GS CONNECT

It gives us immense pleasure to present an innovative approach to master current affairs. Current is a passing wind and diverse issues happen at the same time. It is to an extent chaotic. Newspapers, magazines and various other sources report the chaos per se. With our experience of current affairs we have tried to give "the current" a medium to travel. It is the syllabus of the UPSC with their components that are the medium through which the "Current is Passed" to the readers. Ever since the new syllabus of the UPSC came into existence, current has been gaining significance both at prelims as well as mains examination. This book is meant to cover current affairs and related questions arising from those events. We have not only covered the current events for their factual contents but also presented it in such a way that any question asked from that topic gets covered. Moreover, topics are also "peppered" with the relevant facts/key concepts that are related to the theme. We have also given questions for practice both, subjective and objective, so that candidates are oriented to the examination mode. It is a collection covering myriad source yet in a manageable size. To use this book we recommend you to master the components of general studies (GS) syllabus as broken into rows and columns (provided in the beginning after preface). Each cell comprising of the portion of GS becomes the connect for the current and every news subsequently covered guides the reader to the address of the syllabus. It is logical to expect that same issue may be connected to more than one topic of the syllabus. Further, the news also has some additional vistas opened for the readers by adding a box with a title **"PEPPER IT WITH"** where we expect the students to build further around the theme.

We are also trying to reach the remotest part of the country with our spirit and zeal of "Mains Answer Writing", which has been admired by students, CSE rank holders and other scholars. Continuing in line with the effort, we have started with programs like 7 Question (7Q) Challenge, Shell Points, Stock Points, Content Enrichment Booklet etc.

When it comes to evaluation, we are altogether at a different level. We are also reaching every nook and corner with this expertise for the aspirants of CSE. Now you can write a Mains Answer and get it evaluated from our Expert Team and can get Feedback. **Drop a mail at evaluation@ksgindia.com for registering yourself in our race to perfection.** Don't wait, it's your golden chance to crack this exam and fulfill your passionate dream.

Team KSG

S. No.	1	2	3	4	5	6	7	8	9	10	11
GS – I	Culture-Art Forms, Literature and Architecture from ancient to modern times.	Indian history significant events, person alities, issues and the Freedom Struggle	Post independence issues, National boundary and disputes	Indian society features, issues, globalization and diversity	Women - issues and developments	Urbanizatio n – problems and remedies	Distribution of industries andresources – India and world	Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone etc			
GS – II	Indian constitution- Amendments, acts and bills.	Legislative, executive and judicial processes.	Constitutional, non-constitutional, judicial, quasi-judicial, administrative and other types of bodies.	Federal structure and local bodies. Their powers and functions.	Government policies and various governance issues like transparenc, accountability and – governance	Committees and schemes.	Non-government issues, self-help groups and role of civil society	Vulnerable sections of our society and social sector issues and initiatives.	International Relation-India and other countries, various Indian and international agreements, effects of other countries on India and international institutions.		
GS – III	Various measures to boost Indian economy-planning, policies, management.	Government budgeting and issues related to budget.	Agriculture, animal husbandry and transport	Food security-measures to boost food security and food processing. Issues related to land-land reforms	Industries and infrastructure-their growth and investment model	Space and technology, IT space, robotics and computer	Disease, biotechnol-ogy and human welfare	Innovations, intellectual property, Awards, POI and other import ant aspects of S&T	Environment; government initiatives, various judgment, pollution, degradation and conservation efforts	Disaster & Disaster Management	Challenges to internal security, Various Security forces and agencies and their mandate. Cybersecurity; moneylaunderi-ng and its prevention.
GS – IV	Ethical issues related to family society, education, Corruption etc.	Ethics in public and private administration	Issues	Related laws and rules	Governance/e-Governance	Ethics in interna-tional issues	Person alities and their teachings	Other import ant topics			
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CONTENTS

POLITY & GOVERNANCE

India's Nuclear Liability Law

News Excerpt
Several issues in the Civil Liability for Nuclear Damage Act 2010 have caused delays in the construction of six nuclear power reactors in Maharashtra's Jaitapur which is envisaged as the world's biggest nuclear power generation site.

Pre-Connect
The legal dimension of Civil Nuclear Liability

- Civil nuclear liability is a check which ensures that in case of any nuclear accident, adequate compensation is made available to victims and defines the liability of various stakeholders.
- The government of India enacted the Civil Liability for Nuclear Damage Act (CLNDA) in 2010 to provide a speedy compensation mechanism for victims of nuclear accidents.

Issues with Suppliers Liability Clause

- Foreign and domestic suppliers are worried about the fact that under Indian laws, only suppliers can be asked to pay damages.

International Convention
Two key international conventions are the Vienna Convention on Civil Liability for Nuclear Damage and the Convention on Supplementary Compensation (CSC) for Nuclear Damage- a minimum national compensation amount. India ratified the convention in 2016. Under CSC there are two conditions under which the national law of a country may provide the operator with the "right of recourse", where they can extract liability from the supplier:

- if it is expressly agreed upon in the contract or
- if the nuclear incident "results from an act or omission done with intent to cause damage".

Liability under CLNDA Act

Operators Liability
Act provides for strict and no-fault liability on the operator

An Operator is liable for damage regardless of any fault on its part.

An operator has to pay 1500 crore in case of damage.

An operator will cover this liability through insurance.

Government's Role
When damage goes beyond 1500 crore government will step in. The liability of government is fixed at the rupee equivalent of 300 million Special Drawing Rights (SDRs).

Supplier Liability Clause
An operator can seek recourse from suppliers if the accident is caused by supplier actions.

This includes both the defect equipment and sub-standard services.

- Suppliers are worried that they have unlimited liability under CLNDA as unlike the operator the compensation of a supplier is not fixed. This creates an ambiguity in the case of insurance as well.
- The absence of a comprehensive definition of the types of nuclear damage could allow civil liability claims to be brought against the operator and suppliers through other civil laws.
- It does not bar the person from bringing proceedings against the operator under any law other than this Act. So, criminal liability can be pursued against the operator and the supplier wherever applicable.

Other issues in the Law

- Capping on compensation is not scientific as the extent of damages cannot be ascertained. Thus, who will pay if damage exceeds the limit is not clear.
- The operator of a nuclear plant in India is State itself and therefore in case of any disaster, the ultimate cost will be borne by common taxpayers.

- ✓ There is no provision for additional costs such as cleaning and safe disposal of nuclear waste. These are expensive operations and require caution. Hence, in the absence of such a provision, there is no complete protection.
- ✓ India takes supplies from many foreign suppliers which are foreign entities to Indian Law. Indians can't move to a foreign court to seek compensation.

Way-Forward

- ▪ There is a need to place a cap on the supplier's liability. This will provide them with confidence and insurance aswell.
- ▪ There is a need to amend the law so that there is no ambiguity and provisions for criminal liability must be eased so that there is clarity in criminal proceedings.
- ▪ Extraterritorial jurisdiction will provide access to foreign courts and thus pave the way for compensation from a foreign supplier. This will also allow for robust dispute-resolution mechanisms under International Agreements

Operational Nuclear Plant in India

- Narora Atomic Power Plant
- Rajasthan Atomic Power Plant (KOTA)
- Kakrapar Atomic Power Plant
- Tarapur Atomic Power Plant
- Kaiga Generating Station
- Madras Atomic Power Plant (KALPAKKAM)
- Kudankulam Nuclear Power Station

- ▪ To reduce the burden on taxpayers there is a need to explore alternative funding mechanisms such as insurance or dedicated fund.
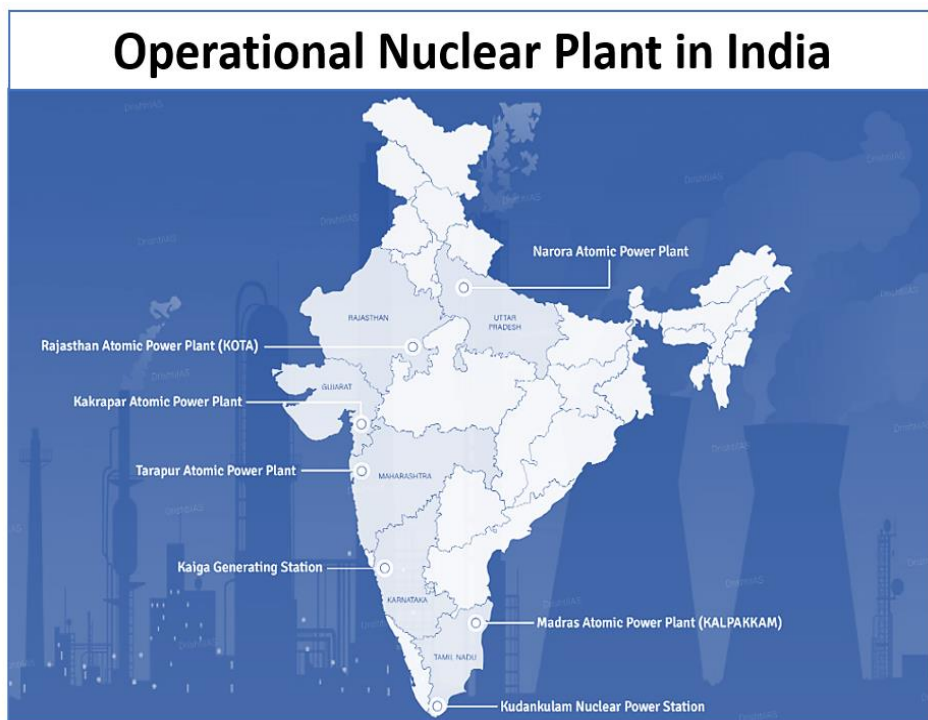
Violence in Manipur

News Excerpt

Manipur High Court verdict directing the State to pursue a 10-year-old recommendation to grant Scheduled Tribe (ST) status to the non-tribal Meitei community has resulted in violent clashes.

Pre-Connect

Understanding Manipur Divide

- • Manipur as a state is geographically divided into Valley (which comprises about 10% of Manipur's landmass) and Hill districts. Hills are dominated by the tribes such as Kukis and Nagas. Valley is dominated by Meiteis
- • The current conflict is the extension of the hill vs plains conflict. Overall, in Manipur Meiteis accounts for 53% of the population while tribal communities account for 40% of the total population (24% Naga and 16% Kuki/Zomi).
- • There exist several conflicts between multiple communities which have resulted in massive violence and loss of lives.

Cause of Present Conflict

There are several issues on which there is a divide between the Meiteis and the tribals these include:

- ➢ In 2015, Meiteis demanded Inner Line Permit (ILP) system for Imphal city which was protested by tribals because this permit would restrict their entry into the valley.
- ➢ The delimitation exercise in 2020 caused discontent among the Meitei community who alleged that the census figures do not reflect the population break-up. While tribal groups were not happy with their underrepresentation in the assembly.
- ➢ In 2021, a coup in Myanmar created a refugee crisis in India's Northeast. Meiteis argue that this has created a sudden mushrooming of villages in the Churachandpur district.

Eviction issue

- ✓ The government of Manipur brought 38 villages in Churachandpur and Noney districts under the Protected Forest area. This made residents of these Kuki villages encroachers.
- ✓ The government also took this step as several tribe members of the Kuki-Zomi group are using these lands to grow drugs.
- ✓ Kuki groups argued that the eviction is illegal and a violation of Article 371C, as Kukis are residents of the Hill Area. Article 371C provides for a committee of the Manipur Legislative Assembly consisting of the members elected from the Hill Areas of the state and Governor shall have responsibility for the proper functioning of that committee.

Arguments Given by Meiteis

- They were recognized as a tribe before the merger of the State with the Union of India in 1949.
- The status will help in preserving the community ancestral land, tradition, culture, and language.
- It will provide constitutional safeguards against outsiders on a similar level like tribal of the hill.
- It will help in addressing the issue of shrinkage of population and land for the community and also address the demographic change issue.
- It will provide them level playing field in the competition for government services.

Arguments of ST Tribe

- Meiteis already have demographic, political and academic advantage over hill tribes.
- It will reduce job opportunities for the tribals and allow for the Meiteis incursion in the hills.
- Meiteis have their language in the Eighth Schedule of the Constitution and some of communities with Meiteis have enjoyed SC, OBC or EWS status.
- Already bulk of government budget and development work is focused on the Meitei-dominated Imphal valley.

Way Forward

- There is a need to re-evaluate the criteria for ST status for which recommendations of various committees can be considered:
- There is a need to address the issue of migration from Myanmar and for this two-pronged strategy needs to be followed:
  - o Increased surveillance
  - o Enhanced regional stability and security
- Peace with local insurgent groups can help in maintaining the identity of the people along the border areas to identify the residents.
- There is a need to improve the human rights situation in the region and for this, there is a need to reconsider the controversial Armed Forces Special Powers Act. This will prevent the misuse of power by security forces and ensure that there is fair and transparent legal system in place.
- There is a need to foster the participation of the people of the region in the decision-making process to instil a sense of ownership and belonging.

Committee Name	Criteria Recommended
Lokur Committee	• Primitive Traits • Distinct Culture • Geographical Isolation • Shyness of contact with the community at large • Backwardness.
Xaxa Committee	• Livelihood and employment • Education • Health • Involuntary displacement and migration • Legal and constitutional matters.

PEPPER IT WITH
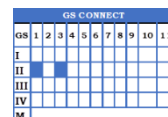
Kuki Tribe, Naga Tribe, 6th schedule, Inner Line Permit (ILP), Lokur Committee 1965, Bhuria Commission, Xaxa Committee, Armed Forces (Special Powers) Act

Ninth Schedule

News Excerpt

Recently, the Government of Chhattisgarh passed two bills in the assembly that will pave the way for a 76% quota for Scheduled Caste, Scheduled Tribes and Other Backward Classes but asserted that they would come into force only after the Centre carries out amendments to include these in the Ninth Schedule of the Constitution.

Pre-Connect

About Ninth Schedule

- The Ninth Schedule contains a list of central and state laws which cannot be challenged in court. The Schedule became a part of the Constitution in 1951 through the first amendment.
- Through the First Amendment, Article 31A (extends protection to 'classes' of laws) and Article 31B (shields specific laws or enactments- giving birth to Schedule IX) were also added.
- Article 31B has a retrospective operation. If an act is held unconstitutional and thereafter is put under the 9th schedule it will be considered as its part since its commencement. SC had termed it as a drastic and novel method of an amendment
- The First Amendment added 13 laws to the Schedule. Currently, there are 284 such laws shielded from judicial review.
- Most of the laws protected under the Schedule concern agriculture/land issues, the list includes other subjects, such as reservation.

> Dr BR Ambedkar on the issue of Judicial review remarked
> *"If I was asked to name any particular Article in the Constitution as the most important, it is Article 32 without which the Constitution would be a nullity- it would not refer to any other Article except this one. It is the very soul of the Constitution and the very heart of it and I am glad that the house had realized its importance".*

Understanding Judicial Review

- Judicial Review act as a cornerstone for the principle of constitutionalism as it upholds the principle of the rule of law and the doctrine of separation of powers.
- On a broader scale, there are mainly three aspects of judicial review, they are-
  - Judicial review of administrative actions
  - Reviewing Judicial pronouncements, and
  - Review of the action of the legislature.
- The nature of the judicial review is procedural. Indian Judicial review has its root directly in several Articles of the Indian Constitution e.g. Articles 13, 32, 131 to 136, 143, 226, and 246.
- Judicial review is responsible for balancing the interests and powers of different organs of the government and in assisting in the maintenance of control by marking a boundary to limit uneven encroachment of the authorities towards a person's constitutional rights and among themselves.

> **1st Amendment was** passed by the provisional parliament which also functioned as the constituent Assembly. When it used to meet for making constitution then it was known as Constituent Assembly and was headed by **Dr Rajendra Prasad** and when as a legislative body then it was headed by **GV Mavalnakar**. The 1st CAA amended articles **15, 19, 85, 87, 174, 176, 341, 342, 372 and 376** and was made by the provisional parliament. Provisions Added by 1st Amendment to the constitution:
> 1. Empowered the state to make special provisions for the advancement of socially and economically backward classes.
> 2. Provided for the saving of laws providing for acquisition of estates, etc.
> 3. Added IX Schedule to protect the land reform and other laws included in it from the judicial review.
> 4. Added three more grounds of restrictions on freedom of speech and expression, viz., public order, friendly relations with foreign states and incitement to an offence. Also, made the restrictions "reasonable" and thus, justiciable in nature.
> 5. Provided that state trading and nationalisation of any trade or business by the state is not to be invalid on the ground of violation of the right to trade or business.

Courts and Ninth Schedule

Three key judgements answer the question of whether the Ninth Schedule is completely Exempt from Judicial Scrutiny. These are:

- ✓ **Keshavananda Bharati v. State of Kerala**– The court introduced a new concept of the "Basic structure of the Indian Constitution" and stated that, "all provisions of the constitution can be amended but those amendments which will abrogate or take away the essence or basic structure of constitution which included Fundamental Rights are fit to be struck down by the court".

- ✓ **Waman Rao v. Union Of India**–SC ruled that "those amendments which were made in the constitution before 24th April 1973 (date on which judgement in Keshavananda Bharati was delivered) are valid and constitutional but those which were made after the stated date are open to being challenged on the ground of constitutionality and the State is only immunized for its acts before the judgement in Keshavananda Bharati. This is also known as the **"Doctrine of Prospective Over-Ruling" which means that 'only what follows after is bound to abide by the rules and what has happened earlier will not be taken into account.**

> **PEPPER IT WITH**
> Schdules of Consitution of India, Doctrine of Basic Structure, Article 13

- ✓ **I R Coelho v. State of Tamil Nadu**: It was held that every law must be tested under Art. 14, 19, and 21 if it came into force after 24th April 1973. In addition, the court upheld its previous rulings and declared that any act can be challenged and is open to scrutiny by the judiciary if it does not align with the basic structure of the Constitution. In addition, it was held that if the constitutional validity of any law under the ninth schedule has been upheld before, in the future it cannot be challenged again. So, **the laws included in IX schedule after April 24, 1973, are now open to judicial review**.

Page 7

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DELHI VN: 9717380832 & **DELHI ORN:** 9811293743 | **JAIPUR:** 8290800441 | **PATNA:** 7463950774| **RANCHI:** 9939982007 | **BHOPAL:** 7509975361|
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Conclusion

By its very nature, Article 31B and Ninth Schedule are prone to misuse which started after the 4th Amendment when few non-agrarian laws were excluded from the scope of judicial scrutiny. But ultimately, the intervention of the Apex Court from time to time ensured to put a check on the powers of the law-making body by describing the basic structure of the Indian Constitution and the provisions of judicial review.

Sports Governance in India

News Excerpt

A recent protest by Wrestlers across India against the Wrestling Federation of India's (WFI) President on the allegation of sexual harassment raises serious issues over the issue of sports governance in India.

Pre-Connect

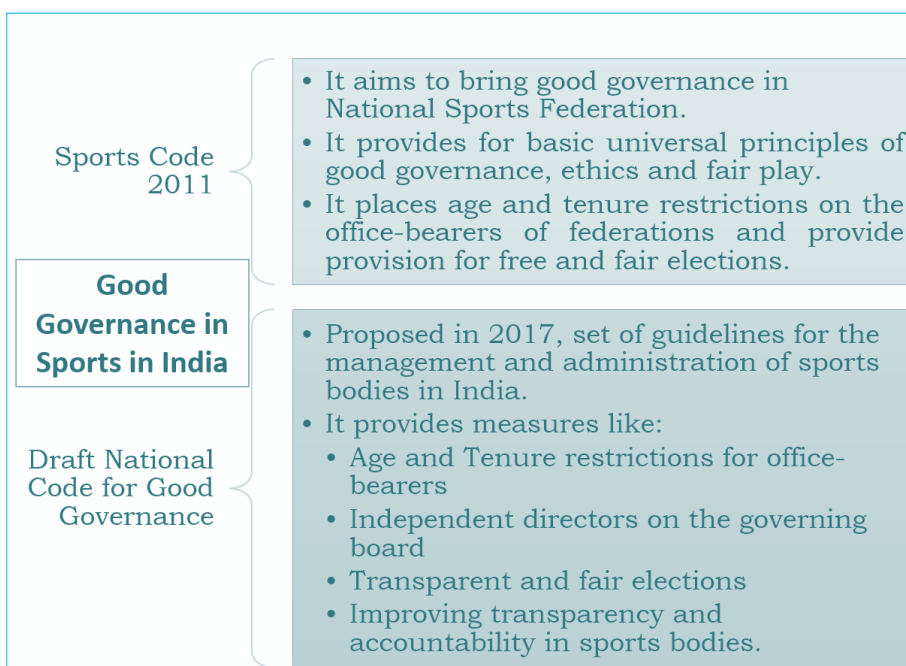### Evolution of Sports Governance in India

- In 1950, the Government of India established the All India Council of Sports for addressing sports standards in the country.
- In 1982, the Government of India established the Department of Youth Affairs and Sports and subsequently National Sports Policy was initiated in 1984.
- In 2000, the Department of Youth Affairs and Sports was into a Ministry of Youth Affairs and Sports (MYAS).
- In 2011, Ministry notified the National Sports Development Code of India 2011.

The present model of Sports Governance

➢ The present model of sports governance is divided into two wings:
  - o Ministry of Youth Affairs and Sports- Under its aegis Sports Authority of India (SAI) along with other bodies works towards the promotion of sports training.
  - o Other wings include associations like Indian Olympic Association (IOA), along with other State Olympic Associations and national and state sports federations.
➢ Sports federations get financial and infrastructural support from the Ministry which also controls these federations through political representations.
➢ All sports federations and State Olympic Association organise events under the IOA.

Issues with Sports Governance in India

- **Division Issue**:
  - o There is no division between management and governance as a result executive committees often end up doing management work than focusing on governance.
  - o It also results ina lack of oversight and accountability.

- **Infrastructure problem**:
  - o Sports is a State Subject and therefore a uniform approach towards the development of infrastructure throughout the country is missing.
  - o Without such infrastructure, it becomes difficult to create a culture of sports in the country.

- **Accountability Factor**:
  - o Accountability and lack of transparency in decision-making have emerged as serious issues with irregular revenue management.
  - o There are several examples of the commonwealth scams and spot-fixing scandals.

- **Professionalism issues**:
  - o The majority of governing bodies of sports lack professionalism in their work, they rely on volunteers instead of skilled professionals.

Good Governance in Sports in India

Sports Code 2011
- It aims to bring good governance in National Sports Federation.
- It provides for basic universal principles of good governance, ethics and fair play.
- It places age and tenure restrictions on the office-bearers of federations and provide provision for free and fair elections.

Draft National Code for Good Governance
- Proposed in 2017, set of guidelines for the management and administration of sports bodies in India.
- It provides measures like:
  - Age and Tenure restrictions for office-bearers
  - Independent directors on the governing board
  - Transparent and fair elections
  - Improving transparency and accountability in sports bodies.

- **Sexual harassment**:
  - o Malpractices of Sexual harassment have marred the functioning of sports organisations. Cases like Ruchika Girhotra shows the response from sports organizations has been slow and inadequate.
  - o This happens as Many sports organizations do not have a formal policy in place for dealing with such complaints, and there is often no clear chain of command for reporting incidents.

> **PEPPER IT WITH**
> Indian Olympic Association, Central vigilance commission, Code of Criminal Procedure.

Way-Forward- Addressing the situation

There are several ways through which sports governance can be improved in India:

- **Athletes are central**
- **Athletes Participation**:
  - o Athletes are the centre of the sports and hence there must be mechanisms which allow for their representation at all levels of sports governance.
  - o This will also bring accountability and transparency to the sports organisations.
  - o The Olympic charter also calls for the election of athlete representatives as members of countries' National Olympic Committee
- **Sports Federations Reforms**:
  - o Sports federations need reforms especially when it comes to autonomy.
  - o There is also a need to develop democratic structures which work free from governmental and external influence.
  - o Sports Federations should work towards reducing corruption and nepotism and autonomy paves the way for the same.
- **Sports Awareness:**
  - o There is a need to build a strong sporting culture in the country, for this education system needs to give equal importance to sports rather than treating it as extra-curricular activities.
  - o Sports helps in improving a child's confidence, and self-image among other skill set.
- **Bottom-Up Reforms:**
  - o Reforms should begin at the bottom, and hence there is a need to reconstitute district and state bodies that feed into national sports governance, on the lines which ensure accountability and transparency are built into the system.
- **Greater Representation of Women:**
  - o Greater representation of women in sports governance positions can help in ensuring that the rights of women are preserved and for this several measures ranging from gender quotas to gender-sensitive policies must be implemented.

Gubernatorial Procrastination

News Excerpt

Recently, the Supreme Court of India has asserted that bills sent to the governor for assent must be returned "as soon as possible" and must not sit over them indefinitely.

Pre-Connect

Governor Powers over State Bills

- **Under Article 200-** Any bill passed by the state Legislative Assembly should be presented to the Governor for assent. Governor on his part may:
  - o Either Assent
  - o Withhold Assent
  - o Reserve the bill for consideration by the President.
  - o Return the bill for reconsideration by the house.
- **Article 201**: If a bill is reserved for the consideration of the President- the President may:
  - o Assent to or withhold assent from the bill.
  - o Direct the Governor to return the bill to the House for reconsideration.
- The reservation of a bill for the President is compulsory if it endangers the position of the state high court. Governor may also reserve the bill if it is of the following nature:
  - o Against the provisions of the Constitution
  - o Opposed to the DPSP
  - o Against the larger interest of the country
  - o Of grave national importance
  - o Deals with compulsory acquisition of property under Article 31A of the Constitution.
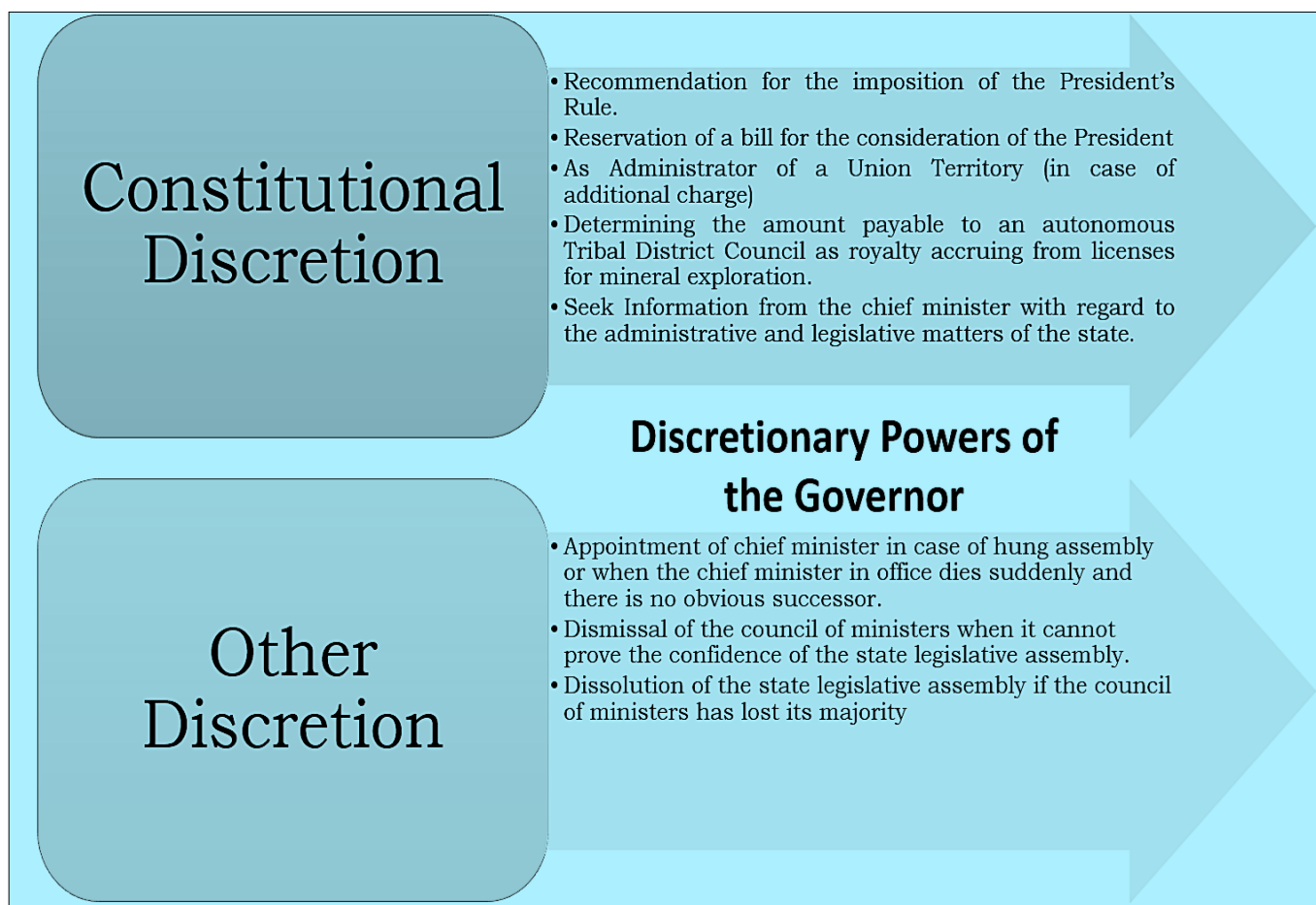
    o Other reasons deemed necessary by the governor.

Supreme Court Observation

➢ Under Article 361 of the Constitution of India- the Office of the Governor has complete immunity from court proceedings for any act done in the exercise of their powers. However, the SC in the *Rameshwar Prasad and Ors. vs Union Of India and Anr* case, the court held that immunity under Article 361 doesn't take away the power of the Court to examine the validity of the action including on the ground of malafides.

➢ SC in a recent judgement observed that the expression as soon as possible" in article 200 has significant constitutional intent and that constitutional authorities should keep this in mind.

Issue with Pendency

✓ **Violation of State Constitutional obligation**- Governor inaction causes a violation of the constitution as it hampers the constitutional functions of the state government.

✓ The administrative functioning of the state government is impacted as it causes delays in decision-making as well as delays in the implementation of policies and laws. Both have significant consequences for public welfare.

✓ In a democracy, a governor being an appointee of the Centre overriding the will of the popularly elected government is not a healthy practice.

Constitutional Discretion

- Recommendation for the imposition of the President's Rule.
- Reservation of a bill for the consideration of the President
- As Administrator of a Union Territory (in case of additional charge)
- Determining the amount payable to an autonomous Tribal District Council as royalty accruing from licenses for mineral exploration.
- Seek Information from the chief minister with regard to the administrative and legislative matters of the state.

Discretionary Powers of the Governor

Other Discretion

- Appointment of chief minister in case of hung assembly or when the chief minister in office dies suddenly and there is no obvious successor.
- Dismissal of the council of ministers when it cannot prove the confidence of the state legislative assembly.
- Dissolution of the state legislative assembly if the council of ministers has lost its majority

✓ It also damages the reputation of the state government as pending bills are seen as a sign of inefficiency and corruption.

✓ Withholding a bill without providing any reason shows the lack of accountability on the part of the office of the governor and this undermines the principles of transparency and accountability in governance.

Conclusion

The observation of SC in fixing a reasonable time frame for Governors to decide in a time-bound manner will help in strengthening federalism in the country. For this, there is a need for a dialogue between the Centre and States to address this issue and ensure that the constitutional provisions are upheld. Also, Civil Society, media and other citizens should pressurise authorities to act in the public interest.

> **PEPPER IT WITH**
> Process of Passing of Bills, President's rule, Article 200, Article 355 Legislative Assemblies

Extra-Judicial Killings (EJK)

News Excerpt

Supreme Court recently stated in an observation that Extra-Judicial Killings in India are in clear violation of Fundamental rights enshrined under **Article 21 (Right to life)** of the Constitution of India.

Pre-Connect

Understanding Extra-Judicial Killings

- Extra-judicial killing is the act of killing a person by the state or its agents without any legal proceedings or justification.
- It is illegal and violates human rights and the rule of law as a person is killed without a trial, due process, or any legal justification.
- It can take different forms, such as extrajudicial executions, summary executions, and enforced disappearances.
- Between 2016-17 and 2021-22 India has seen a 15% decline in encounter killing cases. However, after March 2022, the cases shot up by 69.5% in the last two years.
- Since April 2016, Chhattisgarh recorded the most extrajudicial killing cases at 259, followed by Uttar Pradesh at 110 and Assam with 79.
- Under Section-46 of the Criminal Procedure Code, Police in India are allowed to use lethal force to arrest someone accused of a serious crime.

> **Article 21**
> The Constitution guarantees the Right to Life and Personal Liberty under Article 21, which is non-negotiable and applicable to everyone. It is the responsibility of the police to follow the Constitution and protect the Right to Life of every individual, regardless of innocence or guilt.

Guideline Related to Encounters in India

Supreme Court

The Supreme Court of India in the case of People's Union for Civil Liberties v State of Maharashtra issued guidelines for investigation of police encounters that result in death:

- ➤ Compulsory registration of a First Information Report (FIR) along with magisterial inquiry.
- ➤ Any inquiry must involve the next of kin of the deceased.
- ➤ All intelligence inputs must be kept in written records.
- ➤ To ensure a fair and impartial investigation independent agency to be included.
- ➤ Information about the incidents must be sent to NHRC or SHRC. However, NHRC will get involved only when there is serious doubt about the independent and impartial investigation.
- ➤ These norms are treated as law declared under Article 141 of the Constitution of India.

National Human Rights Commission

✓ NHRC first gave guidelines in 1997 which included:
- o Independent investigation by the State CID
- o Compensation to the deceased if in case police officers are being convicted.

✓ In 2010, NHRC gave another guideline which included:
- o FIR registration along with magisterial inquiry
- o Report to NHRC within 48 hours by the Senior Superintendent of Police or Superintendent of Police.
- o Second Report after three months along with the postmortem report, inquest report, and enquiry findings.

> **PEPPER IT WITH**
> Fundamental Rights, IPC, NHRC, CID, Due Process of Law and, Procedure established by law

Conclusion

Encounter killings should be investigated in a thorough manner so that the credibility of the state is not tarnished. Further, the State has an ultimate responsibility to uphold the rule of law and its strict implementation. The rise of encounter killings is resulting in human rights violations, therefore police officers must be educated on the issue and trained to handle unforeseen situations and protect those in police custody.

Criteria's to determine whether a community qualifies to be a scheduled Tribe are:

Ethnological Traits	Traditional Characteristics	Distinctive Culture	Geographic Isolation	Backwardness

However, Supreme Court wish to fix fool-proof parameters to determine if a person belongs to a Scheduled Tribe. It is of opinion that contact with other cultures, migration and modernization would have erased the traditional characteristics of a tribe. Therefore it wish to fix parameters on which caste certificates can be issued

Process of Inclusion/Exclusion in Scheduled Tribe/Caste Category

Based on the Study of a commission a State or UT government recommends exclusion or addition of a particular community to SC or ST category → This recommendation is being sent to the Union Ministry of Tribal Affairs (MoTA) → MoTA after its own deliberations sent this recommendation to the Registrar General of India (RGI)

After RGI approval, proposal is sent back to the Union Government which after inter-ministerial deliberation sent it to Cabinet for final approval → After this a bill is proposed in the Parliament that amends the Constitution (Scheduled Castes) Order, 1950 and the Constitution (Scheduled Tribes) Order, 1950, as is appropriate, after it is passed by both the Lok Sabha and Rajya Sabha. → Once President assent this bill (under power vested in Articles 341 and 342 of the constitution) then any community is included or excluded as Scheduled Caste or Scheduled Tribe.

SOCIAL ISSUES

National Programme for Prevention & Control of Non-Communicable Diseases (NP-NCD)

News Excerpt

National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) programme was recently renamed into National Programme for Prevention & Control of Non-Communicable Diseases (NP-NCD).

Pre-Connect

About NPCDCS/NP-NCD

- This programme is implemented under the National Health Mission in India and was launched in 2010.
- Its aim is to strengthen infrastructure, human resource development, early diagnosis, promoting health and management.
- For proper management NCD cells are established at National, State and District levels while NCD Clinics are set up at district and community Health Centres levels.
- Currently under NPCDCS there are 677 NCD, 187 Districts Cardiac Care Units, 266 District Day Care Centres and 5392 NCD Community Health Centre-level clinics.

Status of Non- Communicable Diseases

Globally

- As per WHO, NCDs is responsible for 71% of all deaths.
- 85% of nearly 15 million people die from NCDs are between the ages of 30 and 69. Also, these "premature" death are mainly in low and middle income countries.
- Cardiovascular diseases account for most NCD deaths, or 17.9 million people annually, followed by cancers (9.3 million), respiratory diseases (4.1 million), and diabetes (1.5 million). These four groups of diseases account for over 80% of all premature NCD deaths.
- Suicide occurs throughout the lifespan and was the fourth leading cause of death among 15-29 year-olds globally in 2019. It is common in all regions of world.

In India

As per the report by the Indian Council of Medical Research (ICMR):

- Death due to NCDs increased from 37.9% in 1990 to 61.8% in 2016.
- There are 55% of the total disability-adjusted life years in India.
- In comparison to less developed states, there is more burden of NCDs in developed states.

Government Initiatives to combat NCD:

- ✓ **Supporting State Cancer Institutes:** Central Government is working on **strengthening of tertiary care cancer facilities scheme** to set up State Cancer Institutes and Tertiary Care Centres.
- ✓ To make available Cancer and Cardiovascular Diseases drugs and implants at discounted prices to the patients under **Affordable Medicines and Reliable Implants for Treatment (AMRIT)**, various outlets named Deendayal outlets have been opened in many institutions.
- ✓ **Department of Pharmaceuticals is setting up Jan Aushadhi Stores** to provide generic medicines at affordable prices.
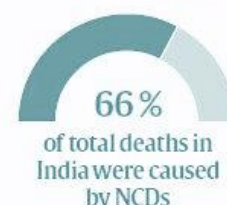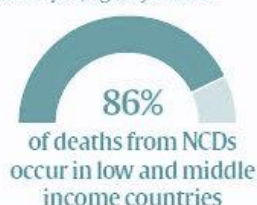

Non-Communicable Diseases

- ❖ Non-Communicable Diseases or chronic diseases are a combination of **genetic, physiological, environmental and behavioural factors** and are generally of long duration.
- ❖ Cardiovascular diseases, cancers, chronic respiratory diseases and diabetes are main type of non-communicable diseases.
- ❖ Main risk factors contributing for non-communicable diseases are **tobacco use, unhealthy diet, harmful use of alcohol, physical inactivity and air pollution.**

THE NCD DEATH TOLL

Every yr, noncommunicable diseases (NCDs) claim 17 mn lives under the age of 70. Many of these deaths are in low and middle income countries, including India. Some numbers:
WHO report; Figures from 2019

60.46 lakh people killed by NCDs in India

86% of deaths from NCDs occur in low and middle income countries

66% of total deaths in India were caused by NCDs

DEATHS CAUSED BY NCDs IN INDIA

25.66 LAKH deaths were due to cardiovascular diseases

11.46 LAKH deaths were due to chronic respiratory diseases

9.20 LAKH deaths were due to cancer

3.49 LAKH deaths were due to diabetes

PEPPER IT WITH

Rare diseases, Integrated Disease Surveillance Programme (IDSP), Universal Immunization Programme, National Iron Plus Initiative for Anaemia Control

Global Initiatives to Combat NCDs
- United Nations High Level Meeting on NCDs
- NCD Alliance
- WHO Framework Convention on Tobacco Control.
- The Sustainable Development Goals (SDGs)
- WHO Global Action Plan for the Prevention and Control of NCDs 2013–2020

✓ **Under Pradhan Mantri Swasthya Suraksha Yojana,** new AIIMS and many modern institutes have been established and are being established which focus on various aspects of oncology.

✓ **Fit India Movement** is another initiative by government for healthy lifestyle.

Conclusion

As per WHO as well as report of Indian Council of Medical Research (ICMR) there is a dire need for promoting healthy lifestyle choices and improving health care services to deal with NCDs. Whole world is hard hit by the impacts of NCDs and India is no less. NCDs can have devastating impacts on personal financial security and national economic growth. In low- and middle-income countries, NCDs often affect people during their most productive years. Thus, dealing with NCDs is a global challenge and should be considered at utmost priority. Steps should be taken to prevent and control it.

❖ The overall burden of disease is assessed using the disability-adjusted life year (DALY), a time-based measure that combines years of life lost due to premature mortality (YLLs) and years of life lost due to time lived in states of less than full health, or years of healthy life lost due to disability (YLDs).

❖ One DALY represents the loss of the equivalent of one year of full health.

❖ Using DALYs, the burden of diseases that cause premature death but little disability (such as drowning or measles) can be compared to that of diseases that do not cause death but do cause disability (such as cataract causing blindness).

Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act

News Excerpt

Recently, certain aspects of the PC & PNDT Act have been recommended for better implementation by Delhi High Court.

Pre-Connect

About PC & PNDT Act,1994

- This act was enacted to ban the female foeticide and deal with the declining sex ratio.

- It banned prenatal sex determination and the motive behind this was to ban the sex selection techniques during conception period and also to stop the misuse of prenatal diagnostic techniques for abortion especially gender biased abortions.
- The act controls the use of prenatal diagnostic techniques (eg. ultra sound machine) by limiting their access to only detecting **genetic abnormalities, metabolic disorders, chromosomal abnormalities, and certain congenital malformations, haemoglobinopathies and sex-linked disorders**.
- It mandates that no laboratory or clinic should conduct test like ultrasonography for the sex determination of foetus.
- As per the law, it is illegal if anyone communicates the information regarding the gender of the child to the pregnant women or relative.
- There is a imprisonment for upto three years and fine of 10,000 if anyone is caught promoting sex determination facilities.
- Offences under the act include
  - Conducting or aiding in prenatal diagnostic techniques in unregistered facilities.
  - Sex selection on a man or woman.
  - Use of prenatal diagnostic techniques other than the one specified in the act
  - Sale distribution, supply, renting of Ultrasound machine or similar machines for sex determination.

Other Government Initiatives
- ❖ **Beti Bachao Beti Padhao**
  The initiative focuses on the declining child sex ratio and empowering girls through awareness.
- ❖ **National Plan of Action for Children**
  It aims to eliminate gender-biased sex selection for children rights and well being.

Issues with the Act
➢ Any involvement of Police in raids and seizure should be as per the CrPC but PC and PNDT contemplate that police should not be involved in related raids.
➢ The Appropriate authorities is given power to investigate, conduct raids, cancel or suspend the registration of medical centers and facilities that violate the PC & PNDT but it lags the power to arrest any person.
➢ Under the Act, the offences have been made 'cognizable' but the effectiveness of the Appropriate Authority's role is questionable.
➢ There are very low numbers of people who are actually convicted for violating the provisions of the Act, which shows failure or incompetence of the Act.

Ethical Issues associated with Prenatal Diagnosis and Sex-Selective Abortion
✓ It **promotes gender discrimination and violence against women** and is against the basic right to life, dignity and equality.
✓ It **promotes crime rate** such as trafficking, violence against women, reduced marriage prospects for men, skewed sex ratio and many others.
✓ Use of prenatal diagnosis for non-medical purposes raises the question on the **morality of the issue** and towards parents and heath care workers.
✓ There are **lots of health issues** associated with prenatal diagnosis and sex-selective abortion especially for women.
✓ **Government services are rare and lack the high quality of treatment**, while private services provide a high standard of care but are not affordable to most of the population.
✓ It **increases health disparities and inequalities** especially among vulnerable societies which lack basic health care facilities and are unaware.
✓ As per studies, it is estimated that there will be 6.8 million fewer female births by 2030, precisely due to the consistent practice of sex-selective abortions.

