



CURRENT AFFAIRS PROGRAM

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1) SEDITION

- **Why in news?**
 - The 22nd Law Commission has recommended that Section 124A of the Indian Penal Code (IPC) dealing with offence of sedition be retained and that the minimum jail term for the offence be enhanced from three to seven years (June 2023)
- **Example Questions**
 - Discuss the provisions and scope of Section 124A of the Indian Penal Code (IPC) pertaining to sedition. Examine its constitutionality in light of freedom of speech and expression [15 marks, 250 words]
 - In light of the recent report by 22nd Law Commission of India, evaluate the need for legislative reforms or amendments to the sedition law in India [10 marks, 150 words]
- **Intro**
 - **Definition:** Conduct or speech inciting people to rebel against the authority of a state or monarch can be considered as sedition.
 - **Section 124A of IPC** defines sedition as "any action whether by words, signs or visible representation which brings or attempts to bring into hatred or contempt, or excites or attempt to excite disaffection towards the Government established by law in India". The section also contains a clarification to the effect that the word "disaffection" includes disloyalty and all feelings of enmity.
 - Under this section, Sedition is punishable with imprisonment for life.
- **Evolution of Sedition Law from the beginning**
 - Not a part of original IPC enacted in 1860.
 - Added a decade later as fears of possible uprising plagued the colonial authorities.
 - Note: Other laws to suppress dissent at that time -> Dramatic Performance Act, 1876 and the Vernacular Press Act, 1878.
 - **The British India government liberally used this provision** during India's freedom struggle to suppress any kind of dissent.
 - **Constituent Assembly:** An attempt to include sedition as an express ground for limiting speech under Article 19(2) was successfully resisted.
 - The law was in a way reimposed in 1951 through First Constitutional Amendment which added two expressions - "friendly relations with foreign state" and "public order" - as grounds for imposing "reasonable restrictions" on free speech.
 - A **Constitutional Bench of the Supreme Court upheld** the validity of Section 124-A in the celebrated case of **Kedar Nath Singh vs. State of Bihar in 1962** but at the same time **attempted to restrict the scope of its misuse**.
 - The Court upheld the right to comment in strong terms upon the measures or acts of **government** and laid down that that a person can be charged with **sedition only if there is incitement to violence in his speech or writing or an intention or tendency to create disorder or disturbance of law and order**.

- The court said "A citizen has a right to say or write whatever he likes about the Government, or its measures, by way of criticism or comment, so long as he does not incite people to violence against the Government established by law or with the intention of creating public disorder"
- In the **Menaka Gandhi** case of 1978, the Supreme Court held that criticizing and drawing opinion against the government's policies and decisions within a reasonable limit that does not incite people to rebel is consistent with the freedom of speech.
- **Inspite of these Supreme Court verdicts**, the law continues to be misused.
 - NCRB report says 356 cases of sedition under Section 124A of the IPC has been registered and 548 people arrested between 2015-2020, with just six convictions.
- **The supreme court** has to pitch in regularly to protect citizen's freedom of speech being suppressed by the sedition law. For e.g.
 - In March 2021, while hearing a plea to "terminate" the Lok Sabha membership of **Dr. Farooq Abdullah** and book him for sedition, the court held that voicing dissent against government doesn't amount to sedition.
 - In June 2021, a two-judge bench of the Supreme Court quashed a sedition case registered against journalist and Padma Shri awardee **Vinod Dua** for his critical remarks against the Prime Minister and Union government in a YouTube telecast.
- **Analysis: Criticism**
 - » **Too Broad and vaguely worded definition** is used to suppress liberty of citizens and Criminalize dissent.
 - This vagueness was misused to suppress dissent and imprison freedom fighters such as Mahatma Gandhi and Bal Gangadhar Tilak who criticized the policies of the colonial administration.
 - This **reduces government accountability** as the government is able to ignore its critics and in turn charge them with sedition.
 - » **Very strict nature** of the law - non-bailable, cognizable and punishment that can extend to life - has a strong chilling effect on free speech and dissent.
 - Note: "**Doctrine of Chilling Effect on Speech** considers the probability of a legal provision causing psychological barriers in the free exercise of the right"
 - Critics of the sedition law argue that this doctrine was not sufficiently developed in 1962 and thus the Kedarnath Singh Judgment should be revised.
 - E.g. After Hathras gang rape case 22 sedition cases were filed. "Vinod Dua" - a journalist was charged with sedition for criticizing governments activities during COVID-19 lockdown.
 - » **Scope of misuse of Law as Political Tool:**
 - Gandhi had said "*Section 124-A under, which I am happily charged, is perhaps the prince among the political sections of the IPC designed to suppress the liberty of citizen*".
 - More than 20 cases were filed under sedition law after the CAA protests.

- » Trial Courts have mostly ignored the 1962 Supreme Court Judgment and have imposed the law even in cases where there was no incitement to violence or attempt towards public disorder.
 - » Sedition is not one of the grounds for reasonable restrictions on free speech provided under Article 19(2).
 - » Law commission of India in a consultation paper, in Aug 2018 observed that berating the country or a particular aspect of it cannot be treated as “sedition” and the charge can only be invoked in cases where the intention is to overthrow the government with violence and illegal means.
 - » UK, which introduced sedition in India, have also abolished it.
 - In fact, in March 2023, even Lahore High Court in Pakistan annulled the offence of 'Sedition' in the Pakistan Penal Code.
 - » Our Criminal law is equipped with other provisions to deal with most of the violations as defined right now under sedition
- **Support of the law**
- » Supreme court has upheld constitutionality of the law. Without sedition, the state would be in jeopardy if the government was subverted.
 - » Law itself might not be problematic, but its implementation is.
 - » Misuse of the law doesn't invalidate it.
 - » Country faces many threats - Terrorism, Naxalism, Enemy states etc. and thus a strong law preventing incitement of violence against state is important to protect unity and integrity of the country.
- **Supreme Court puts the Sedition Law on Hold (May 2022)**
- » A three-judge bench of the Supreme Court has suspended pending criminal trials and court proceedings under Section 124A (sedition) of the IPC till the Centre completes its exercise in re-examining its provisions.
- **22nd Law Commission of India on Section 124A of IPC: Key Recommendations:**
- » The commission recommended that the law should not be repealed but it should be retained with some changes.
 - Why?
 - A necessary legal instrument in the face of threats to India's Internal Security including Maoism, Militancy, secessionist movements etc. The report also quotes NSA Ajit Doval on wars against Invisible Armies, and on a "civil society" that can be subverted, divided and manipulated to hurt the interest of the nation.
 - Allegation of misuse don't automatically justify the repeal of the Section 124A.
 - Further, in the absence of provisions like Section 124A of IPC, any expression that incites violence against the government would invariably be tried under special laws and counter-terror legislation, which contain much more stringent provisions to deal with the accused.
 - While any alleged misuse of section 124A of IPC can be reined in by laying down adequate procedural safeguards, repealing the provisions altogether can have "serious adverse ramifications for the security and integrity of the country", while the subversive forces getting a free hand to further their sinister agenda as a consequence.

- » It has recommended that the **following amendments be made to Section 124A of IPC:**
 - **Include the Kedarnath ruling into the provisions of the law** by adding the words "with the tendency to incite violence or cause public disorder". The report also defines the tendency to incite violence as a "mere inclination to incite violence or cause public disorder rather than proof of actual violence or imminent threat to violence".
 - **Enhancing the imprisonment for sedition** to "remove an oddity"
 - One of the criticisms against the provision is that it **leaves judges with wide discretion on sentencing**.
 - Section **124A has a jail term of up to three years or life imprisonment**. It means either imprisonment for life or imprisonment upto three years only, but nothing in between.
 - The **law commission** has now proposed enhancing the jail term upto seven years or life imprisonment.
 - **To prevent the misuse of the law**, the report suggested including a procedural safeguard that no FIR shall be registered for sedition "unless a police officer, not below the rank of inspector, conducts a preliminary inquiry and on the basis of the report made by the said police officer the Central Government or the State government, as the case may be, grants permission for registering a FIR.
 - Other general suggestions:
 - The police should not use Section 124A to stifle dissent or criticism of the government.
 - The courts should interpret Section 124A narrowly and should not convict a person under this section unless there is clear and convincing evidence that the person has committed the offence.

- **Analysis: Criticism:**

- These recommendations are a step backwards.
 - The Supreme Court in May 2022 had stayed the law and expressed strong reservation and indicated that it could hear arguments in favor of striking down the colonial provision that has proved to be prone to misuse.
 - The report doesn't engage seriously enough with criticism of the sedition provision, including concerns expressed by the Supreme Court.

- **Way forward**

- **Parliament** should do an exhaustive re-examination of the law to determine if it will be appropriate or not to continue the usage.
- **Clarifications given by Supreme Court in Kedarnath case and Law Commission of India should be strictly followed** - "section 124A applies only when there is violence or incitement to violence"

against government". These provisions should be introduced through an amendment to the bill as suggested by 22nd Law Commission of India.

- Simplify the definition to prevent its misuse for curbing dissent and for political reasons.
- Reduce the severity of the law - make it bailable, non-cognizable etc.
- A sign of mature republic is its willingness to stand up to scrutiny by its citizens and accommodate dissent and criticism of the government should not be construed as sedition.

- **Conclusion1 (Supporting the law)**

- The word sedition is extremely nuanced, and the law needs to be applied with caution. It should only be used against serious cases which involves provocation to raise arms against government, demand for separate country etc. But, the legal system needs sedition provision (with some amendments), mostly to act as a deterrent, and on occasion to use against serious offenders.

- **Conclusion2 (Critical of the law)**

- Personal Liberty and Right to Free Speech are hallmarks of liberal democracy and sedition laws and their gross misuse attack the very foundation of these liberties enshrined in the Indian Constitution. The need of the hour requires the judiciary to review the colonial law.
- Even if abolishing of the law is not feasible, it should be toned down and string guidelines should be issued to limit its indiscriminate abuse of the law. This will not only help India's democratic standing but would also safeguard freedom of expression in the country.

1) ECONOMY: FOREIGN TRADE POLICY, 2023

- **Why in news?**
 - » On 31st March 2023, Ministry of Commerce and Industry announced India's Foreign Trade Policy 2023 and it came into force from 1st of April 2023.
- **Example Questions:**
 - » What are the key objectives of India's Foreign Trade Policy, 2023? Highlight some of the challenges to the implementation of this policy. Suggest measures to make this policy more effective in boosting India's exports [15 marks, 250 words]
- **Introduction:**
 - Foreign Trade Policy (FTP) refers to a set of guidelines, regulations and measures formulated by a government to govern its international trade.
- **FTP, 2023** is a policy document which is based on continuity of time tested schemes facilitating exports as well as a document which is **nimble and responsive** to the requirements of trade.
- **The Key Approach** to the policy is based on these **4 pillars**:
 1. Incentive to Remission
 2. Export Promotion through collaboration - Exporters, States, Districts, Indian Missions
 3. Ease of Doing Business, reduction in transaction cost and e-initiatives.
 4. Emerging Areas - E-commerce, Developing Districts as export Hubs and **streamlining SCOMET Policy**.
 - Note: SCOMET stands for Special, Chemicals Organisms, Materials, Equipment, and Technologies (SCOMET) policy.
- **Key Aims and Objectives** of India's FTP, 2023 are:
 - » Boost India's exports to USD 2 trillion by 2030.
 - » Strengthen India's export competitiveness.
 - » Diversify export basket, expand export market, and promote sustainable exports.
 - » Focus on promoting exports from small and medium enterprises (SMEs). For this policy envisages support in the form of access to finance and markets.
 - » Provide incentives for exporters, including duty drawback, export promotion capital goods (EPCG) scheme, and interest subvention schemes.
 - » Encourage collaboration between exporters, states, and districts to promote exports.
 - » Simplify and streamline the process of exporting goods and services:
 - » Focus on emerging areas of export, such as e-commerce, green technology, and defence and aerospace. These are the areas where India has a competitive advantage, and the policy aims to help businesses take advantage of these opportunities.
- **The Policy aims to boost India's exports through several measures:**
 - » Process Re-engineering and Automation (technology enablement) for facilitating exporters.

- » **Expanding the scope of Town of Export Excellence (TEE)** by including Faridabad, Mirzapur, Moradabad and Varanasi in the existing list of 39 towns listed as Towns of Export Excellence (TEE).
 - **Note:** Under this scheme recognised associations of units are provided financial assistance under the Market Access Initiative Scheme on a priority basis, for export promotion projects for marketing, capacity building and technological services, and to visit various trade exhibitions/fairs for exploring more marketing avenues
- » **Promoting Exports from districts** by building partnerships with state government and taking forward the District as Export Hubs initiative to promote exports at the district level.
 - Institutions like State Export Promotion Committee and District Export Promotion Committee will identify export worthy products and services.
 - District specific export action plans will be prepared for each district.
- » A robust export control system in India would provide access of dual use High end goods and technologies to Indian exporters while facilitating exports of controlled items/technologies under **SCOMET** (Special Chemicals, Organisms, Materials, Equipment, and Technologies) from India.
- » **Facilitating E-Commerce Exports** through establishment of e-commerce hubs and other related elements.
 - The consignment wise cap on E-commerce exports through courier has been raised from Rs 5 Lakh to Rs 10 lakh.
 - A comprehensive e-commerce policy addressing export/import ecosystem is planned to be brought soon.
- » **Export Promotion of Capital Goods (EPCG) Scheme** has been rationalized.
 - Prime Minister Mega Integrated Textile Region and Apparel Parks (PM MITRA) scheme has been added as an additional scheme eligible to claim benefits under CSP(Common Service Provider) Scheme of Export Promotion capital Goods Scheme(EPCG)
 - Battery Electric Vehicles (BEV) of all types, Vertical Farming equipment, Wastewater Treatment and Recycling, Rainwater harvesting system and Rainwater Filters, and Green Hydrogen are added to Green Technology products – will now be eligible for reduced Export Obligation requirement under EPCG Scheme.
- » **Introduction of provisions for merchanting trade.**
 - **Note:** Merchanting trade involves shipment of goods from one foreign country to another foreign country without touching Indian ports, involving an Indian intermediary.
- » **Amnesty Scheme** to provide relief to exporters who have been unable to meet their obligations under EPCG and Advance Authorization schemes. This will reduce litigations and foster trust based relationship.

- **Challenges:**

- » **Global Economic Uncertainty:** The global economy is facing a number of challenges, including the COVID-19 pandemic, the Russia-Ukraine war, and rising inflation. These challenges could impact India's exports, as they could lead to lower demand for Indian goods and service.
 - » **Competition** from other emerging economies : Countries like China, Vietnam etc are also competing to increase its export base and may become a hurdle in India's achievement of its export targets
 - » **Domestic challenges** such as infrastructure bottleneck, regulatory hurdles, lack of skilled workforce and high cost of logistics may also become a hindrance to India's exports.
- **Way Forward:**
- » **Increased government support** to exporters in the form of access to finance and market.
 - » **Improvement in infrastructure** such as roads, railways, airways etc for easier and faster export of goods and services.
 - » **Streamlined regulations** related to customs and taxation.
 - » **Increased investment in R&D** for development of innovative products and services fulfilling the global demands.
 - » **Promoting Brand India** in global market. This will attract foreign buyers and increase demand for Indian goods and services.
- **Conclusion1:**
- » Overall, the Foreign Trade Policy 2023 is a comprehensive and ambitious document that has the potential to boost India's exports and promote economic growth. Though, it faces some challenges, but with strong political will, and collaboration with various stakeholders, these challenges could be overcome.
- **Conclusion2:**
- » The new FTP is a shift from an incentive based approach and creates an enabling ecosystem for exporters, which is a move in line with India's vision of becoming 'Atmanirbhar' (self-reliant).

2) ECONOMY: FOREIGN TRADE POLICY, 2023 AND E-COMMERCE

Question: "The Foreign Trade Policy, 2023 approaches digitally enabled cross-border trade in an inclusive manner and seeks to make small players part of India's exports" Elaborate [10 marks, 150 words]

- **Introduction:**
- » India's e-commerce market is one of the largest in the world. It has been made possible due to increase penetration of smart phones, internet and digital payment systems. However, when it comes to e-commerce exports, it accounts for only a very small fraction of India's total exports.
 - » But, FTP, 2023 looks to change this and increase India's e-commerce exports by enabling vendors to access the international markets.
- **Key provisions related to e-commerce in FTP, 2023**
- » The new section on 'Promoting Cross Border Trade in Digital Economy' gives a fillip to e-commerce exports in the following ways:
 - Extending all FTP benefits to e-commerce exports
 - Increasing the value limit for exports through couriers to INR1,000,000 per consignment

- Promoting e-commerce through the **postal routes**: Government aims to operationalize '**Dak Niryat Kendras**' to "work on a hub and spoke model with Foreign Post Offices (FPOs) to facilitate cross border e-commerce and to enable artisans, craftsmen and MEMEs in the hinterland to reach international market.
- The policy also **proposed to create E-Commerce Export Hubs (ECEHs)**, which would act as **a centre for favourable business infrastructure and facilities** for cross border e-commerce activities. These hubs would provide the **necessary infrastructure for exports**, and also connect to and leverage the services of the nearest logistics hubs.
- **Handholding and outreach schemes** to small players on how to use e-commerce platforms effectively.

