumping ground in Aizawl.

About

- The Chite Lui is a river that runs through Aizawl in Mizoram.
- The river originates from Bawngkawn range in north Aizawl and flows through a distance of around 20 kilometres in eastern Aizawl before joining the Tuirial river at the southern end of the city.
- It is a tropical mountain river which is mainly rain-fed and has several small tributaries like Tlak Lui, Bangla Lui, Darnam Lui, Theihai Lui.

Trivia

- The largest river in Mizoram is Chhimtuipui. It originates in Myanmar Burma and passes through Lawngtlai and Saiha districts in the Southern Mizoram and lastly enters the Bay of Bengal at Myanmar.

MAYON VOLCANO

Context

- Mayon Volcano's quiet eruption may last for three months, the Philippine Institute of Volcanology and Seismology warned.

About

- Mayon Volcano is an active stratovolcano in the province of Albay in Bicol, Philippines.
- It is renowned for its "perfect cone" because of its symmetric conical shape, and is regarded as sacred in Philippine mythology.

9. 4   1 MAINS QUESTION AND 5 MCQS

Q1. Recently, India has been experiencing more Heat Waves. Give reasons. What are the socio-economic and ecological impacts of Heat Waves? Suggest mitigation strategies.

Heat Waves

- In India, **a region or locality is considered to be under the influence of a heatwave if the maximum temperature reaches or exceeds**;
- 40 degrees Celsius in the plains.
- 30 degrees Celsius in hilly regions.
- 37 degrees Over the coastal regions

- When the maximum temperature departure ranges between 4.5 and 6 degrees, the India Meteorological Department (IMD) declares a heatwave.

Reasons why India is experiencing more Heat Waves

- Magnified effect of paved and **concrete surfaces in urban areas and a lack of tree cover.**

- **Urban heat island effects can make ambient temperatures feel 3 to 4 degrees more than they are.**
- <u>Higher daily peak temperatures</u> and longer, more intense heat waves are becoming increasingly frequent globally due to climate change.
- More heat waves were expected as <u>global temperatures had risen by an average of 0.8 degrees in the past 100 years</u>. Night-time temperatures are rising too.
- <u>High intensity of UV rays</u> in medium-high heat wave zone.
- Combination of exceptional heat stress and a predominantly rural population makes India vulnerable to heat waves.

Implications of Heat Waves
Social impacts
- Extreme heat can lead to **heat-related illness and death, particularly in elderly populations, the poor, outdoor workers, and urban areas.**
- Heatwaves exacerbate the **urban heat island effects**, amplifying temperatures in built environments, and resulting in poorer air quality due to the creation of ozone that negatively impacts health.
- **Heat-related mortality is expected to be higher in cities**, particularly those characterised by high population density, inequalities, limited access to health care, high pollution levels and fewer green spaces.

Economic impacts
- Multiple areas of the economic sector **experience reduced worker productivity** during heatwaves, especially agriculture and construction.
- <u>Globally, 2%</u> of total working hours are projected to be lost every year, either because it is too hot to work or because workers have to work at a slower pace.
- **Lost productivity from heat stress at work**, particularly in developing countries, is expected to be valued at $ 4.2 trillion per year by 2030, driving more inequality.
- The agricultural sector, where 940 million people earn their livelihood, is set to be harder hit by hotter temperatures, pushing

workers, crops and livestock past their physiological heat and drought tolerances.
- This will result in **lost labour, smaller harvests for farmers and higher prices for consumers**, and negative impacts on livelihoods.
- A <u>World Bank Report</u> suggests that by 2050, about 600 million Indians will live in places that could experience a loss of living standards, which could cost 2.8% of the GDP, stalling efforts to pull large parts of the population out of poverty.
- **Increasing energy demand for cooling** also comes as an extensive economic cost to residents, businesses, and governments.
- With these extreme heat events, the need for access to cooling should be viewed as a basic necessity – not just for health and productivity reasons but, in some cases, even for survival.