Amendment Associated with the PNDT Act, 1994
- ❖ To improve the regulation of the technology used in sex selection, theAct was amended in 2003 to The Pre-Conception and Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act (PCPNDT Act) with the objective of **bring the technique of pre conception sex selection and ultrasound technique within the ambit** of the act.
- ❖ Through Maharashtra Regulation of Pre-natal Diagnostic Techniques Act, Maharashtra was the first state to ban pre-natal sex determination in

PEPPER IT WITH
The Juvenile Justice (care and protection of children) Act-2015, The Commissions for Protection of Child Rights Act-2005, The Protection of Children from Sexual Offences Act-2012

Conclusion
Recent concerns raised by the court has highlighted the clarity on the roles of Police and powers of investigation with Appropriate Authorities. Moreover it has also raised question on the low conviction rates in such acts. These concerns highlight that there is lot more improvement required in the act, thus quick and early actions would benefit society as a whole to get over heinous act of violence like sex selective abortion.

Food Safety in India

News Excerpt
The Advertisement Monitoring Committee at the Food Safety and Standards Authority of India (FSSAI) flagged 32 fresh cases of food business operators (FBOs) making misleading claims and advertisements.

Pre-Connect
About the Food Advertising in India
- Food advertising has been considered as "fairly violative sector" by Advertising Standards Council of India (ASCI).
- ASCI also informs that most complaints of misleading Ads were associated with the nutrition of a product, its benefits and the ingredient mix.
- The advertisements and claims should be adhered to truth, unambiguous, meaningful, not misleading and should be helpful for consumers for information comprehension.
- Claims should be substantiated with the validated methods of quantifying the ingredient.

Important terms used in the Food Advertising Ecosystem in India
➢ **Natural**
  o When a food is a single food derived from a recognised natural source with no other ingredient added to it.
  o Composite Foods are considered natural ingredients made food but not as natural food.
➢ **Fresh**
  o These are food products which are not processed in any manner other than washing, peeling, chilling, trimming, cutting or irradiation by ionising radiation.
  o The reference to "Fresh" is forbidden if the processing endeavours to achieve an extension in the shelf-life of the product.
➢ **Original** describes formulation of food products with a traceable origin which has remained unchanged over time.
➢ **Pure** is used for single-ingredient foods where nothing has been added and are devoid of all avoidable contamination.
➢ **Nutritional claims** are either about the comparison with other products or specific contents of a product.
➢ **Claims of equivalence** can be defined through example such as "contains the same of (nutrient) as a food" or as much (nutrient) as a (food) both labelling can be used but have different meaning.

FSSAI
❖ Food Safety and Standards Authority of India (FSSAI) was established under the Food Safety and Standards Act, 2006.
❖ It is an autonomous statutory body under **Ministry of Health & Family Welfare,** GoI.

Central Consumer Protection authority (CCPA)
❖ The CCPA has been established under **section 10 of the Consumer Protection Act, 2019** for regulating matters relating to violation of the rights of the consumers, unfair trade practices and false or misleading advertisements which are prejudicial to the interests of public and consumers and to promote, protect and enforce the rights of consumers as a class.
❖ It has notified **'Guidelines for Prevention of Misleading Advertisements and Endorsements for Misleading Advertisements, 2022'** with an objective to curb misleading advertisements and protect the consumers, who may be exploited or affected by such advertisements.
❖ CCPA can impose penalty of upto 10 lakh rupees on manufacturers, advertisers and endorsers for any misleading advertisements. For subsequent contraventions, CCPA may impose a penalty of upto 50 lakh rupees.
❖ The Authority can prohibit the endorser of a misleading advertisement from making any endorsement for upto 1 year and for subsequent contravention, prohibition can extend upto 3 years.

Regulations related to Misleading Ads and Claims in India
✓ **The Food Safety and Standard Act, 2006**
  It consolidates the laws relating to food and to establish the Food Safety and Standards Authority of India for laying down science-based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import, to ensure availability of safe and wholesome food for human consumption and for matters connected therewith or incidental thereto.
✓ **The Food Safety and Standards (Advertisements & Claims) Regulations 2018** makes companies accountable for their claims on food products and catering interests of customers.
✓ **The Consumer Protection Act 2019** set up Central Consumer Protection Authority (CCPA) as a regulatory body in matters of wrong advertisements for the protection of rights of consumers.
  o Misleading advertisement has been defined under section 2(28) of the Consumer Protection Act, 2019
✓ **The Programme and Advertising Codes** underlines that advertisements must not give claims which are difficult to be proved, these are prescribed under the Cable Television Network Rules 1994.

Impact of misleading Food Advertisements
▪ **Health Factor:** These advertisements may give wrong health information or may leave consumer in confusion and later may impact its health.

- **Misguide consumers:** These are harmful for consumers as they confuse and misguide consumers regarding food product, sometimes consumers cross their budgets to buy such fake products.
- **Makes Fake image of Food Product:** These advertisements show food product in the false ambit of nutrition and health or beauty which might be completely false or fake.
- **Extends market on one hand but at the cost of vulnerable sections of society:** Vulnerable sections of society may include ill, poor, influenced people.
- **Long term losses:** Continuing food products with false information may lead to long term losses in terms of health, finances etc as it makes false health and beauty standards.

Conclusion

Looking at the consequences, any Food products should be avoided with any unscientific and exaggerated claims. Advertisement should be based on promoting quality of their product not misleading the consumers.

The information or advertisements should have consonance with Good Clinical Practices (GCP) and reviewed scientific journal. People should be made aware of these issues which will help them to choose healthy food products.

> **PEPPER IT WITH**
>
> Mid-Day Meal Programme, National Food Security Act, Antyodaya Anna Yojana, Right to Food

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Recall Law for Substandard Drugs

News Excerpt

Recently an issue of circulating substandard drugs in the market and need for Drug Recall Law in India was again highlighted as a pharmaceutical company inadvertently shipped a Mislabelled batch of Drugs to the market.

Pre-Connect

About Drug Recall

- It is a term used when prescription or drug is removed from the market from distribution or use, as per their reported deficiencies especially in quality, side effects, efficacy or safety.
- The basic goal of drug recall is to protect or refund or provide remedy for consumers who are interested in purchasing the product.
- The product may be defective, contaminated, mislabeled, or poses a risk.
- Defective Drugs can be defined as drugs which are included in Not of Standard Quality (NSQ), Adulterated or Spurious drugs and also include cover drugs prohibited under the Provisions of Drugs & Cosmetics Act.

India and Drug Recall

- Since 1976, India has been trying to bring law that requires pharmaceutical companies to recall batches of drugs from the market that have failed to meet quality parameters or simply mandate recall of substandard drugs from market. Many countries like US already has this law.
- At present there is no such law enacted in India.
- In 2012, some efforts were taken by the CDSCO when some guidelines were published but they were not very satisfactory.

> ### Not of Standard Quality Drugs
>
> - Drugs manufactured by licenced manufacturers have been determined to be "not of standard quality" (NSQ) owing to deficiencies caused by minor variations in the drug. Defects that arise as a result of insufficient pre-formulation checks, in-process controls performed by the supplier, or hazardous conditions.
> - It is the responsibility of the drug company to withdraw the entire batch from the market if a drug is found to be Not of Standard Quality (NSQ).

> ### Drug Regulation Mechanism in India
>
> - The Drugs and Cosmetics Act of 1940 and 1945 ensures responsibility to central and state regulators for regulation of drugs and cosmetics.
>   - Various guidelines are issued licensing Ayurvedic,Siddha,Unani medicines.
> - **Central Drugs Standard Control Organisation(CDSCO)** gives standards and measures for quality of drugs,cosmetics,diagnostics and devices and regulates the market authorization of new drugs and clinical trials.
> - **Drugs Controller General of India** is responsible forapproval of licences of specified categories of drugs like Blood related drugs,IV Fluids,vaccines and sera.
>   - It is the head of department of the CDSCO and sets standards for manufacturing, sales,import and distribution of drugs in India.

- The Drugs and Cosmetics Act 1940 (which contained procedure for recall of Ayurvedic, homeopathic medicines but not allopathic drugs) will be replaced by the Drugs, Medical devices and Cosmetics Bill 2022.

Page 17

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Need for Drug Recall Mechanism

✔ Because of the absence of any law to withdraw the substandard drugs from the market, it becomes very crucial for India to have a National Drug Recall Law.

✔ In most of the states drug regulators can order a withdrawal of drugs but only if same batches of drugs is dispersed across multiple states. Thus, Central drug Regulator law /agency's role becomes important.

✔ Many drugs even after declaration of drugs to be NSQ, are not withdrawn just because of absence of system or mechanism.

Impact of Further Delay in Drug Recall Law

❖ **Illness and serious implications**
Vulnerable sections of the society such as children, low immunity people etc will suffer the most with fatal implications.

❖ **Restriction on reforms of pharmaceuticals** as there are no suggestions taken and no specific body to monitor drugs quality.

❖ **Sale of drugs in Cross Border areas:** If drugs are saled out to neighbours or border sharing countries the health implications would widespread and would bring bad name to India.

❖ Right now, there is no way to do regular inspection, which is necessary for drug quality and sale.

Reasons for lack of Drug Recall System

▪ For long time, there has been **continuous opposition from pharmaceutical industry and state drug regulators** for centralization of regulatory powers. This is because of **incompetence of a regulatory body.**

▪ **Loopholes in Drug Regulatory Laws and their inability to tackle complex drug regulatory issues are important factors to be seen.**

▪ Each state in India has their own **fragmented regulatory structure** but still drugs manufactured in one state can be sent to another but there is no such power to handle the situation.

PEPPER IT WITH

National Action Plan for Drug Demand Reduction,e-ANUDAN, Convention on Narcotics Drugs,1961

▪ Drug Recall has still not been prioritized by Government, this aspect is missing from their agendas. Similarly civil Society and NGOs are quite inactive in this regard.

▪ Pharmaceutical industry's growth is seen as inversely proportional to the strict drug regulations.

▪ Taking strict action is also believed to bring negative publicity to pharma companies internationally.

Conclusion

Recent incidences of decreasing quality of Indian Pharma, has opened eyes of authorities to look into the matter seriously. There is a high need of centralisation of licensed drug regulation with one authority looking into the matter legal power to hold companies liable for failures to recall drugs from across the country, and to also search and seize batches of failed medicine. The absence of centralized regulator has lead to adverse effects for patients in other States. Thus, quick and impactful action is the need of the hour.

M Pox

News Excerpt

After COVID 19, Monkey Pox (earlier M Pox) no longer constitutes Global Health Emergency as announced by World Health Organisation after recommendation from the emergency committee noticing decrease in reported cases and a robust response from countries affected by the virus.

About Money Pox or M Pox

• M Pox was first discovered in 1958 as there were two outbreaks of disease similar to smallpox in colonies of monkeys and hence was named monkeypox.

• Monkeypox virus (MPXV) is an enveloped double-stranded DNA virus that belongs to the Orthopoxvirus genus of the Poxviridae family

• It was found that it is a **viral zoonotic disease** with less clinical severity than small pox.

• Early symptoms of Monkey pox include enlargement of lymph gland through which it can be distinguished from small pox.

• It mainly occurs in communities where there is often a high background prevalence of malnutrition, parasitic infections, and other significant heath-compromising conditions, any of which could impact the prognosis of a patient with MPox.

• Its symptoms include the fever, malaise, and headache more severe than chicken pox infection.

• Its symptoms also include rash development similar to chicken pox.

• Laboratory confirmation of mpox is done by testing skin lesion material by PCR.

• Risk Factor also includes eating inadequately cooked meat of infected animals.

Page 18

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Transmission

➢ **Human-to-human transmission** is known to occur primarily through large respiratory droplets generally requiring a prolonged close contact. It can also be transmitted through direct contact with body fluids or lesion material, and indirect contact with lesion material, such as through contaminated clothing or linens of an infected person.

➢ **Animal-to-human transmission**: It may occur by bite or scratch of infected animals like small mammals including rodents (rats, squirrels) and non-human primates (monkeys, apes) or through bush meat preparation.

Treatment

➢ JYNNEOS is a 2-dose vaccine developed to protect against mpox and smallpox infections. People need to get both doses of the vaccine for the best protection against mpox. The second dose should be given 4 weeks after the first dose.

➢ Vaccination is an important tool in stopping the spread of mpox.

Current status of M Pox

✓ Currently there are more than 87,000 cases of mpox and 140 deaths which have been reported from 111 countries.

✓ Recently there is reduced case of M Pox of almost 90% in comparison to previous year.

In India

✓ India reported its first case of Monkey pox in July 2022 in an old man from Kerala who arrived from UAE, also the first in WHO South-East Asia Region.

✓ India, so far, has reported 71 cases of monkey pox with one death in the southern state of Kerala till October 2022.

✓ As per ICMR-NIV analysis, in India 90%–99% of the genome of M Pox are of A.2 lineage (US) of virus which is different from the B.1 strain (Europe) .

Challenges associated with M Pox

▪ Absence of proven treatment and so prevention is currently the sole modality of hope.

▪ Its re-emerging nature makes it a matter of concern.

▪ It is not restricted to endemic areas. Thus it could be a dangerous re-emerging disease with a worldwide reach including India.

▪ Increased human-animal contact as a result of climate change and deforestation, bush meat eating, and poor health and research infrastructure, among other factors creates an immunological niche for monkey pox virus to re-emerge.

▪ India is on high risk because of its huge population, weak healthcare facilities, heavy burden of both communicable and non-communicable diseases and challenges created by COVID-19.

Conclusion

It continues to pose significant public health challenges, even after lifting of the global health emergency status. To prevent future outbreaks and melting down the impact of m pox a sustainable response is required. One of the crucial aspects of the prevention process is ensuring access to tests, vaccines, and treatments.

Viral zoonotic disease

❖ Zoonoses are diseases transmissible from vertebrate animals, other than humans, to people.

❖ Mammals, birds, reptiles, and probably amphibians are reservoirs or amplifying hosts for viral zoonoses.

❖ Frequently, these viruses cause little or no overt disease in their nonhuman vertebrate hosts.

❖ Human infection may vary from unapparent to fatal disease.

❖ Transmission of zoonotic viruses may occur by a variety of routes. They include: "direct" (e.g., rabies virus) or "indirect" (e.g., hantavirus) contact; "nosocomial" (e.g., Ebola virus); "aerosol transmission" (SARS coronavirus); "vertical" (in utero) (Zika virus); and "vector- or arthropod-borne" (e.g., yellow fever virus and West Nile virus).

PEPPER IT WITH

Hepatitis A, Japanese encephalitis, Tick-borne encephalitis

Preterm Births in 2020: WHO Report

News Excerpt

According to the World Health Organisation's Born Too Soon: decade of action on preterm birth report, India recorded the highest number of preterm births in 2020.

Pre-Connect

About Preterm Birth

• Preterm birth is the birth of a baby before the completion of 37 weeks of gestation and also known as premature birth. (A baby is considered as stillborn who dies any time after 22 weeks of pregnancy, but before or during the birth.)

• There are different stages of preterm birth **extremely preterm (less than 28 weeks)**, **very preterm (28 to 32 weeks)** and **moderate to late preterm (32 to 37 weeks).**

• It is associated with delayed mental and physical development in infants and increased risks of diseases in adulthood and is a significant public health issue in India and Southeast Asia.

- Globally it is found that one in every 10 birth is preterm.
- Preterm babies usually are at higher risk of Type-2 diabetes, hypertension and cancer during adulthood.
- In comparison to normal new born child it is found that after birth preterm babies are 2-4 times at higher risk of death
- As per studies, of about 13% are born preterm all babies born annually in India and India accounts for 23.4% of preterm births globally.

Finding as per report

➢ Approximately 9,00,000 children died in 2019 of complications of preterm birth.

➢ **India, Pakistan, Nigeria, China, and Ethiopia** accounted for 45% of pre-birth babies globally putting these babies at high risk of mortality and "silent emergency".

➢ One premature baby is found dead at every 40 seconds out of preterm birth which is happening in every 2 seconds.

➢ Bangladesh had the highest estimated preterm birth rate (16.2%), followed by Malawi and Pakistan.

➢ **India reported highest number of preterm birth** with 30.16 lakh cases, followed by Pakistan, Nigeria and China.

➢ In India, West Bengal reported highest preterm births with 16% estimate, followed by Tamil Nadu (14%) and Gujarat (9%).

➢ However there has not been any change in preterm birth globally, as the rate remained same at 9.9% in 2020 similar to 2010.

➢ At global level, Southern Asia (13.2%) and sub-Saharan Africa (10.1%) together account for over 65% of preterm births.

➢ **Neonatal disorders** are the leading cause of burden of disease.

➢ The "4 Cs" – Conflict, Climate change, COVID-19 and the Cost-of-living crisis are the major treat.

➢ Maternal COVID 19 was seen as a threat to babies and infection was transmitted from mother to baby.

➢ High income countries have better survival rate (9 in 10) than low-income countries (less than 1 in 10).

➢ Preterm birth is considered as single largest killer of children under five years of age.

Adverse Impacts of Preterm Birth

✓ It accounts for 1 in 5 deaths of children under five years of age which represents that it is one of the leading cause of **Child mortality**.

✓ Preterm babies tend to grow at a slower pace than full-term babies and it can also lead to hearing and vision loss.

✓ Being fourth leading cause of **loss of human capital** worldwide after ischemic heart disease, pneumonia and diarrheal disease, it is damaging factor for **respiratory and cardiac systems** in long term for those who survive.

✓ It leads to the adverse **neuro developmental outcomes** like autism, cerebral palsy, intellectual disabilities especially in the babies born between 37 and 39.9 weeks.

✓ It can also lead to **learning and behavioral disorders** along with increased **risks of chronic disorders**, including psychiatric and cardiovascular disorders in adult survivors.

PREVENTION OF PRETERM BIRTH
- Preconception care package, especially family planning, education, nutrition and STI prevention, ensuring adolescent friendly services
- Antenatal care package for all women with targeted care of women at risk of preterm birth
- Obstetric care and provider education to promote appropriate induction and caesarean
- Policy support including smoking cessation and employment safeguards of pregnant women

MANAGEMENT OF PRETERM LABOUR
- Tocolytics to slow down preterm labour
- Antenatal corticosteroids
- Antibiotics for pPROM

CARE OF PREMATURE BABY
- Essential newborn care, especially feeding support and thermal care
- Neonatal resuscitation if needed
- Extra care of premature babies including Kangaroo Mother Care
- Management of premature babies with complications, especially respiratory distress syndrome and infections
- Comprehensive neonatal intensive care, where capacity allows

REDUCTION OF PRETERM BIRTH

MORTALITY REDUCTION AMONG BABIES BORN PRETERM

Government Initiatives

❖ POSHAN Abhiyan
❖ Anemia Mukt Bharat Abhiyan
❖ National Food Security Act (2013)
❖ Pradhan Mantri Matru Vandana Yojana (PMMVY)
❖ Integrated Child Development Services (ICDS) Scheme
❖ Eat Right India and Fit India Movement.

UN IGME

United Nations Children Fund along with WHO, World Bank Group and the United Nations Department of Economic and Social Affairs, Population Division led UN IGME was formed in 2004 to share on child mortality, improve methods for child mortality estimation, child survival goals and estimating child mortality.
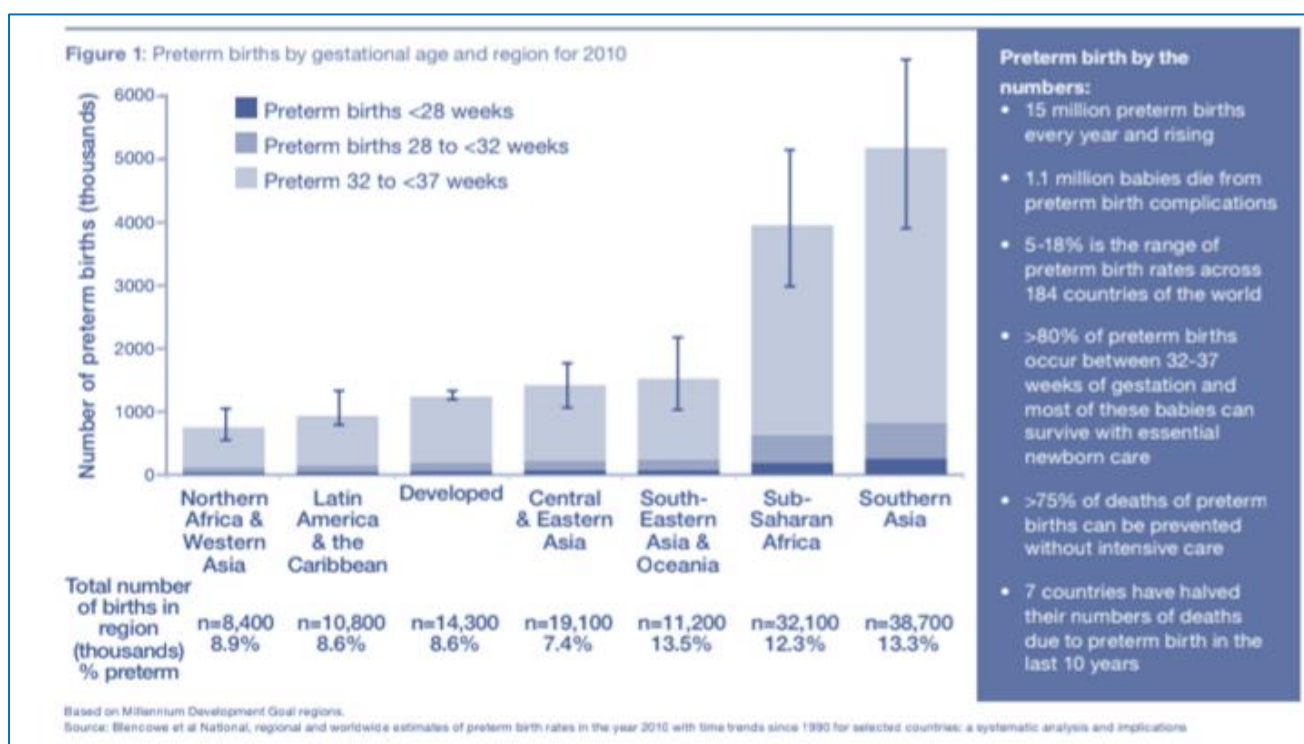
PEPPER IT WITH

Garbh-Ini, ICDS Scheme 'VatsalyaMaatri Amrit Kosh', Endometriosis

Way Forward

- Government should focus on increasing access to family planning services, improving ante partum services such as health and nutrition like the intake of iron folic acid by pregnant mothers.
- Counselling facilities on healthy diet and nutrition can play an important part and at the same time there should be identification and management of risk factors.
- Better data and reports can help in better implementation of schemes at the same time perinatal deaths surveillance guidelines need to be effectively implemented.
- The International Classification of Diseases for child mortality must be adopted.

	Primary Secondary Role: Supporting effort
Invest	Ensure Preterm interventions and research given proportional focus, so funding is aligned with health burden
Implement	Plan and implement preterm birth strategies at global and country level and align on preterm mortality reduction goal
	Introduce Programs to ensure coverage of evidence-based interventions, particularly to reduce preterm mortality
Innovate	Perform research to support both prevention and treatment agendas
	Pursue implementation research agenda to understand how best to scale up interventions
Inform	Significantly improve preterm birth reporting by aligning on consistent definition and more consistently capturing data
	Raise awareness of preterm birth at all levels as a central maternal, newborn and child health issue

- Main region needs to be identified for better intervention to local areas.
- There should be more funding through budget on a priority basis.
-

Figure 1: Preterm births by gestational age and region for 2010

Preterm birth by the numbers:
- 15 million preterm births every year and rising
- 1.1 million babies die from preterm birth complications
- 5-18% is the range of preterm birth rates across 184 countries of the world
- >80% of preterm births occur between 32-37 weeks of gestation and most of these babies can survive with essential newborn care
- >75% of deaths of preterm births can be prevented without intensive care
- 7 countries have halved their numbers of deaths due to preterm birth in the last 10 years

Food Processing, Polishing and Nutrition

News Excerpt

As per studies, nutrients in millets are affected by processing and polishing which has highlighted the challenges related to food security.

Pre-Connect
About Millets

- These are particularly cultivated in the tropical parts of Africa and Asia.

- Millets are high in nutrition and dietary fibre like protein, micronutrients and phytochemicals.
- Millets contain 7-12% protein, 2-5% fat, 65-75% carbohydrates and 15-20% dietary fibre.
- Arid and Semi arid regions with low rainfall are suitable for their growth. It can grow in temperature from 30°C to 35°C.
- It can grown in different soil types, from poor to fertile and are tolerant to some degree of alkalinity.
- Rainfall required is between 250-300mm, which is quite less making it suitable for water scarce and drough prone regions.
- Pericarp's (outer covering) function is to protect the kernel from inhospitable conditions, disease and damage along with husk, endosperm (largest part of kernel and is a storage center with protein covering called as aleurone) and germ are the three major parts of millet kernel.

Millets in India

- Millets are kharif crop which are grown in nine varieties over 20 states in India.
- As per Agricultural and Processed Foods Development Authority, India is the world's largest producer of millets. In 2021-2022, the country accounted for 40.51% of the world's pearl millet production and 8.09% of sorghum.
- Leading producers include Rajasthan, Karnataka, Maharashtra and Andhra Pradesh.
- For the year 2021-22, Millet constitutes around 5 % of the national food grain basket as about 16 million tonnes millets has been produced in India
- Government declares MSP for jowar, bajra and ragi and also bajra has the highest market share followed by jowar.

Government initiatives

- From coarse cereals or cereals of the poor ,millets has been renamed as nutria-cereals.
- The Indian Institute of Millets Research, Hyderabad will be supported as the Centre of Excellence to make India a global hub for 'Shree Anna' (millets).
- 2018 was declared as 'National Year of Millets'.
- **Rashtriya Krishi Vikas Yojana (RKVY)** was a scheme as a initiative for Nutritional Security through Intensive Millets Promotion (INSIMP) to increase millet production between 2011-14.
- Through **National Food Security Mission** Millet was implemented in 212 districts of 14 states.
- **POSHAN** Mission also includes millets.
- **National Food Security Act (NFSA)**, 2013 provides eligible households with rice, wheat, and coarse grain at Rs 3, Rs 2, and Re 1 per kg respectively.

Impact of Processing on nutrients

- Outer covering or husk when removed can remove crude and dietary fiber and reduce the phytic acid and polyphenol contents.
- Due to the loosing of bran, process like milling and sieving make the flour more digestible and visually attractive but also reduce nutrient content.
- Processes such as Germination and fermentation improve the nutritional characteristics of millets.

Impact of Polishing

- The process includes the removal of outer layers of the grain, including the bran and the germ.
- It can severely lead to nutrient loss in all cases.
- The process is long and with every step there is loss of more protein, fat, and fiber contents.
- But at the same time if we peruse process for limited time then nutrient content are preserved. Eg. Polishing barnyard millet for just two to three minutes.
- It can remove 60-80% of iron, magnesium, phosphorus, potassium, and manganese in both indica and japonica varieties.
- It leads to loss of bran and bran loss leads to compromised fiber content.

PEPPER IT WITH

Public Distribution System,Pradhan Mantri Kisan SAMPADA Yojana, World Food Programme, International Fund for Agricultural Development.

Way forward

- **Research:** More research should be done on how to maintain the nutritive value of food along with their refining and production.
- **Awareness**: Consumers should be made aware about the nutritive value of food products and what to consume and what not.
- Processing and Polishing methods **needs a balance** coping with the demand of people.
- Food Authorities should be made responsible for looking at refining process of food so that they don't loose their nutritive content.
- Raw food should be given priority, as compared to refined food. For eg. Rice with bran are highly nutritious as compared to rice without bran.
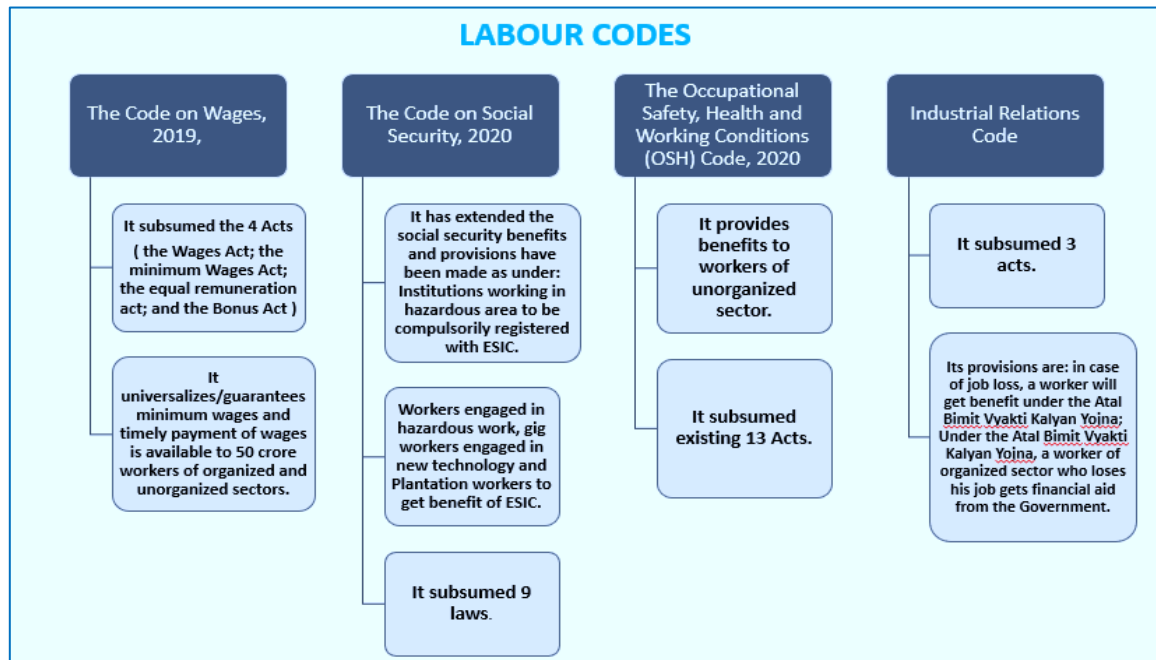
Code on Social Security, 2020

News Excerpt

Recently, Minister of State for Labour and Employment stated in Lok Sabha that for the first time, the definition of 'gig worker' and 'platform worker' has been provided in the Code on Social Security, 2020.

Pre-Connect

Labour code:

LABOUR CODES

The Code on Wages, 2019,
- It subsumed the 4 Acts (the Wages Act; the minimum Wages Act; the equal remuneration act; and the Bonus Act)
- It universalizes/guarantees minimum wages and timely payment of wages is available to 50 crore workers of organized and unorganized sectors.

The Code on Social Security, 2020
- It has extended the social security benefits and provisions have been made as under: Institutions working in hazardous area to be compulsorily registered with ESIC.
- Workers engaged in hazardous work, gig workers engaged in new technology and Plantation workers to get benefit of ESIC.
- It subsumed 9 laws.

The Occupational Safety, Health and Working Conditions (OSH) Code, 2020
- It provides benefits to workers of unorganized sector.
- It subsumed existing 13 Acts.

Industrial Relations Code
- It subsumed 3 acts.
- Its provisions are: in case of job loss, a worker will get benefit under the Atal Bimit Vyakti Kalyan Yojna; Under the Atal Bimit Vyakti Kalyan Yojna, a worker of organized sector who loses his job gets financial aid from the Government.

Code on Social Security, 2020

- The Code on Social Security, 2020 provides for framing of suitable social security schemes for gig workers and platform workers on matters relating to life and disability cover, accident insurance, health and maternity benefits, old age protection, etc.
- The Code also provides for setting up a Social Security Fund and one of the sources of fund, is contribution from aggregator between 1 to 2% of annual turnover of an aggregator subject to the limit of 5% of the amount paid or payable by an aggregator to such workers.
- The Government has launched e-Shram portal on 26.08.2021 for registration and creation of a Comprehensive National Database of Unorganized Workers including gig workers and platform workers.

Definitions on Code

- ❖ **Gig workers:** Gig workers refer to workers outside the traditional employer-employee relationship.
- ❖ **Platform workers:** Those who access organisations or individuals through an online platform and provide services or solve specific problems.
- ❖ **Unorganised worker**: One who works in the unorganised sector, and includes workers not covered by the Industrial Disputes Act, 1947, or other provisions of the Bill (such as provident fund or gratuity).

Platform economy

- ❖ Platform economy operates through two business models, 'Crowd work' and 'Work-on-demand via apps.
  - o **Crowd workers** operate online through platforms that connect vast numbers of clients, organisations, and businesses across borders.
  - o **'Work-on demand via apps'** refers to place-based and geographically limited work, facilitated by platforms.
- ❖ The platform economy generates new avenues of employment.
- ❖ Platform economy jobs are associated with job insecurity, earnings volatility, and lack of social protection schemes and career advancement opportunities. Importantly, by shifting health, financial, and production risks from the client and platform to the worker, this relationship makes workers more vulnerable and insecure.
- ❖ Platform workers as self-employed workers or independent contractors.

Page 23

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DELHI VN: 9717380832 & **DELHI ORN:** 9811293743 | **JAIPUR:** 8290800441 | **PATNA:** 7463950774 | **RANCHI:** 9939982007 | **BHOPAL:** 7509975361 |
INDORE: 7314977441 | **BENGALURU:** 7619166663 | **HYDERABAD:** 79960 66663 | **IMPHAL:** 9650245599 | **SRINAGAR:** 98712 35599 | **MUMBAI:** 9871265599 |

- The Code on Social Security, 2020 envisages social security benefits through formulation of schemes for gig and platform workers and can be implemented through Employees' Provident Fund Organisation (EPFO) and Employees' State Insurance Corporation (ESIC) which hitherto provides social security benefits to organised sector workers.
- The Code empowered the central government to set up social security funds for unorganised workers, gig workers and platform workers. The 2020 code states that the central government will set up such a fund.
  - Further, state governments will also set up and administer separate social security funds for unorganised workers.
- The Code envisages that the appropriate Government may set up a toll-free call centre or helpline or such facilitation centres, etc., for unorganised workers, gig workers and platform workers, as may be considered necessary from time to time to disseminate information on available social security schemes, facilitate filing, processing and forwarding of application forms for their registration, assist them to obtain registration, and to facilitate their enrolment in the social security schemes.

Key Issues in the Code on Social Security, 2020

➤ Provisions on gig workers and platforms workers are unclear. With overlap across definitions, it is unclear how schemes specific to these categories of workers will apply.
➤ Provisions on gratuity for fixed term workers unclear.
➤ The 2020 code mandates an employee or a worker (including an unorganised worker) to provide his Aadhaar number to receive social security benefits or to even avail services from a career centre. This may violate the Supreme Court's Puttaswamy-II Judgement.

Way forward

✓ Gig economy is the growing economy and workers connected with it are very important for the Indian economy. So, provision related to them should be clear and profitable for them.
✓ Aadhar and privacy issue is bigger issue of the time. Employer and government should ensure that the data of the employee will remain safe and it cannot be misused.

> **PEPPER IT WITH**
> Gig economy, Labour code, Code on Social Security, 2020

Regulation of Online money gambling

News Excerpt

Recently, the Ministry of Electronics and IT (MeitY) has announced new regulations to protect online gamers from harmful content and addiction. New online gaming rules have been included as an amendment in the IT Rules of 2021.

Pre-Connect

Online Game

The Indian government defines an online game as "a game that is offered on the Internet and is accessible by a user through a computer resource or an intermediary. Permissible online games are those games, real money or otherwise, that do not involve wagering, user harm in its content and do not create any addictive consequences for children.

Real money gaming

- Real-Money Gaming means the offering, distribution, advertising, promotion and sale of any type of game, e.g., casino, bingo, poker, sports or sporting events, skill games, etc. played through Online Media in which real money is wagered on the outcome of the game.
- As per the All India Gaming Federation – The Online Gaming in India – The GST Conundrum' report, the online real money players are expected to grow from 80 million in 2020 to 150 million by 2023.
- The real money gaming segment is divided into two categories i.e. Fantasy Sports and Online Card Games. Both categories lack strict KYC checks, overlook regulatory guidelines as platforms allow relative anonymity to increase the player traffic. This leads to various types of frauds that impact the reputational, regulatory, and financial aspects of the businesses.

Differences between video games and RMGs		
ISSUE	**VIDEO GAMES**	**ONLINE REAL MONEY GAMES**
Legal view	Considered entertainment products and art forms	International laws govern them under the Online Gambling Act of their respective lands
Primary industry concerns	Age-appropriate content regulation	Socio-economic impact on individuals
Primary incentive & benefit for players	Entertainment, leisure, and career development to become an esports athlete and/or game streamer	Cash winnings

Emotional response triggers for players	Winning or losing virtual in-game activities (gameplay)	Winning or losing cash prizes and deposited money
Monetisation	Buy to Play model - player pays or subscribes to play; Free to Play model - income generated from in-game purchases of virtual items and from advertisements	Operators charge a percentage as commission/platform fees from the deposit and/or earnings of every player on every game
Consumer age group	Ages 3 and above. games have age rating certificates based on content maturity level	Ages 18 & above only due to heavy involvement of real money
Nature of IP	Company-owned original IP or licensed IPs of multimedia brands like Disney, DC, or Marvel	Mostly public domain IPs of pre-existing real-world games/activities
Peripheral industry benefits	E-sports and game streaming industries license video game IPs for films & series production and for merchandising	Not applicable
Artistic merits	Video games are globally recognised as a form of new-age narrative arts medium and are recognised with prestigious international awards	Not applicable
Academic merits	Video games have helped advance R&D in scientific, sociological, and educational domains and facilitated the creation or evolution of new forms of technology	Not applicable
Ancillary industry Benefits	AI, machine learning, computer vision, VFX, simulations, virtual filmmaking, psychology, neuroscience, education & training	Not applicable

About new rules

The new rules can be summarised into the following points:

➢ The government will set up several SROs with representatives from various sectors. These SROs will decide if a game is allowed or not.

➢ Gaming firms or platforms must not offer, publish, or share online games that have harmful or banned content. They must verify the identity of online gamers.

➢ Online games that involve any kind of gambling (including ads) will be prohibited.

➢ SROs will also make sure games follow guidelines to prevent addiction and mental harm through parental controls, frequent warning messages, and age-rating systems.

➢ The gamers will have the option to opt-out after reaching their own limits for time or money spent.

➢ Aside from the above, real money gaming is allowed but it will become unpermissible if money is staked on the result of the game. He added that any SRO that permits such games will be breaking the rules.

○ This was in response to a question about some apps that offer cash prizes based on the outcome of IPL cricket matches.

Aim of new rules

The Ministry of Electronics and IT (MeitY) has asked SROs to prominently mention on their websites and/or mobile apps a framework for verifying an online real money game. This framework will be put in place to guarantee the following:

○ Prevent user harm, such as self-harm and psychological harm, from online gaming

○ Safeguard children from inappropriate or harmful online games by using parental or access control and age-rating mechanism

○ Reduce the risk of gaming addiction, financial loss and financial fraud by warning users repeatedly and allowing them to exclude themselves upon user-defined limits being reached for time or money spent

○ Ensure that online real money games are not against the interests of sovereignty and integrity of India.

Mobile game downloads in India (in billion)
COVID-19 proved to be the tipping point for online gaming in India. The sector witnessed accelerated growth (50%) in Q2.
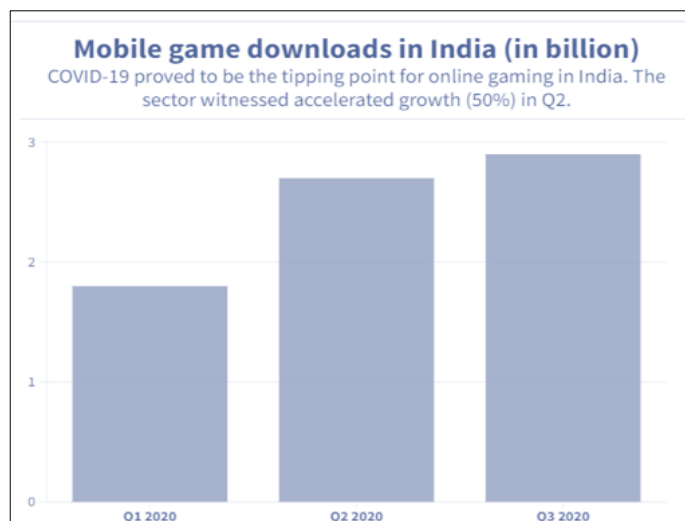
Importance of new Amendment

- The legal framework provided by the new rules will boost investor confidence.
- The release of the new online gaming rules is a watershed moment for the industry, as it recognizes online gaming intermediaries and distinguishes them from gambling.
  - o The rules will go a long way in helping India to become a global leader in gaming and also contribute to the continued success of Brand India and Create in India.
- The new guidelines will promote innovation and boost 'create in India' and 'brand in India' initiatives. "It will ensure the responsible and transparent growth of the industry, safeguarding consumer interests while curbing the proliferation of illegal offshore gambling sites.
- The clear definition of real money and permissible games will be crucial in catalyzing the growth of legitimate industry players.
  - o This framework will allow us to innovate and operate freely while ensuring that the necessary guardrails are in place to safeguard the users.

The rise and rise of Online Gaming in India

- According to Statista, India had nearly 27 crore online gamers in the 2018 fiscal, with the figure rising to 36.5 crore in 2020 and expected to reach 51 crore in the 2022 fiscal.
- A Deloitte report said that the country's online gaming industry was expected to grow to $2.8 billion in 2022, up from $1.1 billion in 2019.
- There were over 400 gaming start-ups in India as of August 2020, according to Maple Capital Advisors.
- Nikkei said in 2021 that India accounted for 15% of global gaming traffic.
- Maharashtra accounts for 17% of online casino traffic, followed by Telangana (10%), according to a study.

Challenges

- o **Some Games are Legal and Some Are Illegal:** The laws concerning Online Gaming in India falls under the state legislature. Only states in India are entitled to formulate laws for such activities within their respective states.
- o **Indian Laws Are Quite Unclear for Using Gambling Site:** Major gambling sites welcome Indian customers but they are operating overseas and aren't necessarily being governed by Indian Law.
- o **Banking Methods for Online Gaming in India:** Indian resident can access online casinos that accept INR without the fear of prosecution. Credit cards, debit cards, wire transfers, prepaid cards, e-Wallets, and Cryptocurrencies (such as Bitcoin, Litecoin, and Ethereum) are some of the Indian online casino banking methods. Each method has its minimum and maximum deposit limits.

Way forward:

- ➤ New rules should be implemented properly and awareness about online gaming and its risk, technicality and other things should be advertised.
- ➤ Everyone should know about the online gaming before playing and also they should be aware about monetary benefits and risk.
- ➤ Government should do something to aware people about online gaming and regulatory laws.

UN Population Report

News Excerpt:

India is set to overtake China to become the world's most populous country by the middle of 2023, according to data released by the United Nations.

Pre-Connect

- **United Nations Population Fund:** UNFPA is the United Nations sexual and reproductive health agency and is formally named the United Nations Population Fund.
- **MISSION:** Its mission is to deliver a world where every pregnancy is wanted, every childbirth is safe and every young person's potential is fulfilled.
- The organization was created in 1969, the same year the United Nations General Assembly declared "parents have the exclusive right to determine freely and responsibly the number and spacing of their children."
- All UNFPA funding is voluntary. UNFPA mobilizes financial resources from governments and other partners to support programmes that aim to achieve the "**three zeros" – zero unmet need for family planning, zero preventable maternal deaths,**

DEMOGRAPHIC INDICATORS

	Population	15-64 years	65+	TFR	Life expectancy
India	1,428.6 mn	68%	7%	2.0	72.5 yrs
China	1,425.7 mn	69%	14%	1.2	79 yrs
World	8,045 mn	65%	10%	2.3	73.5 yrs

UNFPA's State of World Population Report 2023

and zero harmful practices and gender-based violence – and accelerate progress towards the Sustainable Development Goals by 2030.