- **Conclusion:**

- E-commerce platforms for exports can serve as a **democratized marketplace** that allows **small vendors, MSMEs, and local artisans to access international market and retain higher profit margins**. This will not only boost India's exports but will also lead to inclusive growth and development.

3) ECONOMY: FOREIGN TRADE POLICY, 2023 AND DISTRICTS AS HUB OF EXPORTS

Ques: Discuss the role of Foreign Trade Policy 2023 in galvanizing districts of the country to become export hubs [10 marks, 150 words]

- The Foreign Trade Policy, 2023 was launched **with the goal of boosting exports to the USD 2 trillion by 2030**. Towards achieving this goal, one of the sections of the FTP aims to **galvanize districts of the country to become export hubs**.
- It is being done in the following ways:
 - **Identifying products and services** with export potential in the district
 - The policy proposes to do so by **creating District Export Promotion Committees (DEPC)** and creating **District Export Action Plans for each district**.
 - The interventions at the district level can **generate awareness and help small vendors to access bigger markets**.
 - Further, steps such as **promotion of exports through e-commerce and promotion of exports from MSME** will also contribute to development of small towns and districts as export hubs.
 - Lastly, the FTP has declared **four new 'Town of Export Excellence' (TEE)** [Faridabad-Apparel, Moradabad-Handicraft, Mirzapur - Handmade carpet and Dari, Varanasi - Handloom and handicraft] [in addition to existing 39 TEEs] with the objective of moving up the value chain and tapping into new markets.
- These initiatives are thus in sync with the spirit of **'Local goes Global'** and **'Vocal for Local'**. But to make these initiative successful, it is important to focus upon:
 - **Improving export infrastructure** and regulations in every district and town.
 - **Studying global quality standards** and bringing Indian standards in sync with global standards

- Take a few more points for way forward from the main FTP Article.

4) S&T: SPACE: NAVIC AND NVS-01

- Why in news recently?
 - ISRO's GSLV-F12 successfully places navigation satellite NVS-01 into intended orbit (May 2023)
- Example Questions
 - What do you understand by 'Standard Positioning Systems' and 'Precision Positioning Systems' in the GPS era? Discuss the advantages India perceives from its ambitious IRNSS program employing just seven satellites [Mains 2015, 12.5 marks, 200 words]
 - Why is Indian Regional Navigational Satellite System (IRNSS) needed? How does it help in navigation? [Mains 2018, 10 marks, 150 words]
 - What is satellite navigation? Discuss the key economic and social uses of Satellite navigation. [10 marks, 150 words]

A) BASICS ABOUT SATNAV

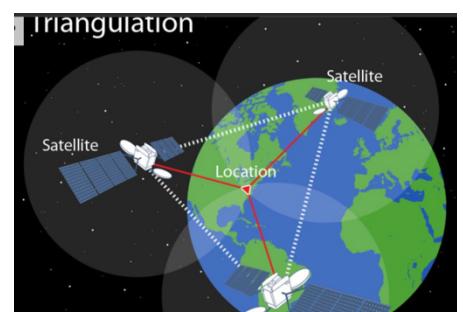
- A satellite navigation (SATNAV) system is a technology that allows users to determine their precise location, velocity, and time information anywhere on or near Earth's surface.
- It uses a network of satellite in space and provide accurate positioning data.
- Currently, there are four global satellite-based navigation system – the American GPS, the Russian GLOASS (GLObalnaya NAvgatsionnaya Sputnikovaya Sistema), the European Galileo and the Chinese BeiDou.
- India has a regional system called NavIC and Japan has Quasi Zenith.

- Methods used in SATNAV: Triangulation and Trilateration

Triangulation: Satnav systems use a technique called triangulation to determine the precise location of a receiver on the Earth's surface.

It is a geometric method that uses the angles formed by lines connecting the receiver to multiple satellites to determine the receiver's position.

By measuring the time it takes for signals to travel from multiple satellites to the receiver, the system can calculate the receiver's position based on the intersection of the satellite signals



Trilateration: GPS receiver use the method of trilateration. Trilateration involves measuring the distance between your GPS receiver (e.g. a smartphone) and multiple satellite in the network. Each GPS satellite broadcasts a signal that includes a timestamp and information about its location. Our GPS receiver picks up these signals and use the timestamp to calculate the distance between itself and each satellite.

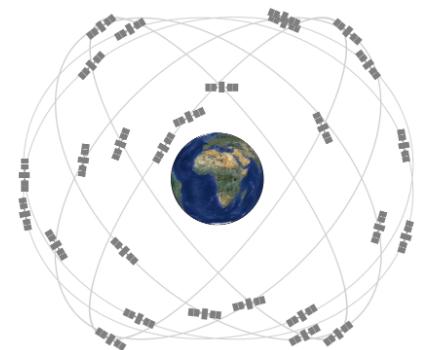
Using the distance from at least four satellites and their known positions, your GPS receiver performs calculations to determine your precise location on earth.

[Please note that GPS doesn't use triangulation (which measure angles), they really don't use angles at all].

- **Accuracy:** They generally provide high levels of positioning accuracy (within a few meters), depending on the quality of receiver and the number of satellites in view. However, various factors such as signal obstruction, atmospheric conditions, and receiver limitations can affect the accuracy.
- **Applications: Navigation purposes** -> helping users find their way while driving, hiking, or boating. It is also used in aviation, surveying, geolocation-based services, precision agriculture, and even in some outdoor recreational activities. It can be used for vehicle tracking, fleet management, precise timing etc.

B) GLOBAL POSITIONING SYSTEM (GPS)

- The best-known satnav system, GPS, uses 24 active satellites (including backups). Day and night, 365 days a year, they whiz around earth once every 12 hours on orbital plane inclined 55 degrees to the equator.
- Wherever you are on earth, you are in sight of at least half a dozen of them, but **you need signals from 3 or 4 satellites** to determine your position with an accuracy of just a few meters.
- **How GPS Finds your location?**
 - It uses **Trilateration**
- **GPS Constellation arrangement**
 - » GPS constellation fly in medium earth orbit (MEO) at an altitude of approx. 20,200 kms. Each circle orbits the earth twice a day.
 - » The satellites are arranged in six equally placed orbital planes surrounding the earth. Each plain contains four slots occupied by baseline satellites. This 24-slot arrangement ensures users can view at least four satellites from virtually any point on the planet.



C) BEIDOU

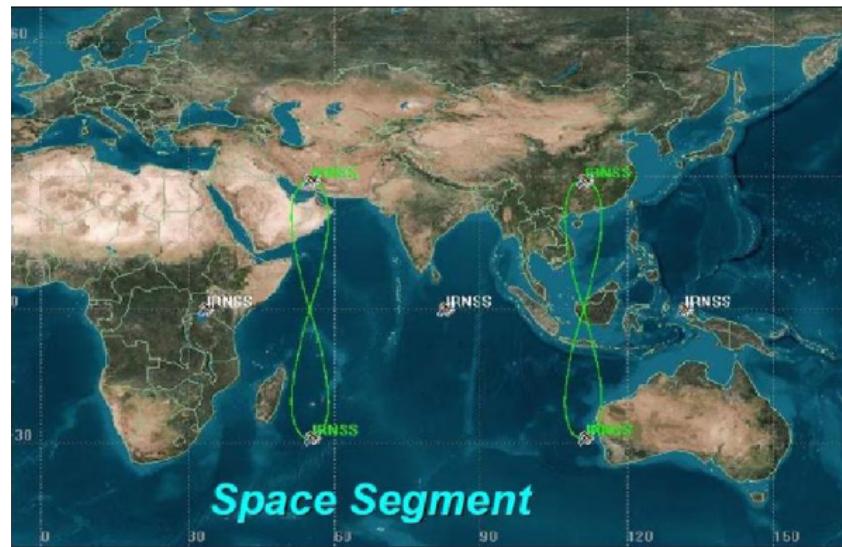
- **Details**
 - China initiated Beidou in 1994 with first BeiDou satellite launched in 2000.
 - **Second generation BeiDou (BDS-2)** provided coverage to Asia Pacific region starting in 2012.
 - **Third generation BeiDou (BDS-3)** satellite deployment started in 2015 and it started providing navigation services in 2018 to countries taking part in BRI. In 2020, the system has been completed and it can now provide global services. With this they have joined United States' GPS and Russia's GLONASS in providing global PNT services, with Europe's Galileo to follow. These are all compatible and interoperable, meaning users can draw services from all of those to improve accuracy.
- **Satellite Constellation**

- **24 satellites in Medium Earth Orbit** (around 21,500 kms above the earth) provide the positioning, navigation, and timing (PNT) services. These satellites use rubidium and hydrogen atomic clocks for highly-accurate timing that allows precise measurement of speed and location.
- **Satellites in geosynchronous Orbit** (including Geo-stationary orbit) help BeiDou provide short messaging service through which 120-character messages can be sent to other BeiDou receivers.

- **Plans of Expansion:**
 - In Nov 2022, China outlined plans to further expand the global reach of its home grown BeiDou satellite navigation system.
 - a. **Pakistan** in 2014 became the first foreign country to set up a BeiDou network.
 - b. **BeiDou** has set up a first of three Continuously Operating Reference Stations (CORS) for its network in Thailand in 2013, to serve as a hub for ASEAN.

D) NAVIC (NAVIGATION USING INDIAN CONSTELLATION)

- Indian Regional Navigation Satellite System (IRNSS) (also called Navigation Using Indian Constellation (NAVIC)), is a regional satnav system developed by ISRO. It aims to provide reliable position, navigation and timing (PNT) services over India and its neighbourhood, upto 1500 km from its boundary. In addition it is also capable of broadcasting messages. This can be used for broadcasting safety-of-life alerts in areas with poor or no communication, particularly in Ocean.
- **Need of IRNSS** when services like GPS are easily available.
 - The access to foreign controlled global navigation satellite systems is not guaranteed in hostile situations, as happened to Indian military depending on American GPS during **Kargil War**.
- **NAVIC provides two types of services:**
 - » **Standard Positioning Service** (Open for Civilian Use)
 - » **Restricted Services** (Encrypted one, for authorized users (military))
- **Components of IRNSS System:**
 - » Space segments consists of **7 satellites, 3 satellites in GEO stationary orbit (GEO) and 4 satellites in GEO synchronous orbit(GSO)** with inclination of **29 degree** to the equatorial plane.
 - » All the satellites will always be visible in the Indian region.



- » **First of the 2nd generation satellite – NVS-01** was successfully launched in May 2023
 - ISRO's **GSLV F12** (GSLV-MK-II mission) successfully places navigation satellite NVS-01 into intended orbit.
 - **About GSLV F12:**
 - » It is the 15th flight of India's GSLV and the 9th flight with indigenous cryo stage.
- **About NVS-01:**
 - » **Heavier:** It weighs 2232 kg and has been placed in geosynchronous orbit (older IRNSS satellites weighed 1,425 kg)
 - » **Indigenous Atomic Clock:** For the first time, the satellite carries an indigenous atomic clock. The space qualified Rubidium atomic clock has been indigenously developed by Space Application Centre – Ahmedabad.
 - » **L1 signals for better use in wearable devices:** The second generation satellites have send signals in a third frequency, L1, besides the L5 and S frequency signals that the existing satellites provide. This will increase operability with other satellite based navigation systems. L1 frequency is the most commonly used in the GPS and will increase the use of NavIC in wearable devices which use low power signal frequency chip.
 - » **Longer Mission Life** of 12 years (earlier NavIC satellites have a mission life of 10 years).
- **Criticism of NaVIC:**
 - **Delay in developing user receiver:** A 2018 report by the CAG of India has said that even though the cabinet cleared funding of Rs 200 crore to develop user receivers in 2006, work on the project started only in March 2017, by which time seven launches of NavIC was already done.
- **Current Situation (June 2023)**
 - The receivers have now been deployed, and NavIC is in use for projects like public safety, power grid synchronization, real-time train information system, and fishermen's safety.

- Other upcoming initiatives (such as) common alert protocol based emergency warning, time dissemination, geodetic network, unmanned aerial vehicles are in the process of adopting NavIC system.
- Some cell phone chipsets build by Qualcomm, MediaTek integrated NavIC receivers in 2019. Some example phones which are NavIC enabled include Redmi Note 9, realme 6, the OnePlus Nord etc.

- **Way Forward:**

- **Promoting the Use of IRNSS:**
 - **NavIC** chip -> affordable
 - **Spreading awareness** -> Positional accuracy better than 20 m and timing accuracy better than 50 ns (20);
 - **Make compulsory for** phones marketing in India: Mobile phones haven't been made compatible to process its signals.
 - **Government apps** -> start using NavIC for various purpose.
 - HEIs -> Promote use in Labs, among students etc.
- **Fast track** the plans for making NavIC global
- The next generation NVS series of satellites will make the NavIC more versatile and promote ease of use.

3. PRELIMS FACTS

1) PLACES IN NEWS: KAFUE NATIONAL PARK (ZAMBIA)

Kafue National Park: Lion and Leopard populations have begun rebounding in Africa's **third** largest national park - **Zambia's Kafue National Park (KNP)** -after fifty years of poaching, according to a new report from **Panthera**, the global wild cat conservation organizations, and partners.

Factors:

1. **Counter Poaching Operations:** Game changing conservation technologies like **SMART** (Spatial Monitoring and Reporting Tool) and **EarthRanger** were employed in these operations.
2. **Effective Prosecution**
3. Distribution of **synthetic 'heritage Furs'** replacing garments made of authentic leopard and lions skin

Other details about KNP: KNP sits within the **Kavango Zambezi Transfrontier Conservation Area (KAZA)**, the largest terrestrial conservation landscape in the world spanning five countries (**Angola, Botswana, Namibia, Zambia, and Zimbabwe**)



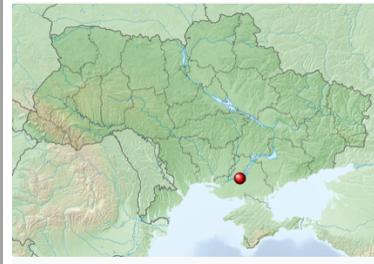
2) PLACES IN NEWS: NOVA KAKHOVKA RESERVOIRS (DAM):

Nova Kakhovka Reservoir (DAM):

The Kakhovka Dam was a dam on the **Dnieper River** (also known as Dnipro) in **Kherson Oblast**, Ukraine. It is a **soviet era** dam and was **destroyed** in June 2023.

This breach has **unleashed flood water in the war zone**. Both, Ukraine and Russia have conflicting accounts on who destroyed it.

This Dam is part of **Kakhovka** hydro-electric power plant. It supplies water to **Crimean Peninsula**, which Russia annexed in 2014, and to the **Zaporizhzhia nuclear power plant**, which is also under Russia control.



Location of Kakhovka Dam in Ukraine

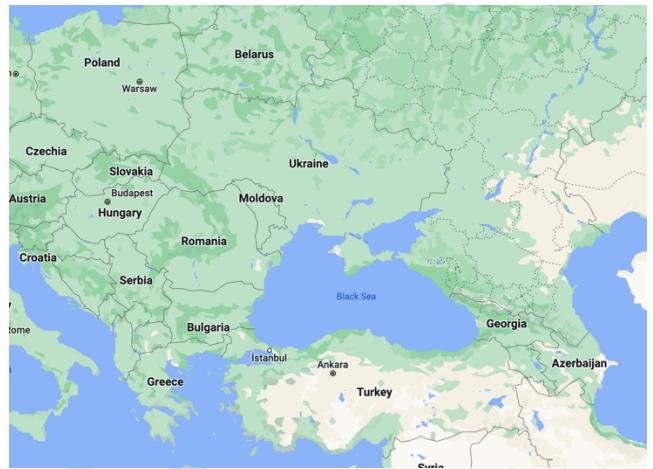


The Zaporizhzhia Nuclear Power Plant is the largest nuclear power plant of Europe. It gets its cooling water from Kakhovka Reservoir. It is located on the southern side, now under Russia control.