Ecological impacts
- Heatwaves, without concomitant increases in precipitation, can lead to **water shortages and increased stress for plants, particularly in arid regions.**
- This has the **effect of reducing plant growth**, the basis of energy production and the food chain, with an overall drying-out of the landscape.
- For example, the 2003 European heatwave resulted in a <u>10% loss in glacier mass in Europe</u>, which was five times more than the average annual loss.
- Similar impacts were reported for the <u>French Alps in 2019.</u>
- Over time, such <u>deep permafrost warming</u> and <u>thawing could cause landslides and rockfalls</u>, continuing the negative ecological impacts.

Mitigation and Adaptation Strategies
- <u>Establish an Early Warning System and Inter-Agency Coordination to</u> alert residents on predicted high and extreme temperatures.
- <u>Capacity building/training programme for health care professionals at</u> the local level to recognize and respond to heat-related illnesses, particularly during extreme heat events.

- These training programmes should focus on medical officers, paramedical staff and community health staff so that they can effectively prevent and manage heat-related medical issues to reduce mortality and morbidity.
- **Collaboration with non-government and civil society to** improve bus stands, build temporary shelters, wherever necessary, improve water delivery systems in public areas and other innovative measures to tackle Heatwave conditions.
- **Identifying heat hot spots through appropriate tracking of meteorological data and** promoting timely development and implementation of local Heat Action Plans with strategic inter-agency coordination, and a response which targets the most vulnerable groups.
- **Review of existing occupational health standards, labour laws and sectoral regulations** for worker safety in relation to climatic conditions.
- Policy intervention and coordination across three sectors health, water and power are necessary.
- Expedite the rollout of the **National Action Plan on Climate Change and Health.**
- Preventing temperature-related morbidity and mortality could be a key programme under this mission.
- Ensure an adequate supply of water. Timely access to drinking water can help mitigate this escalation.
- Further research using sub-district level data to provide separate indices for urban and rural areas to enable more targeted geographical interventions.
- **Provision of public messaging (radio, TV),** mobile phone-based text messages, automated phone calls and alerts.
- Promotion of traditional adaptation practices, such as **staying indoors and wearing comfortable clothes.**
- Popularisation of simple design features such as **shaded windows, underground water storage tanks and insulating housing materials.**

- **Advance implementation of local Heat Action Plans,** plus effective inter-agency coordination is a vital response that the government can deploy to protect vulnerable groups.

Q2. Match the following:

Volcano	Country
1. Mount Vesuvius	a. Philippines
2. Kīlauea	b. Ecuador
3. Mayon Volcano	c. Italy
4. Cotopaxi	d. Hawaiian Islands

A. 1-a, 2-d, 3-c, 4-a
B. 1-c, 2-a, 3-d, 4-b
C. 1-c, 2-d, 3-a, 4-b
D. 1-c, 2-a, 3-b, 4-d

Correct Answer: C

Q3. Consider the following statements:

1. Biparjoy is a tropical cyclone that formed over the Bay of Bengal.
2. The ChiteLui is a river that runs through Aizawl in Mizoram.
3. Lake Victoria is Africa's largest lake by area and the world's largest tropical lake.
4. Canary Islands have historically been considered a link between the four continents of Africa, North America, South America, and Europe.

Which of the above statements is/are correct?

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

Correct Answer: D

Q4. Match the following:

River	Tributary
1. Krishna	a. Mapusa River
2. Kaveri	b. Malprabha
3. Narmada	c. Amravati
4. River Mandovi	d. Arkavathy

A. 1-a, 2-d, 3-c, 4-a
B. 1-c, 2-a, 3-d, 4-b
C. 1-c, 2-d, 3-a, 4-b
D. 1-c, 2-d, 3-b, 4-a

Correct Answer: D.