Key points of the report

Population Estimation

➢ India's population is pegged to reach 142.86 crore against China's 142.57 crore. This shows India will have 29 lakhs more people than its Asian neighbour.
   o According to the report, 68 per cent of India's total population is between the ages of 15 and 64 years, which is considered the working population of a country.
   o About 25 per cent is between 0-14 years; 18 per cent between 10 and 19 years, 26 percent between 10 and 24 years, and 7 per cent above 65 years.
➢ The United States is a distant third, with an estimated population of 34 crore, the data by the State of World Population Report, 2023 of the UN Population Fund (UNFPA) showed.
   o The world's population hit the 800-crore mark in November 2022.
➢ Another UN Report, World Population Prospects 2022, that was released in July last year, had said that by 2050, India's population would reach 166.8 crore, far exceeding China's declining population at 131.7 crore.
   o In 1950, India was at 86.1 crore, while China was at 114.4 crore.
➢ According to the UN projections, India's population is expected to grow for the next three decades after which it will begin declining.
➢ The latest UNFPA report showed population growth in both India and China has been slowing, despite accounting for more than one-third of the estimated global population.

Population Growth concentration:

➢ The report says that contrary to the alarm bells about exploding numbers, population trends everywhere point to slower growth and ageing societies.
   o Eight countries will account for half the projected growth in global population by 2050 — the Democratic Republic of Congo, Egypt, Ethiopia, India, Nigeria, Pakistan, the Philippines and the United Republic of Tanzania — while two-thirds of people now live in a country where lifetime fertility corresponds with zero growth.

Life Expectancy:

➢ According to the report, the average life expectancy at birth for males in India is 71 years while for females it is 74 years.
   o The life expectancy for males globally was projected 71 and 76 for females.
   o For developed regions, the average life expectancy for males was projected at 77 and 83 for females — the highest of all.
   o For less developed regions, the ages are 70 for males and 74 for females, while for least developed countries, it is 63 for males and 68 for females.

Gender Data

➢ The report brought up worrying statistics regarding gender rights in India.
➢ The adolescent birth rate per 1,000 girls aged 15–19 was 11, while 23 per cent of girls were married off before the age of 18.
   o Violence by an intimate partner in the last 12 months was reported by 18 per cent of women, while 66 per cent of women had decision-making on sexual and reproductive health and reproductive rights.
   o A little over 80 per cent of women had some say in decision-making regarding their own healthcare.

Fertility Rate

➢ India's total fertility rate (births per woman in the reproductive age) is estimated at 2.0 lower than the world average of 2.3.
   o Developed regions projected a fertility rate of 1.5, less developed regions 2.4 and least developed countries 3.9.

Key recommendations

✓ With almost half the population under 25 years of age, India has a time-bound opportunity to benefit from the demographic dividend. The focus should be on giving women more power to control when and how they have children.
✓ The report strongly recommended that governments introduce policies with gender equality and rights at their heart, such as parental leave programmes, child tax credits, policies that promote gender equality in the workplace, and universal access to sexual and reproductive health and rights.
✓ Ensuring gender equality, empowerment and advancing greater bodily autonomy for women and girls—is one of the key determinants of a sustainable future.
✓ The report indicates that population anxieties are widespread and governments are increasingly adopting policies aimed at raising, lowering or maintaining fertility rates.
✓ To build thriving and inclusive societies, regardless of population size, we must radically rethink how we talk about and plan for population change.

Demographic Dividend

- As the country with the largest youth cohort, its 254 million youth (15-24 years) can be a source of innovation, new thinking and lasting solutions.
- With close to 50% of its population below the age of 25, India has a time-bound opportunity to benefit from the demographic dividend and it must convert this into "economic benefits through additional investments in health, education, and quality jobs for young people — including targeted investments in women and girls.
- Things would be much better if women and girls, in particular, were equipped with equal educational and skill-building opportunities, access to technology and digital innovations, and most importantly, the information to fully exercise their reproductive rights and options.
- An increased Labour Force increases economic productivity.

Issues with Excess Population

- Increasing population puts pressure on land and water and also it will cause poverty, unemployment, social divide, inequality and crime etc.
- Imposition of forced targets can lead to imbalanced sex ratios, preferential health and nutrition for male children, denial of the paternity of female children, violence against women for giving birth to girl children, and coercion of women to have fewer or greater numbers of children.

Way forward

- Despite having demographic dividend, the major concern is lack of jobs, skills in the people of the country. Thus, there is need to work for the skill management and job creation in our country.
- Government should have to work to achieve National population policy's goals.
- Schemes for population control and skill development should be implemented properly.

ECONOMY

Issue of Illegal Mining

News Excerpt

The Indian Bureau of Mines (IBM) had flagged massive irregularities and corruption in the mining of Manganese ore in the state of Odisha.

Pre-Connect

Mining in India

- India is endowed with huge mineral resources of fuel, metallic and non-metallic minerals including minor minerals.
- The mining sector is an important segment of the Indian economy. India produces as many as 95 minerals, which include 4 fuel, 10 metallic, 23 non-metallic, 3 atomic and 55 minor minerals (including building and other materials).
- The Indian mining industry is characterized by a large number of small operational mines. Most of the mines in India are in Madhya Pradesh followed by Gujarat, Karnataka, Odisha, Chhattisgarh, Andhra Pradesh, Rajasthan, Tamil Nadu, Maharashtra, Jharkhand and Telangana.
- Mining contributes about 2.5% of the Indian GDP and employs millions of people.
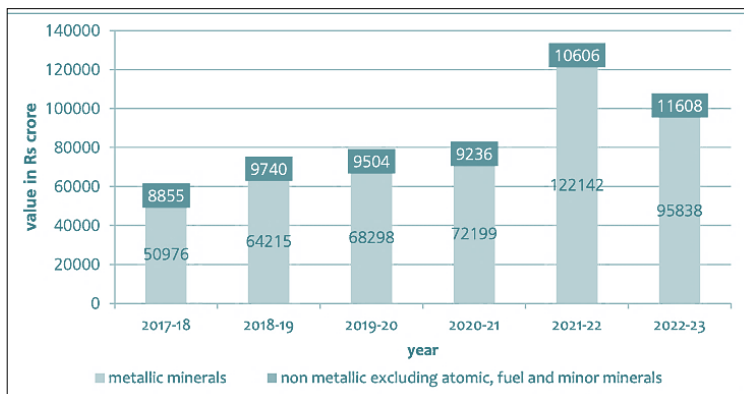
India's Position in the World in Terms of Production

Product	Position in World Production
Mica blocks and splitting	1st
Coal & Lignite; Barytes; Chromite	3rd
Iron Ore	4th
Bauxite; Manganese ore	6th
Aluminium	10th
Crude Steel	11th

Source: Government of India, Ministry of Commerce & Industry.

Illegal Mining in India

About

➢ It is the illegal extraction of minerals, ores and other valuable resources without necessary permits, licenses or approvals from the authorities. Such extraction also involves the violation of environmental, labour and other safety standards.

➢ Illegal mining is primarily of two types.
  o Mining without any approvals whether 13 major minerals notified by the Central government or minor minerals notified by state governments.
  o Mining is above the permissible limit set by the lease approved by the government.

Problems

✓ According to a report by the Union Environment Ministry, there are 1 lakh incidents of illegal mining in the country every year. Every month 8,833, every day 294 and every hour 12 incidents, some river and hill in the country is dug illegally.

✓ In 2016, 1,07,609 cases of illegal mining were reported. But out of these, FIR was registered only in 6,033 cases.

✓ There are several ill practices associated with the Mining sector, some of the issues include:

- o The passing of low-grade ores as high-grade ores.
- o Under-reporting of quantity mines
- o Evasion of payment of royalties and taxes.
- o Financial irregularities by the officials
- o non-use of modern technology and non-inspection of mining leases.
- o Violation of environmental clearances.
- o The boundary markings of the leased-out area are not clearly defined.
- o There is no clarity in the enforcement of law, implementation is a major problem.

> ### Manganese Ore
> ❖ It is the hard element found in the Earth's crust and twelfth most abundant element.
> ❖ It is an important nutrient important for the metabolism of carbohydrates, cholesterol, and amino acids.
> ❖ It has multiple industrial applications such as in production of steel, aluminium alloys, smelting of iron ore and batteries.
> ❖ Though Manganese is associated with all geological formations, majorly it is found in Dharwar system.
> ❖ Odisha is the leading producer with major deposits in the areas of Bonai, Kendujhar, Sundergarh, Gangpur, Koraput, Kalahandi and Bolangir.

Impact

▪ Loss to the state exchequer- Several states in India have lost crores of rupees as revenue. Illegal mining in Karnataka alone has caused a loss of more than Rs 50,000 crore to the exchequer.

▪ Environmental degradation- Illegal mining can cause deforestation, soil erosion and water pollution and impacts the habitats for wildlife thereby causing ecological damages.

▪ Heavy metal pollution: The clear disregard for the safety of illegal mining leads to heavy metal pollutant contamination. Chemicals like mercury and cyanide pose serious risks to public health and nearby communities.

▪ Human Rights Violations: Illegal mining had resulted in the loss of life, including police officers. It is also associated with forced labour, child labour and the exploitation of large populations.

Measures Against Illegal Mining

✛ ### Legal Measures:
- o Section 23C of Mines and Minerals (Development and Regulation) Act 1957, empowers the State Governments to frame rules to prevent illegal mining.
- o The State Government submits quarterly returns on the prevention of illegal mining to the Indian Bureau of Mines. These returns contain details such as the number of cases detected and action taken thereon etc.

✛ ### Surveillance:
- o The Indian Bureau of Mines (IBM) has set up two laboratories to carry out the work for monitoring mining activities using GIS and Remote sensing software.
- o Mineral Conservation and Development Rules 2017 mandates the mineral concession holders to submit drone images & satellite imageries to the Indian Bureau of Mines. It allows IBM to monitor the mining activities in the country remotely without much human intervention.
- o Mining Surveillance System (MSS) is a satellite-based monitoring system which aims to establish a regime of responsive mineral administration by curbing instances of illegal mining activity through automatic remote sensing detection technology.

> ### Mining in Constitution
> #### Under Schedule 7
> - List-I-Central List- Item 54-Central government own minerals within exclusive economic zone of India (EEZ)
> - List-II-State List- Item 23- State government own the minerals located within their boundaries.

> ### PEPPER IT WITH
> National Mineral Policy 2019, Pradhan Mantri KhanjiKshetra Kalyan Yojana, Mineral Concession system, Mines and minerals (development and Regulation) Act

Other measures need to be taken

> There is a need to develop close collaboration between mining companies and local communities to ensure mining activities are sustainable.

> The promotion of sustainable mining practices could result in the reduction of demand from the illegal sector. A CSR-type of responsibility can be placed on the mining companies.

> There is a need to effectively utilise the unused fund lying with the District Mineral Foundation (DMF).
> There is a need to create awareness among the local communities and society about the harmful effects of illegal mining which can help in reporting illegal mining activities to the authorities.

Multi-Modal Logistics Parks (MMLPs)

News Excerpt

The government of India is planning to bid out 6-7 multi-modal logistics parks in the next financial year (2023-2024). According to reports, parks in Chennai and Indore have been awarded till now and the third in Bengaluru is expected by the end of March 2023 The parks currently being bid out are ranking high in the Logistics Efficiency Enhancement Programme (LEEP) index due to their access to commercial hubs.

Understanding MMLPs

- MMLPs are based on Hub & Spoke model they tend to integrate multiple modes of freight transport through highways, railways & inland waterways.
- They are envisaged to be developed as state-of-the-art large-scale warehousing facilities for different types of commodities.
- MMLPs are the one-stop solution for all services related to cargo movement like warehousing, customs clearance, parking, maintenance of trucks etc.
- There are various facilities available in the MMLPs such as:
  - Freight aggregation and distribution
  - Multimodal freight transport
  - Integrated storage and warehousing,
  - Information technology support
  - Value-added services like Cold storage and yard facility
  - Custom clearance house and workshops

- Focus areas under the MMLPs are:
  - Technology-driven-state-of-the-art freight management system.
  - Value-added services range from packaging to labelling.
 - Mechanised material handling and related value-added services
- **Features of MMLPs in India**:
  - MMLPs sites in India are strategically placed and act as a focal point of logistics in the region.
  - Act as an example of cooperative federalism as implementing agencies is Special Purpose Vehicles formed by central and state agencies.
  - Developed under Public-Private-Partnership (PPP) based on a Design, Build, Finance, Operate, and Transfer (DBFOT) model.
  - Developed under various parent programs like PM Gati Shakti National Master Plan and Bharat Mala Pariyojana etc.
 - Carries huge capacities and is expected to cater for the logistic horizon for multiple decades.
- **Advantages of MMLPs:**
  - Improved efficiency of the logistics sector lowering overall freight costs, and warehousing costs and an improvement the tracking of consignments etc.
  - Rail freight movement lowers the CO2 emissions on a per tonne per km basis. Hence, MMLPs can aid in India's objective of a 45 per cent reduction in carbon intensity by 2030.
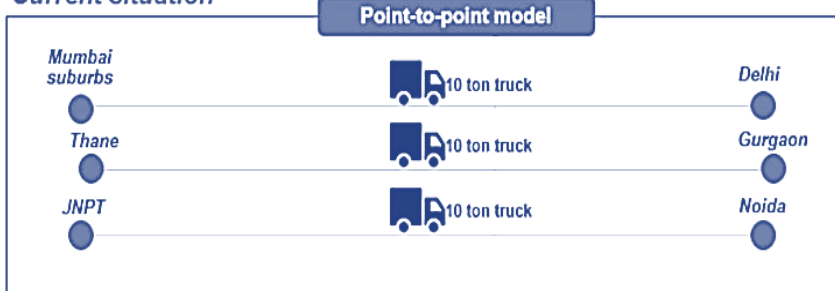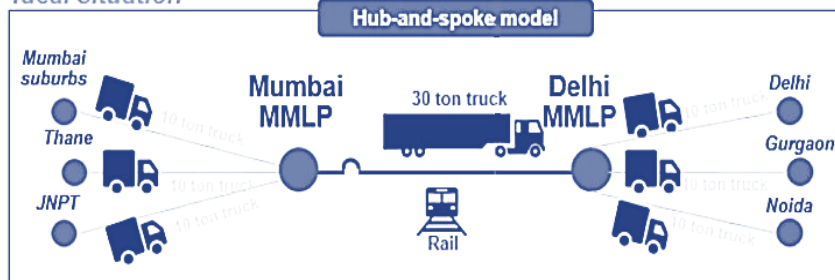
ROAD TO GROWTH

Multi-modal logistic parks to get a push

Road-based port connectivity projects worth ₹10,000 cr

Critical infrastructure gap projects to be implemented

Projects worth ₹ 2 lakh crore in pipeline

MMLP STATUS IN FY23

Two MMLPs bid out till now

Bengaluru MMLP to be awarded by March-end

o Increased freight movement on higher-sized trucks and rail will lead to a 20 per cent reduction in freight vehicles catering to the demands.

Key Schemes for MMLPs development

Bharat Mala Pariyojana (BMP)

➢ BMP is an umbrella program for the highways under the aegis of the Ministry of Road Transport and Highways.
➢ The focus of the scheme is on:
  o Improvement of efficiency of present freight corridors by elimination of choke points.
  o Improved connectivity for the North East by leveraging synergies with Inland Waterways.
  o Use of technology & scientific planning, satellite mapping for project preparation and asset monitoring.
  o Seamless connectivity with neighbouring countries with Integrated Check Posts (ICPs)
  o Bridge the critical infrastructure gaps through effective interventions. These include:
    ▪ Inter corridors and feeder routes
    ▪ National corridor efficiency improvement
    ▪ Border and international connectivity roads
    ▪ Coastal and port connectivity roads
    ▪ Greenfield expressways
  o Connect 550 districts in the country through national highway linkages.

PM Gati Shakti National Master Plan (PMGS-NMP)

✓ It provides multimodal connectivity infrastructure to various economic zones.
✓ There are seven engines under the scheme for economic transformation, seamless multimodal connectivity and logistics efficiency namely:
  o Railways
  o Roads
  o Ports
  o Waterways
  o Airports
  o Mass Transport
  o Logistics Infrastructure
✓ The vision of the scheme:
  o Include the infrastructure schemes of various Ministries and State Governments.
  o It will leverage technology extensively including spatial planning tools with ISRO imagery.
  o Creation of economic zones like textile clusters, pharmaceutical clusters, defence corridors, electronic parks, industrial corridors, fishing clusters, and agri zones to improve connectivity & make Indian businesses more competitive.
✓ Gati-Shakti as a digital platform will bring 16 Ministries including Railways and Roadways together for integrated planning and coordinated implementation of infrastructure connectivity projects.

Central Counterparties

News Excerpt

Recently, the European Securities and Markets Authority (ESMA) the market regulator of the EU financial markets has derecognized six Indian Central Counterparties (CCPs) in accordance with the European Market Infrastructure Regulation (EMIR).

Pre-Connect

Understanding CCPs

• These are the financial institutions that act as an intermediary between buyers and sellers in various derivatives and equities markets.
• They help in facilitating the clearing and settlement process in financial markets.
• They increase the increasing efficiency and stability of financial markets by reducing the risk associated with counterparty, operational, settlement, market, legal, and default issues.
• They collect money from each party involved in the trade and in return guarantee the terms of the trade.
• They perform two functions:
  o Clearing:
    ▪ Validate the details of the trade
    ▪ Ensure both parties have sufficient funds to complete the transactions.

- o Settlement
    - ▪ Transfer of ownership of the asset- from the seller to the buyer
- CCPs dealing with money market instruments and foreign exchange derivatives are regulated by the Reserve Bank of India (RBI) under the Payment and Settlement Systems Act, 2007. While those dealing with securities and commodity derivatives are regulated by the Securities and Exchange Board of India (SEBI).

About Derecognition Decision

ESMA	EMIR
• It is an independent EU authority. • It enhances the protection of investors and promotes stable and orderly financial markets. • It is the direct supervisor of specific financial entities such as credit rating agencies, securitization repositories, and trade repositories	• It is an EU regulation adopted in August 2012 which aims to reduce systemic, counterparty, and operational risk in the OTC derivatives market • It sets higher prudential standards for CCPs and trade repositories and enhances risk mitigation techniques for non-cleared derivatives. • It establishes a framework for the recognition and supervision of third-country CCPs

- ➢ ESMA de-recognised six CCPs which include:
    - o The Clearing Corporation of India (CCIL)
    - o Indian Clearing Corporation Ltd (ICCL)
    - o NSE Clearing Ltd (NSCCL)
    - o Multi Commodity Exchange Clearing (MCXCCL)
    - o India International Clearing Corporation (IFSC) Ltd (IICC)
    - o NSE IFSC Clearing Corporation Ltd (NICCL).
- ➢ These are derecognized due to their failure to meet all EMIR requirements.
- ➢ There are no cooperation arrangements between ESMA and Indian regulators – the RBI, the SEBI and the International Financial Services Centres Authority (IFSCA).
- ➢ India is opposing ESMA supervision as these domestic CCPs operate in India and not in the EU and hence are not subjected to the ESMA regulations.
- ➢ Further, India opined that these six CCPs have robust risk management and there is no need for a foreign regulator to inspect them

Impact of the decision

- ✓ These CCPs will no longer be able to provide services to clearing members and trading venues established in the EU.
- ✓ It will impact European banks functioning in India for two reasons
    - ▪ They will need as much as 50 times higher capital to carry out trades involving the Indian central counterparties.
    - ▪ If not then they will have to unwind positions with the central counterparties over the next 6 to 9 months.

Report on Currency and Finance 2022-23

News Excerpt
Recently, the Reserve Bank of India released its Report on Currency and Finance 2022–23. A key aspect report highlighted is that India's total expenditure for adaptation to climate change could reach 85.6 lakh crore by 2030.

Pre-Connect
About Report
- It is an annual publication of the RBI covering various aspects of the Indian economy and financial system.
- It provides analytical insights into the macroeconomic and financial developments in India and their policy implications.
- The present-year theme of the report is "'Towards a Greener Cleaner India".
- The present focus on the
    o Challenges and opportunities of climate change for India
    o The role the financial sector is poised to play in achieving a low-carbon and climate-resilient development path.
- The present report covers four dimensions of climate change and assesses future challenges to sustainable high growth in India:
    o Unprecedented scale and pace of climate change
    o Macroeconomic effects of such changes
    o Enlist the implications for financial stability for the same
    o Policy options to mitigate climate risks.

Key Highlights of the Report
➢ For achieving net zero emissions by 2070, India needs to up its use of renewable energy and should aim for renewables to account for 80% of its energy mix by 2070-71. This would require an accelerated reduction in the energy intensity of GDP by about 5% annually.
➢ India needs to spend 2.5% of GDP annually till 2030 to address the infrastructure gap caused by climate events. This requires policies that help in mobilizing adequate resources and reallocating current resources to contribute effectively to India's net-zero target.
➢ Public sector banks are more vulnerable to climate-related financial risks than private sector banks.
➢ Only a balanced policy intervention can ensure progress across all policy levers and help India in achieving its green transition targets by 2030 and make the net-zero goal by 2070 attainable.
➢ Central banks have to influence investment decisions and the allocation of resources and credit to achieve sustainability targets. This includes directing banks and other financial institutions to consider climate and environmental risks through various regulations.

Big Tech vs Indian Startups

News Excerpt
Recently, some Indian startups have accused the IAMAI (Internet and Mobile Association of India) of taking policy decisions which favour Big Tech Companies (BTC) over smaller ones. They asserted that IAMAI is pushing forward the anti-competitive practices of the Big Tech Companies.

Pre-Connect
Background of the Issue
- Parliamentary Standing Committee on Finance proposed new regulations to counter the anti-competitive practices of the big tech companies. These include:
    o Certain Standards of behaviour for engagement in certain trade practices in India.
    o Designations of Big tech companies as Systemically Important Digital Intermediaries (SIDIs).
    o SIDIs have the potential to negatively impact competition in the digital ecosystem based on their revenue, market capitalization, and number of active users.
- IAMAI stood against these regulations on the ground that these regulations could stifle innovation and competition. This opinion was in line with the views of other big tech companies (Companies like Meta, Apple, Amazon, Twitter and Google)
- Indian startups, therefore, accused IAMAI of promoting views that favour foreign big tech companies and influencing the Competitive Conduct in the Digital Ecosystem.

Risk to Financial Sector due to Big Techs
There are three risks associated with Big Tech which are:

- ➢ **Complex Governance Structure**- It limits effective oversight and design of entity-based regulation.
- ➢ **Shadow Banking-** Their direct exposure to financial services can lead to shadow banking.
- ➢ **Cross-Functional Database-** Since they use third-party service providers they can easily acquire cross-functional databases which can be exploited to their advantage.
- ➢ **Data Privacy-** Their data processing is opaque and therefore privacy is a big issue.
- ➢ **Level-Playing Field-** Their presence will make it difficult to create a level playing field. They use tools like the exclusivity of participants, discriminate across vendors, give preferential treatment to their products, bundle their services, and create cross-product subsidization.

> **Base Erosion and Profit Shifting (BEPS)**
> Many multinational corporations avoid taxation of their profit in host countries by transferring their profit to shell companies in a tax haven. This they do by showing the transfer as an operating cost as a result they show zero profit. This is known as Base Erosion and Profit Shifting. To counter this OECD developed measures which are known as MLI, India is also a signatory to the same.

Influence of Big Tech Companies on the Indian Digital Ecosystem

- ✓ BTCs usually buy high-value start-ups without being subjected to merger control rules. The Competition Commission of India is not able to capture these mergers and acquisitions as they do not meet the thresholds of assets and turnover required for combinations.
- ✓ BTCs promote their services or their subsidiaries on its platform, while also competing with other service providers on the same platform.This lack of neutrality can harm other businesses and reduce their profits.
- ✓ A lot of customer data at their disposal provides these BTCs with an undue advantage over small and new startups to compete. It allows BTCs to misuse the data to track and profile customers.
- ✓ BTCs restrict the use of third-party applications on their platforms, which can limit user choice. For example, Apple uses its operating system to deny third-party applications to be installed on the I-phone. This limits the user's choice.
- ✓ BTCs force customers to buy additional services linked to their main product, which reduces competition and creates pricing asymmetry.
- ✓ BTCs use anti-steering provisions to prevent business users from using other alternatives, thereby reducing competition.application stores mandating the use of their payment systems. These practices result in anti-competitive exclusionary practices.

Role of Big Techs India's Digital Space

Major player in the fintech market as they offers low per user ad revenues in India.	They help in overcoming literacy barriers as they provide Voice-based and regional language interfaces to reach new users
They provide new business verticals that bridge existing infrastructural and employment gaps thereby helping India to serve Indian markets better.	Majority of Indian internet users rely on them to access information, communicate, and participate in political and social life. This helps in democratizing the exercise of the constitutional right of free speech.

> **Regulation of Big Tech**
> Competition Act, 2002 and CCI checks upon monopolistic practices. Later, in 2022, Government of India brought Competition Amendment Act 2022. The amendment brought two key changes:
> - ❖ The CCI will frame regulations that will prescribe the requirements for the assement whether an enterprise has substantial business operations in India.
> - ❖ CCI will strengthen the Commission's review mechanism, particularly in the digital and infrastructure space, a majority of which were not reported earlier, as the asset or turnover values did not meet the jurisdictional thresholds.
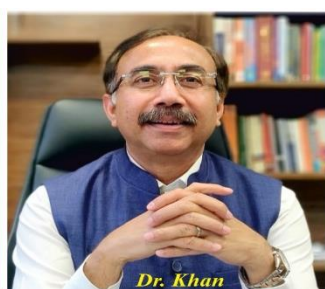
Way Forward

- ▪ Ensure Competition and Market Contestability- Introduce regulations to preserve a level playing field and competition by ensuring equitable access to data.

- Securing Data Protection and Data-Sharing- Make sure that the user's data is collected and utilized for the purpose consented to by the respective user. Users must also be able to get their data back from big tech. There is a need for a more comprehensive open banking regime, which protects business users from deceptive or misleading practices.

- Tracking Conduct of Business-There is a need to lay clear rules defining a list of do's and don't's to stop Big Techs from imposing unfair conditions on businesses and consumers. Also, laws should be made which protect the fundamental rights of users online and make digital space safer.

- Track New Linkages: Emerging markets need to be mindful of the new inter-linkages that big techs might create with the existing financial institutions.

- Any concentration involving entities that provide digital services or collect data should be reported to the CCI before implementation, regardless of whether it meets the notification threshold.

PEPPER IT WITH

IAMAI, Parliamentary Standing Committee, Systemically Important Digital Intermediaries, Fintech, Competition Amendment Bill, 2022, CCI.

INTERNATIONAL RELATIONS

Sudan Crisis and India's Response

News Excerpt

A crisis erupted in Sudan resulting in a trail of violence. India responded by launching Operation Kaveri to evacuate its nationals. There are near about 4000 Indians stuck in various parts of Sudan, including the capital Khartoum and in distant provinces like Darfur.

Pre-Connect

Genesis of Current Crisis in Sudan

- The root cause of violence in Sudan lies in the overthrowing of long-serving President Omar al-Bashir by military generals in 2019.
- A power-sharing agreement was signed between the military and protesters through which a Sovereignty Council was established. Council was to conduct elections at the end of 2023.
- In 2021, however military overthrew the transitional government led by Abdalla Hamdok.

Tussle between Army and RSF

- Soon after the coup, a power struggle arose between the military (SAF) and paramilitary (RSF) generals. This created roadblocks in the transition to elections.
- Negotiations between SAF and RSF broke down due to disagreements over the timetable and security sector reforms.
- Another bone of contention arose over the control of resources and RSF integration into the army. RSF general wants to delay the integration for 10 years but the army said it would take place in the next two years.

Impact of the Present Crisis

- ✓ The battle between the army and RSF will impact the democratic transition in Sudan. It might lead to the country's collapse.
- ✓ The ouster of the Hamdok government will freeze international economic support to Sudan which is battling with hyperinflation and crippled by massive foreign debt.
- ✓ Tensions in Sudan will destabilize neighbouring countries as well especially South Sudan and Chad. Refugees from Sudan's contested areas have already arrived in Chad.

India's response- Operation Kaveri

- India began 'Operation Kaveri' to evacuate around 4,000 nationals currently stranded in Khartoum and other parts of Sudan.
- It involves the deployment of the **Indian Navy's INS Sumedha, a stealth offshore patrol vessel, and two Indian Air Force C-130J special** operations aircraft on standby in Jeddah.
- India has been adept at using its diplomatic skill and leveraging goodwill to ensure that Indians overseas can return to the country when they are faced with a crisis at their destinations.
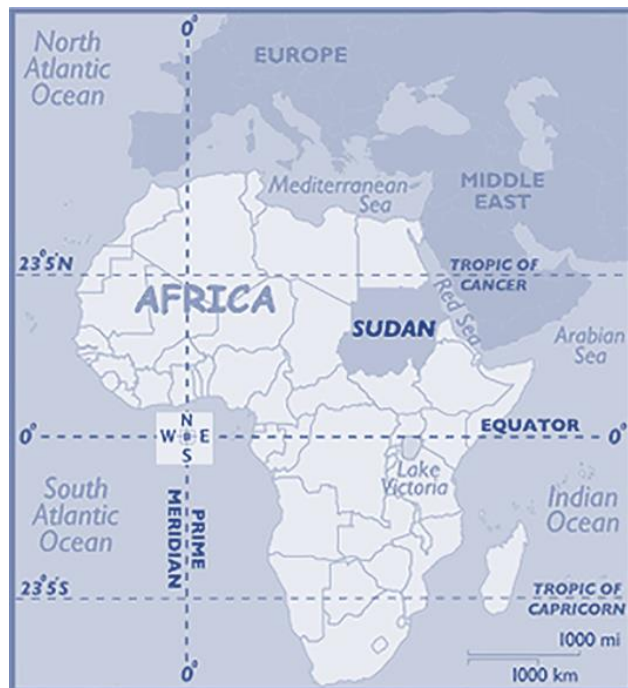
India-Sudan Relations

Economic Relations	Strategic Relations	India as Peace-Maker- Juba Peace Agreement
• The bilateral trade between India and Sudan has grown from USD 327.27 million in 2005-06 to USD 1663.7 million in 2018-19.	• Sudan is located in Northeast Africa and is the third largest African Nation.	• India supported Sudan's efforts to form a transitional government and also supported the Juba Peace Agreement signed by the government in October 2020.
• India's investments in Sudan and South Sudan were roughly USD 3 billion, out of which USD 2.4 billion was invested in the petroleum sector from ONGC Videsh.	• It is strategically located on the Red Sea, near the vast swath of gold reserves and agriculture potential.	• Juba agreement covered various areas such as governance, security, and justice and was important for future constitutional negotiations.
• India has implemented 49 bilateral projects through concessional lines of credit worth USD 612 million in areas such as energy, transport, and agribusiness industry in Sudan in 2021.	• Sudan is been coveted by the outside powers, including its neighbors, the Gulf countries, Russia and the Western nations.	

Rise of Djibouti

With Sudan crisis strategic importance of the military bases of major global powers at Djibouti cannot be overstated. In contemporary geopolitics, Djibouti shot to prominence due to piracy in the Gulf of Aden. The military foothold at Djibouti plays a key role in expanding and strengthening the strategic footprint of France, Japan, and China in the Western Indian Ocean. In fact, Djibouti is a window through which the evolving geopolitics of the Indo-Pacific region could be observed. Besides, for these major powers, military presence at Djibouti is useful for the evacuation of citizens trapped in the conflict zones in Africa. The location of Djibouti makes it easy to launch evacuation efforts via air and sea. As India evacuatesitsnationals from Sudan, the importance of having a military base at Djibouti has been further underscored.

Evacuations Operation by India

Kuwait Airlift-1990
- Over 1,70,000 Indians were airlifted and repatriated to India.

Operation Sukoon-2006
- Also known as the 'Beirut Sealift and is the largest naval rescue mission since the 'Dunkirk' evacuation.
- India evacuated about 2,280 people including some Nepalese and Sri Lankan nationals.

Operation Safe Homecoming-2011:
- To bring back Indian citizens stranded in conflict-torn Libya.
- Evacuation of 15,400 Indian nationals by Indian Navy and Air India.

Operation Raahat- 2015
- India evacuated nearly 5,600 people from Yemen.
- Indian Navy deployed INS Tarkash and INS Mumbai to conduct the evacuation operation.

Operation Samudra Setu (2020):
- Naval operation as part of the national effort to bring home Indian citizens from overseas during the Covid-19 pandemic.
- Indian Naval ships Jalashwa (Landing Platform Dock), and Airavat, Shardul and Magar (Landing Ship Tanks) participated in this operation

Vande Bharat (2020):
- Centre launched the Vande Bharat Mission to bring back Indian citizens stranded in foreign countries, in the backdrop of Covid-19 pandemic
- In the multiple phases of the operation, about 60 lakh Indians were brought back.

Operation Devi Shakti (2021)
- India's complex mission to evacuate its citizens and Afghan partners from Kabul after its swift takeover by the Taliban.

Operation Ganga (2022):
- It is an evacuation mission to bring back all the Indian nationals who are currently stranded in Ukraine.

Conclusion

For India, Sudan's importance lies in the protection of its investments, trade and other interests in the Horn of Africa. The Red Sea region is crucial to India's maritime security strategy. Therefore, before India, recognise any new regime which might come up in Sudan it should guard its trade, investments, and interests in the region.

India-UAE Food Security Partnership

News Excerpt

UAE is focussing on the twin objective of food access and readiness to confront the supply chain crisis as its food security has been built on imports from the global market.

About India –UAE food security partnership

- India plays an important role in UAE'S food security strengthening as it is already the world's second-largest food producer.
- Both India and UAE benefit from each other food security partnership and they have various conflicts of interest.

India's Role

- India has always invested in **humanitarian food aid**especially to developing countries or countries in need, standing by its commitment to regional and global food security.

- **Investment in Food Parks and modern supply chain management** shows India's interest in excelling in the global food marketplace through bilateral trade agreements.
- India's huge arable land, agricultural favourable climate, food production and processing sector make it a strong agri-export source.
- India also keeps taking initiatives for food security and nutrition through various schemes.

UAE'S Role

- On the sidelines of the **Comprehensive Economic Partnership Agreement (CEPA)** UAE has signed Food Security Corridor which has enhanced India's position in Global Food Value Chain.
- **During I2U2 Summit 2022**, UAE ensured an investment of USD 2 billion towards constructing Food Parks in India.
- Dubai Multi Commodities Centre has launched an agri-trading and commodity platform **Agriota**. It will enable direct access to Emirati markets and will connect Indian Farmers to the UAE's Food ecosystem.

> **Government Initiatives**
> - ❖ **Public Distribution System**: It provides 800 million citizens assuring them with daily meal and is the **world's largest food subsidy program**.
> - ❖ **POSHAN Abhiyaan emphases on the importance of nutrition in food security for children and women and this is also world's largest nutrition program for children and women.**

Significance

- Contributing to Global Developmental Agenda, India can strengthen a sustainable, inclusive, efficient, and resilient future of food with UAE.
- India's presidency at G20 can be seen as an opportunity to establish food security in Global South.
- Establishing good relations with UAE can serve as a food export gateway to West Asia and Africa with UAE's strategic location between Asia and Europe contributing to it.
- Also, private sector projects in UAE can help India in generating non-farm agri-jobs and provide better prices for farmers' products.

Challenges

- As per UN climate change, extreme weather is the major factor which contributes to food insecurity.
- Farming is inversely impacted by events like increased temperatures, weather variability, invasive crops and pests, and frequent extreme weather negatively impacting agricultural yields, nutritional quality and farmer incomes.
- Food security is restricted due to a lack of remunerative prices for end goods, abrupt sales and high cultivation costs.
- Agricultural business has got a boost due to globalisation but it has failed to assure stable market pricing.
- Along with economic reasons, geopolitical tensions and disputes especially related to trade result in embargoes, sanctions, and tariffs effect impacting food prices and availability.
- It can also adversely impact vulnerable populations, as countries which depend heavily on food imports can face food shortages and increased food prices.

Way Forward

- **Prioritizing Climate resilience techniques**, such as water management, soil conservation, and climate-smart technologies can help in climate change and mitigation in reducing the impact of climate change on food production and security.
- **Investing in climate-resilient crops** to handle temperature variation and precipitation fluctuations can help in better incentivisation of food.
- India should work on **increasing its diplomacy in food and agriculture** to establish itself as a major player in Global South by extending its support to other developing countries like Africa and Asia through technology partnerships, joint research in promoting drought-resistant cropsandclimate-smart agriculture
- **Incentivisation of water and nutrient-efficient crops** such as millet and pulses along with lucrative minimum support prizes and input subsidies for farmers is required. The declaration of 2023 as the International Year of Millets by the UN General Assembly is one such step.

WTO Panel Rules Against India

News Excerpt

Recently, The dispute panel of the World Trade Organization (WTO) ruled that India has violated global trade agreements by imposing duties on certain communications and information technology products, and called for India to rectify the situation.

Pre Connect
About WTO

- It is the successor to the General Agreement on Tariffs and Trade (GATT), established in the wake of the Second World War in 1995.
- It has 164 members, and it accounts for 98% of world trade and works to help trade flow smoothly, freely and predictably.

> The General Agreement on Tariffs and Trade (GATT) was signed in 1947 by 23 countries. It is a treaty minimizing barriers to international trade by eliminating or reducing quotas, tariffs, and subsidies. It was intended to boost economic recovery after World War II.

- The rules and agreements of WTO are the result of negotiations between the members. The current set of rules and regulations are the result of 1986-1994 negotiations (revision of GATT).
- The WTO Secretariat is situated in Geneva(Switzerland)
- WTO'S Ministerial Conference is a top decision-making body, it meets every 2 years.
- All members of WTO can decide on all matters under multilateral trade agreements.

Challenges for WTO

> Due to opposition to Judge Appointments, the top officials of WTO are no longer actively functioning.
> WTO has to resolve lots of trade disputes which has come as a major challenge for WTO, where countries are increasingly adopting protectionist measures against the international trading system.`

About the decision

✓ India's approach to promoting domestic IT manufacturing and reducing its dependence on imports has been challenged by the EU and other countries.
✓ India's approach has been argued as protectionist and violative of Global Trade Rules.
✓ The introduction of import duties by India between 7.5% and 20% for IT products such as mobile phones (and its component),

and integrated circuits were challenged by the EU (along with Japan and Taiwan) in 2019.
✓ It was found by WTO Panel that India's tariffs on certain IT products were inconsistent with the terms of the Information Technology Agreement (ITA) and violated global trading rules
✓ India has been a signatory to the 1996 ITA, which aims to eliminate tariffs on a wide range of IT products.

✓ The decision has shown that India should align its trade policies with global norms and obligations.
✓ The decision also highlights the challenges India as a developing Nation is encountering to balance its domestic policy with international trade standards.
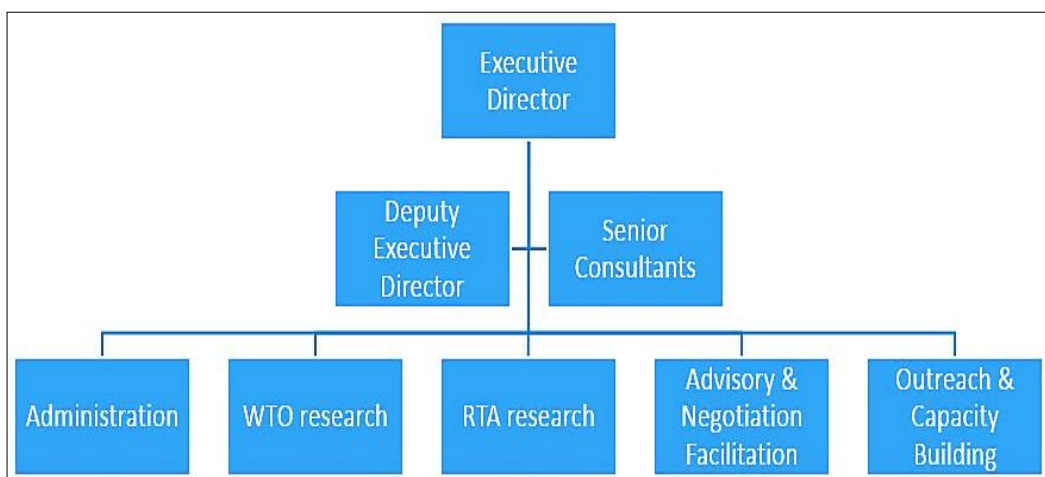
Impacts of decision

- At present India has argued that products such as smartphones were non-existent during the time of signing the agreement and it is not bound to eliminate tariffs on such items.
- The ruling will have serious implications between India and EU trade relations and similarly with Japan and Taiwan as the EU is India's third-largest trading partner, accounting for 10.8% of total Indian trade in 2021.
- India's domestic manufacturing sector protected by tariffs will also be impacted.
- India might have to eliminate or minimize import duties challenged by the EU and other countries.

> **Legal purgatory** is a term to describe a situation where **a legal case or dispute** without resolution or a clear path forward **is in a state of limbo.**

Conclusion

Currently, India can appeal against the ruling over IT tariffs. After appeal the case will be held in Legal Purgatory because of inactive WTO'S top appeals bench. The situation can be challenging if India is seeking to resolve the problem in a transparent and rule-based manner, as Legal Purgatory undermines the effectiveness of the WTO'S dispute settlement mechanism.

SCO Meet 2023

News Excerpt

As India holds the chairmanship of the SCO for the year 2023. It recently organised the meeting of the Foreign Ministers of the Shanghai Cooperation Organization (SCO) took place in Goa. One of the key visibility of the meeting was the internal difference between the member states of the SCO.
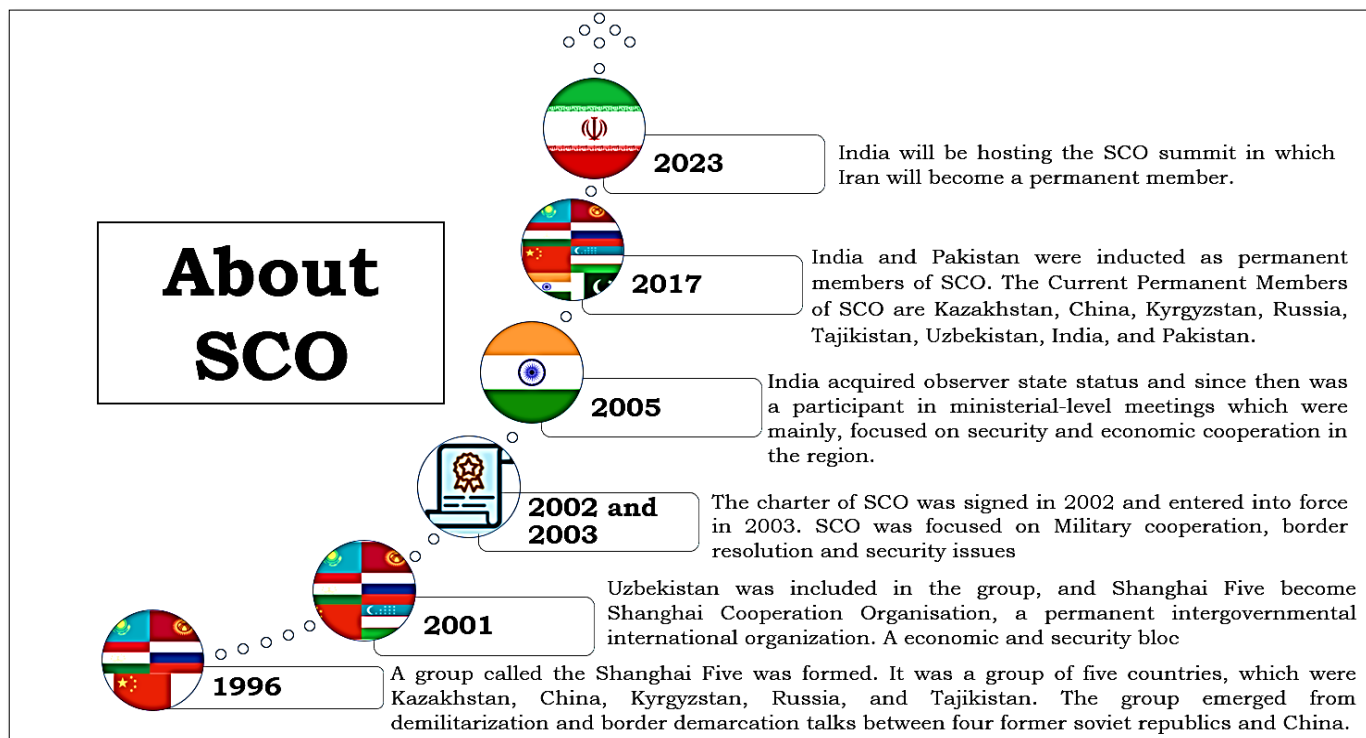
Pre-Connect

Conflict among SCO member

- India and China have locked horns over the border issue.
- State sponsored terrorism and frequent ceasefire violation along with persistent demand by Pakistan of reverting to Article 370 has become a bone of contention between India and Pakistan.
- Several conflicts between Taliban-led Afghanistan and Pakistan which makes the border area of the two countries unstable.
- Kyrgyzstan and Tajikistan have seen an escalation of conflict between the two countries, as witnessed in September and then again in November 2022, which has been a troubling development for the region.