A) UKRAINE

Geographical Details

- Ukraine is a country in Eastern Europe. It is the second largest country in Europe after Russia.
- **Neighbours:** It shares its borders with Hungary, Slovakia, Poland to the West, Belarus to North, Russia to North, Northeast and East and Moldova and Romania to the South.
 - **Trick:** Hungry, Slow, Polar, Bear of Russia are Roaming in Moldova.
- **Coastline:** the country has coastline along the sea of Azov and Black Sea.



Recent Political Events:

- Ukraine gained its independence in 1991 after dissolution of Soviet Union. Ukraine declared itself a neutral state, forming limited partnership with both Russia and NATO.
- In 2014, Kremlin leaning Ukrainian President Viktor Yanukovych rejected an association with the European Union (EU) in favor of close ties with Moscow. This resulted in a series of protests across Ukraine, ending with Yanukovych's removal from power the same year.
- Mass protests and demonstrations known as the Euromaidan erupted, escalating into the Revolution of Dignity that led to the establishment of new government. These events led to Russia annexing Crimea and a war in Donbas against Russian backed separatists, culminating in Russian invasion of Ukraine in 2022.

Donbas Region

The Donetsk and Luhansk region of Ukraine is collectively called the Donbas.

Strategic significance of Donbas region: Donbas can act as a corridor between Russia and Crimea (and by extension, the strategically significant port of Sevastopol).

The population of this region is more Pro-Russia and thus a war has been going on since 2014 against Russia-backed separatists in the region.



On 21st Feb 2022, Russia officially recognized the DPR (Donetsk People's Republic) and LPR (Luhansk People's Republic) and on 24th Feb launched a full-scale invasion of Ukraine.

Kherson

It is a port city of Ukraine that serves as the administrative centre of Kherson Oblast. It is located on the black sea and on the Dnieper River.

Kherson's administrative centre is Kherson City. It was occupied by Russia from March 2022 to Nov 2022, when the Ukrainian forces recaptured it. In June 2023, the city was flooded following the destruction of the nearby Kakhovka Dam.

Mariupol

It is a city of the north coast of the Sea of Azov at the mouth of Kalmius river. While internationally recognized as in Ukraine, the city is under the de facto administration of the Donetsk People's Republic.

During the 2022 Russian invasion of Ukraine, the city was besieged and severely damaged in which it received the title of Hero City of Ukraine. On 16th May 2022, Ukrainian troops in Azovstal Steel Plant surrendered to Russian forces and were evacuated to Russian held territory in the Donetsk People's Republic, as Russia secured complete control of the city.



Mariupol shown within Ukraine

3) S&T: DEFENCE: 'FATTAH MISSILE'

Why in news?

- Iran has claimed that it has created a hypersonic missile capable of traveling at 15 times the speed of sound (June 2024)

Fattah is an Iranian hypersonic medium-range ballistic missile developed by the Islamic Revolutionary Guard Corps and unveiled in 2023.

It is Iran's first hypersonic ballistic missile. According to Iran, its high maneuverability and speed allows it to defeat all missile defence systems.



Range: 1,400 kms and **terminal speed** of Mach 13 to Mach 15.

Significance:

It is the first hypersonic missile of Iran and is also believed to be first such missile in the middle east.

Its capabilities could pose a challenge to regional and global missile defense system.

Note: Hypersonic weapons are the weapons which fly at speeds in excess of Mach 5, or five times the speed of sound.

4) BIODIVERSITY: BLACK VEINED BUTTERFLY

- Why in news?

- » Re-emergence of 'extinct' black veined butterfly in England likely due to unscientific release (June 2023: Source - DTE)

About the Black Veined White (*Aporia crataegi*):

It is a large butterfly that became extinct from British Isles in 1925. It was always considered a rarity in the British Isles but on the continent, it is often very common.

In June 2022, the butterfly was spotted in London. These sightings are the result of unofficial release and is unlikely that the butterfly will survive in the wild to breed. It is not known who did this or why.



5) BIODIVERSITY: MAHUA (MADHUCA INDICA)

- Mahua is a medium sized tropical deciduous tree found largely in central, southern and north Indian plains and forests. They are also found in Nepal, Myanmar, and Sri Lanka.
- **Uses:**
 - Mahua flowers, fruits, and leaves are edible and used as vegetables in India and other Southern Asian Countries.
 - » **The sweet, fleshy flower** are eaten fresh or dried, powdered and cooked with flour, used as a sweetener or fermented to make alcohol. This liquor is popular across India.
 - It is also an oil plant, whose seeds yield between 35 and 47% oil. This oil is used for making soaps and candles. It also has a potential use in bio diesel production. Though, it is used as edible oil by tribals, WHO recommends against it as it contains aflatoxin, a toxin component. The processing of oil can get rid of aflatoxin and makes it edible.
 - **Cocoa Butter Extender:** It is prepared from Mahua seed oil and is a prized product. It can be used for making chocolate and other confectionaries. Experts feel that this product has the scope of altering socio-economic conditions of tribals in India.
 - **Timber:** The tree is also used for its hard, strong, dense and reddish timber.
 - **Traditional Medicines** also use some mahua components.
- **Tribal women from Odisha's Kandhamal District** have been using mahua flowers to prepare various delicious varieties of food (Source: DTE, June 2023)
 - Around 120 tribal women members of the state's Van Dhan Vikas Kendras prepare laddus, cakes, jam, toffees, pickles, squash, pakodas, and biscuits using dry mahua flowers and supply them in local markets.
 - The women started preparing these items after attending a training held at the Krishi Vigyan Kendra, Nandurbar, Maharashtra, in Feb 2023





CURRENT AFFAIRS PROGRAM

PRE-CUM-MAINS 2024

JUNE 2023- BOOKLET-2

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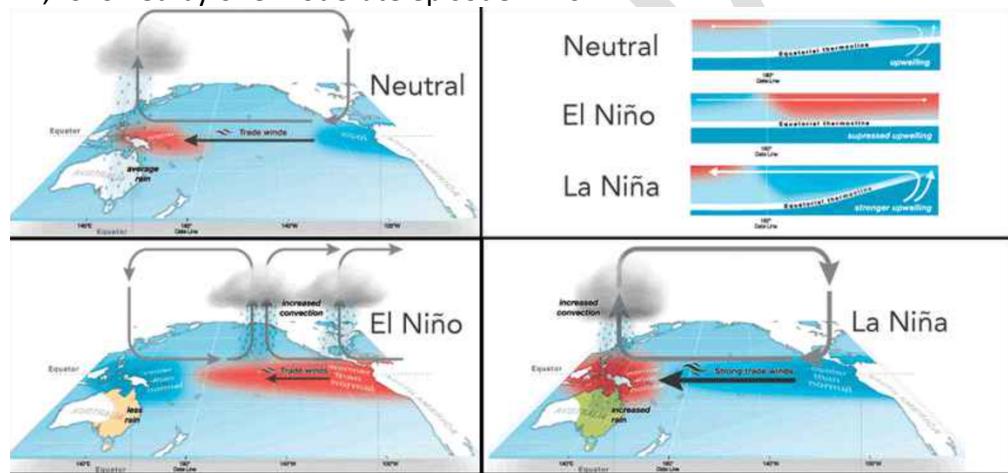
1. GENERAL STUDIES-1

1) GEOGRAPHY: EL-NINO AND MONSOON

- Why in news?
 - » According to the National Oceanic and Atmospheric Administration (NOAA), El-Nino has arrived (June 2023)
- Example Questions
 - » Discuss the mechanism behind occurrence of El-Nino and its counterpart La-Nina. How do they effect Monsoon season in India [15 marks 250 words]
 - » Discuss the different ways in which El-Nino situation is detected in the Pacific Ocean. How does the phenomenon of El-Nino Southern Oscillation impact Monsoon rains in India (10 marks 150 words)
- Understanding El-Nino Southern Oscillation (ENSO)
 - » EL-Nino Southern oscillation, also known as ENSO is a periodic fluctuation in the sea-surface temperature (El-Nino) and the air pressure of the overlying atmosphere (Southern Oscillation) across the **equatorial pacific ocean**. It is a recurring climatic pattern which has impact on temperature and precipitation across the globe.
 - » This scientific phenomenon occurs in **3 phases**: El-Nino Phase, the La Nina phase, and the Neutral Phase.
 - **The El-Nino Phase**
 - During El-Nino, the trade winds weaken or even reverse:
 - Instead of blowing from the east (South America) to West (Indonesia), they could turn into westerlies. As the wind blows from West to East, they cause the masses of warm water to move into the central and eastern equatorial pacific ocean. This leads to increased rainfall along the Western Latin America, the Caribbean and the US Gulf Coast, while depriving SE Asia, Australia and India of rainfall.
 - The strength of trade wind depletes and it is not able to take warm water to the Australian Coast.
 - This reduces the pressure difference between Eastern Pacific and Western Pacific.
 - This phase is characterized by severe drought in Indonesia, Australia (Western Pacific) and heavy rainfalls in the Eastern Pacific (i.e. the west coast of the Equatorial South America)
 - **The neutral phase (Normal Condition) of ENSO** involves sea surface temperature in the tropical pacific ocean that are closer to average.
 - The **trade winds** blow easterly across the surface near the equator.
 - **Warm water accumulates** in the Western Pacific (East Coast of Australia) creating low pressure there and high pressure in the Eastern Pacific (near the Peruvian Coast).
 - This phase is characterized by heavy rains on the East Coast of Australia and lack of rainfall on the Peruvian coast.

» The La-Nina Phase

- It is opposing phase to El-Nino.
- It basically refers to abnormal cooling of the central and eastern pacific ocean waters off the coast of Ecuador and Peru. Such cooling (SSTs falling 0.5 degree Celsius or more below a 30-year average for at least five successive three months period) is a result of strong trade winds blowing west along the equator (strong easterly trade winds), taking warm water from South America towards Asia. The warming of western equatorial pacific, then, leads to increased evaporation and concentrated cloud formation activity around that region, whose affect percolate to India as well. It also leads to decreased rainfall in tropical pacific.
- For e.g. the bountiful rainfall during 2019-22 has been significantly attributed to La Nina.
 - The latest La-Nina event was one of the longest ever, lasting from July-September 2020 to Dec-Feb 2022-23. And it brought copious rainfall to India.
 - This was also the case with two previous strong La Ninas in 2007-08 and 2010-11, followed by one moderate episode in 2011-12.

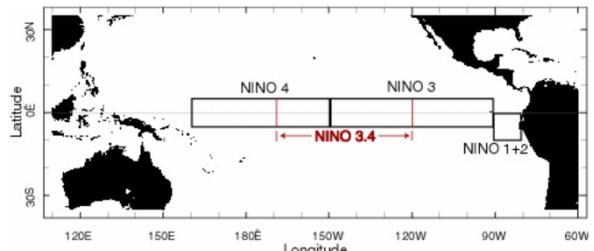


- **Discovery of El-Nino and La-Nina**
 - » El Nino Phenomenon was first noticed by the scientists in the 1920s, though local population in Peru and Ecuador were aware of the periodic warming much earlier.
 - » The La Niña phenomenon, on the other hand, was discovered only in the 1980s.
- **Reasons behind Oscillation** (i.e. El-Nino and La-Nina)
 - » **Not fully understood.**
 - » But the two components of ENSO - Sea Surface Temperature (SST) and Atmospheric Pressure are strongly related.
 - The strengthening and weakening of the trade winds is a function of changes in the pressure gradient of the atmosphere over the tropical Pacific. Ironically, the warming of the sea surface works to decrease the atmospheric pressure above it by transferring more heat to the atmosphere and making it more buoyant. So, in summary, the pressure gradient affects the sea surface temperatures, and the sea surface temperatures affect the pressure gradient.

- **How is El-Nino situation predicted?**

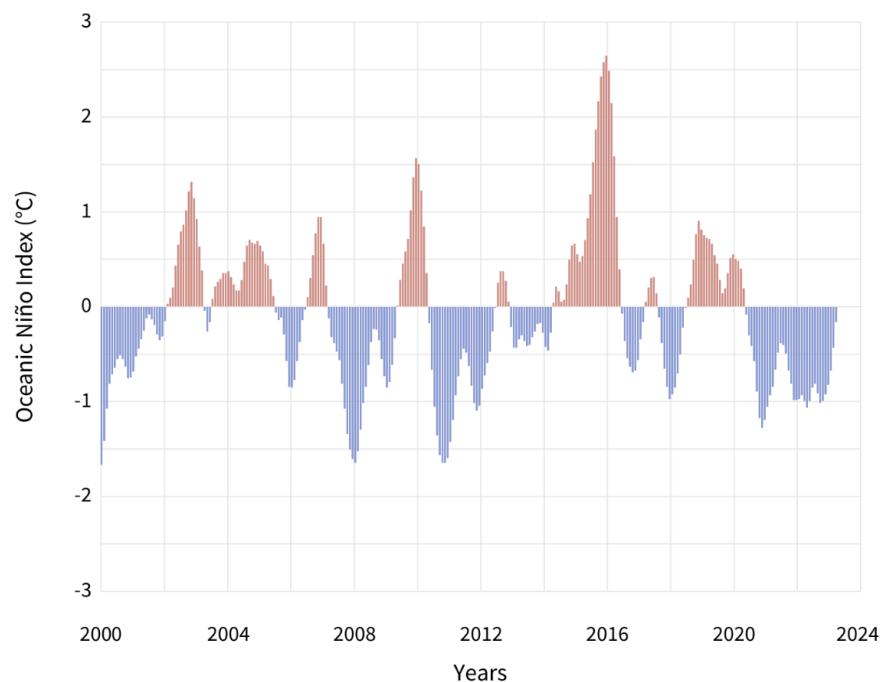
- A. The Ocean Part of ENSO is measured by **Oceanic Nino Index (ONI)**.

- Monitoring of ENSO primarily focuses on Sea Surface Temperature (SST) anomalies in the 4 geographical regions of the equatorial pacific.
- The **Nino 3.4 region** refers to central and equatorial pacific while Nino 3 is the adjoining far-east pacific.
- During an **El-Nino**, the Nino 3.4 region gets relatively warmer (by atleast 0.5 degree Celsius)
- These are averaged over five, three-month sessions on a trot to arrive at the **Oceanic Nino Index (ONI)**.
- During a La-Nina it gets relatively cooler (by at least 0.5 degree Celsius)



Niño Regions

OCEANIC NIÑO INDEX (ONI)



Fluctuations in sea-surface temperatures in the eastern equatorial Pacific Ocean, as represented by Oceanic Nino Index (ONI), since 2000. (Image Credit: NOAA, US)

- **Thermal expansion** of warming water in the eastern part of the basin measurably raises sea level in these regions, and this change in sea level can be measured by satellite sensors. Thereby, variations in sea level are good indicators of the presence of an El-Nino.

- B. The Atmospheric part is monitored through **Southern Oscillation Index, or SOI**.

- Southern Oscillation Index (SOI) is calculated on the basis of the atmospheric pressure difference between Tahiti (Southern Pacific Ocean) and Darwin (Australia).

- **Negative phase of SOI** represents below-normal air pressure at Tahiti and above-normal air pressure at Darwin. It corresponds to warm waters across the eastern tropical pacific typical of **El-Nino**.
- **Positive phase of SOI** coincides with cold ocean waters across the eastern tropical pacific typical of **La Nina episodes**.

- ENSO and Climate

- » In general, El Nino has warming effect on the planet, while La Nina tends to cool it down. The warmest years in a decade are usually the El Nino years.
 - The warmest ever year on record, 2016, was part of one of the longest and strongest El Nino episodes ever, dubbed the Godzilla El Nino.

All but one drought year in India was an El Nino year.



	Drought Intensity	El Nino Intensity
1957-58	Major	Strong
1965-66	Major	Strong
1966-67	Major	No El Nino
1972-73	Major	Strong
1976-77	Moderate	Weak
1979-80	Major	Weak
1986-87	Moderate	Moderate
1987-88	Major	Strong
1991-92	Major	Moderate
2002-03	Moderate	Weak
2004-05	Moderate	Moderate
2014-15	Moderate	Weak
2015-16	Moderate	Very Strong
2018-19	Moderate	Weak

- Accurate Prediction of El-Nino provide valuable information for managing its impacts on vulnerable regions:

- Agriculture and Food Security: Based on the expected changes in rainfall due to El-Nino farmers can adjust their crop choices, planting schedule and irrigation options.
- Water Resource Management:** Early prediction of El-Nino enable water resource managers to optimize reservoir storage and allocations.
- Disaster Preparedness:** Steps can be taken to deal with disasters like drought or heatwaves in vulnerable regions.

- Impact of El-Nino in India

- » El-Nino has been generally known to **suppress monsoon rainfall** in India.
 - Practically, all drought years in India since Independence - marked by large declines in food grains production or monsoon failures - have witnessed El-Nino events of varying intensity. The sole exception was 1966-67, where drought took place without El-Nino.
 - Please note that this doesn't mean the all El-Nino years have been drought years.