Q5. Consider the following statements:

1. Ground-level ozone is a colourless gas produced when two Sulphur Dioxides and volatile organic compounds (VOCs) react in sunlight and stagnant air.
2. Geomagnetic storms interfere with high-frequency radio communications and GPS navigation systems.
3. A quasi-moon moves in a complex, looping orbit that takes it around the planet, but also away from it.
4. A heat wave is when the daily maximum temperature for more than five consecutive days exceeds the average maximum temperature by 20 degrees Fahrenheit.

Which of the above statements is/are correct?

(a) 1 and 3 only

(b) 1, 3, and 4 only

(c) 2 and 3 only

(d) All of the above.

Correct Answer: C

Q6. Consider the following statements:

1. Biparjoy is a tropical cyclone that formed over the Bay of Bengal.
2. The ChiteLui is a river that runs through Aizawl in Mizoram.
3. Lake Victoria is Africa's largest lake by area and the world's largest tropical lake.
4. Canary Islands have historically been considered a link between the four continents of Africa, North America, South America, and Europe.

Which of the above statements is/are correct?

(a) 1 and 3 only

(b) 1, 3, and 4 only

(c) 2 and 4 only

(d) All of the above.

Correct Answer: D

10. PLACES IN NEWS

10. 1   IN INDIA

DUDHWA TIGER RESERVE

About
- A dead body of two-year-old tigress was found in the buffer zone of the Dudhwa Tiger Reserve.
- It is a protected area, located in Terai region of Uttar Pradesh near the India and Nepal border, spreading in the districts of Lakhimpur Kheri and Bahraich.
- In 1965 It was declared a Wildlife Sanctuary and in 1977 It was established as a National park.
- It was declared a tiger reserve in 1987-88.
- It includes the areas of Dudhwa National Parks along with Kishanpur and Katarniaghat wildlife sanctuary.
- It shows a characteristics of tropical semi-evergreen forest, northern Indian moist deciduous forest, and tropical seasonal swamp forest.
- There are over 450 species of birds like Asian king vulture (Sarcogyps calvus) -a critically-endangered species.

KODUMANAL

About
- The Tamil Nadu Department of Archaeology has declared five 'menhir' (single stone) and megalithic burial sites at Kodumanal in Erode district as protected monuments.
- It has recently announced a ban on mining and construction in a 200-metre radius.
- Kodumanal is located on the northern banks of the Noyyal.
- It made it to the archaeology map in 1961 when the Archaeological Survey of India (ASI) started the first dig after noticing antique materials scattered across the barren land of the village.
- Semi-precious stone beads, bangles, copper, silver, iron, and terracotta are among the items unearthed during the excavations.

AMCHANG WILDLIFE SANCTUARY

About
- For peaceful co-existence with wild elephants, the Indian army has generated a unique ecosystem in Amchang wildlife sanctuary.
- This is a small Sanctuary, famous for rare and endangered animals and birds, located in the eastern fringe of Guwahati city, Assam.
- It was declared as a wildlife sanctuary on 19th June, 2004 by the government of Assam.
- It comprises areas of reserved forests of the Amchang, South Amchang and Khanapara.
- It has rare animals like Chinese pangolin and Slow loris.
- Flying fox, Assamese macaque. Rhesus macaque, Capped langur, Hoolock gibbon, Jungle cat, Leopard
- Amchang is also considered an Important Bird & Biodiversity Area.
- Forest type - Eastern Himalayan moist deciduous forest.
- Famous Tree - Yellow butterfly.

SENEGAL

About
- The death toll in the Senegal violence has risen to 15 as supporters of convicted opposition leader Ousmane Sonko and police continued to clash.
- Senegal is a country in West Africa, on the Atlantic Ocean coastline. It is bordered by Mauritania to the north, Mali to the east, Guinea to the southeast and Guinea-Bissau to the southwest.
- Senegal's economic and political capital is Dakar.
- The state is a unitary presidential republic.
- The state was formed as part of the independence of French West Africa from French colonial rule.
- Senegalese people are predominantly Muslim.
- Senegal is classified as a heavily indebted poor country, with a relatively low HDI.
- Senegal is a member state of the African Union, UN and the Organisation of Islamic Cooperation.
- Internationally, Senegal is best known in the sporting world for the Paris-Dakar Rally.