The Colour Problem of China

- China raised the issue of cooperation required to prevent foreign powers from destabilising region with colour revolutions.
- Colour revolutions is uprising in which protestors use a particular colour. Its origins were linked to uprisings in former communist nations of Eastern Europe.
- Few Examples are Orange Revolution of Ukraine, Lotus Revolution of Egypt, Jasmine Revolution of Tunisia among others.

Significance of SCO for India

2023 — India will be hosting the SCO summit in which Iran will become a permanent member.

2017 — India and Pakistan were inducted as permanent members of SCO. The Current Permanent Members of SCO are Kazakhstan, China, Kyrgyzstan, Russia, Tajikistan, Uzbekistan, India, and Pakistan.

2005 — India acquired observer state status and since then was a participant in ministerial-level meetings which were mainly, focused on security and economic cooperation in the region.

2002 and 2003 — The charter of SCO was signed in 2002 and entered into force in 2003. SCO was focused on Military cooperation, border resolution and security issues

2001 — Uzbekistan was included in the group, and Shanghai Five become Shanghai Cooperation Organisation, a permanent intergovernmental international organization. A economic and security bloc

1996 — A group called the Shanghai Five was formed. It was a group of five countries, which were Kazakhstan, China, Kyrgyzstan, Russia, and Tajikistan. The group emerged from demilitarization and border demarcation talks between four former soviet republics and China.

- **Nature of SCO**: SCO ensures political stability in Central Asia and enhances intra-regional cooperation. It doesn't use democracy as an instrument to encourage regime change and promote its geopolitical agenda. Despite being a democracy, India is also sceptical about the merits of democracy promotion by Western countries which have proved disastrous, contributing merely to chaos and instability in the region.
- **Neutrality and Strategic Autonomy**: SCO is not a military alliance rather its military exercises are essentially counter-terror drills. This allows India to follow a policy of neutrality and strategic autonomy and keep away from any formal military alliance.
- **No Anti-Americanism**: The SCO does not perceive itself as an anti-American formation. Neither does it intend to create an alternative world order. It endorses the UN Charter and remains committed to the existing institutions and demands reforms of multilateral institutions. This makes it in sync with Indian foreign policy objectives.
- **Part of Multi-Alignment Strategy**: SCO is a part of India's multi-alignment strategy. It has paved the way for the policy of strategic engagement with pre-eminent powers in the world. It fits completely within the doctrine of plurilateralism, in which India's objective is to engage with all the major players based on its national interest.

- ➤ **Pragmatic De-coupling:** The Covid-19 pandemic, made the world realize its dependence on Chinese supply chains. This also prompted India to go for the Atamanirbhar Bharat Campaign. However, India understands that complete decoupling would be utopian and hence it wants to keep engaging with China and SCO to provide that forum in which diplomacy and dialogue can help resolve India-China differences.

- ➤ **Beyond South Asia**: SCO will help India in projecting its global power aspirations in Central Asia. This will push India's status as a significant pan-Asian player, which was earlier restricted to South Asia. It helps India surpasses the physical and psychological barrier created by Pakistan.

- ➤ **Connectivity:** SCO allows India to pursue its connectivity and developmental projects in Eurasia. One example is the International North-South Transport Corridor (INSTC) which will become operational soon.

- ➤ **Afghanistan Factor**: SCO will allow India to play an active role in Afghanistan. The SCO-CSTO Outreach Summit on Afghanistan is an important initiative for India to increase its presence once again in Afghanistan. It can be used as a regional platform to contribute to peace in Afghanistan.

- ➤ **Scope for India-Pakistan engagement:** SCO provides India and Pakistan with a platform for talks. There is an opportunity to discuss a two-way Pakistan-Central Asia connectivity project. If the project gets materialized, the improvement in Indo-Pak relations will emerge as a subset of the rise of Eurasia.

Changing India-Russia Dynamics

- o India had asserted its displeasure with Russia on the issue of Ukraine.

- o The geopolitical pillar of Russian-Indian relations is poised to be weakened by forces beyond Russia's control.

- o The breakdown in relations with the United States has propelled Russia to seek ever-closer ties with China at the same time as the rivalry between India and China has intensified. Russia could face a difficult choice between its "no limits" friend, China, and its oldest and most valuable Asian partner, India.

- o India on its part do not want to abandon its long-standing security relationship with Russia, however it will keep diversifying its defence exports and will look more to develop defence capabilities indigenously.

- o Though India is willing to buy cheap Russian oil, however China is big buyer of Russian energy, the added advantage it has is the geographical connect it had with China.

- o The balancing act will be difficult of Russia, however, the ball is in the court of Russia.

Challenges For India

- ✓ **China Challenge**: China is the biggest player in the region, its investment reached $40 billion at the end of 2020. Compared to it, India's trade was estimated to be about $2 billion with Central Asia. With the Ukraine war on, there is growing strategic proximity between Russia and China, it is unlikely that the problems that are confronting India-Russia relations are going to disappear anytime soon.

- ✓ **The Pakistan Factor**: The presence of the Pakistan-China alliance in SCO limits India's capability in pushing the issue of terrorism in the SCO. China shields Pakistan so that there is no extra pressure on Pakistan to act on the question of terrorism and this serves its own interests as well.

PEPPER IT WITH
RATS-SCO, INSTC, BIMSTEC, BRICS, IORA, G-20

- ✓ The SCO includes member states with different political systems, economic models, and strategic priorities such as CPEC, border infrastructure projects etc., which can lead to internal conflicts and disagreements on issues such as economic cooperation and security.

Conclusion

SCO will provide an alternative vision for global governance based on the historical experiences and values of the member states. SCO is emerging as a pivotal organization in Eurasia. India's membership in the SCO is critical to its ambition to secure a foothold in Eurasia. India is gradually carving out its own space in the region through the SCO and other independent initiatives such as the India-Central Asia Summit.

China-Central Asia Axis and India Concerns

News Excerpt
Recently, China organised a meeting of trade ministers of the grouping known as C+C5 — China and the five Central Asian republics, namely Uzbekistan, Kazakhstan, Tajikistan, Turkmenistan, and Kyrgyzstan.

Pre-Connect
Central Asia Strategic significance
- • Central Asia has been called the global chessboard, it sits at the heart of Eurasia and, historically, made up half of the ancient Silk Route.

- The region is strategically vital for many countries like China, Russia, India, the US and Europe, as it served as a pivot for geopolitical transformations within the world island.
- The region is becoming home to the New Great Game- characterised by fierce competition between various states all aiming to increase their influence, hegemony and power over the region. In this 'game', the important players are Russia, the US, European Union (EU), China, Turkey, Iran and India.
- China has perhaps the biggest economic footprint in the Central Asian Republics (CARs) region, principally owing to its massive project, the Belt and Road Initiative (BRI).
- India, for its part, has started reviving its old civilisational links with the region, laying the groundwork for building trust and goodwill by extending assistance through capacity building and human resource development, in the areas of information technology, pharmaceuticals, and healthcare.

Chinese Interest in Central Asia

➢ China regarded the Central Asian Republics (CARs) as vital for the security of Xinjiang. Xinjiang also became China's gateway to the markets of Eurasia, Europe, and Russia.

➢ China intensified its efforts to revive the ancient Silk Route in the region by building pipelines, railway links, and roads.

➢ With Russia's help, China created the Shanghai Five in 1996 to solve the problem of undefined borders through confidence-building measures. This later transformed into the Shangai Cooperation Organisation.

➢ The region provides China with a market for cheap exports and overland access to markets in Europe and West Asia.

➢ Central Asian countries, rich in hydrocarbon resources, were considered vital for diversifying China's domestic energy mix, especially considering its disputes in the South China Sea with Japan, Vietnam, Indonesia and the Philippines.

The Chabahar transit route to Afghanistan
The China-'southern seas' route
The historical Grand Trunk Road route
The Chabahar-Central Asia route, bypassing Afghanistan
The India-Iran maritime route

➢ China has been investing heavily in Central Asia through its Belt and Road Initiative, which includes projects in oil and gas, transportation, digital technology, and green energy.

India and Central Asia

✓ India has a long history of cultural and commercial relations with Central Asia, facilitated by its geographical proximity and the Silk Route.

✓ India in 2012 launched Connect Central Asia Policy, aimed to enhance India's political, economic, historical and cultural connections with Central Asia.

✓ Central Asia plays a crucial role in stabilizing the security situation in Afghanistan and reinforcing territorial integrity. The policy is based on pro-active political, economic and people-to-people engagement with Central Asian Countries, both individually and collectively.

✓ India's Extended Neighborhood Policy (ENP)," intends to diversify its geopolitical partners and diplomatic goals, and intends to engage its Central Asian partners on a multitude of fronts.

Ways India to increase its footprint constructively in the Central Asian region:

✦ Leverage SCO:

- India became a full member of the Shanghai Cooperation Organization (SCO) in 2017. India becoming a full member of SCO opened avenues for the country to shape its ties with the Central Asian Republics (CARs) countries.
- The SCO can also serve as a venue for keeping a watch on Pakistan. India could balance the growing Chinese influence and prevent the southern part of the Commonwealth of Independent States (CIS) from becoming the region of China's undivided dominance.

International North–South Transport Corridor (INSTC): India has invested in projects such as the International North–South Transport Corridor (INSTC). The INSTC made substantial progress after India joined the cargo transported through INSTC has increased to 287,000 tonnes in 2018 from a meagre 27,000 tonnes in 2017, or an increase of 963 percent.

Chabahar Port:
- India should provide direct access to Central Asian countries through Chabahar port. India can use its soft diplomacy to take the opportunities presented in the resource-rich region.
- It is in India's interest to expeditiously finalise the much-awaited Free Trade Agreement (FTA) between India and the Eurasian Economic Union (EAEU).
- If finalised without delay, the FTA with EAEU will give India direct access to the region's huge hydrocarbon resources as well as open doors to the Eurasian markets.

Slik Visa:
- The CARs are working to strengthen intraregional economic integration by taking steps like the issuance of the Silk Visa, which will allow foreign tourists a single-visa entry to all countries in the region.
- The regional integration will give more leverage to India because India will also look towards CARs as a geographical unit with socioeconomic homogeneity.
- For India to be able to use this opportunity, its Connect Central Asia policy should be complemented by closer government-to-government ties and purposeful actions that translate policies into practice.

Tax Rebate:
- India should give tax rebates to investors from India who show willingness in exploring the Central Asian markets and invest in the strategic Chabahar port with some guarantees and sureties.
- Furthermore, the tax rebates can play a catalytic role in reviving the close cultural and economic bonds between India and Central Asia.

Conclusion

India must take into consideration its future energy needs and the market potential of the greater Eurasian region, and seize the opportunity to stretch its economic borders while maintaining its constructive approach.

Washington Declaration

News Excerpt:
Recently, the South Korean President visited the U.S. to commemorate the 70th anniversary of the U.S.-South Korea multidimensional 'Iron-clad' alliance. A highlight of the visit was the signing of the "Washington Declaration" as a nuclear deterrence strategy.

Pre-Connect:
- **Mutual Defense Treaty (1954):**
  - The Sino-American Mutual Defence Treaty (SAMDT), officially the Mutual Defence Treaty between the United States of America and the Republic of China, was a 1955–1980 defence agreement between the US and Taiwan.
  - Its goal was to prevent the People's Republic of China from annexing Taiwan.
- **East Asian Strategic Initiative (1990):**
  - It was a broad strategy of enlargement and engagement of the so called bottom up review of defence policy for sustaining a credible overseas presence of American troops in East Asia to ensure regional stability.
  - The Washington Declaration was signed on June 25, 2009, during a summit meeting between U.S. President Barack Obama and South Korean President Lee Myung-bak.

Understanding the Washington Declaration:
- The Washington Declaration is a comprehensive approach to nuclear deterrence, emphasizing both offensive and defensive capabilities, along with arms control measures.
- It aims to deter potential adversaries from initiating nuclear aggression by clearly communicating the United States' intent and resolve to respond with overwhelming force, if necessary.
- The strategy is centered on four core pillars: extended deterrence, Strategic Dialogue, Nonproliferation and arms control and Peaceful Resolution.

> **Extended Deterrence:**
>   o The Washington Declaration reinforces the United States' commitment to providing extended deterrence to South Korea.
>   o It assures Seoul that it will benefit from the full range of U.S. capabilities, including conventional and nuclear forces, in deterring any potential threat to its security.
>   o This commitment enhances the credibility of the alliance and sends a clear message to adversaries that aggression will be met with a strong response.

> **Strategic Dialogue:**
>   o The declaration emphasizes the importance of maintaining regular strategic dialogue between the United States and South Korea.
>   o This facilitates a deeper understanding of the evolving security environment, enhances intelligence sharing, and enables both countries to align their defense policies effectively.
>   o Regular consultations and joint exercises contribute to building interoperability and coordination between their armed forces, fostering a robust defense posture.

> **Nonproliferation and Arms Control**:
>   o The Washington Declaration highlights the shared commitment of both nations to promoting nonproliferation and arms control efforts in the region.
>   o It underscores the need to prevent the proliferation of weapons of mass destruction and strengthen the international norms and agreements governing disarmament.
>   o This mutual commitment helps maintain stability in Northeast Asia and reduces the risk of nuclear proliferation.

> **Peaceful Resolution:**
>   o The Washington Declaration reiterates the commitment of the United States and South Korea to pursuing a peaceful resolution of the Korean Peninsula's issues.
>   o It supports diplomatic engagement with North Korea to achieve the complete, verifiable, and irreversible denuclearization of the peninsula.
>   o This commitment to dialogue and diplomacy is essential in reducing tensions and fostering a more secure and prosperous region.

Relevance in the Current Global Scenario:

The Washington Declaration holds immense relevance in the current global scenario, characterized by emerging security challenges and evolving nuclear dynamics. The strategy addresses the following key factors:

✓ **Evolving Threat Landscape:**
  o The global security landscape has witnessed the emergence of new threats, such as nuclear proliferation, state-sponsored terrorism, and cyber warfare.
  o The Washington Declaration, with its emphasis on modernization and adaptation, ensures that the U.S. nuclear deterrent remains effective against these evolving threats, safeguarding national and global security interests.

✓ **Regional Security Concerns:**
  o Many regions around the world face unique security challenges. By extending its nuclear umbrella to allies and partners, the United States reassures them of its commitment to their security.
  o This bolsters stability in regions where tensions might otherwise escalate, promoting peace through deterrence.
  o The US has been intensifying its efforts to restrict such undesirable geo-strategic situations through alliance strengthening and hard military power reinforcement in the region.
  o Initiatives like QUAD, AUKUS and nuclear consultation with Japan and South Korea can be seen in this background.

✓ **Arms Control and Non-Proliferation:**
  o The Washington Declaration's emphasis on arms control and non-proliferation aligns with global efforts to reduce nuclear risks and prevent the further spread of nuclear weapons.
  o By engaging in negotiations and dialogue with other nuclear-armed states, the United States plays a crucial role in fostering a cooperative and secure international environment.

Way forward

▪ **Bilateral Cooperation and Regional Stability:**
  o The Washington Declaration also paved the way for increased military cooperation and joint exercises between the United States and South Korea.
  o These joint exercises not only enhance the military readiness and interoperability of the two nations but also serve as a visible demonstration of the alliance's commitment to regional stability and security.

▪ **Impact on Bilateral Relations:**
  o The Washington Declaration has had a profound impact on the U.S.-South Korea bilateral relations.
  o It has solidified the alliance by fostering a shared vision and mutual understanding of security challenges.
  o The declaration serves as a testament to the enduring partnership between the two nations, leading to increased diplomatic, economic, and cultural ties.

ENVIRONMENT

Carbon offsetting and related Issues

News Excerpt

In recent years, the carbon offset industry has boomed. It is worth $2 billion (€1.87 billion) annually and is expected to grow five times that size by the end of the present decade.
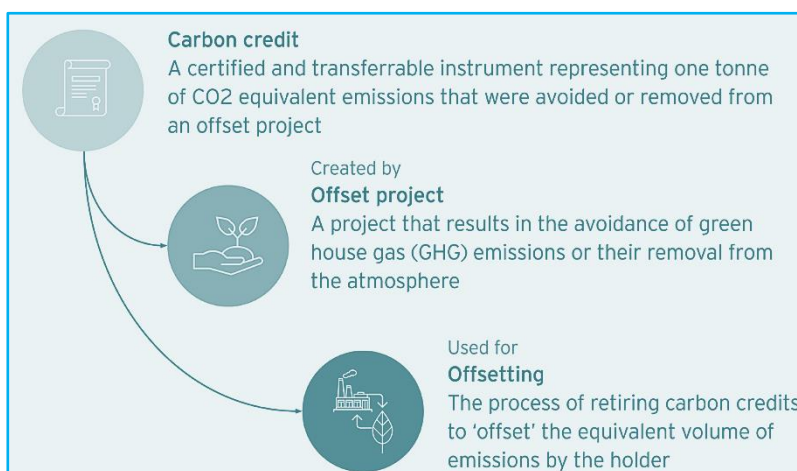
Pre-Connect

- The idea of carbon offsetting was conceptualizedby Kyoto protocol.
- The Kyoto Protocol is an international agreement that aimed to reduce carbon dioxide (CO2) emissions and the presence of greenhouse gases (GHG) in the atmosphere.
- Article 6 of the Paris Agreement establishes that Parties should voluntarily cooperate in achieving their carbon emission reduction targets.
- Carbon offsets are considered as part of the net-zero journey to balance out residual emissions that are unfeasible to eliminate.

Understanding Carbon Offsetting

➢ **About**:A carbon offset broadly refers to a reduction in GHG emissions by increase in carbon storage (either through planting of trees or reducing GHG emission) that is used to compensate for emissions that occur elsewhere.

➢ **Objective**: Carbon offsets are tradable "rights" or certificates linked to activities that lower the amount of CO2.

- o By buying these certificates, a person or Organisationcan fund projects that fight climate change mandated by climate change conventions and protocols.

➢ Offset projects can be broadly split into-

- o **1. Removal offsets**: It describes actions which actively take carbon out of the air and store it permanently, such as by planting trees or direct air capture.
- o **2. Avoidance offsets** are from projects that stop the release of greenhouse gases, such as protecting trees from being logged.

Carbon credit
A certified and transferrable instrument representing one tonne of CO2 equivalent emissions that were avoided or removed from an offset project

Created by
Offset project
A project that results in the avoidance of green house gas (GHG) emissions or their removal from the atmosphere

Used for
Offsetting
The process of retiring carbon credits to 'offset' the equivalent volume of emissions by the holder

Advantages of Carbon Offsetting

Carbon offset projects prevent, reduce or remove greenhouse gas emissions from being released into the atmosphere. Other benefits of Carbon Offsetting are-

✓ **Environmental benefits** include increased biodiversity, maintaining habitat for native animal and plant species, improved local air and water quality, avoiding vegetation clearance, re-establishing vegetation on previously cleared areas, and improved environmental management.

✓ **Social and cultural benefits** are the positive aspects for communities where a project is based such as employment for local people, living and working on country, capacity building, improved health and education, and access to clean and affordable energy.

✓ **Economic benefits** occur when income from the sale of offset credits flows to the community where a project is located and often translates into employment and community support, improved infrastructure, technology transfer, and increased economic activity.

> **Carbon accounting** refers to the process of measuring and quantifying the amount of greenhouse gas emissions produced by an individual, organization, or activity.
> ❖ **Objective**: The primary goal of carbon accounting is to assess and manage emissions to mitigate climate change and support sustainable practices.

Challenges

- ▪ **Double tally**: The risk of double counting emissions reductions is a significant challenge. Double counting occurs when both the buyer and the seller of an offset claim the same reduction as their own.
- ▪ **Durability**: Some offset projects, such as forest carbon projects, rely on the continued existence and management of the project area to maintain carbon sequestration.

- **Leakage**: Emissions reductions achieved in one area are offset by an increase in emissions elsewhere, which may not go to solve the problem of pollution.
- **Quality and credibility**: The credibility and quality of carbon offset projects vary significantly. Ensuring the environmental integrity and transparency of offset projects can be challenging, particularly in complex international markets.
- **Cost-effectiveness**: Achieving meaningful emissions reductions through offset projects can sometimes be more expensive compared to direct emissions reduction measures.

Carbon Offsetting and Climate Change

- Carbon offsetting reduces greenhouse gas emissions to combat climate change. It supports the transition to a low-carbon economy and reduces carbon footprint while having growth in renewable energy.
- Carbon offsetting helps achieve net-zero emissions and carbon neutrality goals. It promotes international cooperation in addressing climate change.
- Carbon offsetting operates within market-based mechanisms. It is not a substitute for reducing emissions at their source.

Way forward

> To counter leakages and overcoming ineffectiveness, there is dire need to establish robust standards and certification frameworks for carbon offset projects.
> The issue of double counting can be addressed while developing clear accounting principles and systems to prevent double counting of emissions reductions.
> The monitoring technologies and verification proceduresmust be augmented to ensure accurate and reliable measurement of emissions reductions.
> The offsetting projects can be prioritizedso that delivery of environmental and social co-benefits, such as biodiversity conservation, poverty alleviation, and community empowerment can be achieved.

Land Restoration and Biodiversity

News Excerpt

The Global Land Outlook report prepared by the United Nations Convention to Combat Desertification (UNCCD) and its partners, sheds light on the critical issue of diminishing land resources and emphasizes the urgent need to restore lands across the globe.

Pre-Connect

UNCCD:

- The United Nations Convention to Combat Desertification (UNCCD) adopted in 1994, stands as the only legally binding international agreement that effectively connects the realms of environment and development with sustainable land management practices.
- It focuses on the arid, semi-arid, and dry sub-humid regions collectively known as drylands, the Convention places particular attention on these vulnerable ecosystems and communities.
- Regular Conferences (COPs) are held every two years, where the Convention's member countries gather to drive the Convention's goals forward and make significant strides in its implementation.

30 by 30:

- The 30x30 target aims to conserve 30% of the world's land and sea by establishing protected areas (PAs) and other conservation measures.
- It surpasses the previous goal, Aichi Target 11, which sought to protect 17% of land and 10% of coastal and marine areas.

State of Global Land Degradation

➢ The state of land degradation at the global level is a complex and multifaceted issue.
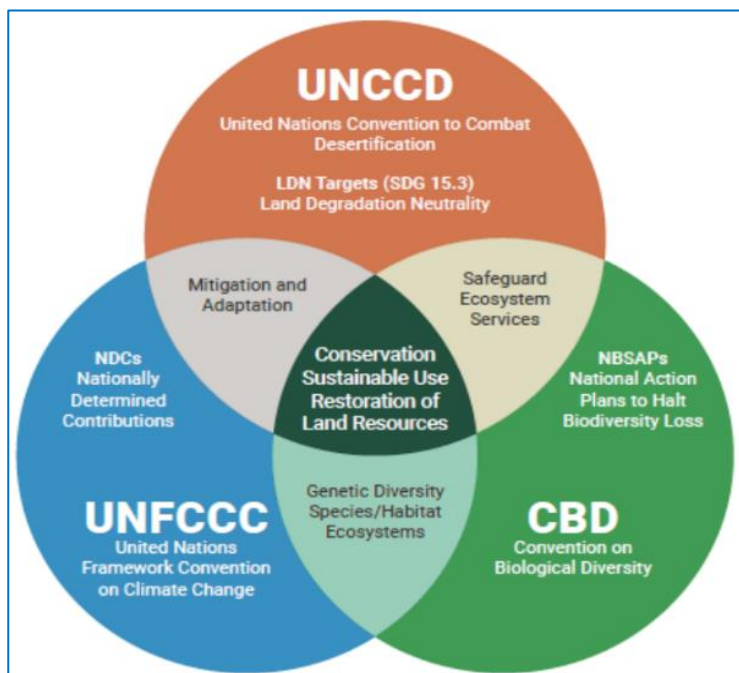
➢ According to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Global Assessment Report on Biodiversity and Ecosystem Services, released in 2019, **approximately 25% of the Earth's land is degraded to some extent.**

➢ The United Nations Convention to Combat Desertification (UNCCD) estimates that **around 3.2 billion people, or 40% of the global population, are affected by land degradation**. This includes soil erosion, desertification, and loss of productive land.

➢ The Food and Agriculture Organization (FAO) reports that **land degradation reduces global agricultural productivity by about 12% annually,** leading to food insecurity and economic losses.

➢ The World Wildlife Fund (WWF) states that unsustainable land management practices, such as deforestation, overgrazing, and inappropriate irrigation methods, contribute significantly to land degradation.

➢ **Climate change exacerbates land degradation,** as rising temperatures, changing rainfall patterns, and extreme weather events increase the vulnerability of ecosystems and agricultural lands.

Causes of Land Degradation and Biodiversity depletion

✓ **Deforestation**: Clearing forests for agriculture, logging, and urban expansion leads to soil erosion, loss of biodiversity, and disruption of ecosystems. It leads to the habitat destruction.

✓ **Soil erosion**: Unsustainable farming practices, such as overgrazing, improper irrigation, and intensive tillage, can result in the loss of topsoil through wind and water erosion.

✓ **Desertification**: Arid and semi-arid areas are prone to desertification, which occurs due to factors like climate change, overexploitation of water resources, and unsustainable land use practices.

✓ **Mining activities**: Extraction of minerals and resources often involves extensive land disturbance, leading to soil erosion, habitat destruction, and contamination.

✓ **Pollution**: Industrial activities, improper waste disposal, and the use of agrochemicals contribute to soil contamination, reducing soil fertility and harming ecosystems.

✓ **Urbanization**: Expanding cities and infrastructure development result in the conversion of productive land into built-up areas, leading to habitat loss and fragmentation.

✓ **Climatechange**: Rising temperatures, altered precipitation patterns, and extreme weather events associated with climate change exacerbate land degradation processes, such as erosion, desertification, and salinization.

Land Degradation and Biodiversity

▪ Land is an operative link between biodiversity loss and climate change.

▪ Land degradation and biodiversity loss are widely recognized as critical environmental challenges with significant implications for ecosystems, human well-being, and sustainable development.

Land Degradation Neutrality (LDN)

❖ It refers to a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems.

❖ LDN seeks to maintain natural capital and the ecosystem services that flow from it.

❖ LDN is about keeping land in balance.

❖ Keeping land in balance provides the basis for keeping food, water, carbon and biodiversity in balance as well.

Climate Change, Land Degradation and Biodiversity Loss

✦ According to IPCC Climate change exacerbates land degradation. Land degradation is a driver of climate change through emissions of GHGs and reduced uptake of carbon and affect biodiversity adversely.

✦ Gross emissions from Agriculture, Forestry and Other Land Use make up 1/3 of total global emissions
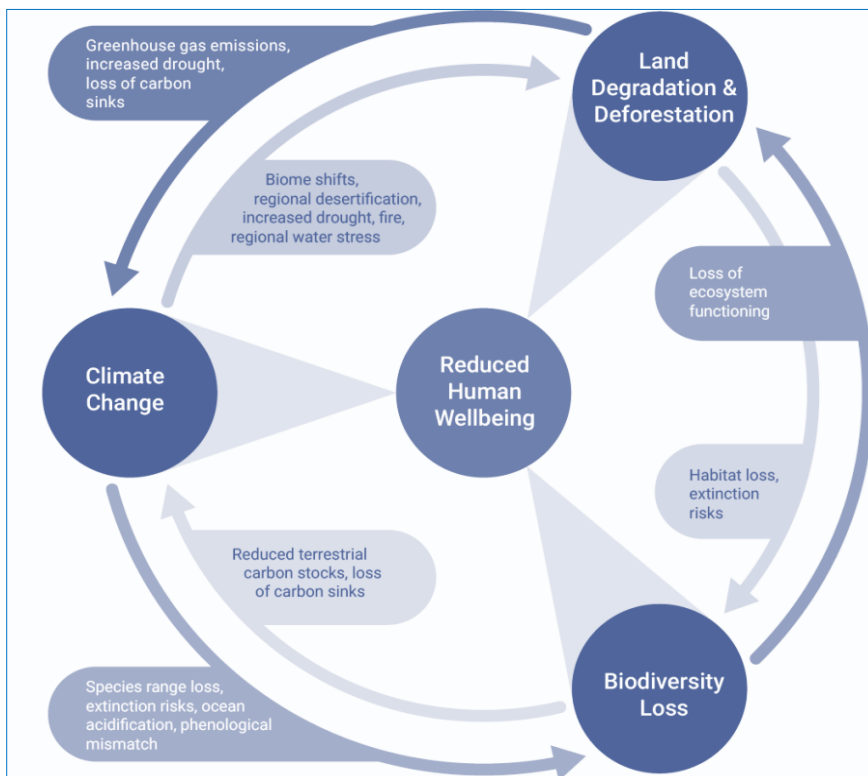
- Land accounts for 61% of anthropogenic methane emissions.
- 50% of the nitrogen applied to agricultural land is not taken up by the crop, resulting in nitrous oxide emissions.

Way Forward

> There is a dire need for coordinated measures to meaningfully slow or reverse climate change, land degradation, and biodiversity loss to safeguard human health and livelihoods.

> Promoting sustainable land management practices is vital for conserving land and restoring degraded areas.

> This includes implementing techniques such as agroforestry, organic farming, rotational grazing, and erosion control measures to minimize soil degradation, preserve fertility, and maintain ecosystem health.

> Adopting ecosystem-based approaches, such as ecological restoration, can help in land conservation and biodiversity protection. This involves restoring entire ecosystems, including their physical, chemical, and biological components, to support diverse species and ecological processes.
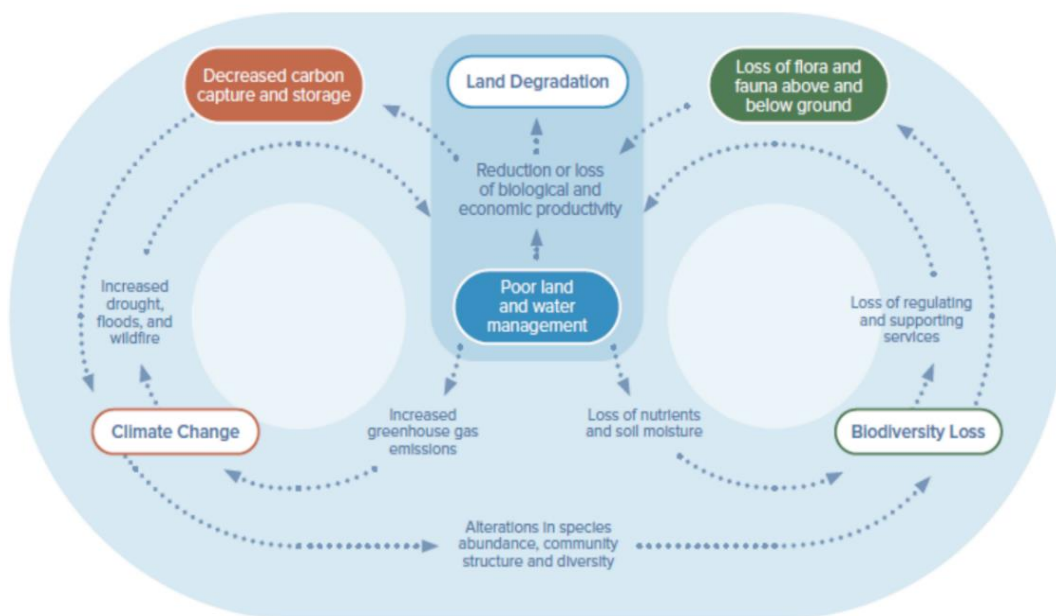
PEPPER IT WITH

UNCBD, Carbon Capturing, UNFCCC, Wetlands, Great Green Wall initiatives

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India's First National Water-Body Census

News Excerpt

The Jal Shakti ministry has released the report of India's first water bodies census, which provides a comprehensive database of ponds, tanks, lakes and reservoirs in the country.

Pre-Connect

- India accounts for 18% of the world's population, but has only 4% of its fresh water resources. More than 80% of water in the country is consumed in agriculture while the rest is used for domestic and industrial purposes.
- In the 11th plan, Central Water Commission (CWC) of Ministry of Jal Shakti initiated a project called India-WRIS, which serves as a unified platform for accessing comprehensive data on water resources.
- As part of the India-WRIS project, an inventory mapping of more than 850,000 surface water bodies, each exceeding 0.1 hectare in size, was created using Cartosat-1.
- The Repair, Renovation & Restoration (RRR) scheme, a component of the Pradhan Mantri Krishi Sinchayee Yojana, offers Central Assistance to States for the development and restoration of irrigation potential through the repair and renovation of water bodies.
- The Central Pollution Control Board (CPCB) has released "Indicative Guidelines for Restoration of Water Bodies," which provide general recommendations for enhancing the capacity of water bodies and improving their water quality.

Key Findings of the report

> The census has enumerated 2.42 million water bodies, out of which 97.1% (2.35 million) are in rural areas and 2.9% (69,485) in urban areas.
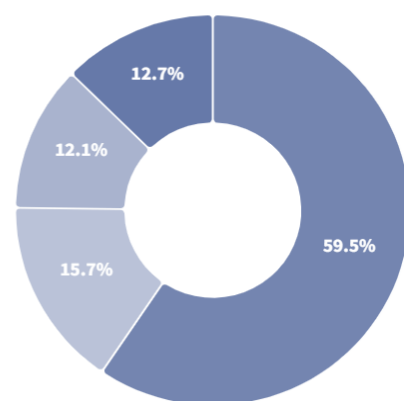
- The census classifies water conservation schemes, percolation tanks & check dams (9.3%), lakes (0.9%) and others (2.5%).
- Among these water bodies, 83.7% (2.03 million) are 'in use'; the remaining are non-functional on account of drying up, silting, construction, etc.
- According to the census, 55.2% (1.33 million) are owned by private entities and 44.8% are under public ownership.
- Information on encroachment of water bodies has been collected, according to which only 1.6% water bodies out of all the enumerated bodies have suffered encroachment. Within this pool of encroached bodies, 95.4% are in rural areas and remaining 4.6% in urban areas.

Water bodies in India

Nature of WBs: ▮ Man-made ▮ Natural ▮ Private ▮ Public

	Man-made	Natural	Private	Public
	78%	22%	55.2%	44.8%

- West Bengal's South 24 Parganas has been reported to be the district with the highest (0.35 million) number of water bodies across the country.
- Maharashtra leads amongst all the states and UTs in building water bodies under water conservation schemes.
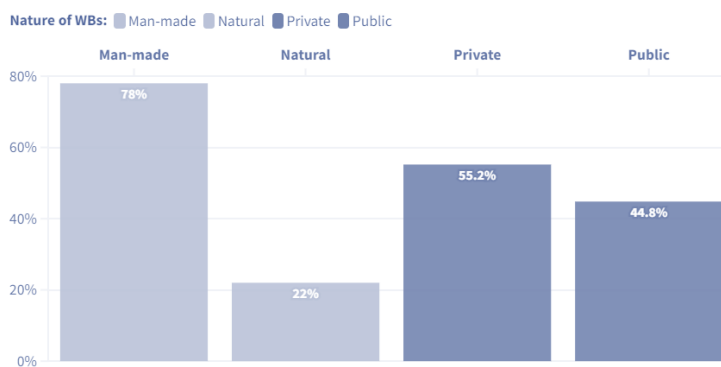
Challenges pertaining to Waster Bodies

Water pollution

Water bodies in India face significant pollution from various sources such as industrial effluents, sewage discharge, and agricultural runoff. For example, the Ganges River, considered sacred in India, suffers from severe pollution due to industrial waste and untreated sewage.

Depletion of groundwater

Overexploitation of groundwater for agriculture, industry, and domestic use has led to the depletion of groundwater levels in many regions. This affects the availability of water for both drinking and irrigation purposes. The state of Punjab, known as the "breadbasket of India," has witnessed a sharp decline in groundwater levels due to intensive agricultural practices.

Encroachment and illegal construction

Encroachment and illegal construction near water bodies pose a threat to their ecosystems. Wetlands and lakes are often filled or encroached upon for urban expansion or illegal real estate activities. The famous Dal Lake in Srinagar, Kashmir, has faced encroachment and excessive urbanization, affecting its ecological balance.

Invasive species

Introduction of invasive species poses a threat to the biodiversity and ecological balance of water bodies. For example, the water hyacinth, an invasive aquatic plant, has proliferated in the backwaters of Kerala, choking water bodies and affecting their ecosystem functions.

Climate change impacts

Climate change exacerbates water-related challenges in India. Changing rainfall patterns, increased frequency of droughts and floods, and rising temperatures affect water availability and quality. The melting glaciers in the Himalayas, the source of many major rivers, including the Ganges and Brahmaputra, pose long-term risks to water availability

Inadequate wastewater treatment

Insufficient wastewater treatment infrastructure results in the discharge of untreated sewage and effluents into water bodies. This leads to contamination and degradation of water quality. For instance, the Yamuna River, a tributary of the Ganges, receives a substantial amount of untreated sewage from Delhi, impacting its water quality.

Significance of the Census

- ✓ The water bodies census data will serve as an authentic dataset for estimation of recharge of ground water. Information and data obtained from water body census will be highly useful in implementation of the Atal Bhujal Yojana.
- ✓ Under Atal Bhujal Yojana, these data can be used for assessment of Gram Panchayat-wise water budgets, preparation of realistic water security Plans and planning various supply/ demand side measures through convergence of ongoing schemes.

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- ✓ The data & information can be used for spatial analysis of distribution of water resources and assessment of ground water level with seasonal variability.
- ✓ There are several instances of water from bore wells being sold and bought at farm level, but specific reports are not available. The census may provide an opportunity to get ground information on this aspect and provide insights into farm level water trading.
- ✓ The Department of Fisheries has informed Ministry of Jal Shakti that the results of First Census of Water bodies will be immensely useful to them for planning and executing Pradhan Mantri MatsyaSampada Yojana (PMMSY).

Socio -Economic Benefits
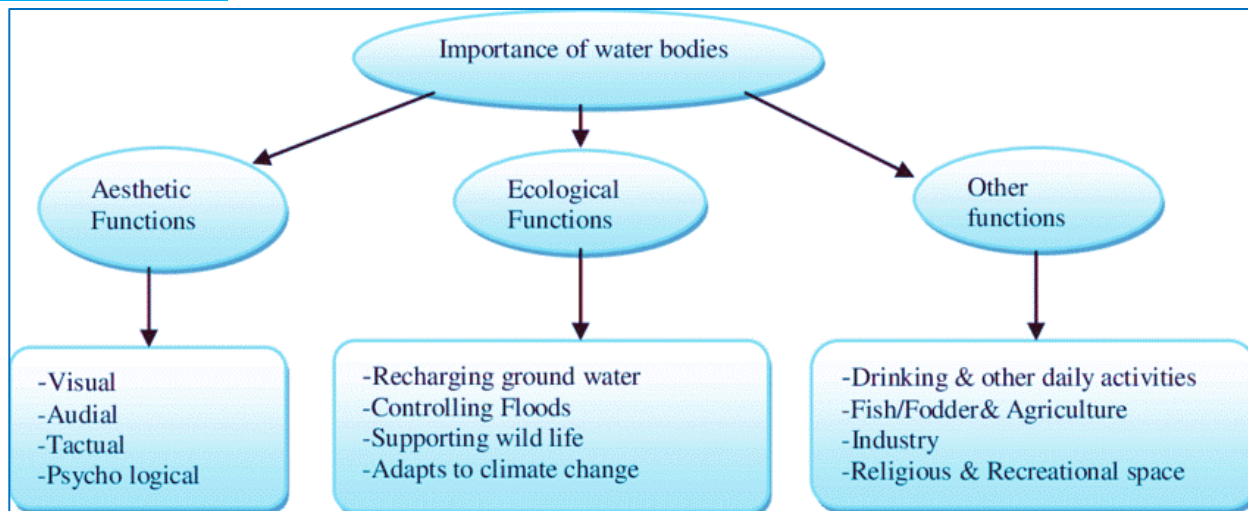
Ways to ensure water body conservation

- Governments should establish and enforce stringent regulations to prevent pollution of water bodies. This includes regulations on industrial effluent discharge, sewage treatment, and agricultural practices.
- Regular monitoring and strict enforcement of these regulations are crucial to maintain water quality.
- Wetlands and riparian zones play a crucial role in maintaining the ecological balance of water bodies. It is important to protect and restore these habitats as they act as natural filters, improve water quality, and provide habitats for diverse species.

Petersberg Dialogue on Climate Change

News Excerpt

The Petersberg Dialogue on Climate Change was held in Berlin. It was hosted by Germany and the United Arab Emirates.

Pre-Connect

- The first Petersberg Climate Dialogue, aimed at improving communication between leaders and environmental ministers following the nearly unsuccessful negotiations at the 2009 United Nations Climate Change Conference in Copenhagen (COP15), was initiated by Germany.
- The Petersberg Climate Dialogue (**PCD)** series was **co-hosted** in **Berlin** by **German**y and the **United Arab Emirates** – the **incoming COP28**-**Presidency**.

Key Takeaways

- To limit global warming to 1.5°C, significant reductions in greenhouse gas emissions are necessary.
- Emphasis should be placed on increasing renewable energy capacity rather than solely phasing out fossil fuel emissions.
- Renewable energy capacity needs to triple by 2030 and double by 2040.
- The Global Stocktake in 2023 will evaluate global climate action and its alignment with the Paris Agreement's goals.

$100 billion climate finance

- ❖ Important key highlights of the dialogue is that developed countries are "on good track" to deliver the $100 billion per year they had promised to mobilise by 2020 during the COP15 in 2009.
- ❖ Delivering the $100 billion goal in 2023 might be too little too late.
- ❖ The $100 billion is likely to be a gross underestimation of the true need for climate finance in developing countries.
- ❖ A recent estimate pegs climate finance needs at $1 trillion per year by 2030 for emerging markets alone.
- ❖ This means that climate finance needs are almost more than 10 times the amount that developed countries have been able to mobilise, 14 years after committing to the $100 billion figure.

➢ The Global Stocktake outcome should consider how climate change affects developing countries' developmental priorities, including poverty eradication.

Issue with Climate Change Financing

✓ Climate change finance is the issue of funding efforts to address climate change. It involves insufficient funding, unequal distribution, the need for innovative financing mechanisms, and ensuring transparency and accountability. International cooperation is crucial to tackle this issue effectively.

✓ Another issue is the imbalance in funding distribution. Developing countries, which are often more vulnerable to the impacts of climate change, face challenges in accessing the necessary funds to implement climate change projects and initiatives. This imbalance raises concerns about fairness and equity in the global response to climate change.

Way Forward

- There is need to mobilize and allocate more financial resources to support climate mitigation and adaptation efforts.

- Address the imbalance in funding distribution, particularly by providing adequate support to developing countries that are more vulnerable to climate change impacts.

- Seek new sources of funding such as public-private partnerships, green bonds, and climate funds to bridge the climate finance gap and attract private sector investments.

> **PEPPER IT WITH**
> UNFCCC, Paris Agreement, INDC, Net Zero Emissions

International Climate Action in Civil Aviation

News Excerpt

India will start participating in the International Civil Aviation Organisation's (ICAO) Carbon Offsetting and Reduction Scheme for international aviation (CORSIA) and the Long-Term Aspirational Goals (LTAG) from 2027.