- Conclusion1

- Though El-Nino and La-Nina are naturally occurring climate events, there **impacts in recent years have been exacerbated** by extreme weather events.
- With a good disaster management strategy, India needs to remain prepared for these adverse weather phenomena.

2. GENERAL STUDIES-2

1) SOCIAL JUSTICE: HOMOSEXUALITY

- Example Questions
 - » "The SC verdict in Navtej Singh Johar v. Union of India is a step in the right direction but will not be enough to ensure protection of fundamental rights for sexual minorities" Discuss [15 marks, 250 words]
 - » "In striking down section 377, the Supreme Court has recognized the Constitution's extraordinary transformative power" Elaborate [10 marks, 150 words]
- Introduction
 - » The sexual orientation characterized by romantic or sexual desire for, or sexual attraction towards member of the same sex is called Homosexuality (Homophilia).
 - The term 'gay' is used to refer to homosexual persons of either gender, although it is mostly used to refer to males.
 - In women, romantic sexual desire for other women is also called 'lesbianism'.
- Legal Provisions in India
 - » **Section 377 of IPC** punished voluntary carnal intercourse against the order of nature with any man, women or animal with imprisonment for life or for a term of upto 10 years.
 - Supreme Court in its 2018 judgment in **Navtej Singh Johar vs. Union of India** has said that section 377 insofar as it prohibits 'any consensual sexual relationship' is unconstitutional.
- History of important court ruling on the issue of Homosexuality:
 - » The issue of Section 377 being violative of fundamental rights was first raised by NGO, NAAZ Foundation, and AIDS Bedhhav Virodha Andolan (ABVA), in the Delhi High Court in 2001. But the petitions were dismissed by the court.
 - » Eight years, later in 2009, Delhi High Court in **Naz Foundation vs. Government of NCT of Delhi (2009)** declared that the Section (377), insofar as it criminalizes consensual sexual acts of adults in private, is violative of article 14, 15, 19 and 21 of the Constitution.
 - The court also held that "constitutional morality must outweigh the argument of public morality, even if it be the majoritarian view".
 - » However, the Naz Foundation judgment was overturned by Supreme Court in 2013 in **Suresh Kumar Koushal vs. Naz Foundation**
- Supreme Court Judgment in **Navtej Singh Johar vs Union of India** have reversed the Koushal judgment and has de-criminalized homosexuality. The key reasons given by the SC are:
 - a. **Sexual orientation is natural** and people have no control over it.
 - It is controlled by neurological and biological factors. CJI said that "what nature gives is natural and the natural identity of an individual should be treated to be absolutely essential to his being".

- Research shows that sexual orientation is decided very early, possibly even before birth, and that homosexuality is found in about 10% of the population, a figure that is largely constant across the cultures.
 - Justice Chandrachud also added that 'homosexuality has been documented in almost 15,00 species'.
 - b. Section 377 violates LGBTs' **Right to Equality** under article 14 of the constitution and **Prohibition of Discrimination** under article 15 of the constitution and is thus irrational, arbitrary and incomprehensible.
 - c. It also violates **Right to Freedom** by punishing freedom of choice of individuals.
 - d. **Violates Right to Life**
 - Right to Privacy as part of Right to Life applies fully to LGBT community.
 - Punishment under Section 377 made the LGBT a closeted community, destroyed the identity of members and breached their dignity - All part of Right to Life.
 - Self-determination lies at the core of the concept of identity.
 - e. **Section 377 leads to harassment of LGBT community**
 - Section 377 has become a weapon in the hands of the police and majority community to harass those who have alternative sex orientation. Therefore it assumes the character of unreasonableness.
 - After the 2013 judgment, a large number of cases have come up where gays were blackmailed by acquaintance and the police is in connivance with each other.
 - f. Benefit of **presumption of constitutionality of a statute can't be extended to a pre-constitutional law like 377** that was not enacted by popular legislature.
 - g. The court has rules that consensual sex between adults is neither harmful nor contagious in society.
 - h. **Constitutional morality is more important than Social Morality** (majoritarian consensus): Social morality or what the majority of society thinks cannot be used to violate the right of even one single individual.
 - CJI Mishra had made it clear by saying "We don't settle constitutional issues by referendum. We don't follow majoritarian morality, but follow constitutional morality".
 - The judges have unanimously said that freedom of choice can't be subjected to majoritarian perceptions. The constitution is not just for majority, the fundamental rights are guaranteed to "any person" and "any citizen" and the sustenance of these rights doesn't require majoritarian sanction.
 - i. Judiciary plays an important role in making constitution a "**living document**" through dynamic and purposive interpretations.
 - The constitution must transform society for better - at the heart of **transformative constitutionalism** lies a pledge to change the Indian society so as to embrace the ideals of justice, liberty, equality and fraternity.
- The Court also added that **society owes an apology to LGBTQ community**.
- **Other arguments Supporting Homosexuality / decriminalizing homosexuality.**
- i. **Homosexuality is not against India's tradition and culture.**
 - Our mythology refers to the existence of homosexuality.
 - There are reference to homosexuality in Valimiki's Ramayan.

- There are many instances of men turning into women and so on in Mahabharata too.(e.g. Shikhandi)
 - Erotic paintings and sculptures in ancient temples depict homosexual impulses of at least certain sections of Indian society.
 - ii. **Forced Heterosexuality Affects family life**
 - Homosexuals when forced to live life of a heterosexual have to get married and live with someone to whom they are not attracted. This ruins the life of not only the homosexual but the person with whom s/he got married.
 - iii. **Even Britishers have changed their law**
 - IPC which was drafted by Britishers criminalize homosexuality.
 - The English law was reformed in Britain by sexual offences Act, 1967, which decriminalized homosexuality and acts of sodomy between consenting adults.
 - iv. **Prevented raising awareness over the issue**
 - Homosexuality is already considered a social taboo and it being illegal further made it difficult to spread awareness about it and thus prevent harassment of homosexual people.
 - v. **International Image of a liberal, inclusive, democratic country**
 - Decriminalization of homosexuality has also enhanced India's international image of being a country of diversity, of inclusion and or equal protection for all.
- **Way Forward:** Supreme court judgement has merely decriminalized homosexuality but has not altered civil laws on it. Further court judgments or laws cannot remove social prejudice on their own. Discrimination still persists at workplace, in renting houses, and in the form of stigmatization which is more intense in rural areas. Therefore, we need to work towards:
- » **Bringing change in social attitude:** A change in social attitude and mentality needs to take place. This would require a lot of proactive efforts from government, civil society organizations, educational institutions etc. in the form of Information, Education and Communication Programs.
 - Homosexuals at leadership roles need to come up openly and confront the discriminatory attitude against them. This will help in changing the social perception
 - » **Ensuring Administrative Protection**
 - Government needs to ensure that homosexuals who are making their identity public are not harassed or discriminated in any way.
 - » **Legal Reforms:** Civil laws have to be brought in consonance with the SC verdict. The amendments need to provide for
 - Legalizing same sex marriage
 - Allowing same sex couples to adopt a child
 - **Ban Conversion Therapy**
 - » **Judiciary** also needs to proactively protect fundamental rights of homosexuals, at least, till the time when social attitude and legal protections are enhanced.
 - An example would be Kerala High Court's June 2022 judgment where it sanctioned a lesbian couple to live together after they were coercively separated by their parents.

- **Conclusion**
 - » The Navtej Singh Johar judgment widens the ambit of individual autonomy and decisional privacy. But the verdict is only the first step towards ensuring right to life, liberty and dignity of LGBT community. We still need to go a long way towards changing social attitude and ending all forms of discriminatory laws against the LGBT community.

2) SAME SEX MARRIAGE

- **Why in news?**
 - » The Constitutional Bench of the Supreme Court has reserved its verdict on the batch of petition seeking legal recognition of same-sex marriages after a hearing that lasted 10 days (May 2023)
- **Quote: "For the time they are a-changing": Bob Dylan**
- **Introduction:**
 - » In Navtej Singh Johar case, Supreme Court decriminalized homosexuality. But, gay marriages still don't have legal recognition in India. This may change soon. In a landmark case, a group of 18 same-sex Indian couples have petitioned the country's Supreme Court to legalize same-sex marriage.
- **Petitions**
 - » The petitions argued that marriage brings with it several rights, privileges, and obligations that are "bestowed and protected by law". The Delhi Commission for Protection of Child Rights (DCPCR) also advocated for recognition of marriage, filing an intervention application to assist the court on the impact of such marriages on children.
- **Respondents Opposing the petition:**
 - » The Central Government, the National Commission for the Protection of Child Rights, and a body of Islamic Scholars called the Jamiat-Ulama-i-Hind, opposed the petitions.
- **Argument Supporting Same Sex Marriage**
 - » The right to marry for non-heterosexual couple is implicit in Article 14 (Equality), 15 (Non-Discrimination), 16 (Equality of Opportunities in public employment), 19 (Freedom of Speech), and 21 (Right to Life). This is specially true after the SC ruling in 'Navtej Singh Johar vs. Union of India' and 'KS Puttaswamy verdict'.
 - » In Navtej Singh Johar verdict, Justice Chandrachud held that members of LGBT community are entitled, as all citizens, to a full range of constitutional rights, including liberties protected by the Constitution.
 - Being able to marry a partner would allow homosexuals to a host of rights currently reserved for heterosexual married couples - including right to jointly adopt children, own property together or nominate one another as a surrogate decision maker in a medical emergency, right to inheritance, maintenance and tax benefits.
 - » Since Navtej Singh Johar Judgment, several high court verdicts have ruled in favor of same sex couples having the right to live together.
 - In Madhu Bala vs State of Uttarakhand (2020), the high court of Uttarakhand held that right of a same sex couple to live together is a constitutional and human right.

- In **Vanitaben Damjibhai Solanki vs State of Gujarat** (2020), the Gujarat High Court ordered police protection for two women police constables in a relationship.
 - In **S Sushma v Commissioner of Police** (2021), the court protects the couple in relationship and makes sure that both sets of parents are taken along in this journey.
 - » **Supreme Court's recognition of same sex marriage will contribute to society's acceptance towards homosexuality.**
 - » A study titled '*The Anticipated Impact of LGBTQIA+ Marriage Equality Legislation on Indian Society and Mental Health*' among Indians has found that legalization of such unions will have a "positive impact on mental health of LGBTQIA+ individuals".
 - » There are 25 countries where same sex marriage is legalized. These countries have seen no harm to their culture and no deterioration of the legitimacy of traditional marriage in any place where same sex marriage is lawful.
- **How the law can be changed?**
- » Personal law can be interpreted by court to legalize same sex marriages.
 - » Government can add a provision defining LGBT culture in personal laws and allow for same sex marriages.
 - » Special Marriage Act, 1954 can be amended to bring in provisions for same sex marriage.
- **Arguments of people opposing same sex marriage:**
- » They argue that same sex marriage is afront to Indian customs and is an urban elitist concept.
 - » The government is also arguing that if Supreme court legalizes same sex marriage, it would mean a virtual judicial rewriting of an entire branch of law and court must refrain from passing such omnibus orders. Proper authority for this should be the legislature.
 - » Some don't consider it as normal because they can't replicate babies.
- **Conclusion:**
- » The LGBTQIA+ community is gazing upon the Supreme Court with a profound sense of optimism, anticipating the bestowal of their long-awaited constitutional rights, which have been withheld from them throughout the ages.

3. GENERAL STUDIES-3

1) SYLLABUS: ISSUES RELATED TO DIRECT AND INDIRECT FARM SUBSIDIES AND MINIMUM SUPPORT PRICE (MSP)

A) GOVERNMENT'S SUBSIDY EXPENDITURE

- For FY23, government has spent Rs 5,32,446 crore on subsidy.
 - This includes Food Subsidy (Rs 2.8 lakh crores), Fertilizer Subsidy (Rs 2.1 lakh crores), and Petroleum subsidy (Rs 30,756 crore).
- It was the 2nd highest ever after the 7.06 lakh crores of FY 20-21.
- But, in 2020-21, the spike in subsidy was on account of the finance ministry making a one-time provision to clear all dues to the FCI and fertilizer companies.
 - The centre in previous years was not providing fully for subsidies, arising from these entities selling grain and fertilizers at below cost to PDS consumers and farmers respectively.
- **Key Reasons for Rise in Subsidy Burden:**
 - **Covid-19 Pandemic:** The lockdown led to launch of various initiatives like Pradhan Mantri Garib Kalyan Anna Yojana.
 - **Russia-Ukraine War:**
 - » This led to surge in global prices of petroleum and fertilizers.
 - Government had to keep farmers and consumer insulated from this price rise which led to rise in subsidy burden.

B) MSP

- **Why in news?**
 - » Government has announced the Minimum Support Price (MSP) for this year's summer (Kharif) season crops, hiking the prices between 5-10% from last season, to ensure remunerative prices to growers for their produce and to encourage crop diversification (June 2023)
 - **Reactions:**
 - A section of farmer representatives have expressed unhappiness over what they term as a 'meagre' hike in MSP, defeating the government's intent of securing a "remunerative price".
 - Agriculture domain experts believe that an increase in MSP may give a slight respite to growers, but argue that in the absence of any dependable or assured market mechanism of procurement-purchase for crop on the MSP in most parts of the country, Crop Diversification will not be encouraged.
- **Example Questions**
 - i. What do you mean by Minimum Support Price (MSP)? How will MSP rescue farmers from the low income trap? [Mains 2018, 10 marks, 150 words]
- **Introduction**

- » **What is MSP:** It is the minimum price set by the Government at which farmers can expect to sell their produce for the season. When market prices fall below the announced MSPs, procurement agencies step in to procure the crop and ‘support’ the prices.
- » **Beginning:** The Minimum Support Prices (MSP) were announced by the Government of India for the first time in 1966-67 for Wheat in the wake of the Green Revolution and extended harvest, to save the farmers from depleting profits.

Prelims	How is MSP decided and Who takes final decision.
	<ul style="list-style-type: none"> ▪ The <u>Cabinet Committee of Economic Affairs (CCEA)</u> announces <u>MSP</u> for various crops at the beginning of each sowing season based on the <u>recommendations of the Commission for Agricultural Costs and Prices (CACP)</u>. ▪ The CACP takes into account <u>demand and supply</u>, the cost of production (A2 + FL method) and <u>price trends</u> in the market, inter-crop parity, implication for MSP on consumers, <u>a minimum of 50% as the margin over cost of production</u>; etc. ▪ The CACP calculates three types of costs — A2, A2+FL and C2 — for each mandated crop for different states. The lowest of these costs is A2, which is the <u>actual paid-out cost incurred by a farmer</u>. Next is <u>A2+FL</u>, the actual paid-out cost plus imputed value of family labour. The highest of the three costs is C2, <u>defined as ‘Comprehensive Cost including Rental Value of Own Land</u> (net of land revenue and interest on value of own fixed capital assets (excluding land))

- » MSP is announced for 22 mandated crops and FRP is announced for sugarcane (**total 23 crops**)

Prelims	Crops Covered under MSP:
	<ul style="list-style-type: none"> - MSP is announced for 22 mandated crops and FRP for Sugarcane. (Total 23 crops) <ul style="list-style-type: none"> ▫ Mandated Crops are: 14 crops for Kharif season, 6 Rabi crops (except Toria) and 2 crash crops (Copra and Raw Jute). ▫ In addition MSP for <u>Toria</u> and <u>De husked coconut</u> are fixed on the basis of MSP for <u>rapeseed/mustard</u> and <u>Copra</u>. - Note: <u>Coffee, tea</u> etc are not covered under MSP. - 7 Cereals, 8 oilseeds, 5 pulses, 5 cash crops - Copra, Raw cotton, Raw Jute, Virginia Flu cured (VFC) tobacco, Sugarcane. - Note: For Sugarcane <u>Fair and Remunerative Prices (FRP)</u> is announced that has to be paid by sugar mill owners.