STADE ROLAND GARROS

About
- The French Open, also known as Roland-Garros, is a major tennis tournament held over two weeks at the Stade Roland Garros in Paris, France, beginning in late May each year.
- The tournament and venue are named after the French aviator Roland Garros.
- The French Open is the premier clay court championship in the world and the only Grand Slam tournament currently held on this surface.
- It is chronologically the second of the four annual Grand Slam tournaments, occurring after the Australian Open and before Wimbledon and the US Open.
- Novak Djokovic won the 2023 men's singles champion. It was his record-breaking twenty-third major title and his third at the French Open.
- IgaŚwiątek won the 2023 women's singles champion. It was her fourth major title and her third at the French Open.

ESTONIA

About
- Estonia's parliament approved a law to legalise same-sex marriage, making it the first central European country to do so.
- Same-sex marriage is legal in much of western Europe but not in central European countries which were once under communist rule and members of the Moscow-led Warsaw Pact alliance but now members of NATO and, largely, the EU.
- Estonia, a country in Northern Europe, borders the Baltic Sea and Gulf of Finland.
- The capital, Tallinn, is known for its preserved Old Town and museums.

KOSOVO-SERBIA

About
- There has been occurrence of violent clashes in Kosovo between ethnic Serbs and the Albanian-led government's police forces.
- Kosovo is a mainly ethnic Albanian territory that declared independence from Serbia in 2008.
- The Serbian government has refused to recognize Kosovo's statehood and still considers it part of Serbia, even though it has no formal control there.
- Over 100 countries have recognized Kosovo's independence.
- Russia, China and five European Union nations have sided with Serbia.
- Kosovo is a small, landlocked country in the Balkans in southern-eastern Europe.
- It shares borders with Albania, North Macedonia, Montenegro, and Serbia.
- Kosovo has a population of 1.8 million people, with 92% Albanians, 6% Serbians, and the rest comprising Bosniaks, Gorans, Turks, and Roma.

KAKHOVKA DAM

About
- The destruction of the Kakhovka Dam has led to a fast-moving disaster with long-term environmental consequences.
- The Kakhovka Dam is a Soviet-era dam located on the Dnipro River in southern Ukraine.
- It was built in 1956 as part of the Kakhovka hydroelectric power plant.
- The primary purpose of the Kakhovka Dam is to generate hydroelectric power.
- The dam also serves as a water reservoir, supplying water for various purposes, including irrigation and industrial use.
- Reservoir supplies water to the Crimean peninsula and the Zaporizhzhia nuclear plant.

BELIZE

About
- The World Health Organization (WHO) has certified Belize as free of malaria.
- Belize is a nation on the eastern coast of Central America, with Caribbean Sea shorelines to the east and dense jungle to the west.
- Offshore, the massive Belize Barrier Reef, dotted with hundreds of low-lying islands called cayes, hosts rich marine life.
- Belize's jungle areas are home to Mayan ruins like Caracol, renowned for its towering pyramid; lagoon-side Lamanai; and Altun Ha.

GABON

About
- Giving India-Africa relations another boost, Union Minister of Education and Skill Development flagged off Gabon's first Agri-SEZ project.
- The project will be implemented by AOM group with Centurion University as its technical and knowledge partner.
- Gabon is a country on the west coast of Central Africa.
- Located on the equator, it is bordered by Equatorial Guinea to the northwest, Cameroon to the north, the Republic of the Congo on the east and south, and the Gulf of Guinea to the west.
- There are coastal plains, mountains (the Cristal Mountains and the Chaillu Massif in the centre), and savanna in the east.