Pre-Connect

- **The ICAO** is responsible for reducing carbon emissions in international civil aviation. To address the impact on climate change, they have adopted important goals to mitigate carbon emissions from aviation.

- **The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)** is intended to address carbon emissions from international aviation.

- CORSIA's main objective is to achieve carbon-neutral growth in the aviation sector by requiring airlines to offset their emissions through the purchase of carbon credits from approved projects.

- CORSIA is a significant step towards mitigating the environmental impact of international aviation on climate change. It provides a framework for monitoring, reporting, and verifying emissions.

- LTAG provides a vision and strategic direction for sustainable aviation growth. It serves as a roadmap to guide the development of policies and initiatives to ensure the long-term sustainability and resilience of the aviation sector.

About

➢ International Climate Action in Civil Aviation refers to collaborative efforts and initiatives undertaken at the global level to address the environmental impact of aviation on climate change.

➢ It includes measures to reduce greenhouse gas emissions, improve fuel efficiency, promote sustainable aviation fuels, and implement carbon offsetting and reduction schemes within the aviation industry.

➢ These actions aim to mitigate the carbon footprint of air travel and contribute to the overall global climate change mitigation objectives.

Aviation Sector and Climate Change

✓ The aviation sector, which includes commercial airlines and other air transport services, plays a significant role in contributing to climate change.

✓ The aviation sector is a notable source of greenhouse gas emissions, primarily carbon dioxide (CO_2) but also other gases like nitrogen oxides (NOx) and water vapor. When aircraft burn jet fuel, CO_2 is released into the atmosphere, contributing to the accumulation of greenhouse gases that trap heat and cause global warming.

✓ The demand for air travel has been steadily increasing, leading to a growth in aviation emissions. As more people choose air travel for business and leisure purposes, the overall carbon footprint of the aviation sector expands, contributing to the acceleration of climate change.

✓ Besides CO_2 emissions, aviation also releases other gases and particles that have climate impacts. For example, NOx emissions from aircraft can lead to the formation of ozone in the lower atmosphere, contributing to the greenhouse effect. Additionally, aircraft contrails and cirrus clouds can have a warming effect by trapping heat radiating from the Earth's surface.

> **The carbon intensity** of aviation refers to the amount of CO_2 emitted per unit of distance traveled. The aviation sector typically has a high carbon intensity compared to other modes of transportation due to the energy-intensive nature of flying and reliance on fossil fuels.

Advantages for India

Environment	By participating in international climate action, India can contribute to global efforts in reducing greenhouse gas emissions from the aviation sector. This aligns with India's commitment to combat climate change and improve air quality, leading to a healthier and more sustainable environment.
Global Collaboration	Joining international climate action in civil aviation allows India to collaborate with other countries, share best practices, and access technical expertise.
Economic Opportunities	Development of clean technologies, sustainable aviation fuels, and energy-efficient infrastructure can be done, by joining international efforts, India can leverage these opportunities, drive innovation, and attract investments, leading to economic growth, job creation, and technological advancements in the aviation sector.
Policy Persuasion	Participation in international forums allows India to have a say in shaping global policies and regulations related to climate change and aviation. It enables India to contribute to the development of frameworks that are fair, equitable, and considerate of the country's specific needs and challenges.
Sustainable Development	By engaging in international climate action, India aligns its aviation sector with the principles of sustainable development. This integration of environmental, social, and economic considerations ensures a balanced approach to aviation growth, minimizing negative impacts and maximizing long-term benefits for communities and ecosystems.

Challenges

- Developing and implementing sustainable aviation technologies, such as electric or hydrogen-powered aircraft, is a significant challenge. Green aviation technologies and alternative fuels often have higher upfront costs compared to conventional fossil fuel-based options.
- Transitioning to greener aviation necessitates the development of new infrastructure, such as charging or refueling stations for electric or hydrogen aircraft and the production and distribution of sustainable aviation fuels.
- Scaling up sustainable aviation technologies and practices to meet the demands of a growing air travel industry is a remarkable challenge.
- Establishing comprehensive and consistent international regulatory frameworks for emissions reductions and net-zero targets poses a challenge.

Way Forward

- Enhancing aircraft fuel efficiency through advanced engine technologies, aerodynamic design improvements, and lightweight materials can significantly reduce carbon emissions.
- Governments, industry stakeholders, and investors should collaborate to support the development and scaling up of Sustainable Aviation Fuels (SAFs) production facilities and ensure a sustainable supply chain of feedstock for their production.
- Investing in sustainable infrastructure, such as renewable energy-powered airports, electric charging infrastructure for ground operations is crucial. Governments and industry should work together to support the development and implementation of green infrastructure.
- Investing in the research and development of electric and hybrid aircraft technologies can lead to zero-emission aviation.

AI Water Foot Prints

News Excerpt

According to a study, ChatGPT consumes fresh water, the significant water usage associated with maintaining data centers for effective working of AI tools.

Pre-Connect

Water footprint refers to the total amount of fresh water used directly or indirectly by an individual, organization, or product throughout its lifecycle. It helps assess water consumption.

Understanding AI Footprint

- AI systems consume water during the operation and maintenance of AI systems, particularly large-scale data centers.
- AI systems generate significant heat during operation, requiring cooling infrastructure to prevent overheating. Cooling mechanisms, such as water-based cooling systems, may be used in data centers to maintain optimal temperatures. This can involve water consumption for cooling purposes.
- AI systems require substantial energy to function, and the generation of electricity often involves water-intensive processes.

- Data centers employ various cooling technologies, including water-based systems such as cooling towers, chilled water systems, or direct liquid cooling.
- These systems use water to absorb and transfer heat generated by the computing equipment, helping to maintain appropriate temperatures.
- Evaporation based cooling process requires water for evaporation, and the water consumption can be significant, depending on the scale and design of the cooling infrastructure.
- The water footprint of data centers can have environmental implications, particularly if the water is sourced from local freshwater supplies.
- High water consumption from data centers can strain local water resources, especially in regions facing water scarcity or where the demand for water is already high.

Key Points of the Study

➢ The study reveals shocking water usage by AI models: training large AI models like GPT-3 can consume 700,000 liters of freshwater, equivalent to producing 370 BMW cars or 320 Tesla electric vehicles.

➢ Even conversing with an AI chatbot like ChatGPT can use up to 500 ml of water for 20-50 questions, and with over 100 million active users, the cumulative water footprint is substantial.

➢ AI models may operate online, but their data storage and processing happen in physical data centers. These data centers produce substantial heat, which calls for water-intensive cooling systems, including evaporative cooling towers. The water used for cooling must be pure freshwater, and data centers also rely on significant amounts of water for power generation.

Environmental Consequences of AI System

✓ **Energy Poverty**: AI models like ChatGPT require significant computational power, which translates to high energy consumption. This may push certain areas or certain section of society towards energy poverty.
   o Data centers that house and operate these models consume substantial amounts of electricity, contributing to carbon emissions and environmental impact associated with energy generation, especially if the electricity is sourced from non-renewable energy sources.

✓ **Carbon Emissions**: The energy consumption of AI systems, including the infrastructure and computing equipment, can result in carbon dioxide (CO_2) emissions. If the energy used to power AI systems comes from fossil fuel-based sources, it contributes to greenhouse gas emissions and exacerbates climate change.

✓ **Infrastructure Footprint**: The infrastructure required to support AI systems, such as data centers and servers, has a physical footprint that includes land use, construction materials, and associated resource consumption. This infrastructure development can have environmental impacts, including habitat disruption, deforestation, and increased waste generation.

✓ **Electronic Waste**: The frequent upgrades and replacements of computing equipment and infrastructure associated with AI systems can contribute to electronic waste. Improper disposal or inefficient recycling of this electronic waste can lead to environmental pollution and resource depletion.

Way Forward

- Enhancing energy efficiency in AI systems and data centers reduces water consumption by minimizing energy needs for cooling and power generation.
- Energy-efficient hardware, optimized algorithms, and advanced cooling technologies lead to energy savings and reduced water usage.
- Transitioning data centers and AI infrastructure to renewable energy sources can have a positive environmental impact.
- Implementing water recycling and reuse systems within data centers can help minimize freshwater consumption.
- Treating and reusing wastewater for non-potable purposes like cooling or landscaping can reduce the demand for freshwater resources and alleviate the strain on local water supplies.

Tea Mosquito Bug Crisis

News Excerpt

Many planters and Association have urged the government to immediately intervene and take appropriate steps to control the Tea Mosquito Bug (Helopeltistheivora) (TMB) problem in the tea plantations in India.

About

- The Tea Mosquito Bug is a sap-sucking insect that primarily infests tea bushes, particularly the young leaves and buds. It belongs to the Miridae family and has a distinctively elongated body shape.
- Tea Mosquito Bugs extract sap from the tender leaves and shoots, causing damage that results in the withering and deformation of tea leaves.

- Infested leaves exhibit characteristic silvering or bronzing, affecting the quality and yield of tea crops. Severe infestations can lead to substantial economic losses for tea growers.
- Prevalence and severity of Tea Mosquito Bug infestations can be influenced by various environmental factors, including temperature, humidity, rainfall patterns, and the presence of natural enemies or predators.

Economic and Social Implications

➢ The Tea Mosquito Bug crisis poses economic challenges for tea growers, as it reduces crop yield and quality, affecting their income and livelihoods.

➢ The feeding activity of the Tea Mosquito Bug causes damage to the leaves, resulting in a decrease in tea quality. Infested leaves may show silvering or bronzing, affecting the appearance and taste of the final tea product. The presence of Tea Mosquito Bugs can reduce the market value of tea.

➢ In severe cases, tea growers may resort to the use of chemical insecticides to control Tea Mosquito Bug populations. These chemicals can have negative effects on the environment, including the potential contamination of water sources, soil degradation, and harm to non-target organisms.

➢ Infestations of the Tea Mosquito Bug can necessitate changes in farming practices. Tea growers may need to allocate additional resources and time to monitor and control the pest, leading to increased labor and production costs.

Way Forward

✓ Addressing the Tea Mosquito Bug crisis necessitates continuous monitoring, research, and implementation of effective pest management strategies.

✓ Collaboration between tea growers, scientists, and agricultural authorities plays a crucial role in developing sustainable and environmentally friendly approaches to minimize the damage caused by these pests.

✓ Controlling Tea Mosquito Bug populations involves biological methods, Integrated Pest Management (IPM) practices can be deployed to reduce such instances.

Great pacific garbage patches

News Excerpt

Recently, in a study, researchers from Canada, the Netherlands, and the U.S. have reported that coastal lifeforms have colonised plastic items in the Great Pacific Garbage Patch, throwing up many dubious firsts.

Understanding Great Pacific Garbage Patch

- The Great Pacific Garbage Patch is a collection of marine debris in the North Pacific Ocean. Marine debris is litter that ends up in oceans, seas, and other large bodies of water.
- The Great Pacific Garbage Patch, also known as the Pacific trash vortex, spans waters from the West Coast of North America to Japan.
    o The patch is actually comprised of the Western Garbage Patch, located near Japan, and the Eastern Garbage Patch, located between the U.S. states of Hawai'i and California.
- The entire Great Pacific Garbage Patch is bounded by the North Pacific Subtropical Gyre.
    o There are some water currents in the oceans that, driven by winds and the Coriolis force, form loops. These are called gyres.
    o The North Pacific Subtropical Gyre (NPSG) is one such, located just north of the equator in the Pacific Ocean.
    o It includes the Kuroshio, North Pacific, California, and North Equatorial currents and moves in a clockwise direction.
    o These currents flow adjacent to 51 Pacific Rim countries. Any trash that enters one of these currents, from any of these countries, could become part of the gyre.
- Inside this gyre, just north of Hawai'i, lies a long east-west strip where some of the debris in these currents has collected over the years. The eastern part of this is the Great Pacific Garbage Patch. It is, per one estimate, 1.6 million sq. km big and more than 50 years old.
- The patch contains an estimated 45,000-1,29,000 metric tonnes of plastic, predominantly in the form of microplastics.
    o The numerical density of plastics here is around 4 particles per cubic metre.

The Anthropocene epoch

❖ Scientists have proposed this name for a new period in the history of the earth characterised by the influence of one species on the planet's geology, ecosystems, even its fate: Homo sapiens.

❖ They're still figuring out when this epoch really began; some candidates include the first nuclear weapon test and rapid industrialisation after the Second World War.

Neopelagic Species

The 'neopelagic' community as a new mixture of open sea (pelagic) species, "evolved to live on floating marine substrates and marine animals, and coastal species, once assumed incapable of surviving long periods of time on the high seas".

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Page 55

- o Mass-wise, however, heavier, more visible objects that haven't yet broken down into smaller particles accounted for 92% in 2018.

Key points of the study

➢ The tsunami off the Japanese coast in 2011 contributed to the debris in this garbage patch. Until at least 2017, researchers had found debris washing ashore on the West coast of North America containing live lifeforms originally found in Japan.

➢ From November 2018 to January 2019, researchers collected 105 pieces of plastic debris from the eastern part of the NPSG, "the most heavily plastic-polluted ocean gyre on the globe," per their paper.

➢ According to the study, 98% of the debris items had invertebrate organisms. Pelagic species (i.e., of the open ocean) were present on 94.3% of them and coastal species, on 70.5%. That is, organisms found on coasts were getting by on small floating islands of garbage (to humans) out in the Pacific Ocean.

➢ The number of coastal species such as arthropods and molluscs identified rafting on plastic was over three-times greater than that of pelagic species that normally live in the open ocean

➢ According to study, organisms belonging to 46 taxa, and 37 of them were coastal; the rest were pelagic. Among both coastal and pelagic organisms, crustaceans were the most common.
  - o The coastal species were most commonly found on fishing nets whereas the pelagic species, on crates.

➢ According to the Study, "Nearly all taxa were of Northwest Pacific origin", including Japan.
  - o Most debris items (85.7%) did not have identifiable markings linked to origin, such as manufacture locations or company/brand names.

➢ The researchers also found that 68% of the coastal taxa and 33% of the pelagic taxa reproduced asexually, and that there was evidence of sexual reproduction among the hydroids and the crustaceans, among others. They found a strong positive correlation between reproduction and mobility.

Challenges for patching up the patch

✓ The Great Pacific Garbage Patch is so far from any country's coastline, no nation will take responsibility or provide the funding to clean it up.

✓ The Great Pacific Garbage Patch is vast and covers a large area of the ocean. Its immense size makes the cleanup process logistically challenging and expensive.

✓ The patch is located in a dynamic oceanic environment with strong currents, winds, and waves. These conditions can hinder cleanup operations, as they make it challenging to deploy and maintain cleanup devices or nets effectively.

✓ Some cleanup methods, such as using nets or barriers, may inadvertently capture and harm marine life along with the plastic debris.

  ✓ The Great Pacific Garbage Patch is an international problem that requires global collaboration and cooperation. Aligning efforts, policies, and regulations among different countries and stakeholders can be challenging.

✓ Cleaning up marine debris is not as easy as it sounds. Many microplastics are the same size as small sea animals, so nets designed to scoop up trash would catch these creatures as well.

Initiatives

✦ Environmental organization The Ocean Cleanup has been collecting plastic waste using a 600-metre floating barrier.

✦ A trial run of an innovative system designed to clean up the world's seas and oceans, founded by UN Environment Programme (UNEP) "Champion of the Earth" laureate Boyan Slat, has set off from San Francisco, in a bid to begin the removal of the Great Pacific Garbage Patch.

✦ United Nations Environment Assembly (UNEA) is expected to take the first steps toward the creation of a landmark treaty to control plastic pollution worldwide.
  - o At UNEA, the world's highest-level decision-making body on the environment, negotiators are scheduled to debate proposals for legally binding rules on the use and disposal of plastic.

Way forward

▪ Cleaning the Great Pacific Garbage Patch is a complex task that requires innovative approaches and collaborative efforts.

▪ Developing and deploying advanced cleanup technologies specifically designed for oceanic debris removal is crucial. This includes the use of large-scale cleanup systems, such as floating barriers or nets, that can capture and remove plastic waste from the water.

▪ Collaboration between governments, organizations, and stakeholders is essential. Cooperating on research, sharing resources, and coordinating cleanup initiatives can maximize efficiency and ensure a unified approach to tackling the problem.

▪ Continued research and innovation are vital for finding new solutions and improving existing technologies. Investing in scientific studies, exploring alternative materials, and developing more sustainable practices are key to long-term success.

CONTENTS
90% of the trash floating in the world's oceans is plastic. In every square mile of ocean, according to some estimates, floats nearly 50,000 pieces of plastic. In the Pacific Gyre, most of that plastic comes from 4 sources: plastic bags, bottle caps, plastic water bottles, and styrofoam.

CHEMICALS
Plastics in the water absorb floating chemicals, which are attracted to the plastic's oil base. Many of these chemicals are known as persistent organic pollutants, which never leave the environment or break down. These chemicals include pesticides, insecticides, fungicides, coolants, PCBs and solvents.

GREAT PACIFIC GARBAGE PATCH
MORE OCEAN LESS PLASTIC

FORMATION
Of the 200 billion pounds of plastic people use each year, about 10% ends up in the ocean. 70% of that eventually sinks, but the other 30% is carried on the surface by ocean currents. When plastic ends up in the waters of the Pacific, much of it is swept into the currents that lead to the Pacific Gyre. Garbage from the east coast of Asia takes roughly a year to reach it; garbage from the west coast of North America takes 5 years.

SIZE
The borders of the plastic garbage patch are difficult to determine because much of the plastic is in pieces too small to be seen by satellites or planes.

Estimates of size range from 250,000 square miles (roughly the size of Texas) to 6 million miles, which would mean that the garbage patch would cover about 10% of the entire Pacific Ocean.

MICROPLASTICS
The Sun breaks down plastic into smaller and smaller pieces, but it can never break it down completely. Unlike organic materials, which eventually biodegrade, the plastic breaks into ever smaller pieces while still remaining a polymer.

As it breaks apart, the plastic ultimately becomes small enough to be ingested by aquatic organisms which reside near the ocean's surface. Plastic waste enters the foodchain.

7,000,000,000 tonnes

Sources: Wikipedia, ecoterchy.com, onegreenplanet.org, nrdc.org

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Heatwave conditions

News Excerpt
The upcoming summer is anticipated to be exceptionally hot, with multiple heatwave episodes expected across various regions of the country.

Pre-Connect
- A Heat Wave is a period of abnormally high temperatures, more than the normal maximum temperature that occurs during the summer season in the North-Western parts of India.
- Heat Waves typically occur between March and June, and in some rare cases even extend till July. The extreme temperatures and resultant atmospheric conditions adversely affect people living in these regions as they cause physiological stress, sometimes resulting in death.
- The Indian Meteorological Department (IMD) has given the following criteria for Heat Waves-
  - Heat Wave need not be considered till maximum temperature of a station reaches atleast 40°C for Plains and atleast 30°C for Hilly regions.
  - When normal maximum temperature of a station is less than or equal to 40°C Heat Wave Departure from normal is 5°C to 6°C Severe Heat Wave Departure from normal is 7°C or more.
  - When normal maximum temperature of a station is more than 40°C Heat Wave Departure from normal is 4°C to 5°C Severe Heat Wave Departure from normal is 6°C or more.
  - When actual maximum temperature remains 45°C or more irrespective of normal maximum temperature, heat waves should be declared. Higher daily peak temperatures and longer, more intense heat waves are becomingly increasingly frequent globally due to climate change.
  - India too is feeling the impact of climate change in terms of increased instances of heat waves which are more intense in nature with each passing year, and have a devastating impact on human health thereby increasing the number of heat wave casualties.

CURRENT CONNECT- MAY- 23

Heatwave in India

➢ Heat wave generally occurs over plains of northwest India, Central, East & north Peninsular India during March to June.

➢ It covers Punjab, Haryana, Delhi, Uttar Pradesh, Bihar, Jharkhand, West Bengal, Odisha, Madhya Pradesh, Rajasthan, Gujarat, parts of Maharashtra & Karnataka, Andhra Pradesh and Telangana. Sometimes it occurs over Tamilnadu& Kerala also. Heat waves adversely affect human and animal lives.

➢ However, maximum temperatures more than 45°C observed mainly over Rajasthan and Vidarbha region in month of May.

Possible Causes

✓ **El Nino Conditions:**
   o This year, the prediction of an excessively hot summer can be attributed to the transition from a strong La Nina phase to the occurrence of an El Nino event in the equatorial Pacific Ocean.
   o These climatic phenomena influence temperature patterns globally, and the timing of the El Nino event occurring earlier than anticipated contributes to the expectation of a particularly hot summer in 2023.
   o El Nino events involve the warming of the Pacific Ocean, which influences global weather patterns, including temperature, rainfall, and wind patterns. The occurrence of an El Nino event can contribute to hotter conditions during the summer.

✓ **Urbanization:**
   o Another contributing factor is rapid urbanization, characterized by the proliferation of concrete-dominated cities.
   o This urban heat island effect results from densely populated urban areas with extensive concrete surfaces, which absorb and retain more heat, intensifying temperatures during heatwaves.

✓ **Global Warming and Climate Change:**
   o The occurrence of heatwaves in India can be attributed to global warming. Global warming refers to the long-term increase in Earth's average temperature caused by human activities like burning fossil fuels, deforestation, and industrial processes.
   o This phenomenon leads to higher temperatures and alters weather patterns, contributing to the occurrence of heatwaves.
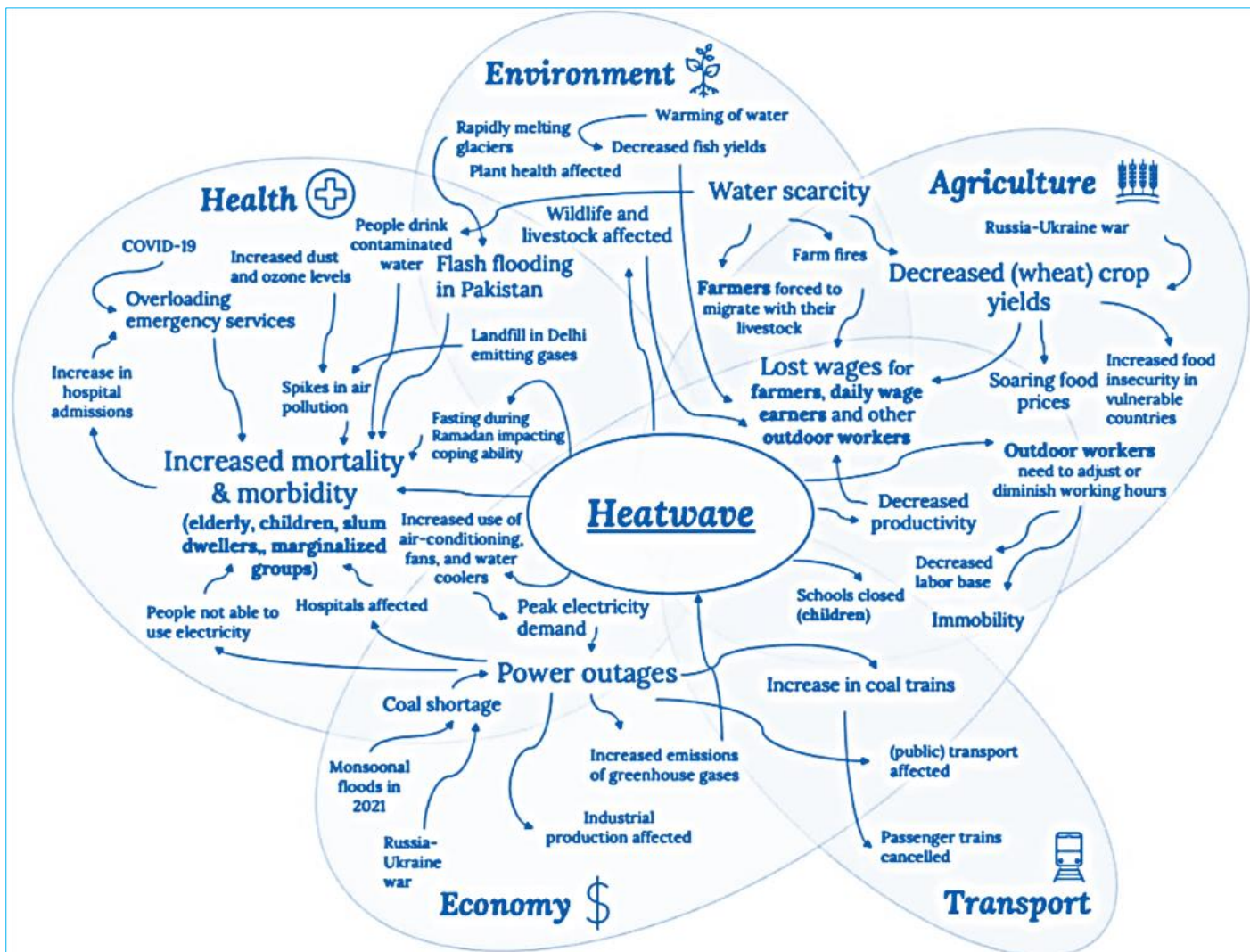
Prevention strategies

- Raising awareness about the risks associated with heatwaves is essential. Educating the public on the importance of staying hydrated, seeking shade, and recognizing heat-related illnesses can help individuals take necessary precautions.
- Incorporating heat-resilient urban planning and design strategies can mitigate the urban heat island effect. This includes the use of green spaces, tree planting, cool roofs, and reflective surfaces to reduce heat absorption and create cooler microclimates within cities.
- Improving the thermal efficiency of buildings through proper insulation, shading, and ventilation can help reduce indoor temperatures and the need for excessive air conditioning.
- Developing and implementing effective early warning systems can provide timely alerts to communities.

SCIENCE & TECHNOLOGY

Mitochondrial Donation Treatment

News Excerpt

The recent news of a kid born in the United Kingdom having three parents' DNA has stirred interest and debate over the technical advances behind this astounding achievement.

Pre-Connect

- Mitochondria are the energy-producing powerhouses of the cell in the form of **Adenosine triphosphate (ATP)**.
- Their function is dependent on proteins transcribed from nuclear and mitochondrial DNA (mtDNA). **Mitochondrial DNA** is circular in structure and contains **37 genes.**
- Unlike nuclear DNA, which we inherit from both parents, mitochondrial DNA (mtDNA) is passed exclusively from mother to child.

About Mitochondrial Disorders

- ➤ Mitochondrial disorders are a group of rare genetic conditions caused by mutations in the DNA of mitochondria, the energy-producing structures within cells.
- ➤ These disorders can lead to a wide range of debilitating symptoms, including muscle weakness, organ dysfunction, neurological issues, and impaired growth.
- ➤ Furthermore, since mitochondria are passed down exclusively from the mother, affected individuals can transmit these disorders to their offspring.

About Mitochondrial Donation Treatment

- ✓ Mitochondrial donation treatment, also referred to as **mitochondrial replacement therapy(MRT)** or **three-parent IVF,** involves the transfer of healthy mitochondrial DNA from a donor to an embryo or egg with defective mitochondria.
- ✓ This procedure aims to prevent the transmission of mitochondrial diseases to future generations by replacing the faulty mitochondria responsible for the condition.

The Three-Parent Technique

- The term "**three-parent baby**" arises from the involvement of three individuals in the conception process.
- The biological parents provide the nucleus DNA, which determines the child's genetic traits, while a donor contributes healthy mitochondria.
- The procedure involves two main techniques:
  - o **Pronuclear transfer** involves transferring the nucleus of a fertilized egg from the affected mother to a donor egg with healthy mitochondria, which is then implanted into the mother's womb.
  - o **Maternal spindle transfer**, on the other hand, involves transferring the nucleus of the mother's egg to a donor egg before fertilization.

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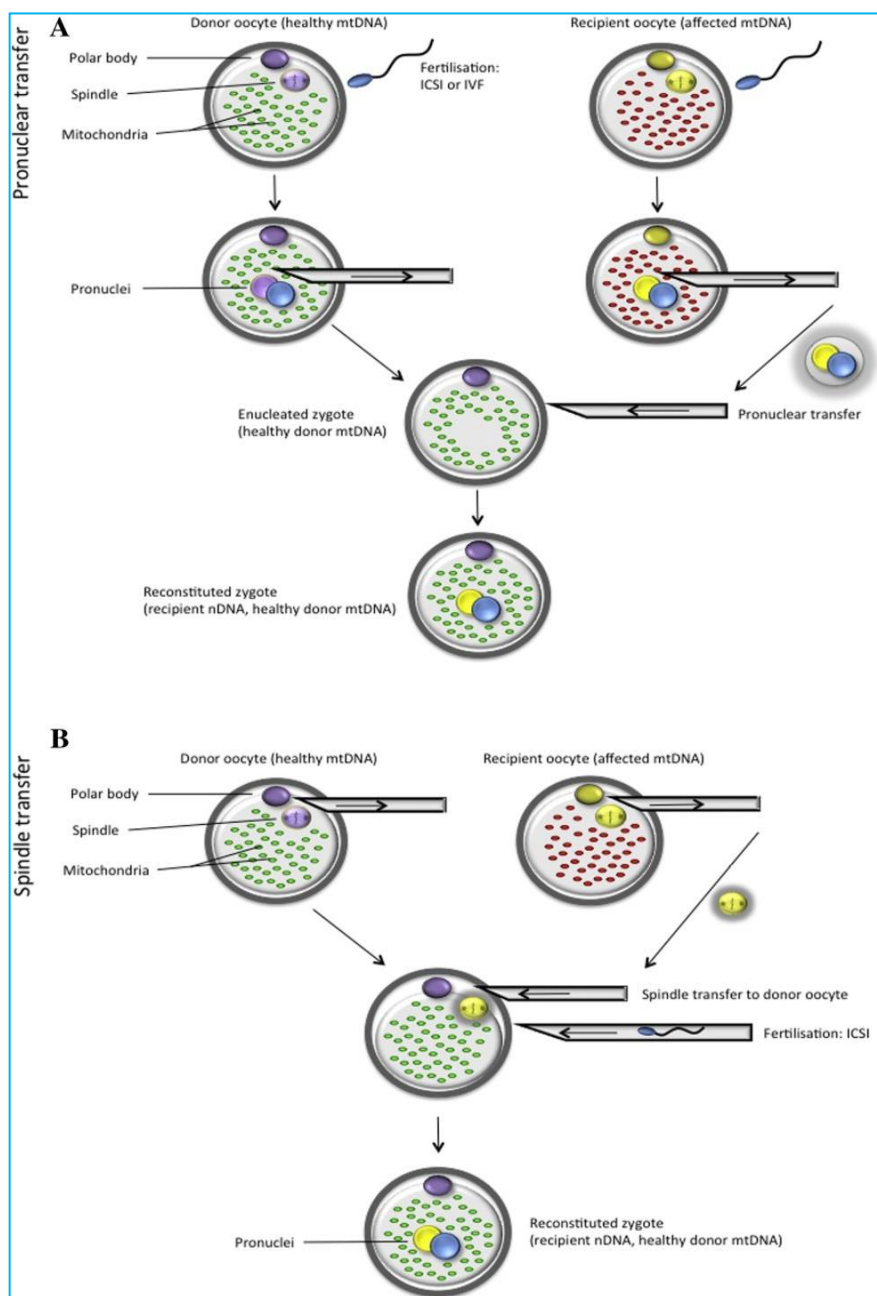
Analytica

- **Societal Aspects**
  - o **Health Impact:** Mitochondrial donation has the potential to prevent the transmission of mitochondrial diseases, which are often severe and debilitating. By reducing the prevalence of these diseases, the overall health and well-being of affected individuals and their families can be improved.
  - o **Access and Equity:** The availability and affordability of the procedure should be considered to prevent potential disparities and ensure that all individuals who could benefit from it have equal access.

  - o **Public Perception:** Public education and awareness campaigns are crucial to foster understanding and support for mitochondrial donation, addressing any concerns or misconceptions.
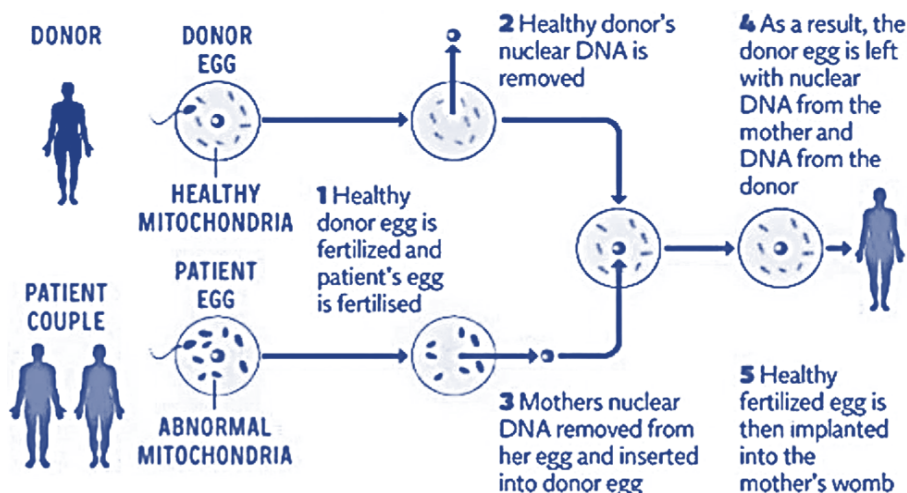
- **Legal Aspects**
  - o **Regulatory Frameworks:** Countries need to establish or update their legal and regulatory frameworks covering areas such as safety, efficacy, donor screening, informed consent, and post-treatment follow-up to address mitochondrial donation.
  - o **Parental Consent:** Since mitochondrial donation involves modifying the genetic material of embryos or oocytes, legal frameworks must address issues of informed consent and decision-making for prospective parents. Balancing reproductive autonomy with the potential long-term implications for the resulting child is a key consideration.

- **Ethical Aspects**
  - o **Genetic Modification:** Mitochondrial donation raises ethical questions about genetic modification. While the procedure does not affect the nuclear DNA responsible for personal traits, it does involve altering the mitochondrial DNA, which can be inherited by future generations. The moral permissibility of altering the germ line is a subject of ongoing ethical debate.
  - o **Donor Conception and Identity:** Mitochondrial donation can involve the use of donor eggs or embryos, leading to questions around donor conception and the right of individuals to know their genetic origins. Ensuring transparency, privacy, and the rights of all parties involved, including donors, parents, and potential offspring, is ethically important.

- **Moral Aspects**
  - o **Personhood and Embryo Status**: Moral considerations may arise from differing perspectives on the moral status of embryos and the beginning of human life. Some argue that the destruction of embryos involved in mitochondrial donation is morally problematic, while others emphasize the potential to prevent the suffering of future individuals.
  - o **Long-Term Effects:** The long-term consequences of mitochondrial donation, including the safety and efficacy of the procedure, need to be carefully considered. Monitoring the health outcomes of individuals born through this technique and assessing potential risks or unintended consequences is essential.

Way Forward

> Mitochondrial donation treatment not only offers hope for affected families but also has broader implications for future generations.

> By preventing the transmission of mitochondrial diseases, this technique contributes to the overall improvement of public health.

> It paves the way for advancements in assisted reproduction technologies, fueling the ongoing exploration of innovative solutions to address various fertility-related issues.

> **PEPPER IT WITH**
> Polar Body Transfer (PBT), Pronuclear Transfer (PNT), in vitro fertilization (IVF), Designer babies

Neurotoxins

News Excerpt

Recently, a gas leak in the Giaspura neighborhood of Ludhiana, Punjab, resulted in 11 fatalities and four hospitalizations for illness.

Pre-Connect

- **Bhopal Gas leak 1984** - Over 500,000 people were exposed to methyl isocyanate (MIC) gas and other chemicals in a pesticide plant resulted in the deaths of thousands of people.
- **2017 Delhi Gas leak:** Around 470 school children were hospitalized after inhaling poisonous fumes that spread due to a chemical leak at a container depot near two schools in the customs area of Tughlaqabad depot.
- **2018 Bhilai Steel Plant Blast**: Nine people were killed and 14 others injured in a blast at the Bhilai Steel Plant of state-owned SAIL.
- **2020 Vizag Gas Leak**- A gas leak at a chemical plant killed least 12 people in the styrene plant owned by South Korean electronics giant LG at Visakhapatnam, in the state of Andhra Pradesh.

Ludhiana Gas Tragedy

➢ According to the police preliminary investigation, the neighborhood manhole may have let out a deadly gas that travelled to the adjacent stores and homes.
➢ Hydrogen Sulphide, a neurotoxic gas, has been speculated as the cause of the catastrophe by forensic professionals.
➢ Expert view: It's likely that some acidic garbage was dumped into the sewer, where it mixed with other sewer gases like methane and carbon monoxide to create hydrogen sulphide.

About Neurotoxins

✓ Neurotoxins are harmful compounds that have a direct impact on the neurological system.
✓ Neurotoxicity occurs when the nervous system's normal activity is disrupted by exposure to hazardous substances, whether natural or man-made.
✓ These compounds have the potential to damage or even kill neurons or nerve cells, which are essential for signal transmission and processing in the brain and other sections of the nervous system.

Neurotoxic gases

- Neurotoxic gases include methane, hydrogen sulphide, carbon monoxide, and carbon dioxide.
- While methane and carbon monoxide are odourless gases, hydrogen sulphide has a strong odour and can be lethal in large concentrations.
- Chemical oxidation is used to remove gases such as hydrogen sulphide from wastewater. Oxidants such as hydrogen peroxide are applied to the wastewater.

Reasons behind Gas leaks

- **Inadequate Waste Management**: Improper disposal of industrial waste might result in the discharge of neurotoxic gases. Dumping poisonous chemicals into sewers, for example, can result in dangerous chemical reactions, as witnessed in the Ludhiana gas leak incident.
- **Inadequate Industrial Plant Maintenance:** Poorly maintained plants and storage facilities might result in gas leakage. The Bhopal gas tragedy is an example of a catastrophic gas leak caused by insufficient chemical plant safety and maintenance.
- **Lack of regulation and Monitoring**: Weak environmental regulatory enforcement and insufficient monitoring of industries and government bodies can result in dangerous gas leaks. Inadequate oversight causes industries to operate without basic safety measures, increasing the likelihood of gas leaks.
- **Overcrowding in Cities**: The presence of industrial and residential structures in highly populated areas raises the risk of gas exposure. As demonstrated in the Vizag gas leak event, insufficient urban planning and zoning rules contribute to this problem.
- **Infrastructure Failures:** Gas leaks can occur as a result of damaged or poorly maintained pipes and storage tanks. In some cases, deteriorating infrastructure and a lack of regular maintenance can lead to dangerous scenarios.

Challenges

> **Lack of disaster preparedness**: In the Kochi rubbish fire event (2022), a mountain of waste caught fire and spewed hazardous vapors for more than a week. This underlined the importance of enhanced emergency planning in order to minimize harm to human health and the environment.
> **Issues with India's legal structure-** include insufficient and obsolete laws, fragmented and overlapping rules, insufficient fines and deterrents, and an insufficient emphasis on prevention, among other things.
> **Non-transparent industrial operations-** such as unauthorized activities, unsafe working conditions, and insufficient money for upkeep all contribute to higher chances of industrial disasters in India.
> **Lack of awareness**: In the Bhopal gas tragedy (1984), poor safety precautions were implemented due to a lack of information about the hazards linked with methyl isocyanate, which contributed to the fatal leak.
> **Improper maintenance**: The Vizag gas leak (2020) at LG Polymers India's facility in Visakhapatnam was caused by a technical malfunction in the refrigeration unit, emphasizing the significance of good infrastructure maintenance.
> **Rapid urbanization:** Initially a barren area near the LG Polymers plant in Visakhapatnam, the Gopalapatnam area became heavily populated as the city expanded, increasing the risk of exposure to the styrene gas leak.

Page 62

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> **Inadequate trash disposal**: The Surat toxic waste dumping disaster (2022) resulted in six deaths, highlighting the consequences of unlawful dumping and poor waste management. This can lead to dangerous circumstances.

Way Forward:

⇒ **Strengthen the legal framework**-Examine and update existing laws and regulations governing hazardous materials and industrial safety to ensure they are comprehensive, effective, and in accordance with international standards.

  o India should follow in the footsteps of the **European Union's Seveso Directive and REACH regulation**, which enforce severe safety requirements and promote responsible chemical management, and could assist India in strengthening its regulatory system.

⇒ **Improve workplace safety** -By implementing tight safety measures in industries and developing effective emergency preparedness plans to prevent accidents and safeguard workers from harmful gas exposure.

Safety Measures taken by Government against Gas leaks:

❖ **The Bhopal Gas Leak (Processing of Claims) Act of 1985** empowered the central government to secure claims resulting from or associated with the Bhopal gas tragedy.

  o Such claims are dealt with quickly and fairly under the provisions of this Act.

❖ **The Environment Protection Act (EPA) of 1986** empowers the central government to take actions to improve the environment, set standards, and inspect industrial units.

❖ The Public Liability Insurance Act of 1991 is a type of insurance designed to help people who have been injured while working with hazardous substances.

❖ Under the **Hazardous Waste (Management, Handling, and Trans-boundary Movement) Rules, 1989,** industries are expected to identify main accident hazards, implement preventative measures, and submit a report to the appropriate authorities.

  o Importers are required to provide complete product safety information to the competent authorities under the Manufacture, Storage, and Import of Hazardous Chemicals Rules, 1989, and to transport imported chemicals in conformity with the modified rules.

❖ **The Chemical Accidents (Emergency, Planning, Preparedness, and Response) Rules, 1996** mandate the central government to form a central crisis group for chemical accident management and to build up a rapid response mechanism known as the crisis alert system.

  o Each state must form a crisis committee and report on its activities.

❖ **The National Environment Appellate Authority Act, 1997**: Under this Act, the National Environment Appellate Authority can hear appeals concerning the restriction of areas in which any industries, operations, processes, or class of industries shall not be carried out or shall be carried out subject to certain safeguards under the EPA1986.

⇒ **Support the development of new technologies and safer alternative**-To dangerous substances by encouraging research and technological innovation. This can help to reduce the danger of neurotoxic gas leaks and the effects they have on human health and the environment.

Generative AI

News Excerpt

The use of Generative Artificial Intelligence (GAI) is currently in its early phases, but its impact is expected to rise as technology evolves and improves.

Pre-Connect

- GAI is a fast-emerging branch of AI that refers to the use of algorithms and models that can generate new content that resembles human-created data.
- The aim is to develop algorithms that can capture the essence of human creativity and produce content that is indistinguishable from what humans create.
- While GAI is frequently connected with ChatGPT and deep fakes, the technology was originally developed to automate the repetitious processes needed in digital image and audio rectification.
- The Global Partnership on Artificial Intelligence (GPAI) is an international initiative aimed at fostering collaboration and promoting responsible development and use of artificial intelligence (AI) globally.
- It was launched in 2020 and currently consists of a group of like-minded countries and organizations that are committed to addressing challenges and opportunities related to AI

Generative Models

➢ Several types of generative models have been developed, each with its own unique approach to content generation. Three prominent models are Variational Auto Encoders (VAEs), Generative Adversarial Networks (GANs), and Autoregressive models.

➢ **Variational Auto Encoders (VAEs):**

Page 63

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o VAEs are encoder-decoder models that learn the underlying probability distribution of a given dataset.
o They consist of an encoder network that maps input data to a latent space representation and a decoder network that reconstructs the original data from the latent space.
o By training VAEs to maximize the likelihood of the input data, they can generate new samples by sampling from the learned latent space distribution.

➤ **Generative Adversarial Networks (GANs)**
o GANs employ a two-component system: a generator and a discriminator. The generator aims to create realistic content, while the discriminator tries to distinguish between real and generated samples.
o Through an adversarial training process, GANs improve their ability to generate increasingly realistic samples. GANs have been widely used to create lifelike images, videos, and even text.

➤ **Autoregressive Models**
o Autoregressive models, such as the Transformer model, generate content by sequentially predicting the next element based on previously generated elements.
o These models have been particularly successful in natural language processing tasks, enabling the generation of coherent and contextually relevant text.

Applications of Generative AI

Generative AI has found applications across various domains, significantly transforming industries and creative processes.