Kharif Crops	Rabi Crops
1. Paddy	15. Wheat
2. Jowar	16. Barley
3. Bajra	17. Gram
4. Maize	18. Masur/lentil

	5. Ragi	19. Rapeseed/mustard
	6. Arhar (Tur)	20. Safflower
	7. Moong	21. Toria (an oilseed similar to rapeseed)
	8. Urad	Other Crops
	9. Cotton	22. Copra / Dehusked Cotton
	10. Groundnut	23. VFC Tobacco
	11. Sunflower seed	24. Raw Jute
	12. Soyabean black	25. Sugarcane(FRP)
	13. Sesamum	
	14. Nigerseed	

- **Need of MSP/ Rationale Behind MSP**
 - » Protecting farmers from price volatility
 - » Incentivizing farmers to grow crops in short supply
 - » MSP also ensures easy procurement for food security schemes
- From FY19 the MSP has been **pegged at more than 50% of cost of production for most of the Kharif and Rabi crops**. This is another step towards ensuring **income inclusiveness**.
 - » Accordingly, the Government has been increasing the MSP for all 22 Kharif, Rabi and Commercial crops with a margin of at least 50% over the all-India weighted average cost of production since the agricultural year 2018-19.
- **Various Mechanisms under MSP to procure crops and ensure remunerative prices for farmers (Before PM-AASHA)**
 1. **For wheat and paddy** -> **Open Ended Procurement by FCI**
 2. **Coarse Grains** -> **Purchased by state government** with permission of central government, **upto the extent it is required** in their Target Public Distribution System (TPDS).
 3. **Price Support Scheme (PSS)** - for oil seeds, pulses and cotton - at the request of concerned states
 4. **Market Intervention Scheme (MIS)** for perishable horticulture commodities - at the request of states - when there is excess supply or low prices.
- **Some shortcomings in MSP Procurement Program**
 - » **Procurement is limited to few crops, few geographies and few farmers** -> only wheat and rice under open procurement -> Punjab, Haryana, Coastal Andhra benefitted a lot -> mostly big farmer benefitted
 - » There has been delays in establishment of procurement centre.
 - » Lack of awareness about MSP among large section of farmers. This leads to they getting exploited at the hands of commission agent.

- » **Inadequate MSP** (MSP calculation is not based on A2 + FL + C2 which was recommended by MS Swaminathan committee). It uses A2 + FL method.

- **Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (PM-AASHA):**
 - » The scheme is aimed at increasing the MSP procurement of pulses, oilseeds, COPRA etc. This is expected to ensure remunerative price to farmers.
 - » **Three components of PM AASHA - Price Support Scheme; Price Deficiency and Payment Scheme; and Private Procurement & Stockist Scheme**
 - Note: For Oilseeds, the states will be allowed to choose between the PSS or two other schemes.
 - » **Note: AASHA is complementing (not replacing) complementing other schemes**
 - Other existing schemes of Department of Food and Public Distribution (DFPD) for procurement of paddy, wheat and nutri-cereals/coarse grains and of Ministry of Textile for Cotton and Jute will be continued for providing MSP to farmers to these crops.
 - » **What was expected out of PM-AASHA:**
 - Better remuneration for farmers; reduced storage and procurement requirement for government; increased private participation -> more investment in storage etc; improved food security

- **But, PM-AASHA has also not been able to increase MSP procurement a lot due to following reasons:**
 - **Budgetary support for PM-AASHA** has been too minimal (around Rs 15,000 crore in the first year)
 - **A number of factors preventing PM-AASHA to be inclusive:**
 - » **Agri-Marketing reforms** are incomplete: Poorly functioning APMCs with cartelization, lack of transparency which causes price distortion.
 - The three farm laws which were expected to reform agri-marketing in India had to be withdrawn due to farmers' protest.
 - » **Poor infrastructure:** This has led to farmers remaining out of MSP regime, remaining out of MSP regime.
 - To increase procurement of pulses, oilseeds etc., a large infrastructure improvement is required at state level. This infrastructure is absent or very poor at state level.
 - » Further, **ineffective supply chain management**, has rendered the whole scheme trivial.
 - For e.g. NAFED has a stock of 4 million tonnes of pulse and oilseeds, but their distribution policy is non-existent.
 - **State Financial condition** may not be strong enough for the program.

- **Other Criticism of MSP mechanism in general**
 - **MSPs causes market distortion** -> this negative impacts free market economy and investment in the sector.
 - **Cropping pattern** is affected and farmers tend to grow high MSP crops rather than the most suitable crop for the region.
 - **Excess fertilizer and water guzzling crops** makes agriculture unsustainable.
 - **Higher inflation due to higher MSP pressure** also has to be considered while announcing MSP for the food crops.
 - **Cost Plus Pricing** is risky as it ignores the demand side, i.e. demand-supply, domestic and international price trends, terms of trade, inter-crop price parity etc.

- Leads to less focus on non-price factors like technology, inputs, services, institutions and infrastructure
 - High fiscal burden on government
- Bigger stock exceeds the stock holding norms of FCI
- WTO' AOA issues (discussed with WTO issues separately)

- Way forward

- There is a need of **correction in the way MSP is provided.**
 - Land rentals and capital depreciation needs to be kept in mind.
- In order for our **procurement policy to be really inclusive**, government will need to focus upon improving the procurement infrastructure in rural, remote and backward areas. There is also a need to fast track the reform process of APMCs to end cartelization and promote transparency.
- Steps towards **wooing private investments** needs to be enhanced. Crop mandis can ensure more competition and thus better output for farmers.
- Further, FCI and NAFED will have to **strengthen the supply chain mechanism** to focus more on efficient distribution of the procured food items.
- At the same time we should remember that **procurement schemes can only be a temporary solution**. For lasting impact we need other structural changes. Farming has to be made profitable by reducing production cost and improving returns.

In summary, there has to be a **Comprehensive 'Production, process and market' approach** through higher investments on market infrastructure, processing, value addition and agri-business and diversification along with farmer's welfare initiative.

2) FERTILIZER SUBSIDY

- Why in news?
 - » CACP recommends Centre to bring urea under NBS regime to check overuse (June 2023)
- Introduction
 - » A fertilizer is any organic or inorganic, natural or synthetic material added to soil to supply one or more plant nutrients essentially to the growth of plants.
 - » These fertilizers provide **six macro nutrients** and **8 micro-nutrients** to plants for well balanced growth:
 - i. **6 macronutrients:** nitrogen(N), phosphorus(P), potassium(K), Calcium (Ca), magnesium (Mg), and sulphur(S). They are consumed by plants in larger quantities and make the bulk of fertilizers.
 - ii. **8 Micronutrients:** Boron (B), Chlorine (Cl), Copper (Cu), iron (Fe), manganese (Mn), Molybdenum(Mo), Zinc (Zn) and Nickel (Ni).
 - » Fertilizer are an important input for agriculture and have played a major role in increasing farm productivity since green revolution.
 - » But Indian farmers have often faced difficulties due to shortage of fertilizers in past. To ensure easy availability of fertilizers, government has **various subsidy schemes**. But not all fertilizers are sold at a controlled price.

- » In India, Urea is the only controlled fertilizer, which is sold at statutory notified uniform price. The Phosphatic and Potash fertilizers are under a decontrolled regime and are sold at indicative maximum retail prices (MRPs).

A) NUTRIENT BASED SUBSIDY (NBS) SCHEME, 2010

- Key provisions of NBS
 - **Fixed subsidy based on nutrient:**
 - » Government provides a fixed amount of subsidy based on the nutrient content (both macro and micro (boron, zinc etc.)) (per kg) of fertilizers (unlike the earlier product-based subsidy scheme) to the fertilizer companies.
 - » For e.g. for RABI 2022 (from 01/10/2022 to 31/03/2023) - Subsidy rate was decided as follows:
 - N (Rs 98.02/kg) P (Rs 66.93/Kg), K (**Rs 23.65/Kg**) and S (Rs 6.12/kg)
 - **MRP to be fixed by fertilizer companies** on the basis of demand and supply but after incorporating the subsidy element.
 - Rate of subsidy is determined by various factors such as international prices, exchange rate, inventory levels etc.
 - The NBS scheme currently covers 21 grades of different phosphatic and potassic (P&K) fertilizers including DAP (diammonium phosphate), MOP (Murate of Potash) and other NPK complex fertilizers.
 - **UREA has been kept outside the coverage of the NBS scheme.**
- **Key Aim** -> Reduced Subsidy Burden; New specialized variety of fertilizers; Balanced application; Improved farm output; promote indigenous fertilizer industry.
- **Hasn't been as affective** -> Government's subsidy burden still very high -> UREA kept out of NBS, so farmers shifted to UREA -> Balanced Nutrient Goal also missed.
- **Subsidy burden** has also kept on going up.

B) UREA BASED SUBSIDY

- **Introduction:**
 - To ensure affordable access to fertilizers to farmers, UREA is made available at statutorily **controlled price**, which at present is Rs 5378 per MT (exclusive of Central/State Tax and other charges towards neem coating).
 - The difference between the delivered cost of fertilizers at farm gate and MRP payable by farmers is given as subsidy to the fertilizer manufacturer/importer by GoI.
- **Issue of Diversion**
 - Being super-subsidized, urea is always prone to diversion for non-agricultural use - as a binder by plywood/particle board makers, cheap protein source for animal feed manufacturers or adulterant by milk vendors - apart from being smuggled to Nepal and Bangladesh.
- From 2018, the government announced the **implementation of DBT** for disbursement of fertilizer subsidy.

- Now the subsidy transfer only happens after the actual sales to farmers by retailers. Retailers have a point of sale (PoS) machine linked to e-Urvark DBT Portal. Fertilizer buyers (farmers) are required to furnish Aadhar or KCC number.
- **Advantages**
 - Prevents diversion and plug the leakages (because Aadhar is used)
 - Timely payment of Urea subsidy to urea manufacturing companies.
 - Adequate availability of UREA to farmers at adequate prices.
- But the diversion still continues at the retail level.
- Various steps being proposed to deal with this problem:
 - **Plans for Direct Cash Transfer to Farmers:**
 - Ceiling might be put on farmers based on the size of their land.
 - The subsidy may be directly transferred to farmer's e-wallet which could be made available along with farmer's Rupay Kisan Card.
 - In a study by NITI Aayog in 2019, farmers prefer DBT to fertilizer companies, rather than Direct Cash Transfer to Farmers as they are worried that buying fertilizers at market price would be an extra burden.
 - Government is trying to resolve this concern by developing a DCT mechanism where fertilizer subsidy will be paid in advance.
- **Plans to cap the total number of subsidized fertilizer bags that any person can buy during an entire Kharif and Rabi Cropping season:**
 - This is expected to end even retail-level diversion and purchases by large buyers masquerading as farmers.

C) IMPACT OF FERTILIZER SUBSIDY POLICIES IN INDIA

- **Positive Impact:** Fertilizer subsidy policies have had positive impact in terms of increasing fertilizer consumption and hence leading to an increase in overall Agri-production.
- **But it has failed in the goals of increasing domestic production** (and has thus increased import dependency) and promoting balanced use of nutrients by farmers. It has also led to diversion of UREA for other industries and exports to neighboring countries.
- **Why domestic industry couldn't be promoted:**
 - **Lack of raw material for potassic and phosphatic fertilizers:** India completely lacks any commercially exploitable source of Potash and the entire demand for MOP is met through import. In the Phosphatic sector (for DAP etc.), there is limited availability of raw material like Sulphur and rock phosphates and hence, a bulk of raw material is imported. Even the **Urea sector** is dependent on imported fuel sources like crude oil and now, even gas.
 - **Low investment in fertilizer sector** over the years.
 - **Inefficient Fertilizer manufacturer companies** - Since they get subsidy based on the cost of production (rather than fixed subsidy for all manufacturers on the basis of per unit production).
- **Increased dependency on Urea has been harmful**
 - In India, the ideal ratio of NPK fertilizers use is considered as **4:2:1**. However, in most regions it is skewed against the ratio with a propensity to use larger quantities of N (urea) as it is cheaper.

- It has caused serious problems:
 - i. Widespread deficiency of secondary and micro-nutrients.
 - Among these, the deficiency of zinc has to be specifically mentioned as zinc deficiency in food causes problems like stunting.
 - ii. **Fertilizer response and efficiency** has continuously declined over decades mainly due to imbalanced use of nutrients.
 - iii. Environmental damages
 - Part of over-used Nitrogen is lost as NH₃, N₂, NO_x gases which adversely affect environment.
 - Part of Nitrogen leaches down as NO₃ and contaminates the ground water resources. It has been found to cause methemoglobinemia or the Blue baby syndrome.
 - iv. **Limits diversification of crops**
 - Specialized fruits, vegetables require special non-UREA fertilizers, which are not easily available at affordable prices. This prevents diversification of agriculture.
- **Diversion of UREA** -> smuggling to neighboring Nepal, Diversion to Industries
- **Huge Fiscal Burden on Government**
 - A burden of more than Rs 2 Lakh crore only because of fertilizer subsidy.

D) SOME STEPS THAT HAVE BEEN TAKEN TO MAKE UREA SECTOR EFFICIENT.

- i. **GAS Price Pooling**
 - Earlier, different urea plants got gas at different prices, so their cost of production differed.
 - Therefore, in 2015 government has approved a major policy intervention. Under this policy the **domestic gas is pooled with imported LNG gas** to provide uniform natural gas to all the Urea manufacturing plants for the production of Urea.
 - **Cost of UREA at pooled price will be less than the price of imported urea**. This will help in increasing the production. This will augment indigenous production capacity.
- ii. **Neem Coating of UREA**
 - Reduces rate of dissolution in soil -> slowly absorbed by plants
 - Reduces diversion to industry
 - Neem has other advantages for crops -> insecticidal and pesticidal properties
 - UREA can't be used in synthetic milk now
- iii. **New Urea Policy** to increase the productivity, efficiency and indigenous production
- iv. **Introduction of 45 kg Urea Bag** (from earlier 50 kg) -> aimed at cutting demand
- vi. **Nano Urea**
 - Government has notified the **specification of Nano nitrogen** under Fertilizer Control Order, 1985.
- vii. **One Nation One Fertilizer Scheme**

- It aims to ensure timely supply of fertilizers as well as eliminate the dilemma of farmers in choosing one of the many brands available in the market.

viii. **Pradhan Mantri Krishi Samriddhi Kendra (PMKSK)**

- It has been decided to convert the existing village/block/sub-district/taluk and district level fertilizer retail shop into Model Fertilizer Retail Shops. These shops will act as "**One Stop Shop**" for all the agriculture related inputs and services.

ix. **PM PRANAM (Proposed)**

- Aimed at reducing the use of chemical fertilizers and thus reducing the subsidy burden.

E) STEPS THAT FURTHER NEEDS TO BE TAKEN/WAY FORWARD

i. **Work towards self-reliance and reducing dependency on imports.**

- Tie-up with gulf countries to set up plants
 - Gas prices for UREA plants in India is 3 times higher than in gulf countries. So we should set up joint ventures in countries where these prices are low.

ii. **Correcting Price Signals and Decontrolling the Fertilizer sector -> More investment and more competition.**

- The Commission on Agriculture costs and Prices (CACP) has recommended the centre to bring urea under NBS regime.

iii. **Direct Cash Transfer to Farmers and ensure progressive subsidies.**

iv. **Improve fertilizer efficiency -> Expand the soil health testing facilities and Issue of soil health cards**

v. **Digitization of land records**

- The process of was launched in 2008 but has not gathered momentum.
- Without setting right the land records, it will be impossible to transfer the subsidy to beneficiaries or to issue soil health cards.

vi. **Ensuring timely reach of subsidy to farmers**

- Last, but not the least, in the drive for increased efficiency and productivity, we should not forget the question of equity and inclusiveness, for 85% of our operational holdings belong to small and marginal farmers and smaller farmers tend to use fertilizers more intensely.

vii. **Develop Alternative sources of nutrition for agriculture** - Shift towards non-chemical form of fertilizers -> scope to use large biomass of plants which is wasted today;

- **Conclusion:**

- These steps will go a long way in enhancing the productivity of agriculture, mitigating climate change, providing an alternative to chemical fertilizers and balancing the fiscal impact of fertilizer subsidy on the Union Budgets in the years to come.