✓ **Visual Arts**
o Generative models have revolutionized the field of computer vision, enabling the creation of realistic images and videos.
o They can assist with image synthesis, style transfer, and even inpainting, seamlessly filling in missing parts of an image.

✓ **Music Composition**
o Generative AI has become an invaluable tool for musicians and composers. By training models on vast collections of music, generative algorithms can create original compositions, imitating various styles and genres.
o These models can be used for inspiration, as collaborative tools, or even for generating background music for films and games.

✓ **Content Creation and Text Generation**
o In the realm of natural language processing, generative models have been employed for text generation, translation, summarization, and even chatbots.
o They can generate engaging stories, generate realistic dialogue, and assist with language-related tasks.

✓ **Data Augmentation and Synthesis**
o Generative AI models can generate synthetic data to augment limited datasets for training machine learning models.
o This technique helps overcome data scarcity challenges and improves the performance of AI systems.

✓ **Drug Discovery and Material Science**
o Generative AI models aid in the discovery of new drugs and materials. By generating molecular structures and simulating chemical interactions, these models accelerate the research and development process in pharmaceuticals and materials science.

Ethical Considerations

▪ **Bias and Discrimination**
o Generative AI models can inadvertently replicate biases present in the training data, leading to biased outputs.
o Careful consideration must be given to ensure fair representation and prevent reinforcement of societal biases in generated content.

ARTIFICIAL INTELLIGENCE

👍 PROS	👎 CONS
Efficiency and Accuracy	Uncontrollability
Effective Data Acquisition and Analysis	AI Machines Don't (Currently) Have Any Emotion
Reducing Costs (Cheaper Products & Services)	Degradation (unable to self-repair)
Improving Human Decision Making	A Reduced Number of Jobs For Humans
Improving Human Workflows	High Costs
The Mechanical Advantage	Lacking Creativity and Out-of-the-Box Thinking
Understanding High-Dimensional Data	Ethical Considerations

- ## Intellectual Property and Plagiarism
  - o Generative AI raises concerns regarding copyright infringement and plagiarism.
  - o Clear guidelines and regulations need to be in place to address the ownership and ethical use of generated content.
- ## Misinformation and Deep-fakes
  - o The ability of generative AI to create realistic synthetic content raises concerns about the potential misuse of the technology for spreading misinformation and creating deep-fakes.
  - o Robust mechanisms for content verification and authentication are necessary to address these issues.
- ## Privacy and Data Protection
  - o Generative AI models often require large datasets, including personal information, for training.
  - o Privacy safeguards should be implemented to protect individuals' data and ensure compliance with data protection regulations.

> **PEPPER IT WITH**
>
> AI, Generative Adversarial Network, Variational Auto Encoders (VAEs), National Strategy for Artificial Intelligence

Conclusion

Generative AI represents a significant advancement in AI technology, offering exciting possibilities in content creation, design, and various other fields. However, it also presents ethical challenges that need to be addressed proactively. Striking a balance between innovation, responsible development, and ethical considerations is crucial to harness the potential of generative AI while ensuring the technology is used ethically, fairly, and for the betterment of society.

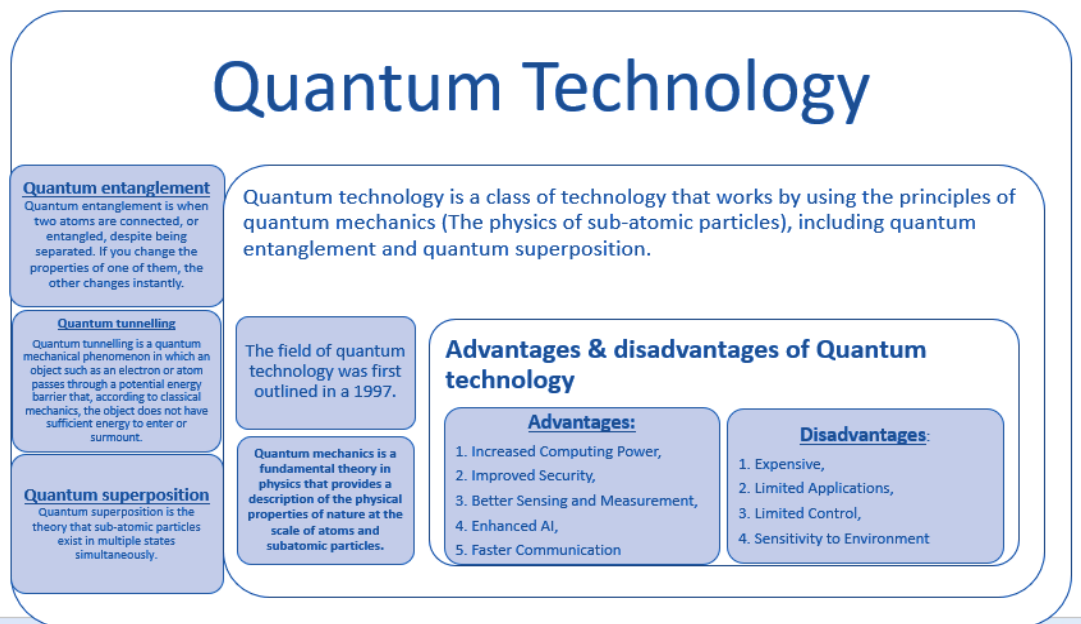## National Quantum Mission

News Excerpt

Recently, National Quantum Mission received cabinet approval at a total cost of Rs. 6003.65 crores, to scale up scientific and industrial R&D, for accelerating Quantum Technology-led economic growth.

Pre-Connect

National Quantum Mission

- NQM is an eight-year (2023-24 to 2030-31) mission that will focus on everything quantum-related, from its initial development to its use in industries.
- This mission is to be implemented by department of science and technology in partnership with other departments.
- This is the only mission in the country so far, where the technology is not taken from any advanced countries. we will develop the technology ourselves.

Quantum Technology

Quantum entanglement
Quantum entanglement is when two atoms are connected, or entangled, despite being separated. If you change the properties of one of them, the other changes instantly.

Quantum tunnelling
Quantum tunnelling is a quantum mechanical phenomenon in which an object such as an electron or atom passes through a potential energy barrier that, according to classical mechanics, the object does not have sufficient energy to enter or surmount.

Quantum superposition
Quantum superposition is the theory that sub-atomic particles exist in multiple states simultaneously.

Quantum technology is a class of technology that works by using the principles of quantum mechanics (The physics of sub-atomic particles), including quantum entanglement and quantum superposition.

The field of quantum technology was first outlined in a 1997.

Quantum mechanics is a fundamental theory in physics that provides a description of the physical properties of nature at the scale of atoms and subatomic particles.

Advantages & disadvantages of Quantum technology

Advantages:
1. Increased Computing Power,
2. Improved Security,
3. Better Sensing and Measurement,
4. Enhanced AI,
5. Faster Communication

Disadvantages:
1. Expensive,
2. Limited Applications,
3. Limited Control,
4. Sensitivity to Environment

- National Quantum Mission (NQM) will fund research and development of quantum computing technology and associated applications.
- The NQM will focus on four verticals of quantum technology –
  - o Quantum computing, quantum communication, quantum sensing and metrology, and quantum materials and devices.

Important Features of the Mission

- ➢ The Union Cabinet approved the National Quantum Mission (NQM) at a total cost of Rs.6003.65 crore from 2023-24 to 2030-31.
- ➢ It is aiming to seed, nurture and scale up scientific and industrial R&D and create a vibrant & innovative ecosystem in Quantum Technology (QT).

- This will accelerate QT-led economic growth, nurture the ecosystem in the country and make India one of the leading nations in the development of Quantum Technologies & Applications (QTA).
- The new mission targets developing intermediate-scale quantum computers with 50-1000 physical qubits in 8 years in various platforms like superconducting and photonic technology.
    - Satellite-based secure quantum communications between ground stations over a range of 2000 kilo-meters within India, long-distance secure quantum communications with other countries, inter-city quantum key distribution over 2000 km as well as multi-node Quantum network with quantum memories are also some of the deliverables of the Mission.
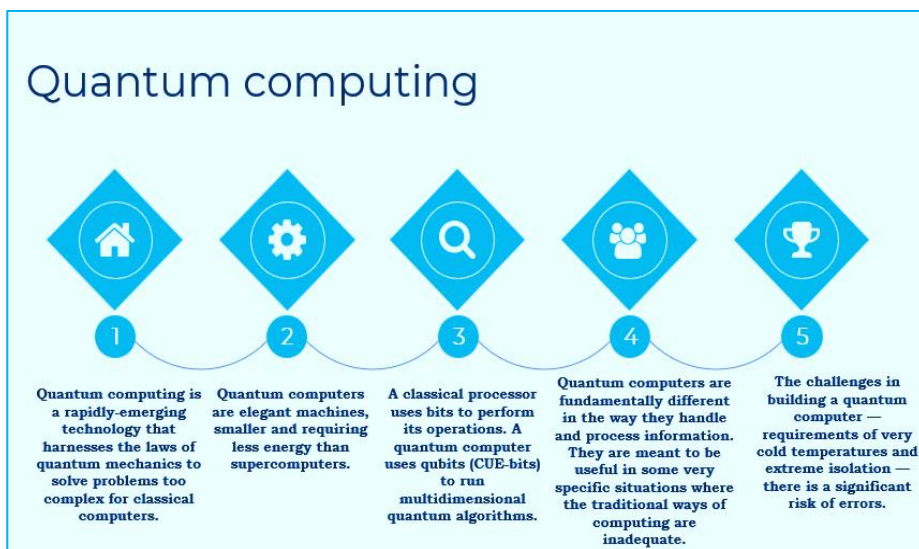
- The mission will help develop magnetometers with high sensitivity in atomic systems and Atomic Clocks for precision timing, communications, and navigation.
- It will also support design and synthesis of quantum materials such as superconductors, novel semiconductor structures, and topological materials for the fabrication of quantum devices. Single photon sources/detectors, and entangled photon sources will also be developed for quantum communication, sensing, and metrological applications.
- Mission Implementation includes setting up four Thematic Hubs (T-Hubs) in top academic and National R&D institutes in the domains - Quantum Computing, Quantum Communication, Quantum Sensing & Metrology, and Quantum Materials & Devices.
    - The hubs will focus on the generation of new knowledge through basic and applied research as well as promote R&D in areas that are mandated to them.

Benefits of the mission

- ✓ NQM can take the Technology Development ecosystem in the country to a globally competitive level. It will help in seeding, nurturing and scaling-up scientific and industrial R&D in the country.
- ✓ The Mission would greatly benefit various sectors, including communication, health, financial, energy with applications in drug design, space, banking, security etc. It will lead acceleration of QT-led economic growth.
- ✓ The Mission will also provide a huge boost to National priorities like Digital India, Make in India, Skill India and Stand-up India, Start-up India, Self-reliant India and Sustainable Development Goals (SDG).
- ✓ Creation of vibrant an innovative ecosystem in quantum technology.
- ✓ It will help in making India a leading nation in development of quantum technologies and applications.

Challenges

- Quantum computers are highly prone to interference, which makes the quantum algorithms running on them prone to errors. Thus, it may give wrong results.
- Most quantum computers need to be super-cooled to slightly above absolute zero to function because the heat introduces error or noise into the qubits.
- The expansion of quantum computing will increase the ecological footprint.

- Due to the acute shortage of candidates with doctoral degrees in quantum physics, engineering and statistics physics, engineering and statistics, finding the right talent is another major challenge.
- Metrics are not clearly defined to assess the results of India's quantum efforts. Achieving quantum supremacy alone will not necessarily protect India's national interests.

Way Forward

- The National Quantum Mission should be implemented properly. Because the success of this mission will pave the way for New India.
- Government should prioritize science and research in the country by budgetary allocation and educational support.

Nano Technology -Modified Nano Sheets

News Excerpt

Recent observations of IISC stated that chemically modified Nano-sheets are highly effective for biomedical applications.

Pre-Connect

- Nanotechnology, often known as nanotech, is the manipulation of matter on atomic, molecular, and supramolecular scales ranging from **1 to 100 nanometers.** A nanometer (nm) is one billionth of a metre (10^9).
- It is the manipulation and application of materials and technologies so small that nothing smaller can be constructed.
- It takes a multidisciplinary approach that includes applied physics, materials science, chemistry, biology, surface science, robotics, engineering, electrical engineering, and biomedical engineering.
- Over the last few decades, physics fields such as **nanoelectronics, nano-mechanics, nano-photonics, and nanoionics** have grown to provide a fundamental scientific foundation for nanotechnology.

About Chemically Modified Nano Sheets:

- Chemically modified nano sheets are atomically thin, two-dimensional materials that undergo chemical modifications to enhance their properties and functionality.
- These materials can be derived from diverse substances such as **graphene, transition metal dichalcogenides (TMDs)**, and other layered compounds.
- By altering their chemical composition, researchers can tailor their physical, electrical, optical, and mechanical properties to suit specific applications.

Chemical Modification Techniques:

- ✓ Chemical functionalization involves altering the surface properties of nano sheets by attaching various chemical groups or molecules.
- ✓ This process allows researchers to tailor the nano sheets' properties, enabling precise control over their behavior in biological environments.
- ✓ Several chemical modification techniques, such as covalent and non-covalent functionalization, have been employed to achieve desired characteristics.
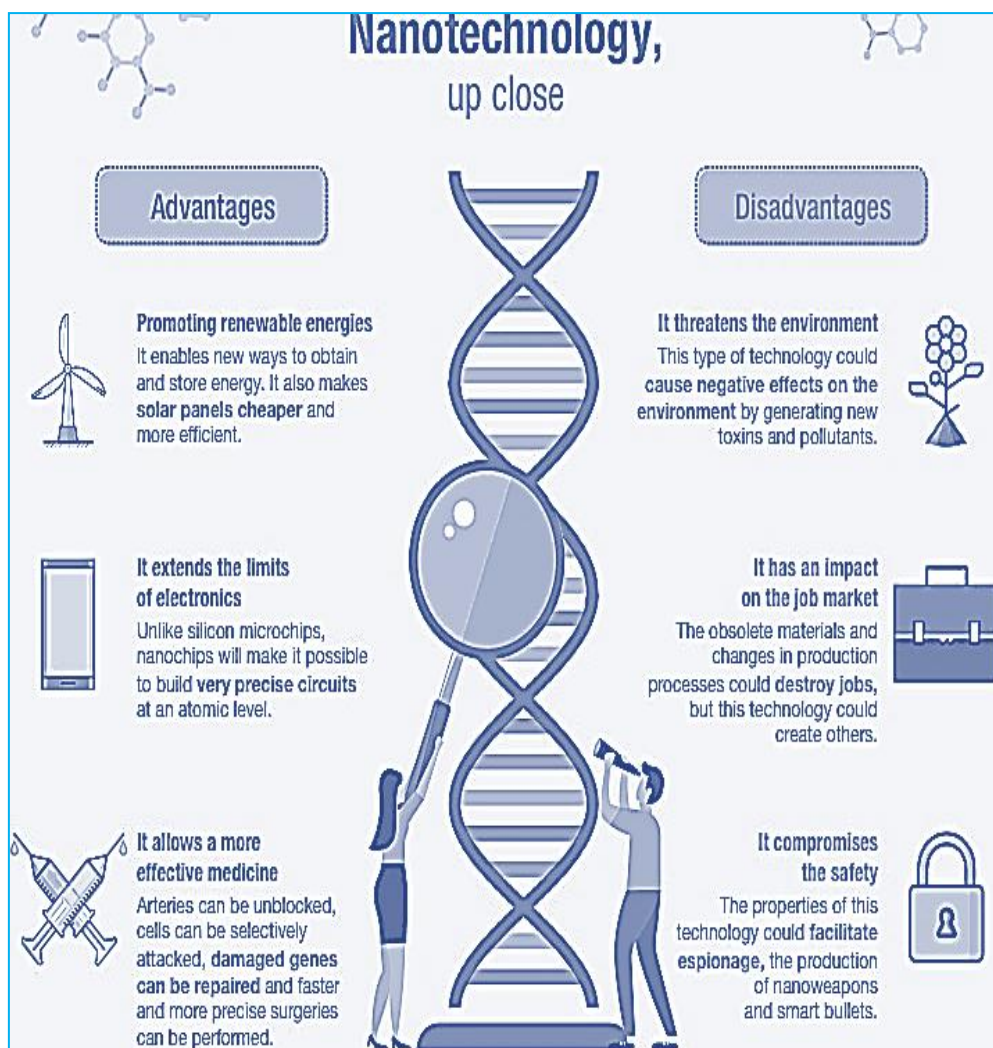
Potential Applications:

- **Electronics and Optoelectronics:**
  - o Chemically modified nano sheets exhibit exceptional electrical conductivity, high carrier mobility, and tunable band gaps. These properties make them ideal for next-generation electronic devices, ultrafast transistors, and flexible, transparent displays.
  - o Additionally, their unique optical properties enable their integration into optoelectronic devices like photo detectors and sensors.
- **Energy Storage and Conversion:**
  - o Nano sheets offer opportunities for significant advancements in energy storage and conversion technologies. Their high surface-to-volume ratio and mechanical flexibility make them suitable for super capacitors, batteries, and fuel cells.
  - o Furthermore, their efficient catalytic activity enhances energy conversion in solar cells and hydrogen production systems.
- **Biomedical Applications:**
  - o Chemically modified nano sheets hold promise in biomedical applications due to their biocompatibility, large surface area, and tunable drug delivery capabilities.
  - o They can be utilized for targeted drug delivery systems, biosensors, tissue engineering scaffolds, and diagnostic tools for early disease detection. Ex: Cancer detection and treatment: **Gold nanoparticles, Smart pills, Nanobots**

- **Tissue Engineering and Regenerative Medicine:**
  - o By mimicking the extracellular matrix and providing a scaffold for cell growth and tissue formation, nano sheets can promote tissue regeneration.
  - o Surface functionalization of nano sheets can enhance their biocompatibility, cellular adhesion, and integration with host tissues, facilitating the regeneration of damaged or diseased tissues.
- **Drug Delivery Systems:**
  - o By modifying their surface with specific ligands or polymers, nano sheets can encapsulate therapeutic agents and transport them to the desired site within the body.
  - o The controlled release of drugs from nano sheets offers several advantages, including enhanced drug efficacy, reduced side effects, and improved patient compliance.
  - o Furthermore, the large surface area of nano sheets enables loading multiple drugs simultaneously, opening new possibilities for combination therapies.
- **Environmental Remediation:**
  - o Nano sheets can be engineered to remove pollutants from air and water due to their large surface area and adsorption capacity.
  - o These materials show potential for water purification, air filtration, and the remediation of toxic contaminants.

Nanotechnology, up close

Advantages

Promoting renewable energies
It enables new ways to obtain and store energy. It also makes solar panels cheaper and more efficient.

It extends the limits of electronics
Unlike silicon microchips, nanochips will make it possible to build very precise circuits at an atomic level.

It allows a more effective medicine
Arteries can be unblocked, cells can be selectively attacked, damaged genes can be repaired and faster and more precise surgeries can be performed.

Disadvantages

It threatens the environment
This type of technology could cause negative effects on the environment by generating new toxins and pollutants.

It has an impact on the job market
The obsolete materials and changes in production processes could destroy jobs, but this technology could create others.

It compromises the safety
The properties of this technology could facilitate espionage, the production of nanoweapons and smart bullets.

Advancements and Challenges:

- Techniques such as chemical vapor deposition, plasma-assisted methods, and chemical exfoliation enable the production of large-scale, high-quality nano sheets.
- Additionally, precise control over their chemical modifications allows for tailoring their properties.
- However, challenges persist in terms of scalability, cost-effectiveness, and environmental impact.
- Ensuring reproducibility and standardization of synthesis methods, optimizing large-scale manufacturing processes, and addressing potential toxicity concerns are critical areas of focus for future research and development.

> **PEPPER IT WITH**
> Fullerenes, Quantum dots, photovoltaic cells, dendrimers, atomic force microscope (AFM), scanning tunneling microscope (STM), Dip Pen Nanolithography (DPN)

Conclusion:

Chemically modified nano sheets have emerged as a cutting-edge technology with vast potential in biomedicine. Their unique properties and versatile functionality make them a promising platform for biosensing, drug delivery systems, tissue engineering, and regenerative medicine. Continued research, collaboration, and investment in this field will be essential to unlock the full potential of chemically modified nano sheets, driving innovations that will shape the future of technology and society as a whole.

SECURITY

Common Uniform

News Excerpt

Indian Army has decided that irrespective of the cadre and appointment all officers of the rank of Brigadier and above will wear Common Uniform items, in order to promote and strengthen common identity and approach.

Pre-Connect

Background

- The concept of common uniform was practiced 40 years ago, when there were changes towards regimental affiliations.
- Till Lt.Colonel the regimental service continued untilmid-1980s,Colonel and above rankers wore common uniform patterns and insignia. Colonel and brigadiers wore khaki beret, shed their regimental insignia and wore Ashoka emblem on their cap badges.
- Although for most officers,the regimental service in the army ends at the rank of Colonel. So, all the uniform affiliations with respect to corps or regiment also ends there, representing that any regimental parochialism will not be promoted to higher ranks.

About Uniform Pattern of Senior Indian Army Officers

Current Uniform Pattern

- ➢ There are different uniform accouterments such as berets, lanyards, and badges of ranks for different branches of the Army depending on their regiment affiliation.
- ➢ The uniform worn by officer of the rank of Colonel and above is termed as Staff Uniform, distinguishing it from residential uniform.
- ➢ The wearing of any item of regimental uniform, particularly headdress, along with staff uniform is unauthorized.
- ➢ At present armored corps officers wear black berets, military intelligence and infantry officers wear dark green berets while other corps officer wear dark blue berets.
- ➢ Officers from Lieutenant to General rank wearas per their regimental or corps affiliation.
- ➢ Officers from the rifle regiments such as Gorkha Rifles, Garhwal Rifles and Rajputana Rifles wear black rank badges currently.

> **Accouterments** are worn and carried by military personnel which are additional items of dress or equipment that are worn or carried, especially, to complete a uniform or outfit.

> **Regimental Parochialism** is the term used for loyalty towards one's regiment or corps. It creates a sense of pride and attachment to one's unit that can result in lack of cooperation or competition with other units.

New Uniform Pattern

- ✓ Officers from **Brigadier, Major General, Lt. General to General** are bound to wear berets having same color,common badges of rank,a common pattern of shoes and a common belt buckle.
- ✓ Meanwhile, the color for the shoulder rank will be golden for all officers.
- ✓ Also, the headgear,gorgetpatches,belts,shoes and shoulder rank badges will be standardized and it will be common for officers of Brigadier and above ranks.
- ✓ No change has been made to the uniform worn by colonels and below –rank officers but now on they will no longer wear regimental lanyards(cords) on their shoulders. Any shoulder flashes like 'Special Forces', 'Arunachal Scouts', 'Dogra Scouts', etc. will not be worn anymore.
- ✓ No particular uniform will represent any one regiment or corps as all the officers of higher ranks will dress in the same pattern.

Significance

- ▪ It will enhance a culture which is more **cohesive and integrated** in approach within the Indian Army.
- ▪ It will help in dealing with **tinkering syndrome' which is triggered by tendency of chasing legacy** towards end of tenure.
- ▪ It will ensure **common identity** to all senior rank officers representing real ethos of the Indian Army.
- ▪ It will help in **eliminating regimental parochialism** and **common identity** among officers will help to meet the different challenges of modern warfares and adapting changing strategic circumstances.
- ▪ It will help **in changing the mindset and dismantling the entire eco-system**, which gives disproportionate advantage to one Arm and few regiments affiliated with senior officers.
- ▪ It will help in **commanding troops of mixed regimental lineage** for senior officers.
- ▪ It will help in **establishing a more inclusive and collaborative leadership** style that transcends traditional loyalties and affiliations.

> **PEPPER IT WITH**
> Vande Bharat Mission, Defence Acquisition Procedure 2020, Theatre Commands Positive indigenisation lists, Defence export policy

Conclusion

With this initiative the aim is to lower down the elitism and parochialism which has existed in the army, since long time. Along with this issue other issues like vacancy allocation, objectivity in placement and selection to make it merit oriented Army can be addressed with this initiative and without parochialism. So, this initiative can be taken as bold initiative side-lining the fixed mindsets and residual baggage.

Dima Hasao Insurgent Group

News Excerpt

Recently, Assam based insurgent group the **Dimasa National Liberation Army (DNLA) signed** a Peace Agreement with the state and Union government.

Pre-Connect

About the Dima Hasao Insurgent Group(DNLA)

- The group was established in 2019 with the aim to seek sovereign territory for the Dimasa tribals.
- Working of this group is looked after by **North Cachar Hills Autonomous Council and the Karbi Anglong Autonomous Council.**
- It is an operating insurgent group in Dima Hasao and Karbi Anglong districts in Assam.
- It works to develop a sense of brotherhood among Dimasas by rebuilding trust and faith among fellow Dimasas to regain Dimasa Kingdom.
- It works on extortion and taxation and gets support from the NSCN (IM) of Nagaland.

> Karbi Anglong **and Dima Hasao (earlier North Cachar Hills)** districts are protected under the **Sixth Schedule of the Constitution.**

About Dimasas or Dimasa-Kacharis

➢ These are inhabitants of Dima Hasao, KarbiAnglong, Cachar,Hojai and Nagaon districts covering majority of Assam and Nagaland and known as earliest rulers and settlers of Assam.

➢ These are also known as earliest inhabitants of the Brahmaputra Valley.

➢ These are believed to be descendants of the rulers of powerful Kamarupa Kingdom prior to Ahom Rule who ruled large parts of Assam along the south bank of Brahmaputra between 13th and 16th centuries.

➢ Dimapur now called Nagaland and later Maibang in North Cachar Hills was their capital.

> **PEPPER IT WITH**
> Karbi Anglong Agreement, Bodo Accord, Bru-Reang Agreement, NLFT-Tripura Agreement

Improvised Explosive devices

News Excerpt

Recent soldiers in Jammu Division and security personnel of the District Reserve Guard in Chattisgarh Dantewada area were killed because of Improvised Explosive Devices.

Pre-Connect

About Improvised Explosive Device

- In 1970's, after Irish republican army (IRA) used bombs made from agricultural fertilizer and SEMTEX smuggled from Libya to make highly remote-controlled bombs, improvised explosive device were used by British Army. {SEMTEX is a plastic explosive containing RDX (i.e.-Research Department Explosive) and PETN (Penta-erythritol tetra-nitrate}.
- It was commonly used during Iraq War around 2003.
- It comes in many forms, from a small pipe bomb to a sophisticated device capable of causing massive damage and loss of life.
- They are easy to carry and can be placed in vehicle, kept in package or concealed on the roadside.
- Common materials such as **fertilizer, gunpowder, and hydrogen peroxide,** can be used as explosive materials in IEDs.
- The explosion depends on the type of material used as explosive but can be triggered by various methods, including remote control, infra-red or magnetic triggers, pressure sensitive bars or trip wires (victim operated).
- Its damage is based on its size, construction, and placement, and whether it incorporates a high explosive or propellant.

Impacts

➢ Damage may include explosion in nearby buildings, public transports, effects on ventilation, water/sewage, release of hazardous material and even exit routes may be disrupted.

- Secondary hazards include possibly toxic smoke, disruption of electric power, ruptured natural gas lines and water mains, along with debris.
- It can also lead to uncontrolled traffic in the area of blast with stampede and overcrowding.
- It may cause health impacts like high blood pressure, anxiety, eye injuries, abdominal injury, basic injuries, psychological impacts and even fatalities especially if the area is closed.
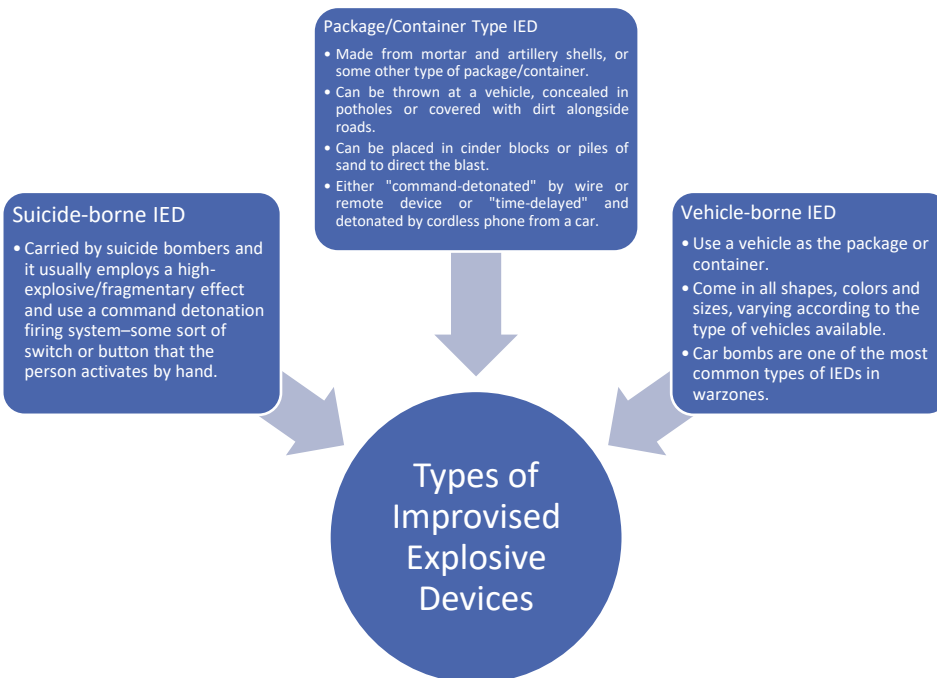
Way Forward

- **Stealth, camouflage and concealment are integral way to avoid such accidents.**
- Strict measures such as mandatory addition of odoriferous chemicals or biosensors should be added to industry and mining for early and easy detection during transport.
- Stricter controls on manufacture, supply and sale of explosives and detonators with strict legislative measures are required.
- In War Zones, security forces should be provided with appropriate protective gear, such as blast resistant clothing, helmets and eye protection.
- Vehicle should be equipped with blast-resistant technology and 360-degree observation should be adopted.
- Security forces should always have a group of vehicles, so that in time of crisis, they can help each other.
- **Various detection methods**, such as metal detectors, ground-penetrating radar, and trained sniffer dogs, to locate and clear landmines and IEDs should be implemented well.
- **Road opening parties with Unmanned Ground Vehicle and drones for aerial surveillance can** play an important role in detection of ambushes.
- Vulnerable areas can be mapped and contingency plans can be prepared for them.

Package/Container Type IED
- Made from mortar and artillery shells, or some other type of package/container.
- Can be thrown at a vehicle, concealed in potholes or covered with dirt alongside roads.
- Can be placed in cinder blocks or piles of sand to direct the blast.
- Either "command-detonated" by wire or remote device or "time-delayed" and detonated by cordless phone from a car.

Suicide-borne IED
- Carried by suicide bombers and it usually employs a high-explosive/fragmentary effect and use a command detonation firing system–some sort of switch or button that the person activates by hand.

Vehicle-borne IED
- Use a vehicle as the package or container.
- Come in all shapes, colors and sizes, varying according to the type of vehicles available.
- Car bombs are one of the most common types of IEDs in warzones.

Types of Improvised Explosive Devices

PEPPER IT WITH
VL SR SAM, STREKOZA, Spectro drone

ART & CULTURE

Samarth Ramdas

News Excerpt:

Samarth Ramdas, a prominent figure in Indian history, was a saint, philosopher, and social reformer who made significant contributions to society during the 17th century.

Early Life and Spiritual Journey:

- Samarth Ramdas, originally named **Narayan SuryajiThosar,** was born in Jamb, Maharashtra, in 1608.
- From a young age, he displayed an inclination towards spirituality and a deep longing for spiritual knowledge. He renounced his family and worldly possessions at the age of 11 and embarked on a spiritual quest.
- His teachings, writings, and reforms continue to inspire generations and have left an indelible impact on Indian society.
- Under the tutelage of Guru Ramdas, Samarth Ramdas received spiritual training and imbibed the teachings of the Bhakti movement, emphasizing devotion to God and the principles of social equality.

Teachings and Philosophy:

- ➢ Samarth Ramdas' teachings were grounded in the belief that true spirituality lies in the service of humanity. He emphasized the importance of **moral values, righteousness**, and **compassion.**
- ➢ His philosophy encouraged individuals to lead a disciplined life, practicing devotion and selflessness.
- ➢ He advocated for the eradication of social evils and the upliftment of the marginalized sections of society.

Literary Contributions:

- ✓ Samarth Ramdas penned several literary works that continue to inspire and guide people.
- ✓ His most renowned composition is the **"Dasbodh,"** a spiritual treatise in Marathi that contains profound insights into various aspects of life, including self-realization, ethics, and social responsibility.
- ✓ His other notable works include "**ManacheShlok**" and **"Karunashtake."**

Social Reforms and Influence:

- Samarth Ramdas played a crucial role in initiating social reforms during his time. He strongly condemned the caste system and worked towards eradicating social discrimination.
- He advocated for the empowerment of women and promoted education for all, regardless of gender or social status. His efforts to uplift the oppressed and bring about social equality left a lasting impact on society.
- His commendation to Lord Hanuman, Maruti Stotra, is still commonly recited by school children as well as wrestlers akhadas across Maharashtra.
- His teachings and contributions continue to resonate with people from all walks of life. His emphasis on spirituality, social reforms, and ethical living holds relevance even in contemporary times.
- Many organizations and institutions have been established in his name, dedicated to spreading his teachings and promoting his ideals.
- o His emphasis on compassion, righteousness, and selfless service has inspired countless individuals to work towards creating a just and equitable society.

> **PEPPER IT WITH**
> Manache Shlok, Asmani Sultania, Parachakraniroopan, Maruti Stotra

Conclusion:

Samarth Ramdas, through his life and teachings, exemplified the principles of spirituality, social reform, and compassion. His profound insights and reforms continue to guide and inspire individuals to lead a life of righteousness and service to society.

Heritage sites in India

News Excerpt

Every year on April 18, World Heritage Day is observed to raise awareness of the importance and preservation of all World Heritage Sites.

Pre-Connect

- India has 40 World Heritage Sites at present and has constantly had its heritage structures added to the UNESCO list.
- India has officially joined the Super-40 club for nations that have been inscribed as World Heritage Sites, joining nations like Italy, Spain, Germany, China, and France.
- Archaeological sites and monuments not only play an important part in advancing India's tourist prospects, but also serve as a treasure trove of our rich and diversified cultural history.
- The Archaeological Survey of India is in charge of the upkeep, restoration, and environmental improvement of 3692 Centrally Protected Monuments.
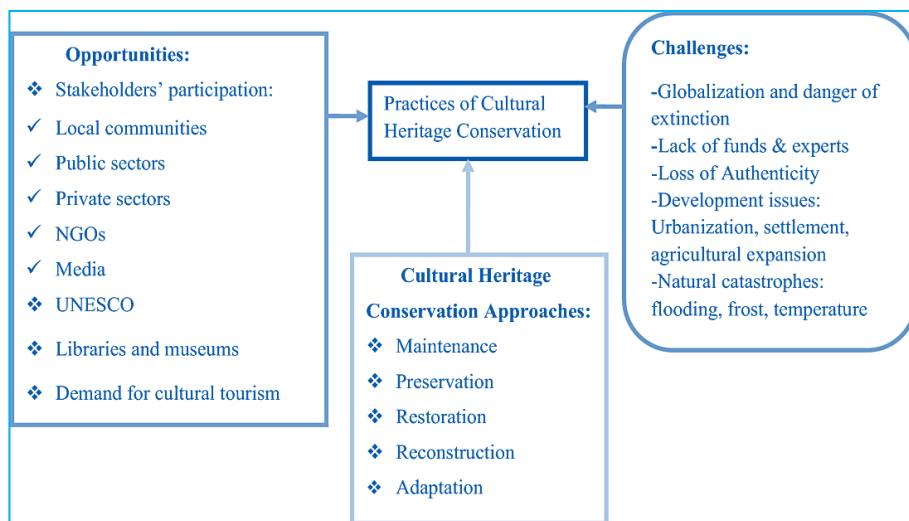
About World Heritage

➢ World Heritage is an official designation given to a site following careful consideration of a proposal submitted by the country and evaluations undertaken Heritage Committee decides whether to grant a property this distinction.

➢ Once a year, the Committee composed of 21 nations representing all geographical regions meets to discuss whether the proposed locations satisfy certain requirements and exhibit what is known as the "**Outstanding Universal Value.**"

➢ The OUV designation means that a cultural or natural site is "as exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity."

Global Challenges for World Heritage sites

✓ There are environmental threats and challenges, such as climate change, global warming, pollution of the environment, depletion of the ozone layer and water supplies, sea level rise, extinction of raw materials and biological species, energy issues, etc. that can result in environmental catastrophes.

✓ The development of mass culture as a whole, which includes the fusion of tastes, perceptions, and preferences as well as the commercialization of culture, poses another set of cultural global challenges and dangers.

✓ National cultural traditions are at odds with the cultural convergence brought forth by cultural globalization.

Opportunities:
❖ Stakeholders' participation:
✓ Local communities
✓ Public sectors
✓ Private sectors
✓ NGOs
✓ Media
❖ UNESCO
❖ Libraries and museums
❖ Demand for cultural tourism

→ Practices of Cultural Heritage Conservation ←

Cultural Heritage Conservation Approaches:
❖ Maintenance
❖ Preservation
❖ Restoration
❖ Reconstruction
❖ Adaptation

Challenges:
-Globalization and danger of extinction
-Lack of funds & experts
-Loss of Authenticity
-Development issues: Urbanization, settlement, agricultural expansion
-Natural catastrophes: flooding, frost, temperature

Heritages related challenges in India

▪ **Lack of human resource:**
  o The most serious difficulty that the institutions (tasked with looking after the country's heritage sites and monuments) face is a lack of qualified skilled manpower and competent employees to look after the monuments and carry out conservation operations.

▪ **Natural calamities and pollution:**
  o India being a tropical country, changeable environmental circumstances such as severely hot or cold weather, relative humidity, light levels, and pollutants are major challenges.

▪ **Absence of specifications of conservation works:**
  o Lacking list of standards for conservation work, the CPWD criteria, which are not meant for conservation work, are being followed by the ASI.
  o Although ASI declared a revised national conservation policy in 2014, the policy is little recognized even among ASI staff at the circle level.

▪ **Lack of funds:**
  o Lack of finances is also a problem for the ASI, which is straining to carry out the mission of maintaining and managing more than 3500 sites with its limited resources.

> **The Ancient Monuments and Archaeological Sites and Remains Act (or AMASR Act) 1958:**
> ❖ It is an act of the Indian Parliament that provides for the preservation of ancient and historical monuments, archaeological sites, and remains of national significance, as well as the regulation of archaeological excavations and the protection of sculptures, carvings, and other similar objects.
> ❖ This statute governs the activities of the Archaeological Survey of India.

> **PEPPER IT WITH**
> Indian National Trust for Art & Cultural Heritage (INTACH), National Mission on Monuments and Antiquities (NMMA) 2007, Project Mausam.

Way forward

It is necessary to ensure the correlation of the national legislation with international experience and UNESCO's standards, taking into account new challenges and threats.

Modern technologies such as photogrammetry, 3D laser scanning, block chain technology, and so on may be studied and used to improve monument documentation wherever possible, because quality documentation now allows for quality scientific research in the future.

Page 73

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INDORE: 7314977441 | **BENGALURU:** 7619166663 | **HYDERABAD:** 79960 66663 | **IMPHAL:** 9650245599 | **SRINAGAR:** 98712 35599| **MUMBAI:** 9871265599|

UNESCO Cultural World Heritage Sites in India

S. No.	Site	Place	Year of declaration
1.	Taj Mahal	Uttar Pradesh	1983
2.	Ellora Caves	Maharashtra	1983
3.	Ajanta Caves	Maharashtra	1983
4.	Agra Fort	Uttar Pradesh	1983
5.	Sun Temple, Konark	Odisha	1984
6.	Group of Monuments at Mahabalipuram	Tamil Nadu	1984
7.	Khajuraho Group of Monuments	Madhya Pradesh	1986
8.	Group of Monuments at Hampi	Karnataka	1986
9.	Fatehpur Sikri	Uttar Pradesh	1986
10.	Churches and Convents of Goa	Goa	1986
11.	Group of Monuments at Pattadakal	Karnataka	1987
12.	Great Living Chola Temples	Tamil Nadu	1987
13.	Elephanta Caves	Maharashtra	1987
14.	Buddhist Monuments at Sanchi	Madhya Pradesh	1989
15.	Qutb Minar and its Monuments, Delhi	Delhi	1993
16.	Humayun's Tomb, Delhi	Delhi	1993
17.	Mountain Railways of India	Tamil Nadu	1999
18.	Mahabodhi Temple Complex at Bodh Gaya	Bihar	2002
19.	Rock Shelters of Bhimbetka	Madhya Pradesh	2003
20.	Chhatrapati Shivaji Terminus	Maharashtra	2004
21.	Champaner-Pavagadh Archaeological Park	Gujarat	2004
22.	Red Fort Complex	Delhi	2007
23.	The Jantar Mantar	Rajasthan	2010
24.	Hill Forts of Rajasthan	Rajasthan	2013
25.	Rani-Ki-Vav	Gujarat	2014
26.	Archaeological Site of Nalanda Mahavihara (Nalanda University)	Bihar	2016
27.	Jaipur City	Rajasthan	2020
28.	Historic City of Ahmedabad	Gujarat	2017
29.	Victorian and Art Deco Ensemble of Mumbai	Maharashtra	2018
30.	The Architectural Work of Le Corbusier, an Outstanding Contribution to the Modern Movement	Chandigarh	2016
31.	Kakatiya Rudreshwara (Ramappa) Temple	Telangana	2021
32.	Dholavira	Gujarat	2021

UNESCO Natural World Heritage Sites in India:

S.No.	Site	State	Year of declaration
1.	Kaziranga National Park	Assam	1985
2.	Keoladeo Ghana National Park	Rajasthan	1985
3.	Manas Wildlife Sanctuary	Assam	1985
4.	Nanda Devi National Park and Valley of Flowers	Uttarakhand	1988, 2005
5.	Sundarbans National Park	West Bengal	1987
6.	Western Ghats	Maharashtra, Goa, Karnataka, Tamil Nadu and Kerala	2012
7.	Great Himalayan National Park	Himachal Pradesh	2014

UNESCO Mixed World Heritage Sites in India

S.No.	Site	State	Year of declaration
1.	Khangchendzonga National Park	Sikkim	2016

The Indus Valley Civilization

News Excerpt:

Recently, the study published in the journal Communications Earth & Environment, discovered three long-term droughts that lasted between 25 to 90 years during Indus Valley Civilization.

Pre-Connect:

- The Indus Valley Civilization, also known as the Harappan Civilization, flourished around 2600 to 1900 BCE in the northwestern regions of the Indian subcontinent.
- It was one of the world's earliest urban civilizations, characterized by advanced urban planning, sophisticated drainage systems, and remarkable craftsmanship.
- Recent research and archaeological evidence suggest that prolonged droughts might have played a significant role in ending the era of mega cities during the Indus Valley Civilization.
- The Indus Valley Civilization was spread across a vast area including Harappa and Mohenjo-Daro, were remarkably well-planned and featured advanced systems of sanitation, brick-laid houses, public baths, and complex urban infrastructures.
- This ancient civilization boasted extensive trade networks, evidence of script-like symbols, and a robust agricultural system.
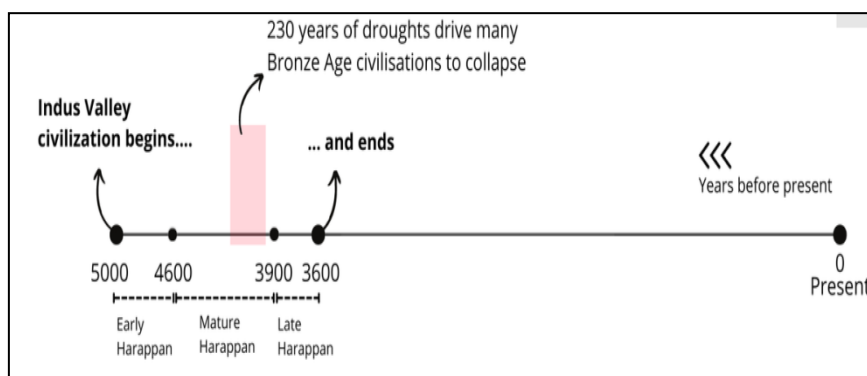
Prolonged Droughts and their Impact on IVC

- The Indus Valley Civilization thrived in a region where monsoon rains are crucial for agricultural productivity.
- However, research suggests that during the latter stages of the civilization, the region experienced an extended period of drought.
- This prolonged dry spell severely affected the availability of water for irrigation and domestic use, making it challenging for the Harappans to sustain their agricultural practices and support the growing population in their urban centers.