3) NANO-FERTILIZERS

- **Why in news?**

- Union Home Minister Amit Shah launched IFFCO's liquid nano Di-Ammonia Phosphate (DAP) (April 2023)

- Nano Urea fast-tracked for approval despite incomplete trials (Sep 2022)
- **Question:**
- “The Nano-Fertilizer technology can change the contours of not just Indian agriculture but also the economy” Critically analyze [10 marks, 150 words]
- **Introduction:**
- India has become the first country in the world to have developed and roll out nano-fertilizers.
 - » So far, it has launched nano-versions of two fertilizers – Urea and Diammonium Phosphate (DAMP).
 - » While nano-Urea has been made available to farmers since late 2021, nano-DAP was launched in April 2023.
 - The Indian Farmers Fertilizer Cooperative Limited (IFFCO), which had developed the variants using propriety technology, claims that Nano-UREA and Nano-DAP have several advantages over their conventional granular counterparts.
- **More Details:**
- Both Nano-Urea and Nano-DAP come in liquid form.
 - IFFCO claims that a 500 ml bottle of nano-urea can replace at least a 45 kg bag of granular urea and a bottle of 500 ml nano-DAP can replace a 500 kg bag of granular DAP.
- **Advantages:** The Parliamentary Standing Committee on Chemicals and Fertilizers (2022-23), headed by Shashi Tharoor have enumerated several advantages of nano-fertilizers in its March 2023 report:
- **Soil Health:** Nano-UREA can address the imbalanced and excessive used of conventional urea in the country, which accounts for around 82% of nitrogenous fertilizers applied to majority of the crops.
 - It costs lesser than subsidized conventional fertilizer thus reducing the cost for farmers.
 - They also result in better productivity and higher income for farmers.
 - » The PSC report notes that it has average 8% higher crop yield.
 - Experts also believe that these nano-fertilizers will lead to reduced import dependency of fertilizers and save forex reserves.
 - It will also contribute to reduced fiscal burden of government because of reduced fertilizer subsidy cost.
- **Limitations:**
- **Doubts about Yield gain:** DTE has reported interviews of several farmers who had to resort back to traditional fertilizers after, nano-fertilizers didn't give good results.
 - **Labour cost for spraying fertilizer** is increasing the overall input cost for farmers.
 - **Complaints** about farmers being forced to buy Nano-Urea.
 - **Issue of Evaluation/Trial:** ICAR has given results of field trial based on a year (two seasons) of experiments in its affiliated labs. This was an exception as ICAR normally tests a new fertilizer for 2 years (or three seasons) before giving go ahead to a new fertilizer.
- **Conclusions:** Nanotechnology could play a crucial role in promoting sustainable agriculture in India and nano-urea is an example of that. At the same time, it should be ensured that any new technology-based product is properly evaluated in its efficacy, environmental impact and economic impact on farmers.

4. PRELIMS FACTS

1) PLACES IN NEWS: SVALBARD

SVALBARD (also known as Spitsbergen)

- It is a Norwegian archipelago in the Arctic Ocean. North of mainland Europe, it is about midway between the northern coast of Norway and the North Pole. The islands of the group range from 74 degree to 81-degree N.
- The largest island is Spitsbergen.
- **Flora and Fauna:** The flora has adapted to take advantage of the long period of midnight sun to compensate polar nights. Many seabirds use Svalbard as a breeding ground, and it is home to polar bears, reindeer, the Arctic fox.
- **Svalbard Global Seed Vault** is a seedbank to store seeds from as many of the world's crop varieties and their botanical wild relatives as possible. It is a cooperation between the government of Norway and the Global Crop Diversity Trust, the vault is cut into rock near Longyearbyen, keeping it at a natural – 6 degree C and refrigerating the seeds to -18 degree C. It is also referred as Earth's dooms day vault.
- **IndARC:** It is India's first underwater moored observatory in the Arctic region. It was deployed in 2014 at Kongsfjorden fjord, Svalbard, Norway. It is focused on studying arctic climate



2) S&T: SPACE

- **Why in news?**
 - Norwegian Ambassador Han Jacob Frydenlund's visit to ISRO's headquarters (June 2023)
- In June 2023, Norwegian Ambassador Frydenlund, accompanied by officials of Kongsberg Satellite service (KSAT), called on ISRO Chairman S. Somanath in Bengaluru, ISRO. The meeting concluded with a mutual agreement on the importance of maintaining a continued partnership and fostering increased engagements between India and Norway.

- It also offered an occasion to recall the 'Svalbard mission' of 1997.

A) SVALBARD MISSION OF 1997

- On Nov 20, 1997, a Rohini RH-300 Mk-II sounding rocket rose to the skies from Svalbard, Norway, operationalizing a new rocket launching range.
- ISRO bagged the Norway mission after its commercial arm Antrix Corporation won a global tender floated by the Norwegian space agency.
- The RH-300 MK-II was given a new name by the NSC (Norwegian Space Centre): **Isbjorn-1**, which translates literally as 'Polar Bear-1'.



CURRENT AFFAIRS PROGRAM

PRE-CUM-MAINS 2024

JUNE 2023- BOOKLET-3

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LevelupIAS

1) GEOGRAPHY: HEAT WAVES

- **Why in news?**
 - Many Heat wave deaths in Uttar Pradesh and Bihar (June 2023)
 - Earlier in April 2023, **13 people died from apparent heatstroke** while attending a government award function in an open space in Navi Mumbai. This is possibly the **biggest ever heatwave-related death toll from a single event in the country** and brings back to spotlight on potential risks from heatwaves, whose intensity and frequency is expected to rise because of climate change.
- **Example Questions**
 - What are heat waves? Suggest a strategy to reduce India's vulnerability to heatwaves. [15 marks, 250 words]
 - With a focus on the Oct 2019 guidelines from the National Disaster Management Authority (NDMA), discuss the mechanisms for preparedness to deal with Heat Waves in India. [15 marks, 250 words]
 - Heatwaves can pose economic challenges to various sectors. Evaluate the economic consequences of heatwaves on industries such as agriculture, tourism, and energy, and suggest some measures to minimize their adverse effects [15 marks, 250 words]
- **Definition**
 - A heat wave is a **period of abnormally high temperatures, more than the normal maximum temperature** that occurs during the **summer season** usually in the north-western parts of India. In India, heat waves **typically occur between March and June**, and in some rare cases extend till July.
 - **Indian Meteorological Department (IMD)** has given following criteria for heat waves.
 - **Maximum Temperature of at least 40 degree Celsius for Plains, 37 degrees Celsius for coastal regions** and atleast **30 degree Celsius for hilly regions**.
 - Following conditions are used declare heat waves:
 - a. **Based on Departure from Normal**
 - **Heat Wave:** Departure from normal is 4.5 degree to 6.4 degree.
 - **Severe Heat Wave:** Departure from normal is > 6.4 degree.
 - b. **Based on Actual Maximum Temperature (for plains only)**
 - **Heat Wave:** When actual maximum temperature \geq 45 degree Celsius
 - **Severe Heat Wave:** When actual maximum temperature \geq 47 degree Celsius.
- **Increasing cases of Heat Waves in India:** According to Lancet Report, India faced **60 million heatwave exposure events** in 2016, a rise from 40 million exposures in 2012. Similarly, the **average length of heat waves** in India ranged from **3-4 days**, which is more than double of **global average of 0.8 - 1.8 days**. The key factors responsible for this are:
 - **Climate change -> higher temperatures**
 - According to a report by UNICEF "*The Coldest year of the Rest of Their Lives*" - **nearly every child will face frequent heatwaves by 2050**.
 - **Sparser Pre-Monsoon shower and Delayed Monsoon**
 - This weather pattern coupled with **El-Nino effect**, which often increases temperature in Asia, combine to create the record high temperatures.

- The **Loo (hot and dry winds)** originating from **Pakistan and Northwest India**, has also contributed to increasing temperature in India.
 - **Urbanization and its problems like Urban Heat Island (UHI) Effect** exacerbates the problem of heat wave in many parts of our country.
 - **Decreasing Tree Covers** -> concrete jungles, land heats up more.

- **Impact of Heatwaves**
 - **Health Impacts**
 - The heat waves are associated with increased rate of heat stress and heat stroke, worsening heart failures and acute kidney injury from dehydration.
 - Children, elderlyies and those with pre-existing morbidities are particularly vulnerable.
 - According the NDMA, more than 24,000 people have died in India due to heat waves between 1992-2015.
 - **Economic Loss**
 - According to Lancet, the output of workforce in India declined by 7%, equivalent to 75 billion labor hours every year.
 - **Worsening of air pollution problems** -> increased electricity use -> more fuel burned.

- **Steps Taken So Far**
 - The **IMD** has regularly issued heat wave warnings in different parts of the country to make people aware of the worsening situation.
 - The **NDMA** has suggested things like covering of head, cross-ventilating rooms and sleeping under a slightly wet sheet.

- **NDMA's revised guidelines for prevention and management of Heat Waves in India (Oct 2019)**
 - **Aim/Objective**
 - The guideline aims to provide framework for developing Heat Action Plans for implementation, inter-agency coordination and impact evaluation of heat wave response activities in cities/towns.
 - **Developing a Heat-wave Plans**
 - Generating heat wave risk and vulnerability map and mapping hotspots for developing a strategic mitigation action plan.
 - Identifying **Vulnerable Population** - elderlyes, pregnant women, chronic disease patient, resident of a particular type of housing, certain type of occupations etc.
 - **Identification and Evaluation of factors** leading to disproportionate increase in temperature in the city.
 - **Reducing Temperature** in the cities through vertical gardens, small parks with water fountains etc.
 - Coordinate with Research institutions for better built environment.
 - Government budget should allocate funds for R&D in this field
 - Curb Future UHI manifestation by incorporating findings from the built environment assessment
 - Adhere to city building codes.
 - Preparedness at the local level for health eventualities.
 - Health care system capacity building
 - Collaboration with private and Non-Government and Civil Society

- Establish Early Warning System and Communication Systems
 - Developing inter-agency response plan and coordination in the field.

- **Other Steps that can be taken:**
 - **Preparedness:** Already discussed with NDMA guidelines
 - **Response:**
 - Ensuring quick advanced communication and guidelines during heatwave condition.
 - Drinking water supply should be increased along the roadside during heatwave conditions
 - Health facilities should respond with all the relevant facilities.
 - **Other steps:**
 - **Reviewing the existing occupational health standards, labor laws, and sector regulation** for worker's safety.
 - **Special focus on farm laborers** as the agricultural sector was more vulnerable compared to the industrial and service sectors because workers there were more likely to be exposed to heat.
 - Increased work on amenities like increased access to drinking water, indoor ventilation, healthcare, regular work breaks, and protection against wage loss.
 - **Promoting more greenery throughout the city** especially on both sides of the roads to ensure cooler roads.
 - **Making communities more aware and resilient** to after effects of the heatwaves.
 - Internationally, the **global community** should work towards achieving the climate change mitigation goals by working towards Paris Climate targets and making the NDCs more ambitious.

A) PRELIMS UNDERSTANDING: WHAT IS HEAT STROKE?

- A heat stroke happens when the ambient temperature is so high that the body's cooling mechanism (sweating) is not able to bring down the temperature of the core. The body temperature may shoot upto 40-degree C. In these situations there is severe imbalance of salts such as sodium and potassium in the body.
- The high core temperature coupled with salt imbalances disrupts the organs, leading to host of symptoms.
 - It can affect the brain, making a person foggy, drowsy, and in severe cases may also lead to a person going into a coma.
 - It can also lead to kidney and liver damage as well.
- A cascade of such symptoms may also lead to death due to heat stroke.
- **What should be done during such situations:**
 - In severe cases, the aim is to bring down the core temperature of the body fast. This can be done by pouring cold water over the person, making them drink cold drinks, and giving them electrolytes to balance salt levels.
 - **Visit hospitals quickly** if they are exhibiting symptoms like high body temperature, but no sweat, feeling drowsy, vomiting, not passing urine, and not breathing properly.
- **How to prevent heat stroke?**
 - Don't go out between 12 noon - 3 pm. Avoid strenuous activities during this period.
 - If you have stepped out, ensure that you are drinking water even if you don't feel thirsty. Drink other hydrating fluids, like Lassi, lemon water, buttermilk, or ORS that can maintain electrolytes levels.
 - Don't consume coffee, tea, and carbonated drinks as they by dehydrate you further.
 - Wear light weight, light-colored, loose, and porous cotton clothes.

2) GEOGRAPHY: URBAN HEAT ISLAND (UHI) EFFECT

- **Probable Questions?**
 - i. What is Urban Heat Island? What are the key factors responsible for the phenomena. [150 words, 10 marks]
 - ii. "Urban Heat Island effect is accentuated by rapid urbanization". Elaborate. Suggest some measures to deal with the phenomena. [200 words, 12.5 marks]
- **Introduction**
 - UHI is an urban area which is significantly warmer than the surrounding rural areas.
 - The temperature difference is more stark during the day hours and night. Weak winds reduces the heat transfer and makes this phenomena more apparent.
- **Causes**
 - The main cause of UHI effect is the modification of land surfaces.
 - Extensive concrete and asphalt surfaces, which absorb and retain heat from sun. These materials have low albedo (reflectivity) and high heat capacity, leading to absorption and storage of solar radiation.
 - Unscientific Urban Planning and Layout may also be responsible for UHI effect. Density of buildings, street patterns, and the arrangements of tall structures may affect the air flow and restrict the dissipation of heat.
 - Decreased vegetation cover and reduction in agri fields: Vegetation help in regulating temperature by a process of evatranspiration. In the absence of vegetation, this cooling effect reduces.
 - Decrease in water bodies (like lakes and ponds) over the years reduce the cooling effect during summers.
 - Increasing population also increase the human generated heat through refrigerators, ACs etc.
- **Harmful Impacts**
 - UHI increases the probability of long duration heat waves and it also exacerbates the impact of heat waves.
 - It leads to increased energy consumption. This is due to greater demand for cooling in hot weather conditions
 - Elevated Emissions of Air Pollutants and Greenhouse Gases
 - Increased energy consumption leads to more greenhouse gas emissions as more fossils will be burned for the energy.
 - Fossil fuels also produce other harmful pollutants such as Sulphur dioxide, Nitrogen oxides, Particulate Matter, Carbon monoxide etc.
 - The pollutants further result in formation of ground level ozone, acid rains etc.
 - Ozone is formed when NO_x reacts with Volatile Organic Compounds in presence of sunlight. If environment becomes hotter, more ground level ozone will be formed.
 - It also decreases water quality as warmer waters put stress on the ecosystem.
 - Storm water which gets warm will affect the nearby ponds, lakes and rivers too.
 - **Infrastructure Damage:** The excessive heat in urban areas can cause damage to infrastructure, particularly roads, pavements and buildings.
 - Some experts believe that it may be contributing to global warming.
- **Some positive impacts**
 - Lengthening the plant growing season in very cold regions.
- **How Urban Heat Island effect can be mitigated?**
 - **Proper Urban Planning** - keep UHI effect in mind, while planning urban development.

- Lower building height, aligning streets against the sun's path (i.e. in north-south direction) could prevent new layouts from heating up.
 - Focus on energy efficient buildings which will ensure insulation, high-performance windows etc.
 - Create monitoring systems to automatically identify UHIs.
 - **Green Infrastructure**
 - It includes Green Roofs (Roof partially or completely covered by vegetation)
 - Painting house in light colors
 - Promoting urban forestry (For e.g. use Miyawaki method)
 - **Protect Water Bodies and Permeable Surface:**
 - This will ensure high soil moisture and proper cooling of cities.
 - **Community Engagement and Education**
 - Promoting behavioral changes like reducing energy consumption, planting more trees, etc.
 - **Collaborative governance:**
 - Promote collaboration between various stakeholders like state government, local bodies, NGOs etc.
- **Conclusion:**
- These measures can not only help mitigate UHI effect, but can also improve urban resilience, enhance public health and create sustainable and livable cities.