Diminished Crop Yields and Food Shortages:

- ✓ The prolonged droughts likely resulted in reduced crop yields, leading to food scarcity and escalating prices. The reliance on the monsoon rains for irrigation made the civilization vulnerable to climatic variations.

Page 75

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✓ The lack of sufficient rainfall and depleted water sources would have severely affected the agricultural productivity of the region, leading to a decline in food production. This, in turn, could have triggered social unrest, migration, and even conflicts over scarce resources.

Impact on Trade and Economy:

- The Indus Valley Civilization was a thriving commercial center, engaging in long-distance trade with Mesopotamia and other ancient civilizations.
- However, the prolonged droughts disrupted the agricultural surplus, which was the backbone of trade and economic prosperity.
- Reduced agricultural output would have hindered the surplus food supply necessary for trade, destabilizing the economy and disrupting the complex network of exchange and commerce that characterized the civilization.

Social Disruptions and Migration:

- As the droughts persisted, the adverse effects on agriculture and trade likely led to social disruptions within the Indus Valley Civilization.
- Food shortages, economic hardships, and the collapse of urban infrastructure would have put immense pressure on the social fabric.
- The lack of resources may have triggered migrations from urban centers to rural areas, causing the abandonment of mega cities and ultimately leading to the decline and disintegration of the civilization.

> **PEPPER IT WITH**
> Pattanam Site, Muziris, Greco-Roman classical age

Conclusion:

While the Indus Valley Civilization faced multiple challenges throughout its existence, recent research indicates that prolonged droughts played a significant role in the decline of the mega cities that once thrived along the Indus River. The disruption of agricultural practices, diminishing food supplies, and economic instability caused by the droughts likely led to social unrest, migrations, and the ultimate downfall of this great civilization.

Adi Shankaracharya

News Excerpt

Recently, on 25th April, 1235th Birth anniversary of Adi Shankaracharya has been celebrated. He is known as an Indian Guru and philosopher.

Adi Shankaracharya

- He was one of the most influential philosophers of India. He was born in Kerala in the eighth century.
- He was an **advocate of Advaita** or **the doctrine of the oneness of the individual soul** and the Supreme God which is the Ultimate Reality.
- He taught that Brahman, the only or Ultimate Reality, was formless and without any attributes.
- He considered the world around us to be an illusion or maya, and preached renunciation of the world and adoption of the path of knowledge to understand the true nature of Brahman and attain salvation.
- Shankaracharya was the one who introduced about the Panchkayatna for of worship which means worshiping the five deities (Lord Shiva, Goddess, Lord Vishnu, Lord Surya and Lord Ganesha).
- It is believed that he mastered the Vedas when he was just sixteen years old. He has written many scriptures, books and stotram.
- Adi Shankara is generally identified as the author of 116 works — among them the celebrated commentaries (bhashyas) on 10 Upanishads, the Brahmasutra and the Gita, and poetic works including Vivekachudamani, Maneesha Panchakam, and Saundaryalahiri.
- Adi Shankara's philosophy is encapsulated in the much-quoted formulation: **"brahma satyamjagan-mithya, jivobrahmaivanaaparah"** (brahman alone is real, this world is an illusion/ and the jiva is non-differential from brahman).
- A **12-foot statue of Adi Shankaracharya** has been established at **Kedarnath**, where the acharya is believed to have attained samadhi at the age of 32 in the ninth century.

Mathas Established by Shankaracharya — Sringeri (01), Dwarka (02), Puri (03), Joshi math (04)
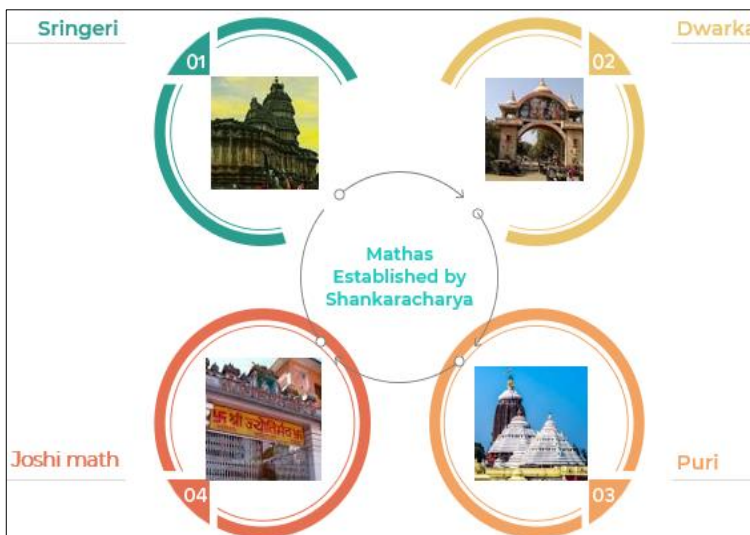
> **PEPPER IT WITH**
> Advaita Philosophy, Vedangas

CONTEMPORARY ETHICS CASE STUDIES

1. The government has planned a dam on the river to provide water for irrigation of crops, control floods in some parts of your district, and supply drinking water to numerous towns and cities. Some part of the dam to be constructed lies in areas of high ecological value occupied by tribes who are challenging the government. The tribal groups, who oppose the construction of the dams, represent a minority compared to the multiple towns and cities which would benefit from the dams. Nevertheless, it should be taken under consideration that the tribal consider the forests as their own. Also, their distinctive lifestyle and culture is intimately related to the existence of these natural areas.

   It has been noted that the forests also have a very high ecological value. If this project is completed, their land would submerge and the tribe would have to be relocated. Government was aware of that and still they went ahead with the project.

   You are the District Magistrate of this district. Every day protests and demonstrations are happening in your office. The government has given you the responsibility to manage the situation.

   (a) **What are the various options available to you? Evaluate all of their merits and demerits**

   (b) **What course of action will you follow? Justify with arguments.**

2. You are a student in a leading Law University. You went with your college friend A to his village to attend his sister's marriage. His parents are farmers and are financially very poor. They have somehow managed to send him to the university by selling their land. After reaching village, you came to now that the bride is still below 18 years of age, which makes it a case of child marriage. The family wants early marriage of the daughter to avoid huge demands of dowry in the future. You are well aware that child marriage is illegal in India. So, you discuss the issue with your friend who says that he is helpless and can't do anything. Your friend feels that his family is already doing too much for him and he cannot argue and change his parents' decision.

   (a) **What are ethical issues involved in this case?**

   (b) **What are the options available to you? Evaluate their merits and demerits?**

   (c) **What course of action would you follow and why?**

3. You are the secretary in the Department of education. You have received a complaint regarding prejudice against students of lower castes in some professional degree colleges and universities. Also, one of the Doctor students committed suicide and police investigation points to her harassment by seniors in name of caste. There are media reports too of presence of caste and religion biases in the campuses. All these educational institutions have contributed greatly to the development of the state and any frivolous case could lead to their reputational loss. Also, the recent incident of suicide of young doctor has led to protests in campuses and has disturbed peace and harmony in the college campus.

   (a) **Discuss the immediate steps you would take to contain growing discontent among some students.**

   (b) **What can be the long term solution to tackle the issue of caste and other biases at the educational institutes?**

SCAN THIS QR TO FOR MODEL ANSWER

PHILOSOPHY OF THE MONTH

Inner Transformation Needs Inner Governance

- Governance principles are ubiquitous whether it is the government or the corporations or an individual. Every person aspires to become a great human being but is not the goal that drives us rather we are guided by the motive force of achieving fame and fortune.

- This desire for achievement compels us to pursue all that is outside of ourselves, thinking it will impart a sense of fulfilment. But it often results in making us feel unfulfilled. People despite knowing that there is something deeper that is to be discovered, do not have the patience to pursue it.

- The deeper can only be found with the inner motive force which drives an individual towards spiritual orientation. When an individual has a clarity that chasing happiness outside is like chasing a mirage. And there is conviction in the pursuit of the highest ideal of realising our human potential.

- To achieve this an individual need to go through a process of inner transformation. the process of inner transformation of a human being has to be through a self-governance framework.

- Frameworks designed to stabilise our minds, draw the mind inwards, build various introspection practices and enhance our faith in the Divine force with the conviction that all the impulses for work, all the capacities for work come from the divine.

- The expansion of the individual personality into the expansive, universal personality is the blueprint for our inner transformation. Without a self-governance model, one will not be able to alter their physical habits and mental attitudes.
- One should follow the Swami Vivekananda's arise, awake and stop not till the goal is reached, to undertake the greatest journey of inner transformation

Every word you say has immense power

- The Indic religions – Hinduism, Buddhism, Jainism and Sikhism – have always believed in dialogue as the methodology of spiritual growth.
- The famous Rig Vedic dictum: 'Ekam Sat Vipra BahudhaVadanti – the truth is one, the wise call it by many names', is at the heart of our rich pluralistic culture.
- Hinduism is probably the only religion that is prepared to accept multiple paths to the Divine. This naturally involves a continuous process of dialogue even within Hinduism, for example, between the Advaitins and the Dvaitins, or between the Shaivas and the Vaishnavas. But these conversations have to be carried out in a calm and peaceful atmosphere
- In many cultures, especially in ours, the 'Word' is looked upon as sacred. The Upanishads say, 'Aum ItyekaksharamBrahmn' – this one syllable 'Aum' is the 'Brahmn', while the Bible opens with the words: 'In the beginning there was the Word, and the Word was with God, and the Word was God.'
- The vibratory power of the word is much greater than most people realise, and the constant use of harsh and cruel language cumulatively has a very negative impact on society. There is a Hindi saying that 'the wound of an arrow can be healed, but the wound of a word can never be cured.' And there is the popular English one 'sticks and stones can break my head, but words can break my heart.'
- We must, therefore, cherish and respect our words, and not denigrate their value by misuse. This is indeed at the heart of our democracy and our constitutional structure. To quote Kabir: Ghat ghatmein tore sain basat hain, KatuVachan mat bol re– the Divine resides everywhere, so do not use bitter language at all.

PT CONCATENATION

Debt-for-climate swaps

Context
In the past decade, debt-for-climate swaps have grown relatively popular among low- and middle-income countries.

Key Points
- The debt-for-climate swap was introduced as a debt restructuring device that aims to combat climate change by ensuring that debt-ridden countries do not incur additional debt while addressing climate change locally.
- A debt-for-climate swap is an agreement between the creditor and a debtor by which the former forgoes a portion of the latter's foreign debt, or provides it debt relief, in return for a commitment by the government to invest in a specific environmental project to, say, decarbonise the economy, develop climate-resilient infrastructure, or protect biodiverse forests or reefs.
- Multilateral development banks and multilateral organisations such as the United Nations Development Programme (UNDP) have also been advocating this instrument as a debt-relief measure.
- The utilisation of these swaps now stretches to finance enormous climate mitigation and adaptation projects.

Benefits:
➢ Debt-for-climate swaps are one way to fulfil their commitments. Second, debt-for-climate swaps are attractive instruments due to their transparency.

➤ They can reduce the level of indebtedness of a nation to private creditors or creditor nations, the concessional capital is assured to be directed to climate projects with third-party guarantors overseeing the escrow fund.

➤ Debt-for-climate swaps offer an innovative way to make climate investments in islands countries while creating the much-needed fiscal space.

LINK IT WITH: Small Island developing states, Paris Agreement, Glasgow Financial Alliance for Net Zero

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Laundromat Countries

Context
The term "Laundromat" gained prominence in the news with the exposure of a vast money laundering scheme.

Laundromat countries
- Laundromat countries are nations that have been implicated in engaging in money laundering activities, specifically through the use of large-scale financial transactions to conceal and transfer illicit funds across international borders.
- Money launderers employ a network of shell companies and multiple fictitious transactions to obscure the true origin and destination of the funds.
- The Russian Laundromat case exposed the involvement of various countries as facilitators in the money laundering process.
- The media coverage of Laundromat countries aims to raise awareness about the risks associated with money laundering, advocate for regulatory reforms, and enhances the enforcement of global anti-money laundering measures.

LINK IT WITH: Dirty money, Double Taxation Avoidance Agreement, Windfall tax

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Price Cap Coalition

Context
The Price Cap Coalition, along with the EU and the international G7+ implemented price caps on seaborne Russian petroleum products like diesel and fuel oil.

Key Points
- The Price Cap Coalition consists of Australia, Canada, the European Union (EU), Japan, the United Kingdom (UK), and the United States (US).
- This decision aims to reduce Russia's revenues and limit its ability to engage in conflicts, such as the ongoing situation in Ukraine.
- These price caps are in addition to the existing price cap on crude oil implemented since December 2022, and they complement the EU's complete ban on importing seaborne crude oil and petroleum products.
- Regular monitoring of the price caps for petroleum products and crude oil will take place to ensure their effectiveness and assess their impact.
- The implementation of these measures is expected to contribute to the stabilization of global energy markets, benefiting countries worldwide.

Cooking Oil: Smoke Point Limit

Context
The smoke point of oil is the temperature at which it starts to produce smoke when heated. Using oil beyond its smoke point can have several adverse effects.

Key Points
- When oil exceeds its smoke point, it can develop an unpleasant taste and odor, which can negatively impact the flavor and quality of the food being cooked.
- Smoke oil is a substance specifically designed to produce thick smoke when burned. While smoke oil is generally used for specific purposes like special effects in entertainment or military training exercises.

Adverse Impacts
➤ **Trans Fat**: The use of smoked oil can potentially result in the formation of Trans fats, especially when the oil is reused multiple times. Accumulation of Trans fats in the body can lead to an increased risk of cardiovascular diseases. Trans fats are unhealthy fats that are formed when liquid oils are converted into solid fats through a process called hydrogenation.

➤ **Hazard**: Heating oil beyond its smoke point can lead to the oil reaching its flash point—the temperature at which it can ignite. This poses a fire hazard, especially if the oil is left unattended or used in large quantities.

➤ **Air pollution**: Smoke oil releases large amounts of smoke, which can contribute to air pollution and poor air quality. The smoke particles emitted can be harmful if inhaled and can exacerbate respiratory conditions in sensitive individuals.

➤ **Soil Pollution**: The chemicals used in its composition may be hazardous, and improper disposal can lead to contamination of soil and water sources.

> **Health Impacts**: Heating an oil beyond its smoke point can cause the oil to break down and release harmful compounds, Prolonged exposure to the smoke may have adverse health effects, particularly for individuals with pre-existing respiratory conditions.

LINK IT WITH: FSSAI, Food Safety and Standards Act, 2006, Total Polar Compound (TPC) Limit

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Gravitational Lensing

Context:

Recently, Astronomers for the first time have discovered one of the biggest black holes inside a galaxy hundreds of millions of light years from Earth, through gravitational lensing throwing the field open for detecting more black holes and investigating their origins.

About Gravitational Lensing:

- **Gravitational lensing** is a phenomenon in which the light from a distant celestial body is bent and distorted by the gravitational field of an intervening object, such as a **galaxy cluster**, that lies between the distant object and the observer.
- This distortion of light can create magnified, stretched, or multiple images of the distant object, allowing astronomers to study the object in greater detail that would otherwise be too far away or too faint to be seen.
- According to **Einstein's general relativity**, light bends when it passes near a massive object in a phenomenon known as gravitational lensing.
- This effect is only visible in rare cases and only the best telescopes including the **NASA/ESA Hubble Space Telescope** can observe the results of gravitational lensing.
- This observation used one of the most powerful astronomical cameras in the world, the **Hyper Suprime-Cam (HSC)** mounted on the **8.2m diameter Subaru Telescope** on the summit of Mauna Kea in Hawaii collaborating with scientific community of Japan, Taiwan and Princeton University.

LINK IT WITH: TEMPLATES, James Webb Space Telescope (JWST), Electromagnetic force, Light waves, Light years.

Phantom Credit

Context:

More than 90% of rainforest offset credits do not represent genuine carbon reductions.

About Phantom Credit:

- The "**phantom credits**" often marketed as "offsets," but in reality, they do not result in actual carbon emissions reductions and may even have the opposite effect by speeding up global warming.
- Numerous major corporations, including Netflix, Disney, Shell, Gucci, Sales force, and easy Jet, have acquired rainforest offset credits from the VCS Programme.
- These rainforests offset credits have not been able to produce supposed carbon credit due to implementation failure and corruption.
- Since doing so enables them to claim the lucrative "carbon neutral" moniker, buying these credits frequently constitutes a significant portion of businesses' net zero strategies.

Green Washing

Context:

Recently, while major banks publicly announce more funding for green projects and India strengthens its transition policies, several US states are moving in the opposite direction.

Green washing:

- The term "green washing" was first used in 1986 by environmentalist Jay Westerveld to describe a false, deceptive, or untrue action or series of claims made by an organization using terminology such as "eco-friendly" or "sustainable, about the positive impact that a company, product, or service has on the environment.
- Green washing is an attempt to capitalize on the growing demand for environmentally sound products, whether that means they are more natural, healthier, free of chemicals, recyclable, or less wasteful of natural resources.
- One common form of Green washing is to include misleading labeling or bury environmentally unsound practices in the fine print. This can include" which are vague and not verifiable.

LINK IT WITH: Carbon Credit, Emission Reduction Purchase Agreement (ERPA).

PSLV-C55/TeLEOS-2 Mission

Context:

Page 80

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Recently, The Indian Space Research Organisation (ISRO) launched Singapore's TeLEOS-2 satellite from the Satish Dhawan Space Centre in Sriharikota.

About TeLEOS-2:

- ISRO launched TeLEOS-1, the first Singapore commercial Earth Observation Satellite, which was launched into a low Earth orbit for remote sensing applications in 2015.
- ISRO has so far launched nine satellites belonging to Singapore.
- TeLEOS-2 satellite will be put to use to support the satellite imaging needs of various government entities in Singapore.
- **Functions**: It carries a Synthetic Aperture Radar (SAR) payload. It will be able to provide all-weather day and night coverage, and capable of imaging at 1m full-polarimetric resolution.

LINK IT WITH: POEM-2, LUMILITE-4

Electromagnetic Ion Cyclotron (EMIC) waves

Context

Recently, Scientists have discovered Electromagnetic Ion Cyclotron (EMIC) waves. These are plasma waves which were observed at the Maitri station on Antarctic

About (EMIC) waves:

- The discrete electromagnetic emissions detected in the magnetosphere of the Earth are known as Electromagnetic Ion Cyclotron (EMIC) waves.
- The loss mechanisms of extremely energetic electrons (in the MeV range or "killer electrons") in the inner magnetosphere of the Earth are significantly influenced by the EMIC waves.
- These waves originate at equatorial latitudes (11 degree), travel along magnetic field lines, and leave their mark in the ionosphere at high latitudes.
- Both space and ground-based magnetometers can detect their traces.
- These waves are crucial in the precipitation of killer electrons, which pose a threat to our space-based equipment and instruments. Killer electrons are electrons with a speed similar to that of light that create the radiation belt of planet Earth.
- The work can aid in understanding how energetic particles in the radiation belts affect low-orbit spacecraft.

LINK IT WITH: Plasma waves, Magnetosphere.

Relative humidity

Context:

IMD intends to publish a Heat Index, or what the temperature feels like when humidity is factored in, for Delhi this summer.

About

- There are three techniques to measure humidity, which is the quantity of moisture in the air around us.
- The most prevalent of these is **absolute humidity,** which is measured in kg/m3 and is the mass of water vapour in a certain volume of the air and water vapour mixture.
- The second is **specific humidity,** which is determined by dividing the mass of the moisture by the mass of the air. It is expressed as a dimensionless number, while it can also be stated in other comparable units, such as grams per kilograms.
- The third is "**relative humidity" (RH**) refers to the ratio between the actual amount of atmospheric moisture in the air and the amount that would be present if it were saturated.
- Relative humidity (RH) is a measure of how much water vapor is in a water-air mixture compared to the maximum amount possible.
- A **Psychrometer** is a tool with two thermometers and a chart to determine the final reading. Relative humidity can be calculated directly by modern, electronic psychrometers.

LINK IT WITH: Dew Point, Hyperhidrosis.

Mercy Petition

Context:

Recently, The Supreme Court (SC) has declined to order the government to commute Balwant Singh Rajoana's death sentence, instead allowing the government to deliberate on the Mercy Petition as needed.

About Mercy Petition:

- A mercy petition is a formal plea made by someone sentenced to death or imprisonment to the President or Governor, depending on the case.

- Many countries, including the United States of America, the United Kingdom, Canada, and India, have adopted the Mercy Petition concept.
- **Article 72:** The President has the authority to issue pardons, reprieves, respites, or remissions of punishment, as well as to suspend, remit, or commute the sentence of anyone convicted of any offence:
  - In all circumstances where a Court Martial renders a punishment or sentence;
  - In all cases when the punishment or sentence is for a violation of any law relating to an issue to which the Union's executive power extends; in all circumstances where the sentence is a death sentence.
- **Article 161:** The Governor of a State has the authority to grant pardons, reprieves, respites, or remissions of punishment, or to suspend, remit, or commute the sentence of any person convicted of any offence against any law relating to a matter to which the State's executive power extends.
- There is no legislative written system for dealing with mercy petitions, but in practice, after exhausting all legal remedies, the offender or a relative on his behalf may make a written petition to the President.
- The petitions are received on behalf of the President by the President's secretariat and transmitted to the Ministry of Home Affairs for comments and recommendations.

> - **Pardon**: The president can completely absolve/acquit the person of the offence and release him as a normal citizen.
> - **Commute:** To change the sort of punishment to something less severe. As an example, from rigorous to ordinary incarceration.
> - **Remission**: To lower the severity of a punishment without affecting its character. For instance, 20 years rigorous imprisonment is reduced to 10 years rigorous imprisonment.
> - **Reprieve**: A postponement in the execution of a sentence, generally the death penalty, to allow a guilty person to establish his innocence.
> - **Respite**: Reduce the severity of punishment based on specific factors such as pregnancy, old age, and so on.

LINK IT WITH: Article 21, Article 72, Article 161, and Pardoning Powers.

Article 142(1) of the Constitution

Context:

Recently, the Supreme Court ruled that a court can grant divorce directly under Article 142 of the Constitution in cases where the marriage has irretrievably broken down, without first referring the parties to a family court, where they must wait 6-18 months for a decree of divorce by mutual consent.

About Article 142(1) of the Constitution:

- Article 142 gives the Supreme Court the unique power to perform "complete justice" between the parties when the law or statute does not afford a remedy.
- **Complete justice-**The Supreme Court has stated that the capacity to do comprehensive justice is of a different level and nature that cannot be limited by the requirements of statute law.
- This power facilitates the administration of justice, and whenever the court determines that the demand for justice necessitates the exercise of such powers or under any law made by Parliament and, until provision in that behalf is made, in such manner as the President may by order preside over." it does so by using this extraordinary provision of Article 142(1), which was specifically inserted in the Constitution.

LINK IT WITH: Article 142, Supreme Court, Consumer Protection Rules, 2020, Consumer Protection Act 2019, and Doctrine of 'separation of powers.

Cognizable Offences & FIR

Context:

Recently, the Supreme Court issued a notice to Delhi Police on a plea filed by seven wrestlers seeking a FIR against head of the Wrestling Federation of India (WFI) and an MP, on sexual harassment charges.

About Cognizable Offences & FIR

- First Information Report (FIR) is a written document generated by police when they acquire information regarding a cognizable offence.
- It is a report of information that arrives to the police station first, which is why it is called the First Information Report.
- In most cases, it is a complaint filed with the police by the victim of a cognizable offence or someone acting on his or her behalf. Anyone can report a cognizable offence, either verbally or in writing.
- FIR is not specified in the Indian Penal Code (IPC), the Code of Criminal Procedure (CrPC), or any other law.

- In police regulations or guidelines, however, information recorded under Section 154 of the CrPC is referred to as a First Information Report (FIR).
- An FIR contains three critical components:
  o The data must be related to the commission of a cognizable offence.
  o It should be delivered in writing or orally to the police station's commander.
  o The informant must write it down and sign it, and the essential aspects must be noted in a daily journal.
- **Cognizable Offence**: A cognizable offence is one that allows the police to arrest someone without a warrant.
- They have the authority to initiate an inquiry into a cognizable case without the need for a court order.
- **Non-cognizable Offence:** A non-cognizable offence is one in which a police officer does not have the jurisdiction to arrest someone without a warrant.
- Without the approval of the court, the police cannot investigate such an infraction.
- In the instance of non-cognizable offences, a FIR is filed under Section 155 of the CrPC.
- The complainant will be required to seek an order from a court. The court may then order the police to investigate the complaint.

LINK IT WITH: ZERO FIR, Section 154 CrPC, and Section 155 CrPC.

Kesavananda Bharati Judgment

Context:

Recently, the Supreme Court published a video commemorating the landmark 1973 Fundamental Rights case on the 50th anniversary of the landmark judicial decision in the Kesavananda Bharati case.

About Kesavananda Bharati Judgment:

- In this case, the Supreme Court reversed its decision in the Golak Nath case. It maintained the legality of the 24th Amendment Act and said that Parliament has the authority to limit or eliminate any of the Fundamental Rights.
- Simultaneously, it established a new notion of the Constitution's 'fundamental structure' (or 'essential features').
- It decided that Parliament's constituent power under Article 368 does not allow it to change the Constitution's "basic structure."
- This means that Parliament cannot limit or eliminate a Fundamental Right that is part of the Constitution's "basic structure."

Basic Structure Doctrine

- In the Kesavananda Bharati case, the Constitutional Bench held 7-6 that Parliament could amend any provision of the Constitution as long as it did not alter or revise the core structure or important elements of the Constitution.
- The court, however, did not define the word "basic structure," and simply mentioned a few concepts - federalism, secularism, and democracy as being part of it.
- The doctrine of the 'basic structure' has since been interpreted to include the following:
  o The supremacy of the Constitution,
  o The rule of law,
  o The independence of the judiciary,
  o The doctrine of separation of powers,
  o The sovereign democratic republic,
  o The parliamentary system of government,
  o The principle of free and fair elections,
  o The welfare state and so on.

LINK IT WITH: Basic Structure of Constitution, Golaknath-case, NJAC Act, Fundamental rights

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Shilabhattarika

Context:

Researchers at India's Bhandarkar Oriental Research Institute in Pune decrypted copper plates that revealed Shilabhattarika was the daughter of the "Satyashraya" Chalukyan ruler Pulakeshi.

About Shilabhattarika:

- Shilabhattarika was an Indian Sanskrit poet who lived in the ninth century.
- She lived in the Narmada Valley, near the Vindhya Mountains.
- Medieval Sanskrit literary writers appreciated her poetic abilities.
- It is thought that she is related to Shilamahadevi, the queen of Rashtrakuta monarch Dhruv in the eighth century.
- She was the daughter of Chalukya ruler Pulakeshin II, according to current study.

Literary works

- Shilabhattarika is known to have composed at least 46 poems on a variety of subjects, including love, morality, politics, nature, beauty, the seasons, insects, rage, indignation, rules of conduct, and the characteristics of many types of heroines.
- Shilabhattarika is regarded as a pivotal character in the Panchali literary style, which strives for "a balance between words and meaning."
- The **Panchali style,** according to Rajashekhara, can be found in the works of Shilabhattarika and probably in some of the works of the 7th-century poet Bana.
- A 14th-century anthology, **Sharangadhara-paddhati,** celebrates her and three other female poets for their exceptional literary genius and erudition.
- "**Toch chandramanabhat"** (it is the same moon in the sky), one of the most iconic songs by noted Marathi poetess Shanta Shelke, is inspired by Shilabhattarika's words.

Key findings in Research

- The research looked at a copperplate charter comprised of five copper plates from the time of Badami Chalukyan emperor Vijayaditya (696-733 CE).
- The plates were fastened together by a metal ring with the Badami Chalukyas' characteristic varaha (boar) seal.
- The 65-line Sanskrit manuscript was written in late-Brahmi script.
- According to the charter, King VijayadityaChalukya bestowed the village of Chigateri to a scholar called Vishnu Sharma on the recommendation of Shilabhattarika's son, Mahendravarma.
- Shilabhattarika's husband, Dadiga, was appointed governor of Kogali, and his elder brother Polavira replaced their father Mokkara as king of the Western Ganga dynasty, which served as subordinates to the Chalukyas of Badami and fought the Pallavas of Kanchi.
- Shilabhattarika's father-in-law, Mokkara (or Mushkara), and his father, Durvinita, who was a skilled composer who patronized Bharavi, the author of the classical epic Kiratarjuniya, were also featured on the plates.

LINK IT WITH: Pulakeshin II, Panchali literary style, Badami.
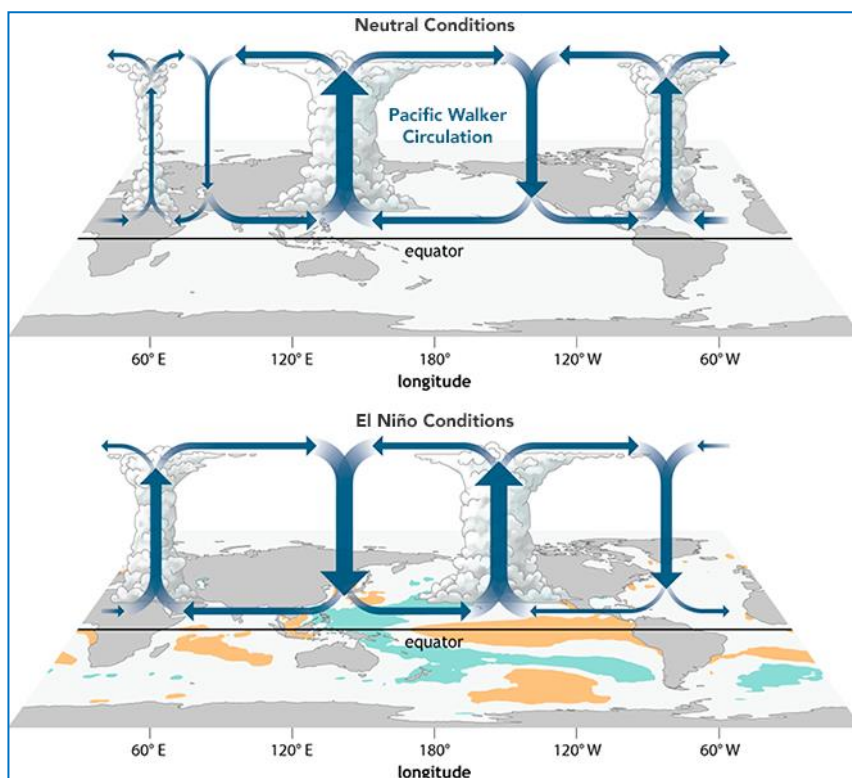

El Nino

Context:

According to the India Meteorological Department (IMD), there is a nearly 70% chance of an El Nino developing this monsoon, raising concerns that the weather phenomenon could threaten most emerging markets.

About El Nino:

- Peruvian fishermen discovered El Nino when they noticed unusually warm water off the coast of Peru.
- El Nino, which translates as "the little boy" in Spanish, was given the name by Spanish immigrants.
- El Nino quickly became associated with irregular and dramatic climate changes rather than only warming of coastal surface waters.
- El Nino occurrences do not follow a predictable cycle; they occur at two- to seven-year intervals.
- Scientists discovered that El Nino occurs in conjunction with the Southern Oscillation.
- The Southern Oscillation is a change in atmospheric pressure that occurs across the tropical Pacific Ocean.

- When the coastal waters of the eastern tropical Pacific warm (El Nino), the air pressure over the ocean falls.

India's El Nino:

- In 1997, India saw the largest El Nino on record, but the monsoon season was typical.
- Between 2001 and 2020, India experienced seven El Nino years, four of which resulted in droughts (2003, 2005, 2009-10, and 2015-16).

- Inflation was also caused by a 16%, 8%, 10%, and 3% fall in kharif or summer-sown farm output (which accounts for approximately half of the country's yearly food supply).

LINK IT WITH: El Nino-Southern Oscillation (ENSO), Oceanic Nino Index (ONI), La Nina, Indian Ocean Dipole (IOD).

Science Based Targets initiative (SBTi)

Context:
After two climates advocacy organizations wrote a joint letter to UN Race to Zero, Adani Green Energy Ltd, Adani Transmission, and Adani Ports & SEZ were recently excluded from the Science Based Targets Initiative.

About Science Based Targets initiative (SBTi):
- The UN Global Compact (UNGC), CDP, the World Resources Institute (WRI), and WWF collaborated to create the "Science Based Targets" program.
- A global campaign is being made to improve corporate climate.
- To make sure that the transformative action is in line with the most recent findings in climate science, it sets emissions reduction targets.
- It is "science-based" because it corresponds to the scale needed to maintain the increase in global temperature below 2°C relative to pre-industrial levels.
- Enhancing businesses' competitive edge while they make the transition to a low-carbon economy is possible through "science-based target setting."
- The SBTi also introduced the first Corporate Net-Zero Standard in the world to make sure that businesses' net-zero goals are translated into actions that are consistent with attaining a net-zero world by no later than 2050.

LINK IT WITH: Nationally Determined Contribution (NDC), India Cooling Action Plan (ICAP), Bureau of Energy Efficiency (BEE), Lifestyle for Environment (LIFE), And Green Climate Fund (GCF).

Eco-sensitive Zones

Context:
Recently, the Supreme Court updated its ruling to require mandatory eco-sensitive zones (ESZ) of at least one km around national parks, wildlife refuges, and protected forests across the nation.

About Eco-sensitive Zones:
- Ecologically Sensitive Zones (ESZ) is areas designated to protect biodiversity and conserve the natural habitats of specific species.
- It aims to minimize ecological imbalances as well as the tension between people and the environment.
- By restricting and prohibiting particular activities, especially those that are conducted close to natural parks and wildlife sanctuaries, ESZ declarations strive to create protected zones.
- Under the Environmental Protection Act of 1986, Ecologically Sensitive Zones are declared by the Central Government through the Ministry of Environment, Forests, and Climate Change.
- More than 600 Ecologically Sensitive Zones have been declared in various states of India.
- Uttar Pradesh, Haryana, West Bengal, Andhra Pradesh, Maharashtra, and Karnataka are a few of India's key Eco-Sensitive Zones.
- According to the National Wildlife Action Plan (2002–2016) of the Ministry of Environment, Forest and Climate Change (MoEFCC), state governments are required to designate land within 10 kilometers of national parks and wildlife sanctuaries as eco-fragile zones or eco-sensitive zones (ESZs) under the Environmental (Protection) Act of 1986.
- The 10-km guideline is followed as a general rule, although there is some flexibility in how far it is actually put to use. If there are more significant ecologically essential "sensitive corridors" in an area beyond 10 km, the Union government may also declare it an ESZ.

LINK IT WITH: Environmental Protection Act 1986, Wildlife Protection Act 1972, National Wildlife Action Plan (2002-2016), and Urbanization, One-horned Rhino, Kaziranga National Park, Forest Rights Act, Gram Sabha, Eco-tourism, Horticulture, and Carbon footprints.

River-Cities Alliance (RCA)

Context:
Recently, The National Mission for Clean Ganga (NMCG) and the National Institute of Urban Affairs (NIUA) together organized the 'River-Cities Alliance (RCA) Global Seminar: Partnership for Building International River-Sensitive Cities'.

About River-Cities Alliance (RCA):
- The RCA is a cooperative project of the Ministries of Housing and Urban Affairs (MoHUA) and Jal Shakti (MoJS), with a goal to link river cities and concentrate on sustainable river-centric development.

Page 85

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- The three major areas of focus for the Alliance are networking, capacity building, and technical support.
- The Alliance, which had 30 member cities when it first started in November 2021, has grown to 110 river cities throughout India and one overseas member city from Denmark.
- The RCA wants to help Indian cities acquire new techniques and strategies for managing urban rivers by facilitating knowledge exchange (online).
- Additionally, it will provide international cities with the chance to learn from Indian city experiences that may be applicable to their own contexts.

LINK IT WITH: NamamiGange Program, NMCG, NIUA, RCA, Societies Registration Act, 1860, Ganga Action Pan.

Central Asian Flyway (CAF)

Context:

The Ministry of Environment, Forest, and Climate Change recently hosted a meeting of Range Countries in New Delhi to strengthen conservation efforts for migratory birds and their habitats in the Central Asian Flyway (CAF).

About Central Asian Flyway (CAF:

- **Flyway**-It is a geographic area where one or more migratory species complete their whole annual cycle, including breeding, moulting, staging, and non-breeding.
- The Central Asian Flyway (CAF) spans a sizable portion of Eurasia between the Arctic and Indian Oceans. It is one of the top nine flyways for migrating birds worldwide.
- The Flyway is home to at least 279 populations of the 182 migratory waterbird species, of which 29 are vulnerable or approaching threat on a worldwide scale.
- The Central Asian Flyway encompasses 30 nations, including India.
- It stretches from the furthest breeding grounds in the Russian Federation (Siberia) to the furthest non-breeding (wintering) grounds in West and South Asia, the Maldives, and British Indian Ocean Territory.

LINK IT WITH: MEE-ZOO, PARIVESH, Ramsar Sites, and Important Bird Areas

Project-SMART

Context:

Recently, a Memorandum of Understanding (MoU) for "Station Area Development along Mumbai-Ahmedabad High Speed Rail" (Project-SMART) was signed by the Ministries of Housing and Urban Affairs (MoHUA) and of Railways.

About Project-SMART:

- Project-SMART aims to improve accessibility and convenience for passengers and other stakeholders in the Mumbai-Ahmedabad High Speed Railway (MAHSR) stations' surrounding areas, as well as to foster economic activity there.
- Out of a total of 12 stations, the MoU was signed for four high-speed rail stations: **Sabarmati, Surat** in **Gujarat, Virar,** and **Thane** in **Maharashtra.** Sabarmati is a brown field development, while Surat, Virar, and Thane are green fields.
- The initiative would make it easier and better for local governments, state governments, and urban development authorities to plan, develop, and administer the areas around MAHSR stations.
- A number of seminars and site visits for Project-SMART are being organized in Delhi, Ahmedabad, and Mumbai by the Housing and Urban Affairs Ministry, the governments of Gujarat, Maharashtra, and JICA.

LINK IT WITH: Smart Cities Mission (SCM), AMRUT Mission.

Rare Black Tiger

Context:

Recently, the death of a rare black tiger reported in the Similipal Tiger Reserve in Odisha's Mayurbhanj district after 30 years could have a significant effect on the animal population.

About Rare Black Tiger:

- They are a rare colour variation of tigers and neither a separate species nor a geographical subspecies.
- **Pseudomelanistic** or false coloured is the word used to describe the unusually dark or black coat of these tigers.
- **Transmembrane Aminopeptidase Q,** or **Taqpep**, is the gene that has the uncommon mutation responsible for this.
- Genetic drift is the primary cause of the uncommon mutation. Due to this geographic isolation, inbreeding has developed in Similipal over many generations as a result of the marrying of genetically related individuals.
- **The Nandankanan Zoological Park** in Bhubaneswar, Ranchi Zoo, and Chennai's Arignar Anna Zoological Park are the only other locations in India that house black tigers outside Similipal.

- The majority of black tigers are seen in Similipal, which is a record-breaking number. According to the 2018 Tiger Status Report, the reserve has previously recorded eight tigers.

LINK IT WITH: Similipal Biosphere Reserve, ErengaKharias and Mankirdias tribes.

BizAmp

Context:
Recently, the Ministry of MSME has organized an outreach program called BizAmp at Dimapur Nagaland in collaboration with NSIC Venture Capital Fund Limited (NVCFL) under the Self-Reliant India (SRI) Fund.

About BizAmp:
- The Northeast region of the country's first outreach program, BizAmp, was created with the goal of maximizing capital gains through NVCFL's SRI Fund.
- The program intends to support micro, small, and medium-sized firms (MSMEs) in the Northeastern States and help them grow their companies by giving them access to SRI Fund benefits.
- Beneficiary MSMEs were given a platform specifically designed for them to share their tales and motivate aspirant MSMEs during the event.
- With the attendance of Industry Secretaries from various northeastern states, the event demonstrated the coordinated efforts of the State and Central governments and gave insights into the many policies established for MSMEs to aid in their growth.

LINK IT WITH: Alternate Investment Funds (AIFs), NSIC Venture Capital Fund Limited (NVCFL)

Net zero innovation virtual centre

Context:
Recently, During the India-UK Science & Innovation Council conference, India and the UK announced the establishment of a "NET Zero" Innovation Virtual Centre to address climate change and environmental goals.

About net zero innovation virtual centre:
- Specifically with regard to climate change and environmental challenges, India and the UK have jointly launched an endeavor to increase their scientific and technological cooperation.
- It will operate as a platform for bringing together stakeholders from the two nations to work on some of the main areas, including the decarbonization of manufacturing processes, transportation systems, and green hydrogen as a renewable source.
- As long as greenhouse gas emissions and removals from the atmosphere are balanced, it will help the effort to achieve net zero emissions.
- Additionally, it will help the two nations' policy discussions and capacity-building efforts as well as knowledge sharing and innovation in research and development.
- The UK has become India's second-largest international partner for research and innovation.
- The cooperative research project between the UK and India has increased from almost nothing to close to £300-400 million.

LINK IT WITH: NET Zero Innovation Virtual Centre, India-UK Science & Technology Cooperation, and India's Net Zero Targets.

Millets Experience Centre (MEC)

Context:
Recently, in partnership with the National Agricultural Cooperative Marketing Federation of India (NAFED), the Indian government has opened a Millets Experience Centre (MEC) that is a first of its type.

About Millets Experience Centre (MEC):
- The MEC is a creative concept that will promote millets as a versatile, healthful grain by emphasizing its nutritional benefits and offering customers a unique dining experience.
- The UNGA's designation of 2023 as the International Year of Millets (IYM 2023) serves as the impetus for this project. Millet is referred to in the Union Budget 2023–24 as "**Shree Anna.**"
- The centre offers a selection of ready-to-eat and ready-to-cook goods from nearby millet start-ups.
- The MEC will broaden the options available to consumers who are actively looking for healthier substitutes.
- The Food and Agriculture Organisation (FAO) supported India's request to observe an International Year of Millets in 2023 in 2018, and the UNGA subsequently proclaimed 2023 to be the International Year of Millets.
- This was approved by a UN Resolution, which was spearheaded by India and backed by more than 70 other countries.

LINK IT WITH: National Millets Mission (NMM), Initiative for Nutritional Security through Intensive Millet Promotion (INSIMP) and Price Support Scheme (PSS)

Persona Non Grata

Context:

Recently, China labeled a Canadian diplomat in Shanghai persona non grata as Canada announced it would expel a Chinese ambassador on claims of involvement in an intimidation campaign against a Canadian politician.

About Persona Non Grata:

- It's a Latin term that means "**Unwelcome Person**. It refers to a diplomat or foreign person whose entry or presence in a particular country has been restricted by that government.
- At the **1961 Vienna Convention on Diplomatic Relations**, the term was given diplomatic significance.
- According to **Article 9 of the treaty,** a country may declare any member of a diplomatic staff persona non grata "at any time and without explanation for its decision."
- If a person does not return to their home country, the country "may refuse to recognize the person concerned as a member of the mission."
- Even before entering a country, a person might be proclaimed persona non grata. Its application is not restricted to diplomats.

LINK IT WITH: Vienna Convention on Diplomatic Relations of 1961, Consular Relations Act 1968.