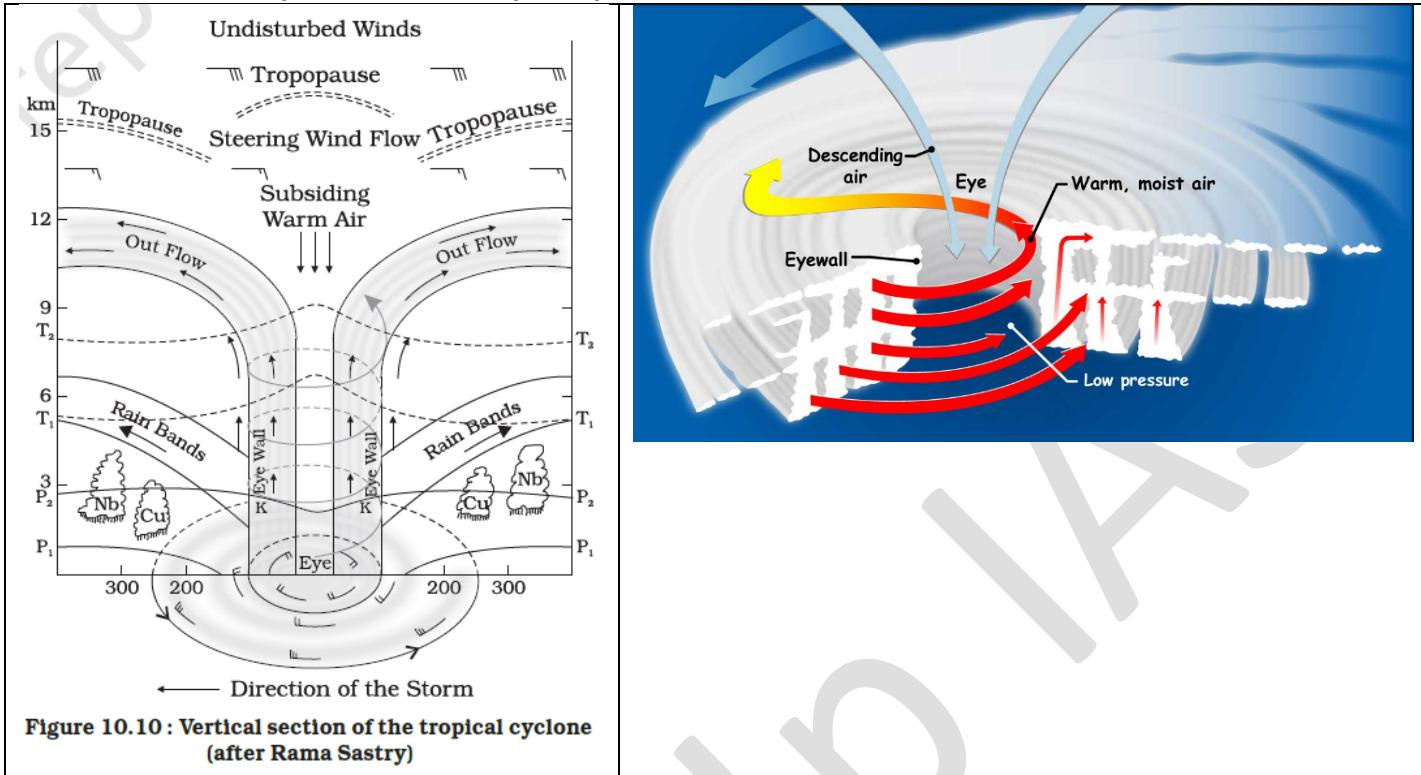
3) GEOGRAPHY: CYCLONES

- **Syllabus:** Important Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, **cyclone** etc., geographical features and their location - changes in critical geographical features (including waterbodies and icecaps) and in flora and fauna and the effects of such changes
- **Why in news?**
 - **Cyclone Biparjoy** (June 2023)
- **Example Questions**
 - Tropical Cyclones are largely confined to South China Sea, Bay of Bengal and Gulf of Mexico. Why? [12.5 marks, 200 words] [Mains 2014]
 - The recent Cyclone on the coast of India was called "Phailin". How are the tropical cyclones named across the world? [Mains 2013] [10 marks, 150 words]
 - Why is east coast of India more prone to tropical cyclones compared to west coast of India? [10 marks, 150 words]
 - Discuss the conditions required for the formation of a tropical cyclone [10 marks, 150 words]
- **Introduction**
 - Tropical cyclone is a violent storm system characterized by a low pressure centre, strong winds and heavy rainfall. They originate over oceans in tropical areas and move to coastal areas bringing about large scale destruction. It is one of the most devastating natural calamities.

Prelims	Different names
	<ul style="list-style-type: none"> ▪ Cyclones - Indian Ocean region ▪ Hurricane - Atlantic / East pacific ▪ Typhoons - West Pacific and South China Sea

- **How does a cyclone originate and intensify?**
 - Tropical cyclones originate over warm tropical oceans.
 - **The condition favorable for the formation and intensification of tropical storms are**
 - a. Large Sea surface with temperature higher than 26.5 degree celsius to a depth of atleast 50 meters below the surface.
 - b. Presence of the Coriolis force (A distance of atleast 500 km from equator) (as Coriolis force is zero at equator)
 - c. Small variation in the vertical wind speed (low wind shear i.e. there is not too much change in wind direction and strength at different levels)
 - d. Pre-existing weak low-pressure area or low-level cyclonic circulation
 - e. Upper divergence above the sea level system
 - f. If ITCZ is away from Equator, the tropical cyclone are intensified because of warm air masses converging at ITCZ.
- **Process of formation of a tropical cyclone**
 - Warmer ocean surface (generally late summers) -> Low pressure center on water bodies -> winds from surrounding region are attracted towards this region -> while rising up they release the latent heat which acts as an energy for tropical cyclone.
- **Process of intensification of storm**
 - The energy that intensifies the storm, comes from the condensation process in the towering cumulonimbus clouds, surrounding the center of the storm. With the continuous supply of moisture from the sea, the storm is further strengthened.
- **Various stages in formation of a tropical cyclone**
 - **Tropical Depression** (wind speed < 62km/h) -> **Tropical Storm** (wind speed > 62 km/h) -> **Cyclone** (Wind speed >= 119 km/h) -> **Super Cyclone** (wind speed >= 320 km/h)
- **Tropical Cyclone Structure**
 - Because the converging wind spiral inward towards the central low pressure area, the wind rotate in a counterclockwise direction around the central low in the northern hemisphere (clockwise in the southern hemisphere). As these winds spiral inward they draw in the thunderclouds around the storm, creating the spiral rain bands that are clearly visible on satellite images of the storm.
 - As the winds converge toward the central core, they spiral upwards, sending warm moist air upwards. As this air rises, it cools and releases its latent heat into the atmosphere to add further energy to the storm.
 - The winds spiraling around this central core create the eye of the tropical cyclone and eventually spread out at high altitudes. Eventually, cool air above the eye begins to sink into the central core. This dry descending air within the eye gives the core a clear, cloud free sky, with little to no wind. The wind is coming inwards towards the center from all direction. This convergence causes the air to sink in the eye. This sinking creates a warmer environment and the clouds evaporate leaving a clear area in the centre.
- **Dissipation**
 - Since the main source of energy for the storm is the heat contained in the warm tropical and subtropical oceans, if the storm moves over the land, it is cut off from its source of heat and will rapidly dissipate.
- **Other terms**
 - **Land fall:** It refers to the centre of a storm - or its eye - moving over land from the sea.

- A Schematic representation of tropical Cyclone



- Useful Video:

- <https://youtu.be/UKL9NIxLIIE> (Formation of a Tropical Cyclone)

A) WHY TROPICAL CYCLONES DON'T ORIGINATE ON WESTERN COAST OF S AMERICA, AFRICA AND AUSTRALIA

- Cold Ocean Currents -> don't let shifting of ITCZ -> warm air don't converge here.

B) HOW ARE CYCLONES ORIGINATING IN INDIAN OCEAN NAMED?

- The system of naming of Atlantic cyclones (hurricanes), is a fairly old practice, but giving names to cyclones that originate in the northern Indian Ocean and affect South Asian countries began only at the turn of this century.
- Currently, the Cyclones worldwide are named by 9 regions - North Atlantic, Eastern North Pacific, Central North Pacific, Western North Pacific, North Indian Ocean, South West Indian Ocean, Australian, South Pacific, and South Atlantic.
- The system of naming cyclones was finalized at a meeting of World Meteorological Organization (WMO) and the United Nation Economic and Social Commission for Asia and the Pacific (ESCAP) in 2000, and the first cyclone was named in 2004.

- Eight north Indian ocean countries, namely Thailand, Myanmar, Bangladesh, India, SriLanka, Pakistan, Maldives, and Oman were asked to contribute names so that a combined list could be compiled. Each country gave 8 names and a combined list of 64 names were prepared by the Regional Tropical Cyclone Committee.
 - One name from each country is picked in an order to name the cyclones.
 - The Cyclones in North Indian Ocean basin are named by Indian Meteorological Department and the first tropical cyclone was named in 2004 as Onil (given by Bangladesh).
 - This list exhausted with Cyclone Amphan in 2020.

The latest list of tropical cyclone names was adopted by the WMO/ United Nations Economic and Social Commission for Asia and the Pacific (WMO/ESCAP) panel countries in April 2020 for naming of tropical cyclones over north-Indian ocean, including Bay of Bengal and Arabian Sea.

- The 13 panel countries - Thailand, Myanmar, Bangladesh, India, Sri Lanka, Maldives, Pakistan, Iran, Yemen, Oman, UAE, Qatar and Saudi Arabia - have submitted a list of 13 names each [total 169]
- Why Name a Cyclone: Ease of Communication
 - Remembering cyclones or discussing their impacts, or warning people about them, becomes easier with a name.
 - Giving a name to a cyclone makes it easier to spread the word.

C) CYCLONE COLOR CODING

- IMD has its own color-coding system for warning and information regarding cyclones. It is used to signify the intensity of the situation and the warning associated with it. The main objective of the color coded system is to alert people of hazardous weather conditions which have potential to damage properties and lives.
 - Green: All is well - no adverse weather conditions
 - Yellow: It asks the 'guards to be updated' to handle the bad weather that can last for days, with a warning of affecting daily activities.
 - Orange: "Be Prepared" - It can be warning for extreme damage to communication disruptions that can lead to power cuts, road and railway blockade.
 - Red: It is the highest level of warming that notifies the authorities to take action. This is a case in which there is a threat to life with the worst weather conditions.

D) CYCLONE BIPARJOY (JUNE 2023)

- Some unique aspects about Biparjoy:
 - It was a slow cyclone. It developed into a cyclonic storm on 6th June 2023 and made a landfall on June 15. The 10 day life period, during which it developed into a very severe cyclonic storm and then an extremely severe cyclonic storm, was longer than the average but not the longest. One of the reasons for its longer stay on the sea was its relatively slow speed.
 - Cyclones in the Arabian Sea typically progress with a speed of 12-14 km per hour. Biparjoy, through most of its life, moved at a speed of 5-7 km an hour while covering a distance of nearly 1200 km to Gujarat.
 - Reason: Biparjoy was sandwiched between two anti-cyclonic systems. One of them had the effect of aiding its northwards movement, while the other was sort of pulling it back. The combined effect was that it moved relatively slow.

- **Impact:** The slow speed meant that even after reaching land, the cyclone remained close enough to the sea to draw moisture and sustain itself. This allowed it to penetrate much deeper in land (till Ajmer, Rajasthan)
- It was a **recurring tracks cyclone**.
 - The influence of these anticyclonic systems also made its trajectory wobble. We call it recurring tracks cyclone. The trajectory of such cyclones tends to change directions frequently.
 - Therefore, it was only from 11th June, it was concluded that cyclone is hitting Gujarat coast (earlier it was presumed to be hitting Karachi)

E) EXCELLENT WORK OF DISASTER MANAGEMENT:

- **Excellent Forecasting:** Management of recent Cyclone Biparjoy indicates that India has successfully planned and executed integrated forecast systems and computational infrastructure to reduce cyclone mortality by nearly 90% (when compared to the first decade of 21st century).
 - **Early warning** (4 days in advance before landfall) gave enough time for administration to prepare.
 - **Note:** A cyclone in 1998, that stuck Gujarat, reportedly killed nearly, 3,000 people, and it can be safely said that India has moved beyond that era.

F) WHY ARE TROPICAL CYCLONES BECOMING MORE DANGEROUS?

- **Climate Change -> Marine Heatwaves**
 - Ocean absorbs most of the access heat in the atmosphere, it is leading to oceans warming up globally causing marine heatwaves.
- **Warming of oceans** is leading to other challenges like increased intensity of cyclones, rising sea levels, and changing weather patterns globally.
 - For e.g., a new study has suggested that warm subsurface waters in the Bay of Bengal has likely helped fuel the 2020 Amphan super cyclone.

G) WAY FORWARD:

- With climate change, **be prepared for stronger cyclones**.
- **Coastal Regulation Zone Rules** should be followed in letter and spirit.
 - Further, it should also specify that only those structures, which are capable of withstanding these cyclones are built in these regions.
- The **dwelling of rural, coastal inhabitants must be strengthened**.
- **Increase green cover** like Mangroves which act as natural shield and improve resilience of coastal areas.
- **Forecasting should continue to improve**.
 - There should also be focus on maximizing skills of the forecasts of cyclone intensities, lifespans, speeds, and tracks.
 - **India's academic climate community** should build teams to work with IMD to advance understanding of cyclone processes and to improve cyclone predictions.

1) SOCIAL JUSTICE: LGBTQIA+

- **Example Questions**
 - "Legal provisions alone will not be able ensure equal rights for Transgenders, social attitude towards them needs to change" Discuss [15 marks, 250 words]
- **Introduction**
 - **LGBTQIA++** is an inclusive term that includes people of all genders and sexualities, such as lesbian, gay, bisexual, transgender, questioning, queer, intersex, asexual, pansexual, and allies.
 - **LGB** (Lesbian, Gay, Bisexual)
 - **Who are Transgenders?**
 - People who have a gender identity or expression that differs/doesn't conform to the social expectations for their assigned sex. They are sometimes called transsexual if they desire medical assistance to transition from one sex to another.
 - Transgenders also include people who are not exclusively masculine or feminine (people who are genderqueer/non-binary).
 - **Intersex** - Individuals who don't fit into specific gender norms of woman or man; can also be used for those with reproductive anatomy that isn't biologically typical.
 - **Questioning** - when a person is exploring their sexuality, gender identity and gender expression
 - **Queer** - An inclusive term or as a unique celebration of not molding to social norms
 - **Asexual** - used for those who don't feel sexual attraction to either sex or that don't feel romantic attraction in the typical way.
- **Population:** Estimated transgender population > 4,90,000 (2011 census)
 - But the transgender activists estimate the population to be 5-6 times more.
 - In the United States 0.3% people identify themselves as transgender indicating that our census numbers are big under-estimation.
 - It further shows that people in India still have to hide their identity as transgender.
 - **Nodal Ministry :** Ministry of Social Justice and Empowerment.
- **Problems faced by Transgenders:**
 - Discrimination in Family
 - Family gives up the child; higher rate of domestic violence; Orthodox mindset considers birth of transsexual as ill omen.
 - social stigma.
 - discrimination in all walks of life (Education, Health, Work, Access to Public Facilities; Denial of residence);
 - lack of self-determination (mis categorization as males or females);
 - police harassment.
 - insensitive laws (provisions for transgenders missing);
 - For e.g.
 - personal marriage laws don't legalize homosexual marriages.
 - Laws related to adoptions (The Hindu Adoption and Maintenance Act, 1956 (HAMA), and Juvenile Justice Act (JJA) - both laws - don't mention anything about adoption by homosexual couples.

- sexual harassment;
 - Lack of understanding in society -> makes them feel isolated, lonely and may cause mental health issues.
- **Important steps taken for their welfare so far**
 - i. **Supreme Court Judgment in 2014: National Legal Service Authority vs. Union of India**
 - Declared Transgender people to be a 'third gender'.
 - Affirmed that fundamental rights granted under Constitution of India will be equally applicable to transgender people
 - Gave them right to self-identification of their gender as male, female or third gender.
 - The court also recognized transgender people as **socially and economically backward classes** and hence should be granted reservation in educational institutions and jobs.
 - i. **Steps taken by various state governments**
 - Some states like Bihar have already provided them reservations as OBCs.
 - The state of Kerala had become the first state to announce the policy for transgenders in 2015. It has recently announced reservation in Higher educational institutions for transgenders.
 - States like **TN, Rajasthan**, and Chhattisgarh have also allowed hiring of transgenders in police forces.
 - iii. **Transgender Persons (Protection of Rights) Act, 2019**
 - iv. **Transgenders Persons (Protection of Rights) Rules, 2020**
 - v. **National Council for Transgender Persons constituted (Aug 2020)**
 - vi. **National Medical Commission declared conversion therapy a 'professional misconduct'** and empowered the State Medical Councils to take disciplinary action if the guideline is breached.
 - Earlier, Madras High Court had directed NMC to issue an official notification listing conversion therapy as a wrong, under the Indian Medical Council (Professional Conduct, Etiquettes and Ethics).
 - vii. **Shelter Homes - 'Garima Greha' (July 2021)**
 - Shelter Homes - 'Garima Greha' for Transgenders: MoSJ&E has initiated 12 pilot shelter homes and provided financial assistance to community based organizations (CBOs) for setting up of shelter homes 'Garima Greha' for Transgender Persons. (July 2021)
 - These pilot shelter homes are in States of Maharashtra, Delhi, West Bengal, Rajasthan, Bihar, Chhattisgarh, Tamil Nadu and Odisha.
 - The main aim of these shelter homes is to provide safe and secure shelter to Transgender persons in need. These shelter homes would provide basic amenities like food, medical care, recreational facilities and also conduct capacity-building/skill development programmes for Transgender persons.
 - viii. **National Portal for Transgender Persons**
 - The portal provides for the **procedure for identification certificates issued by the District Magistrate**. It is functional in all districts of the country.
 - The portal was launched in Nov 2020.
 - As of June 2021, i.e. within 6 months of its launch, the portal has issued 1,557 certificates.
 - x. **IWEI - India Workplace Equality Index (Dec 2020)**
 - It is touted as the country's first comprehensive benchmarking tool for employers to measure their progress on LGBT+ inclusion at the workplace.