Tea fortification

Context:

A recent study on 43 women in Maharashtra reported a significant rise in Folate and Vitamin B12 levels after fortifying tea with folate and vitamin B12. It also revealed a considerable rise in hemoglobin levels.

About Food Fortification:

- It refers to a process in which in order to boost the nutritional content of staple foods such as rice, milk, and salt, important vitamins and minerals such as iron, iodine, zinc, Vitamin A & D are added.
- These nutrients may or may not have been present in the food prior to processing.

About Tea Fortification:

- According to the new study, fortifying tea with **folate and vitamin B12** may help counter anaemia and neural-tube defects (NTD) in Indian women because tea is the most often consumed beverage in India.
- The majority of Indian women have inadequate dietary folate and vitamin B12 intake, which contributes to anaemia and the high frequency of folate-responsive neural-tube defects (NTDs) in India.
- Both vitamin B12 and folate are required for the body's creation of red blood cells.
- Vitamin B12 is required for normal folate absorption and utilisation in the body; folate shortage can result in severe birth defects (NTDs).
- Neural tube abnormalities occur when the neural tube, which eventually becomes the brain, spinal cord, and surrounding tissues, does not close properly during foetal development.

LINK IT WITH: Fortification, Folate & Vitamin B12, Anemia, Fortification Programs in India

Biosynthetic clock

Context:

Recently, Scientists discovered that the ageing process of cells is regulated by a genetic regulatory circuit that may be altered to extend their life.

About Biosynthetic clock:

- A biosynthetic 'clock' prevents the body's cells from ageing, or from attaining normal levels of degradation associated with ageing.
- The rate at which individual cells age determines human lifetime. Recent study has revealed that cells age in two unique ways, which are controlled by a common genetic regulatory circuit.
- Cells' lifespan can be extended by manipulating these processes. Cells, including those of yeast, plants, animals, and humans, all include gene regulatory circuits that are important for a variety of physiological processes, including ageing.

> **Gene oscillator**-These are ubiquitous regulatory motifs in the molecular control circuits of living cells. Prominent examples include the cell cycle and cellular signaling.

- Throughout their lives, cells undergo a range of chemical modifications before degenerating and dying. However, cells with the same genetic material and living in the same environment might age in different ways.
- About half of the cells age due to a progressive loss in the integrity of DNA, which is where genetic information is stored.

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- The other half ages in a way that is linked to the decrease of mitochondria, the energy producing elements of cells. Thus, steering the cell's travel between these routes can have a major impact on ageing.
- These regulatory circuits, which normally work as toggle switches, can be programmed to establish a negative feedback loop to slow the ageing process.

LINK IT WITH: Ossification Test, Epigenetic Clock Technique, Radiographic Techniques

Sea Mount

Context:
In a recent discovery, scientists discovered 19,325 additional seamounts after combing over new high-resolution data. A 2011 census identified 24,000 seamounts in the world's oceans.

About Sea Mount:
- A seamount is a mountain that exists underwater. They are generated by volcanic activity and are recognized as hotspots for marine life by experts. Seamount volcanoes, like land volcanoes, can be active, extinct, or dormant.
- Most seamounts occur near mid-ocean ridges, where the earth's tectonic plates move apart and allow molten rock to ascend to the seafloor. The Mid-Atlantic Ridge and the East Pacific Rise are the two most researched mid-ocean ridges on the planet.
- Some seamounts have also been discovered near intraplate hotspots, which are areas of intense volcanic activity inside a plate, and island arcs, which are oceanic island chains with volcanic and seismic activity.
- Seamounts are mapped using one of two methods: echo sounders or multibeam sonar on ships for topographic mapping, or satellite altimetry for gravity-field mapping.

LINK IT WITH: Trenches, Submarine Ridges, Submarine Canyons, Atoll, Bank, Shoal and Reef.

Safe City Project

Context:
Delhi is preparing to execute the Safe City Project, which aims to improve security for inhabitants, particularly women.

About Safe City Project:
- The Safe City Project is a Ministry of Home Affairs project funded by the Nirbhaya Fund that aims to create a safe, secure, and empowering environment for women and girls in public settings.
- The project is being executed in eight metro cities, including Delhi, Mumbai, Chennai, Kolkata, Hyderabad, Ahmedabad, Lucknow, and Bengaluru.
- CCTV cameras will be placed as part of the project, as will a command-and-control centre with video analytics, AI, machine learning, and facial recognition capabilities.
- The costs of the projects are split 60:40 between the central and local governments.
- Delhi is getting ready to launch the Safe City Project, which aims to improve security for inhabitants, particularly women.

LINK IT WITH: Harit Sagar Green Port, BharatmalaPariyojna, UDAN 5.0, and Viability Gap Funding (VGF).

HakkiPikki Tribal Community

Context:
Recently, more than 181 members of the HakkiPikki tribal community from Karnataka are stranded in war-torn Sudan.

About HakkiPikki Tribal Community:
- The HakkiPikki tribe is a semi-nomadic tribe that lives in forest areas of west and south India and has traditionally engaged in bird capturing and hunting.
- It is a Scheduled Tribe of Karnataka, and its ancestors are supposed to be related to the renowned Ranapratap Singh.

Origin and establishment:
- The HakkiPikki tribe is thought to have originated in Gujarat and Rajasthan before migrating to south India through Andhra Pradesh.
- In Karnataka, the tribe is organized into four clans and has a population of 11,892.
- Gujaratia, Panwar, Kaliwala, and Mewaras are the four clans, which correspond to castes in traditional Hindu society.

LINK IT WITH: Meitei Tribe, Hmar Tribe, Pangal Tribe, Anal Tribe, Zomi Tribe and Kuki Tribes.

Off-Budget Liabilities

Context:

Recently, the Indian government discontinued off-budget borrowings in FY2022 to improve fiscal transparency. It also intends to pre-pay the remaining Off-Budget commitments.

About Off-Budget Liabilities:

- Off-Budget liabilities are debts incurred by state-run entities to fund government programmes and subsidies outside of the regular budget.
- These agencies raise funds by issuing bonds with higher interest rates than government securities (G-secs).
- However, because the loan's burden is not legally on the Centre, the loan is not included in the national fiscal deficit. This contributes to keeping the country's fiscal deficit within acceptable boundaries.
- By the end of FY21, the Centre's off-budget liabilities were close to Rs 6.7 trillion.

LINK IT WITH: Exchange Traded Funds (ETFs), Gilt-edged securities, E-kuber

Digital Highways

Context:

Recently, The National Highways Authority of India (NHAI) has announced a plan to build over 10,000 km of Optic Fiber Cable (OFC) infrastructure across the country by fiscal year 2025.

About Digital Highways:

- Digital Highways or Roads are digital platforms that provide shared public and private services.
- They use data, technology, and connection to improve the Strategic Road Network (SRN) in terms of design, construction, operation, and utilisation.
- This will result in safer travel, faster deliveries, and overall better experiences for all.

Optic Fiber Cable (OFC)

- Fiber-optic cables resemble tubes that contain small glass or plastic wires.
- They use light to deliver data considerably faster than traditional lines that use power.
- Metal wires are preferable for transmission in optical fiber communication because they cause less damage to the signals.
- The optical fiber operates on the total internal reflection (TIR) concept.
- TIR is the total reflection of a beam of light from the surrounding surfaces back into a medium such as water or glass.
- For Telecom / Internet Services, the OFC network will enable direct plug-and-play or 'Fiber-on-demand' models.
- The network will be leased to eligible users on an 'Open for All' basis via a web portal using a Fixed Price Allotment process.
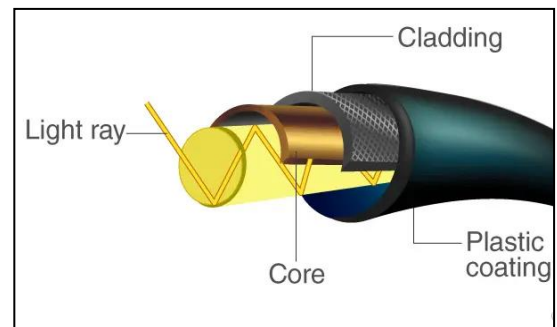
LINK IT WITH: total internal reflection (TIR), Digi Lockers, Unified Mobile Application for New-age Governance (UMANG)

India's First Water Metro

Context

Recently, Prime Minister of India has inaugurated India's first water metro in Kerala's Kochi.

First water metro

- The Kochi Water Metro is a project being implemented by Kochi Metro Rail Corporation Limited (KMRL) with the assistance of a German funding agency, Kreditanstalt für Wiederaufbau.
- It includes boats that are hybrid, battery-powered, air-conditioned and disabled-friendly among other features.
- It will connect 10 islands around the city in Malabar Coast through battery-operated electric hybrid boats.
- The water metro will operate on water bodies like any other ferry or traditional boat service, but with modern facilities, enhanced safety and security measures.

Metro in India

- There are currently 16 operational rapid transit (popularly known as 'metro') systems in fifteen cities across India, with Delhi Metro being the largest.
- As of March 2023, India has 859 kilometers (534 miles) of operational metro lines and 16 systems.
- India's metro network is the fourth longest in the world, behind China, USA and South Korea. A further 568.15 km of lines are under construction.
- The first rapid transit system in India is the Kolkata Metro, which started operations in 1984. The Delhi Metro has the largest network in the entire Country.

- The project is envisaged with 38 jetties, and 78 boats, covering a distance of 76 km. The non-polluting, battery-powered boats are noise-free and produce low waves, unlike traditional ferries. Boat re-charging facilities have been provided in all terminals.

LINK IT WITH: Metro in India, Rapid transit system

Ramanujacharya

Context

Recently, on 25th April, 1006th Birth anniversary of Ramanujacharya has been celebrated.

About Ramanujacharya

- Sri Ramanuja Acharya was born to mother Kanthimathi and father Asuri kesavasomayaji at Sriperumbudur in Tamil Nadu in 1017 CE and left his body and merged with the Supreme Soul in 1137 CE at Srirangamin.
- Ramanuja was originally known as Lakshamana but later came to be known as Ramanuja.
- He played a major role towards Vaishnavism tradition and Bhakti movement.
- Ramanuja Acharya was always against discrimination and he revolted against the discrimination on the basis of caste and even helped the people to follow the Vaishnavism and Bhakti movement.
- He created his own teachings written several books and his major works are:
  - o VedarthaSangraha, Sri Bhashya and Bhagwat Gita Bhashya
- He was deeply influenced by the Alvars.
- He propounded the **doctrine of Vishishtadvaita or qualified oneness** in that the soul even when united with the Supreme God remained distinct.
- He is considered to be the inspiration for poets like Annamacharya, Bhakt Ramdas, Thyagaraja, Kabir, and Meerabai.
- Ramanuja is also credited with establishing the correct procedures for rituals performed in temples throughout India, the most famous being Tirumala and Srirangam.
- He took education to those who were deprived of it. His greatest contribution is the propagation of the concept of "vasudhaivakutumbakam", which translates as "all the universe is one family".
- He travelled across India for several decades, propagating his ideas of social equality and universal brotherhood from temple podiums.
  - o He embraced the socially marginalized and condemned, and asked royal courts to treat them as equals.
  - o He spoke about of universal salvation through devotion to God, compassion, humility, equality, and mutual respect, which is known as Sri Vaishnavam Sampradaya.

LINK IT WITH: Vishisthadvaita, Ramanujacharya

Myelin Basic Protein

Context

Recently, A research group from physical sciences division of the Institute of Advanced Study in Science and Technology, Guwahati have fabricated monolayers of pure myelin basic protein (MBP).

Myelin Basic protein

- It is a major protein component of myelin sheath, which is a protective membrane that wraps around the axon of nerve cells and acts as a model protein in studying diseases like multiple sclerosis (MS).
- MBP helps in compactification of the myelin sheath, and the fabricated tailored monolayers can give an in-depth understanding of the role of MBP in forming multi-lamellar myelin sheath structure as well as preserving the integrity, stability, and compactness of the sheath.

About research

➤ Researchers used a technique called the Langmuir-Blodgett (LB) technique to form monolayers of pure myelin basic protein at the air-water and air-solid interfaces.

➤ They explained the mechanism of formation of MBP while tracking the stability and rigidity of the protein films by tuning the subphase pH conditions.
  - o The reversible nature of the molecules confirms the flexibility of the films with respect to the pH conditions.
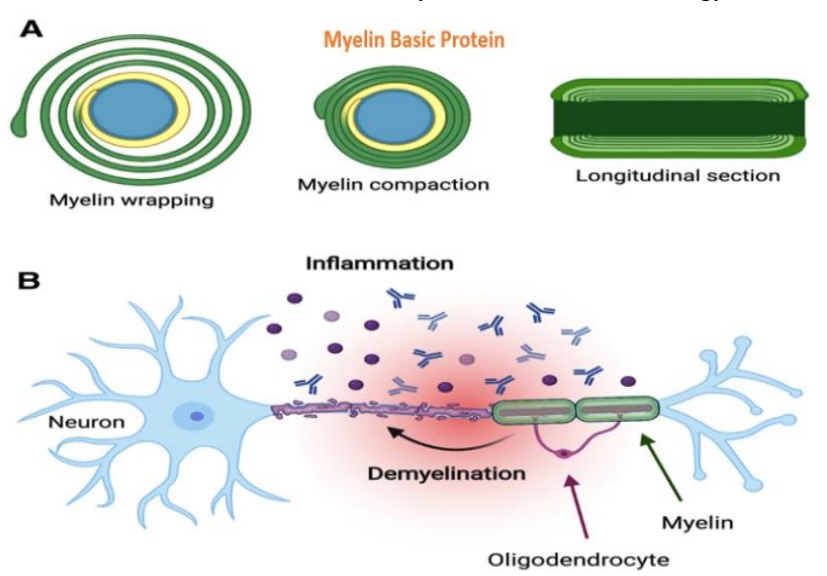
➢ The behaviour of the protein under variable pH conditions were investigated from different areas of the monolayer formed at the air-water interface.
   o The rigidity of the monolayers was correlated with the specific domains formed and the area occupied by the domains on the water surface.

LINK IT WITH: Langmuir-Blodgett (LB) technique, MBP, Institute of Advanced Study in Science and Technology
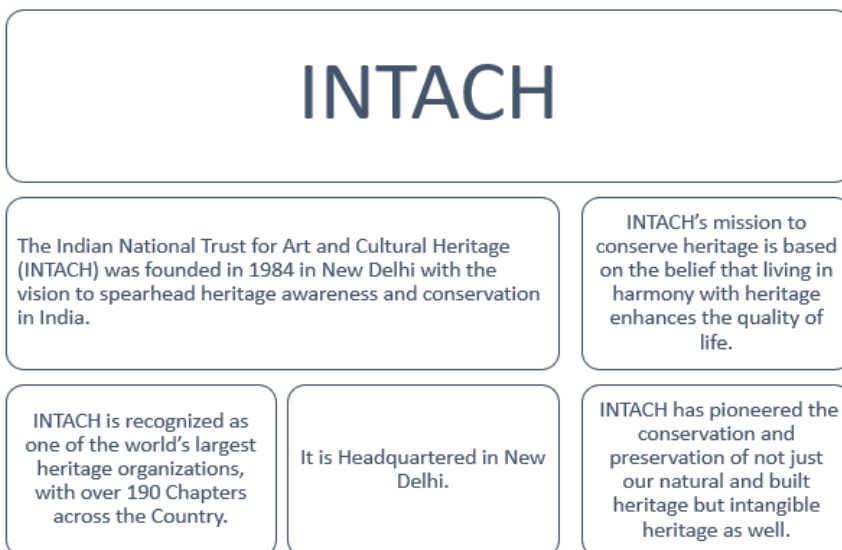

Thirunelli Temple

Context

The Indian National Trust for Art and Cultural Heritage (INTACH) has urged the government to conserve the historically significant 600-year-old 'Vilakkumadom', an exquisite granite structure, at the SreeMahavishnu Temple at Thirunelli.

About Thirunelli Temple

- It is one of the most ancient temples in Kerala. It is believed that here the prathishta of Lord Vishnu was performed by Lord Brahma.
- It is also known as ''SahyamalaKshetram'' and ''Kashi of the South''.
- Thirunelli Temple draws pilgrims from all over, primarily for ancestral rites.
- The rituals are performed on the banks of the stream Papanasini which flows down from Mount Brahmagiri.
   o It is believed that this stream has divine power to dissolve sins of all the mortals. Another major attraction of the temple is the holy rock where people pray for their forefathers.
- Thirunelli Temple is the only temple in the world where the devotees can perform all the rituals related to one's life, starting from birth to death and life after death.
- Vilakkumadom is an exquisite granite structure believed to be constructed in the 15th century AD, at the SreeMahavishnu Temple at Thirunelli in Wayanad.
- It is said that the work was initiated by the King of Coorg without the knowledge of the temple's custodian, the Kottayam Raja. The Kottayam Raja later stopped the works and the structure remained untouched afterwards.

LINK IT WITH: INTACH, Thirunelli Temple, cultural heritage

INTACH

The Indian National Trust for Art and Cultural Heritage (INTACH) was founded in 1984 in New Delhi with the vision to spearhead heritage awareness and conservation in India.

INTACH's mission to conserve heritage is based on the belief that living in harmony with heritage enhances the quality of life.

INTACH is recognized as one of the world's largest heritage organizations, with over 190 Chapters across the Country.

It is Headquartered in New Delhi.

INTACH has pioneered the conservation and preservation of not just our natural and built heritage but intangible heritage as well.

Mangrove pitta

Context:

Recently, in a first-ever census of mangrove pitta birds carried out in two coastal districts of Odisha, 179 such birds were sighted.

About Mangrove pitta

- Mangrove pitta is a resident non-migratory bird that generally feeds on crustaceans, mollusks and insects.
- It is found in few pockets of eastern India, including Odisha's Bhitarkanika and West Bengal's Sundarbans.
- The breeding season of this species ranges from April to August in Bhitarkanika.

Scientific name: Pitta Megarhyncha

Conservation status: Near Threatened

Native: Bangladesh, India, Indonesia, Malaysia, Myanmar, Singapore, and Thailand (primarily the west coast of the southern Thai peninsula)
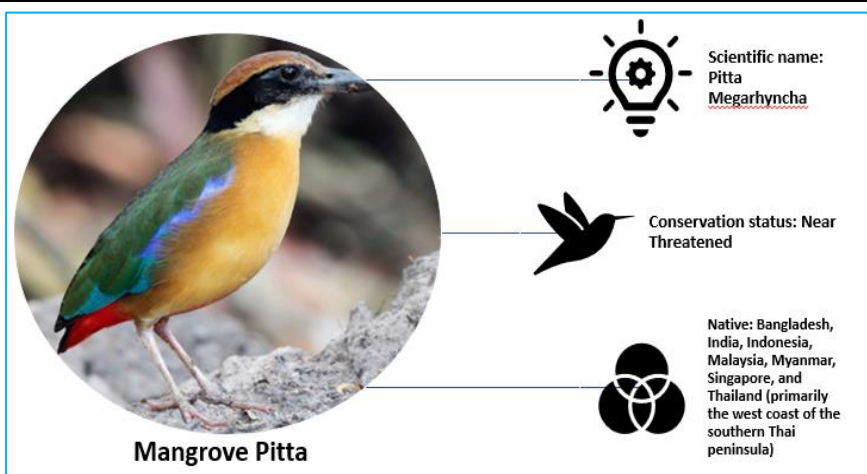
Mangrove Pitta

- Abundant fish in the river and creeks and distance from human habitation has made Bhitarkanika a suitable congenial breeding place for this bird species.

Key findings of the census of mangrove pitta

➢ The first census of mangrove pitta (Pitta megharencha) birds was mainly focused on the mangrove patches all along the coasts of Kendrapara and Jagatsingpur districts.

➢ The mangrove pitta is found in coastal mangrove forests of India, foraging on the ground and resting on the trees.

➢ The census was carried out by point count method, either by walking in the forest or using country boats in the creeks. The birds were counted by direct sighting and from their chirping.

➢ In this census, a total of 179 individual mangrove pitta birds were counted.

➢ The highest concentration of the birds has been found in the mangroves near the Mahipura river mouth inside the Bhitarkanika National Park.

LINK IT WITH: Bhitarkanika National Park, Mangrove pitta

> **Bhitarkanika National Park**
> ❖ Bhitarkanika National Park is a 145 km² large national park in northeast Kendrapara district in Odisha in eastern India.
> ❖ It was designated on 16 September 1998 and obtained the status of a Ramsar site on 19 August 2002.
> ❖ Bhitarkanika is India's second largest mangrove ecosystem after the Sunderbans.
> ❖ The National Park is essentially a network of creeks and canals which are inundated with waters from rivers Brahmani, Baitarani, Dhamra and Patasala forming a unique ecosystem.
> ❖ Bhitarkanika is home to one of the largest congregation of the endangered Salt Water Crocodile in the country.

Army Commanders' Conference

About: Recently held Army Commanders Conference (ACC) is organized to make important policy decisions that will guide the future of the Indian Army.

- It is a biannual event of the highest level, providing an institutional platform for the Indian Army to engage in conceptual-level discussions.
- The conference focused on the extraordinary contributions made by the Army in protecting the nation's borders, combating terrorism, and providing aid to the civil administration.
- It has been decided to operationalise Command Cyber Operations and Support Wings (CCOSWs) in the immediate future with current focus on net-centric operations.
- It focused on converting the five-year Technical Entry Scheme (TES) for entry of officers to four years from January 2024 and training motivated soldiers for Paralympic events.
- It was also decided to double the sustenance allowance to especially abled children of personnel killed in the line of duty through the Army General Insurance Fund (AGIF).
- Progress made on activities identified as part of the 'Year of Transformation-2023' initiative was reviewed by accessing Agnipath Scheme, digitization and automation initiatives, combat engineering tasks, work aspects, and budget management.

LINK IT WITH: Combined Commander Conference, Exercise Garuda, Exercise Eastern Bridge, and Naval Commanders' Conference 2023

B9 Countries

Context

B9 countries discuss NATO's eastern flank and support for Ukraine.

About

- The Bucharest Nine, also known as the B9 group, was established in 2015 and consists of nine countries located on the eastern flank of the North Atlantic Treaty Organization (NATO).
- These countries include Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia.
- Among the B9 nations, the Baltic republics of Estonia, Latvia, and Lithuania were formerly part of the Soviet Union, while Bulgaria, Hungary, Poland, Romania, and the former Czechoslovakia (now Slovakia and the Czech Republic) were signatories of the now-dissolved Warsaw Pact military alliance.
- The B9 countries have been vocal in their criticism of Russia's actions, particularly regarding its aggression against Ukraine since the annexation of the Crimean Peninsula in 2014.
- All these B9 countries are members of the European Union (EU) and the NATO.

LINK IT WITH: BIMSTEC, SCO, MGC

Windhoek Declaration

Context

The Windhoek Declaration is considered a benchmark for ensuring press freedom around the world.

About

- The Windhoek Declaration, adopted on May 3, encompasses 19 principles centered around the importance of an independent, pluralistic, and free press. In 1993, the United Nations declared May 3 as World Press Freedom Day.
- This Declaration is based on Article 19 of the Universal Declaration of Human Rights, which emphasizes the right to freedom of opinion and expression.
- According to the Windhoek Declaration, a free press plays a crucial role in upholding democracy and fostering economic development.
- Furthermore, the Windhoek Declaration addresses the issue of persecution faced by journalists, editors, and publishers in African countries. It calls upon the United Nations to recognize press censorship as a violation of human rights.
- The Declaration also encourages the international community to support the initiatives and projects outlined within it.
- World Press Freedom Day is observed to raise awareness about the global state of press freedom, as well as to highlight the responsibilities and risks associated with journalism. It serves as a reminder of the importance of a free and independent press in society.

LINK IT WITH: Reporters without Borders, World Press Freedom Index

MAP CONNECT

PLACES IN NEWS-INDIA

Mana village
o It is located near the famous pilgrimage site of Badrinath in Chamoli district of Uttarakhand.
o The village has gained prominence recently after it was renamed as part of the government's 'Vibrant Village' scheme.
o It aims to develop villages in 46 border blocks across 19 districts, four states, and one Union Territory.

Maa Kamakhya corridor
o Maa Kamakhya temple is one of the oldest of the 51 pithas in the Shakta tradition.
o This temple is located at Nilachal Hills Guwahati, Assam, near the southern bank of the Brahmaputra River.
o Apart from main temple, it is dedicated to the ten Mahavidyas of Saktism.

Tilting of Tungnath Temple
o Temple is located in the Rudraprayag district of Garhwal Himalayas.
o It is tilting by five to six degrees.
o According to ASI officials, the central government has been notified about the temple's condition and that it should be included as a protected monument.

Nathu La
o A massive avalanche swept away a group of tourists in east Sikkim's Nathu La area near the China border

Dawki land port
o It was inaugurated by Union Minister Shri Nityanand Rai in Meghalaya.
o The port will promote trade and commerce between India and Bangladesh.
o The port is situated in West Jaintia Hills in Meghalaya.

Lithium Reserves
o The Geological Survey of India has found India's second Lithium reserves in Rajasthan.
o Lithium deposits are found in Degana, from where the tungsten mining was previously done.
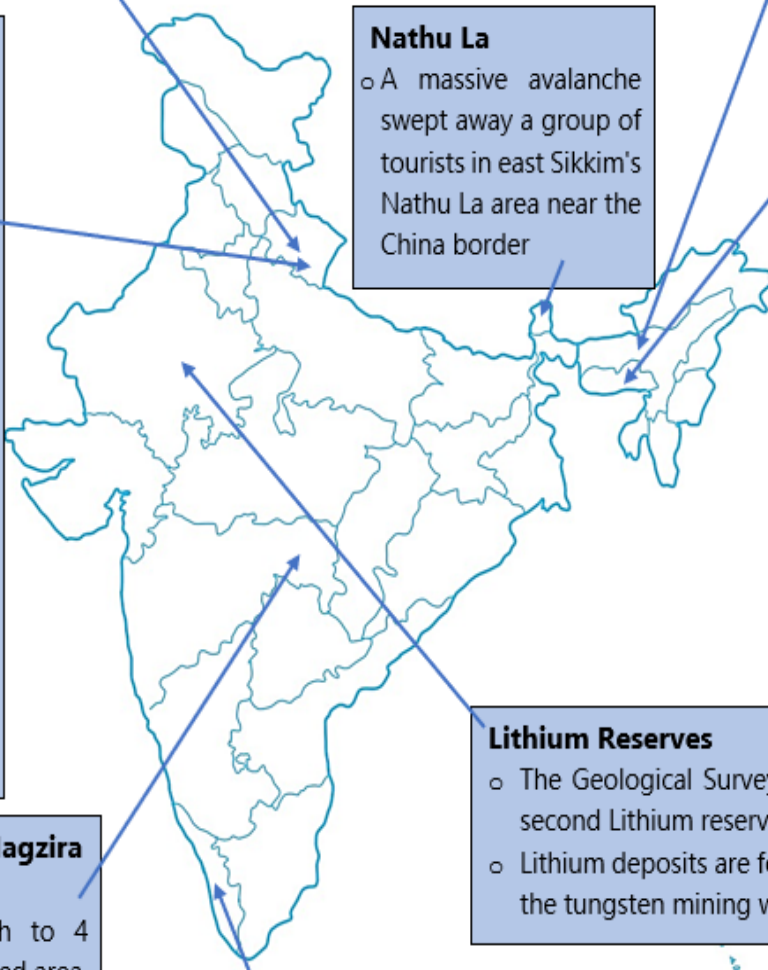
Nawegaon- Nagzira Tiger Reserve
o Tigress gives birth to 4 cubs in this protected area.
o It is situated in Gondia and Shandara Districts of Maharashtra.
o The reserve is rich in bio-diversity and has linkages with Kanha, Pench and Tadoba Tiger Reserves.

The Kottayam Greenfield Airport project
o The ministry of civil aviation has granted site clearance for the new 'Greenfield Airport' project in Kerala's Kottayam district.
o The new airport at Sabarimala, hailing as it is "great news" for tourism, particularly for those on a spiritual journey.

PLACES IN NEWS-WORLD

Places	Map
o The Nagorno-Karabakhconflict is an ethnic and territorial conflict between Armenia and Azerbaijan over the disputed region.	
o Nyiragongo volcanois destined in Virunga national park which is a UNESCO World Heritage property in the Democratic Republic of the Congo along the western arm of the East African Rift System. It is active volcano.	
o Macquarie Island is an island in the southwestern Pacific Ocean, about halfway between New Zealand and Antarctica. • Regionally part of Oceania and politically a part of Tasmania, Australia, since 1900, it became a Tasmanian State Reserve in 1978 and was inscribed as a UNESCO World Heritage Site in 1997.	
o The South Pars/North Dome field is a natural-gas condensate field located in the Persian Gulf. It is far the world's largest natural gas field, with ownership of the field shared between Iran and Qatar.	

DATA OF THE MONTH-Mapping India's export hotspots

Petroleum products
MAP 2A

- Begusarai
- Jamnagar
- Mumbai
- Dakshina Kannada

Precious stones & jewellery
MAP 2B

- Jaipur
- Surat
- Mumbai
- Kolkata

Vehicles
MAP 2E

- Gurugram
- Aurangabad
- Pune
- Anantapur
- Kancheepuram

Pharmaceutical products
MAP 2F

- Solan
- Ahmedabad
- Medchal-Malkajgiri
- Ranga Reddy
- Visakhapatnam

Rice, wheat and other cereals

MAP 2C

- Karnal
- Raipur
- East Godavari
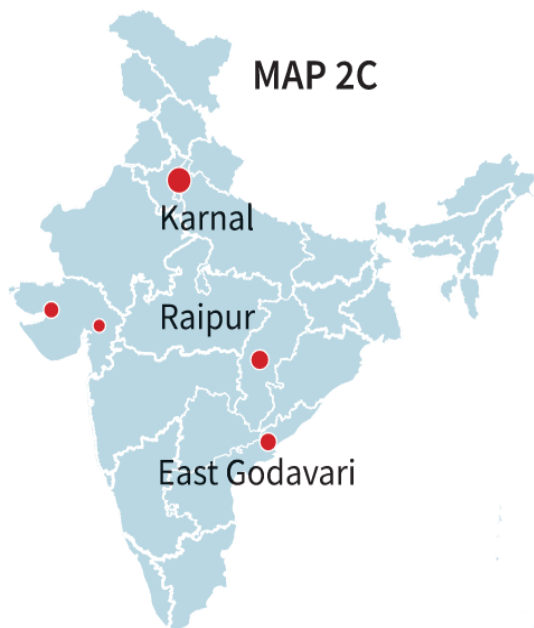
Smartphone and electronics

MAP 2D

- Gautam Buddha Nagar
- Kolar
- Kancheepuram

The table shows the share of the top exporting commodity of the top exporting district in India's total exports

Commodity	District	State	Share
Petroleum products	Jamnagar	Gujarat	67%
Precious stones & jewellery	Surat	Gujarat	36%
Smartphones, electronic parts	Gautam Buddha Nagar	Uttar Pradesh	26%
Vehicles	Kancheepuram	Tamil Nadu	21%
Rice, wheat & other cereals	Karnal	Haryana	17%
Pharmaceutical products	Medchal Malkajgiri	Telangana	15%

THEMATIC ESSAYS

1. The ultimate value of life depends upon awareness and the power of contemplation rather than upon mere survival.
2. The promise of democracy remains real and powerful
3. Man has lost the ability to foresee and to forestall

SCAN THIS QR FOR MODEL CONTENT

CONCEPT CLEARING ASSIGNMENT

1. Analyze the major issues and challenges associated with India's Nuclear Liability Law (NLL). What will be the implication of NLL on the country's nuclear energy sector and international obligations? Also, suggest potential measures.

2. Critically examine the impact of the 9th Schedule on the judicial review process. What are the challenges and implications posed by the inclusion of laws under the 9th Schedule?

3. What are the key factors hindering effective sports governance in India? Suggest some innovative solutions to enhance transparency, accountability, and the overall development of sports in the country.

4. Highlight the major issues and ethical concerns related to the implementation of the Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act in India. Evaluate the effectiveness of this Act in curbing female foeticide while considering the challenges related to enforcement and societal attitude.

5. What is the impact of misleading food advertisements on public health and consumer choices in India?

6. Examine the challenges within the regulatory framework that hinder the implementation of an efficient drug recall mechanism. Substantiate your views with suitable examples.

7. What kind of economic consequences could occur due to illegal mining in India? Assess the underlying factors perpetuating illegal mining activities and suggest measures to curb this menace.

8. Comment on the potential of Multi-Modal Logistics Parks (MMLPs) in driving economic growth and enhancing logistics efficiency in India.

9. Discuss the implications of the rising dominance of Big Tech companies on the growth and sustainability of Indian startups. What kind of challenges and opportunities are presented by this dynamic, especially for MSME-level new Startups?

10. Discuss the significance of India's involvement in providing humanitarian assistance to the Sudan crisis.

11. How does land degradation contribute to the loss of biodiversity, and what are the long-term consequences for ecosystem stability and human well-being?

12. What are the socio-economic advantages derived from water bodies? Also, highlight the intricate complexities involved in their sustainable management to bolster livelihoods, environment conservation and biodiversity conservation.

13. Discuss the ecological ramifications and water footprint associated with the widespread implementation of AI-led systems. Analyze the potential environmental trade-offs arising from the utilization of artificial intelligence in various sectors, with a specific emphasis on the management of water resources.

14. Explain the key objectives and potential advantages of the National Quantum Mission in India. Discuss its significance in advancing quantum technologies and fostering innovation in India.

15. Discuss the challenges and opportunities presented by India's increased engagement with the SCO, and propose measures to leverage this platform for maximizing India's national interests.

PT ORIENTED QUESTIONS

1. Consider the following statements regarding debt-for-climate swaps:
1. It is a debt restructuring device to ensure debt-ridden countries do not incur additional debt.
2. It is advocated by United Nations Development Programme as a debt relief measure.

Which of the statements given above is/are correct?
(a) 1 only 　　　　(b) 2 only
(c) Both 1 and 2 　　(d) Neither 1 nor 2

2. Recently, the term Laundromat countries was mentioned in the news, it refers to-
(a) Countries implicated to engage in cyber terrorism.
(b) Countries implicated to engage in terrorist activities.
(c) Countries that have restricted money laundering activities successfully.
(d) Countries implicated to engage in money laundering activities

3. Which of the following can be cited as implications of the Smoke Point Limit?
1. Respiratory disorders
2. Fire Hazard
3. Cardiovascular diseases

Select the correct answer using the codes given below:
(a) 1 and 2 only 　　(b) 2 and 3 only
(c) 1 and 3 only 　　(d) 1, 2 and 3

4. Consider the following statements regarding River-Cities Alliance (RCA):
1. It is a joint project of the Ministries of Housing and Urban Affairs and Jal Shakti.
2. It aims to help Indian cities to acquire new techniques and strategies for managing urban rivers.

Which of the statements given above is/are correct?
(a) 1 only 　　　　(b) 2 only
(c) Both 1 and 2 　　(d) Neither1 nor 2

5. **Consider the following statements regarding Relative Humidity:**
   1. It is determined by dividing the fixed mass of the moisture by the exact mass of the air.
   2. It can be calculated directly by modern electronic psychrometers.
   3. It is expressed as a dimensionless number but sometimes in litres.

   Which of the statements given above is/are correct?
   (a) 1 and 2 only
   (b) 2 only
   (c) 1 and 3 only
   (d) 1, 2 and 3

6. **Which among the following can be cited as objectives of Bharat Mala Pariyojana (BMP)?**
   1. Improvement of efficiency of present freight corridors by elimination of choke points.
   2. Improved connectivity for the North East by leveraging synergies with Inland Waterways.
   3. Seamless connectivity with neighbouring countries with Integrated Check Posts (ICPs)

   Select the correct answer using the code given below:
   (a) 1 and 2 only
   (b) 2 and 3 only
   (c) 1 and 3 only
   (d) 1, 2 and 3

7. **Consider the following statements regarding Science Based Targets initiative:**
   1. It is an initiative of the WHO and UN.
   2. It corresponds to the scale needed to maintain the increase in global temperature below 2°C relative to pre-industrial levels.

   Which of the statements given above is/are correct?
   (a) 1 only
   (b) 2 only
   (c) Both 1 and 2
   (d) Neither 1 nor 2

8. **Which of the following gases are included in neurotoxin gases?**
   1. Hydrogen Sulphide
   2. Carbon Dioxide
   3. Carbon monoxide

   Select the correct answer using the code below:
   (a) 1 and 2 only
   (b) 2 and 3 only
   (c) 1 and 3 only
   (d) 1, 2 and 3

9. **Consider the following statements regarding National Quantum Mission:**
   1. It is launched by NITI Aayog.
   2. It focuses to work with advanced countries regarding technology development.

   Which of the statements given above is/are correct?
   (a) 1 only
   (b) 2 only
   (c) Both 1 and 2
   (d) Neither 1 nor 2

10. **Consider the followings:**
    1. Variational Auto Encoders
    2. Generative Adversarial Networks
    3. Transformer model

    Which of the given technology is associated with the above given models?
    (a) Modes in Cybersecurity
    (b) Models in Generative AI
    (c) Models in Quantum Computing
    (d) Models in Augmented reality

11. **Consider the following statements regarding Samarth Ramdas:**
    1. He wrote "ManacheShlok" and "Karunashtake."
    2. He believed in the caste-based society.
    3. His most renowned composition is the Dasbodh.

    Which of the statements given above is/are correct?
    (a) 1 and 2 only
    (b) 2 and 3 only
    (c) 1 and 3 only
    (d) 1, 2 and 3

12. **Consider the following pairs:**

UNESCO World Heritage site	Place
1. Mountain Railways of India	Kerala
2. Rani ki Vav	Rajasthan
3. Kakatiya Rudreshwara Temple	Tamil Nadu

    How many of the above given pairs is/are correctly matched?
    (a) One pair Only
    (b) Two Pair Only
    (c) Three Pair Only
    (d) None of the Pairs

13. **Consider the following statements regarding M Pox:**
    1. It is a viral zoonotic disease with less clinical severity than small pox.
    2. Its early symptoms include enlargement of lymph gland.
    3. It can be transmitted from human to human.

    Which of the statement given above is/are correct?
    (a) 1 and 2 only
    (b) 2 and 3 only
    (c) 1 only
    (d) 1, 2 and 3

14. **Drug Recall sometimes seen in news, refers to**
    (a) It is a campaign against toxic drugs.
    (b) When any drug is removed from the market from distribution
    (c) When any drug is added to market after years of ban.
    (d) When a drug is not available in the market because of high demand.

15. **Consider the following statements regarding Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act:**
    1. Its main purpose is to ban the use of sex selection techniques before or after conception.
    2. It mandates that no laboratory or clinic should conduct test like ultrasonography for the sex determination of fetus.

Which of the statements given above is/are correct?

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

16. **With reference to the Manganese Ore, Consider the following statements:**
    1. It is the hard element found in the Earth's crust and twelfth most abundant element.
    2. It is an important nutrient important for the metabolism of carbohydrates, cholesterol, and amino acids.
    3. It has multiple industrial applications such as in production of steel, aluminium alloys, smelting of iron ore and batteries.

    Which of the statements given above are correct?

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

17. **Which of the following statements is correct regarding Shilabhattarika?**
    (a) She was a 9th-century Sanskrit poet from India.
    (b) She was the daughter of Shaka ruler Rajbarman II.
    (c) Songs by Marathi poetess on farmers.
    (d) She is regarded as a pivotal character in the Panchatantra literary style.

18. **Which of the following statements are correct regarding General Agreement on Tariffs and Trade (GATT)?**
    1. It was signed in 1991 between USA and India.
    2. It is a treaty minimizing barriers to international trade by eliminating or reducing quotas, tariffs, and subsidies.
    3. It was intended to boost economic recovery after World War II.

    Select the correct answer using the code given below:

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

19. **Consider the following statements regarding the Washington Declaration:**
    1. It is a comprehensive approach to nuclear deterrence, emphasizing both offensive and defensive capabilities, along with arms control measures.
    2. It reinforces the United States' commitment to providing extended deterrence to South Korea.

    Which of the statements given above is/are correct?

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

20. **Which of the following can be cited as environmental consequences of AI system?**
    1. Rising of Carbon Emission
    2. Resource depletion
    3. Utilisation of freshwater

4. Energy poverty

Select the correct answer using the code given below:

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

21. **With reference to India's first water bodies census, Consider the following statements:**
    1. The census report is released by the national water commission.
    2. As per the census, West Bengal has the highest number of water bodies across the country.
    3. According to the census, almost half of the water bodies are encroached in rural areas.

    Which of the statements given above is/are incorrect?

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

22. **Which of the following can be cited as ecological functions of water bodies?**
    1. Recharging groundwater
    2. Controlling the Floods
    3. Adaptation to the climate change
    4. Support the primary food chain

    Select the correct answer using the code given below:

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

23. **Consider the following statements regarding Ninth Schedule:**
    1. The schedule contains a list of central and state laws which cannot be challenged in court.
    2. The schedule became a part of the Constitution in 1951 through the first amendment.

    Which of the statements given above is/are correct?

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

24. **Consider the following pairs:**

Articles	Subject matter
1. Article 200	Any bill passed by the state Legislative Assembly should be presented to the Governor for assent
2. Article 201	The Office of the Governor has complete immunity from court proceedings for any act done in the exercise of their powers.
3. Article 361	Any bill reserved for the consideration of the President

How many pairs given above is/are correctly matched?

(a) Only one pair
(b) Only two pairs

(c) Only three pairs

(d) All of the above pairs

25. **Consider the following statements regarding the Food Safety and Standards Authority of India (FSSAI):**
    1. It was established under the Food Safety and Standards Act, 2006.
    2. It is an autonomous statutory body under the Ministry of Health & Family.

    Which of the statements given above is/are correct?
    (a) 1 only   (b) 2 only
    (c) Both 1 and 2   (d) Neither 1 nor 2

26. **What was the exact constitutional status of India on 26th January, 1950? (UPSC 2021)**
    (a) A Democratic Republic
    (b) A Sovereign Democratic Republic
    (c) A Sovereign Secular Democratic Republic
    (d) A Sovereign Socialist Secular Democratic Republic

27. **Which of the following are the most likely places to find the musk deer in its natural habitat? (UPSC 2020)**
    1. Askot Wildlife Sanctuary
    2. Gangotri National Park
    3. Kishanpur Wildlife Sanctuary
    4. Manas National Park

    Select the correct answer using the code given below
    (a) 1 and 2 only   (b) 2 and 3 only
    (c) 3 and 4 only   (d) 1 and 4 only

28. **In the Government of India Act 1919, the functions of the Provincial Government were divided into "Reserved" and "Transferred" subjects. Which of the following were treated as "Reserved" subjects? (UPSC 2023)**
    1. Administration of Justice
    2. Local Self-Government
    3. Land Revenue
    4. Police

    Select the correct answer using the code given below:
    (a) 1, 2 and 3
    (b) 2, 3 and 4
    (c) 1, 3 and 4
    (d) 1, 2 and 4

29. **Consider the following statements: (UPSC 2020)**
    1. Jet streams occur in the Northern Hemisphere only.
    2. Only some cyclones develop an eye.
    3. The temperature inside the eye of a cyclone is nearly 10 C lesser than that of the surroundings.

    Which of the statements given above is/are correct:
    (a) 1 only
    (b) 2 and 3 only
    (c) 2 only
    (d) 1 and 3 only

30. **Which one of the following is used in preparing a natural mosquito repellent? (UPSC 2021)**
    (a) Congress grass
    (b) Elephant grass
    (c) Lemongrass
    (d) Nut grass

Answer Key

No.	Ans	No.	Ans	No.	Ans
1.	C	11.	C	21.	B
2.	C	12.	D	22.	D
3.	D	13.	D	23.	C
4.	C	14.	B	24.	A
5.	B	15.	C	25.	C
6.	D	16.	D	26.	B
7.	B	17.	A	27.	A
8.	D	18.	A	28.	C
9.	D	19.	C	29.	C
10.	B	20.	D	30.	C