- It was launched in Dec 2020 by **non-profit Keshav Suri Foundation** (founder Hotelier-activist Keshav Suri) partnered with **Pride Circle, Stonewall UK** and **FICCI**, to bring the IWEI to India Inc.
 - The index **measures 9 areas**: policies and benefits, employee lifecycle, employee network group, allies and role models, senior leadership, monitoring, procurement, community engagement and additional work.
 - **Standard Chartered Bank** has been named as a 'Gold Employer' in the Indian Workplace Equality Index 2021 for its LGBT+ inclusion.
- **Steps that further needs to be taken**
 - i. **Proper estimation**
 - ii. **Sensitization and Awareness to deal with stigmatization**
 - Inclusion of third gender in school books
 - Information, Education and Communication Programs
 - iii. **Ending all forms of discrimination, coming up with welfare schemes etc.**
 - Effectively enforce the 2019 act
 - iv. **Reservation in educational institutions and jobs**
 - This will help in dealing with poor literacy rate and employment situation
 - v. **Special focus on their health needs**
 - Community had been demanding mental health counselling support and free gender transition surgery facilities in government hospitals.
 - vi. **Rehabilitation**
 - A large number of them are involved in flesh trade. There should be a plan to rehabilitate them in various other sectors
 - vii. **Transgender Welfare board in all states** should be made mandatory.
 - This will provide an institutional set up to look after the welfare of the transgender community.
 - viii. **Reforming Personal Laws** to make them more inclusive.

2) THE TRANSGENDER PERSONS (PROTECTION OF RIGHTS) ACT, 2019

- **Main Provisions**
 - i. **Definition of Transgenders:**
 - A person whose gender doesn't match the gender assigned at birth. It includes trans-men and trans-women, persons with inter-sex variations, gender queers, and persons with social cultural identities such as Kinnar and Hijra.
 - **Intersex variations** is defined to mean a person who at birth shows variations in his or her primary sexual characteristics, external genitalia, chromosomes, or hormones from the normative standard of male or female body.
 - ii. **Prohibition Against Discrimination:** The act prohibits the discrimination against a transgender person, including denial of services or unfair treatment in relation to, Education, Health, Employment, access to or enjoyment of goods, facilities, opportunities available to public; Right to movement Right to reside, rent, own or otherwise occupy property, Opportunity to hold public or private office;
 - iii. Every transgender person shall have **right to reside** and be included in the household.
 - If the immediate family is unable to care for transgender persons, the person may be placed in a rehabilitation centre, on the orders of a competent court.

- iv. **Health Care:**
 - The government must take steps to provide health facilities to transgender person including separate HIV surveillance center, sex reassignment surgeries, etc.
 - The government shall review medical curriculum to address health issues of transgender persons, and provide comprehensive medical insurance scheme for them.
- v. **Certificate of identity:** A transgender person may make an application to the District Magistrate for a certificate of identity, indicating the **gender as 'transgender'**. A revised certificate may be obtained only if individual undergoes surgery to change their gender either to male or a female.
- vi. **Welfare measures by government**
 - The act directs central and state governments to take measures to ensure the full participation of transgender persons in society.
 - Government must also take steps for their rescue and rehabilitation, vocational training and self-employment, create schemes which are transgender sensitive, and promote participation in cultural activities.
- vii. **Offences and penalties:** -> Forced labour; denial of public space; removal from household, village; physical, sexual, verbal abuse etc.; These offences will attract imprisonment between six months and two years, and a fine.
- viii. **National Council for Transgenders persons (NCT)**
 - The National Council of Transgender persons will consist of
 1. Union Minister for Social Justice (Chairperson)
 2. Minister of State for Social Justice (Vice-Chairperson)
 3. Secretary of Ministry of Social Justice
 4. One representative from ministries including health, home affairs and human resource development
 5. Representatives from other ministries, NITI Aayog and the NHRC.
 6. Five members from transgender community and five experts from NGOs.
 - The council will advise the central government on the formulation and monitoring or policies, legislation and projects with respect to trans gender person.

- Analysis

- **Positives**
 - The act is in spirit with International Conventions, particularly the Universal Declaration of Human Rights, 1948, the International Covenant on Civil and Political Rights, 1966, and the Yogyakarta Principles 2006.
 - It recognizes gender identity as non-binary. Through this act the government has evolved a mechanism for social, economic and educational empowerment of the transgenders.
 - The act will benefit a large number of transgenders persons, mitigate the stigma, discrimination and abuse against this marginalized section and bring them into mainstream of society.
 - It will lead to greater inclusiveness and would make transgender persons as productive member of society.
 - The bill will bring greater accountability on the part of the central government and state government/ union territories administrators for issues concerning transgender persons.
- **Negatives/Limitations/Shortcomings**
 - i. **Principle of Self Determination/ Self Identification missing**
 - NALSA verdict had suggested that anyone who didn't identify with the gender assigned to them by birth could choose to identify as transgender without needing a physical

- examination and certification, the new bill undoes this possibility both in spirit and in practice.
- In fact, the parliamentary standing committee on the bill, which submitted its report in July 2017 have called for many modifications including the change in definition to ensure conformity with the international definition and providing right to self-identification.
 - In the current act, there are no avenues open either for appeal in the event a magistrate refuses to hand out such a certificate.
- ii. **Doesn't suggest changes in other laws**
 - Certain criminal and personal laws currently only recognize the genders of 'man' and 'women'. It has not been defined how such laws will be applicable to transgender persons.
 - iii. **National or State Commissions: No provision** for national or state commission for transgenders
 - NCT, lack the power of commission, which is statutory in nature
 - iv. **Transgender Rights Court: No provision for transgender right courts**
 - v. **Reservation: Silent on any kind of reservation** for transgender persons in education system
 - vi. **Lack of clear grievance redressal mechanism and insufficient punishment**
 - The act is ambiguous about the methods individuals must follow to seek justice, limits the jail sentences that the offender may receive to just two years.
 - vii. **Only covers transgender** (protection may be needed by Intersex, Queer, lesbians, gays, bisexuals etc. as well)
- **Parliamentary standing committee on the bill submitted its report in July 2017 and suggested following changes.**
 - a. Self-identification to bring conformity to international definition
 - b. Providing transgender persons with medical benefits
 - c. Providing quotas in government college and jobs
 - d. Recognize the rights of transgenders person to partnerships and marriages
 - **This has become more crucial after decriminalization of homosexuality by Supreme Court.**
 - **Conclusion1**
 - With various judicial and legal efforts, NALSA Judgment, Transgender Persons (Protection of Rights) Act, 2019 etc., the environment for transgender persons is changing in the country. But, still we need to go a long way in creating a society completely inclusive of LGBTI++ community.
 - **Conclusion2**
 - We need to emulate Kerala Model throughout the country. This state, in last 12 years have turned from a society which was very discriminatory against transgenders to a society which is very inclusive towards transgenders. All this is a result of strong political will where politicians and administrators have acted to reform social attitudes.

3) PRELIMS: INTERSEX INCLUSIVE PROGRESS PRIDE FLAG

- Why in news?

The month of June is recognized as the Pride Month all across the world. While many organization still use the older rainbow pride flag (a simple red to violet rainbow) in their events, the new variation is increasingly accepted as a more inclusive representation of the LGBTQIA+ community (June 2023)

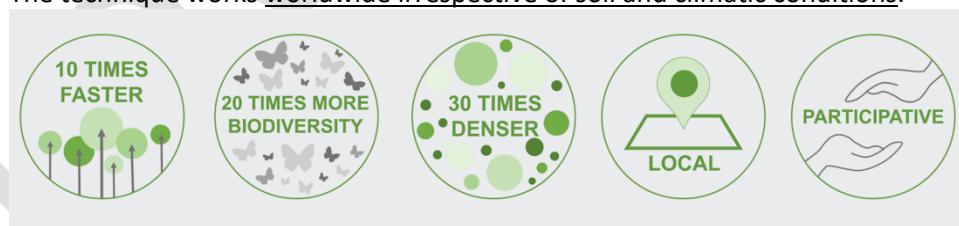


- A Pride flag essentially represents the pride associated with LGBTQIA+ social movement. For centuries people belonging to the community have had to fight for basic rights in countries across the world. The struggle continues in many countries. Uganda, for instance, recently passed a law criminalizing the LGBTQIA+ community.
- History of Pride Flag:
 - The simple rainbow pride flag, designed by Baker, made its debut in 1978 at the San Francisco Gay Freedom Parade. The new flag is based on this very flag.
 - In 2018, American Graphic Designer Daniel Quasar redesigned the flag to include the colors of the transgender flag, blue, light pink, and white. Quasar added the transgender colors along with black and brown color (representing the people in color) in a chevron shape to represent forward movement.
 - The most recent version of the flag is designed by Valentino Vecchietti in 2021 as an inter-sex inclusive Pride flag. A purple circle over a yellow triangle was included in the chevron part of the pride flag. This is a reference to the Intersex pride flag.
 - Why is it called inter-sex inclusive Progress Pride Flag:
 - The intersex has been largely been under-represented within broader queer narratives.
 - According to UN, intersex people are born with sex characteristics (including genitals, gonads, and chromosome pattern) that don't fit typical binary notions of the male or female bodies.
 - In 2021, Intersex Equality Rights (UK) decided to adapt the Pride Progress flag design to incorporate intersex flag, creating the new inter-sex pride flag. Intersex equality rights activists did the redesigning. The colors yellow and purple are used in the intersex flag as a counterpoint to blue and pink which are traditionally seen as gendered colors.

- What do colors of the new flag signify?
 - Red - Life
 - Orange - Healing
 - Yellow - New Ideas
 - Green - Prosperity
 - Blue - Serenity
 - Violet - Spirit
 - Chevron Part:
 - Black and Brown = People of color
 - White, blue and pink = Trans people
 - Yellow with purple circle = Intersex People

1) ENVIRONMENT: MIYAWAKI FORESTS

- **Why in news?**
 - PM Modi talks Miyawaki forests in Mann ki Baat (June 2023: Source - IE)
- **Practice Questions:**
 - Discuss the Miyawaki method of afforestation and its significance in the context of ecological restoration and climate mitigation [10 marks, 150 words]
 - Critically analyze the advantages and limitations of the Miyawaki method compared to traditional afforestation approach. Discuss its potential application and suitability in different regions of India. [15 marks, 250 words]
- **What is Miyawaki Forest?**
 - Miyawaki Forests (also known as Miyawaki method or Miyawaki technique), refer to a unique approach to afforestation and ecological restoration developed by Japanese Botanist Dr Akira Miyawaki. He is a recipient of the 2006 Blue Planet Prize, which is the equivalent of a Nobel prize in ecology.
 - This method aims to create dense, fast growing forests in a short period of time, typically 20-30 years, by emulating the natural growth process of the forests.
- **Details of the method and its advantages:**
 - The method take its inspiration directly from process and diversity in nature: 15 to 30 different species of trees and shrubs are planted together. This plant community works very well together, and is perfectly adapted to local weather conditions.
 - The habitat thus created get more complex over time and attract much more biodiversity. Vegetation becomes much denser than conventional plantations, and it has the structure of a mature natural forest.
 - For e.g. a Kerala based teacher, Raafi Ramnath, has used this method to transform a barren land into a mini forest called Vidyavanam by planting more than a 100 varieties of trees.
 - It is a multistorey structure, where different levels of vegetation appear. The forest thus structured delivers many benefits in the form of ecosystem services.
 - **Faster Recovery:** It would take 200 years to let a forest recover on its own. But with the Miyawaki method a similar result is achieved in 20 years.
 - The technique works worldwide irrespective of soil and climatic conditions.
- **Some challenges and limitations**
 - **Regular Maintenance** requirement: Regular watering, weeding, and pest control can be labor intensive and time consuming
 - **Seed availability** for various kinds of diverse seed is a challenge.
 - **High Initial investment** - Cost of acquiring and preparing land, procuring diverse range of seeds/saplings, and ongoing maintenance expense.
 - **Lack of Long term Data:** Since Miyawaki method is only a few decades old, how sustainable these trees would be over longer period is not very well known.



- **Conclusion:**

- It is important to consider these advantages and limitations when assessing the suitability and feasibility of the Miyawaki method in different contexts. The specific ecological, social, and economic factors of an area should be taken into account for successful implementation and effective decision-making

4. PRELIMS FACTS

1) PLACES IN NEWS: LAKE VICTORIA

- Why in news?

- More robust measures needed to minimize disaster impact in Lake Victoria Basin: Study (June 2023: Source - DTE)

It is the 2nd largest fresh water lake in the world in terms of surface area (after Lake Superior).

It has its boundaries in 3 east African countries (Uganda(45%), Kenya (6%) and Tanzania (49%)). It occupies a shallow depression in Africa.

It is largest lake of Africa.

Source of water for lake Victoria: Mostly rainfall (80%) and thousands of small streams. The Kagera river is the largest river flowing into the lake, with a mouth on lake's western shore.

Lake Victoria is drained solely by the Nile River near Jinja, Uganda, on the lake's northern shore

Mingingo Island

It is a very small island (barely 1/4th of an hectare large) in Lake Victoria.

It is claimed by both Uganda and Kenya and the dispute has continued for a decade now.

The island is a rounded, rocky outcrop which has become densely populated over the last 1 decade.

The surroundings of the island is very rich in fishes and is a fisherman's paradise.

Climate Change threatening Lake Victoria Basin (June 2023)

- A new scientific report published in the journal Nature shows significant precipitation changes and increasing extreme climate events in the near future of the already sensitive region, affecting both its large human populations as well as endemic biodiversity.

Note: Country's forming part of Lake Victoria Basin:

1. Uganda
2. Kenya



Note:

Lake Superior is the world's largest fresh water lake by surface area, third largest by volume, and the deepest, largest and coldest of the Great Lakes of North America.

Lake Baikal (located in Russia in the southern region of Siberia), is the largest freshwater lake by both volume and depth (1741 m). It contains 20% of the world's fresh water. It hides its vast waters under a relatively small surface area.

3. Tanzania
4. Rwanda
5. Burundi

Each of this country contributes water to the lake through various rivers, streams, and direct rainfall.

2) PLACES: VENETIAN GRAND CANAL

Venice: It is a city in north-eastern Italy and is the capital of Veneto region. It is built of 118 small islands. That are separated by expanses of open water and by canals.

Venetian Grand Canal:

It is a channel in Venice, Italy. It forms one of the major water traffic corridors in the city.

One end of the canal leads into lagoon near the Santa Lucia Railway Station and the other end leads into the basin at **San Marco**; in between, it makes a large reverse-S shape through the central districts of Venice.

Why in news?

Venetian canal had turned green. Initially known one was able to give a reason. But in June 2023, authorities found that the test samples of the water confirmed the canal's bright new hue was caused by **fluorescein**, a chemical often used to find leaks during underwater construction. The official are investigating how the chemical got into the canal.



3) CULTURE: GANDHI PEACE PRIZE, 2021

- Gandhi peace price is an annual award instituted by Gol in 1995, on the occasion of 125th Birth Anniversary of Mahatma Gandhi as a tribute to the ideals espoused by Mahatma Gandhi.
- Who can get this award?
 - This award is open to all persons, irrespective of nationality, race, language, caste, creed, or gender.
 - The award carries an amount of Rs 1 crore, a citation, a plaque, and an exquisite traditional handicraft/handloom item.
- Past Awardees include ISRO, RK Mission, Grameen Bank of Bangladesh, Vivekananda Kendra, Akshay Patra, Sulabh International.
 - It has also been awarded to luminaries like Nelson Mandela, Dr Julius Nyerere (Former President of Tanzania) etc.
 - Recent awardees include Sultan Qaboos Bin Said Al Said, Oman (2019) and Bangabandhu Sheikh Mujibur Rehman (2020), Bangladesh.

- The Jury headed by the PM Modi, after due deliberation on 18th June 2023 unanimously decided to select **Gita Press**, Gorakhpur as the recipient of the Gandhi Peace Prize for the year 2021, in recognition of its outstanding contribution towards social, economic, and political transformation through non-violent and other Gandhian methods.
- **More About Geeta Press:**
 - Established in 1923, it is one of the world's largest publishers, having published 41.7 crore books in 14 languages, including 16.21 crore Shrimad Bhagvad Gita. The institution has never relied on advertisement in its publications, for revenue generations.

4) SCIENCE: COCAINE

- **Why in news?**
 - "Black Cocaine" worth Rs 32 crores seized at Ahmedabad International Airport (June 2023: Source - PIB)
- **About Cocaine:**
 - It is powerfully **addictive stimulant drug** made from the leaves of the coca plant native to South America. Although healthcare providers may use it for valid medical purpose, such as local anesthesia for some surgeries, recreational cocaine is illegal.
 - As a **street drug**, it looks like a fine, white, crystal powder.
 - **How does cocaine affect the brain?**
 - It increases levels of the natural chemical messenger dopamine in brain circuits related to the control of movement and reward.
 - **Short term effects:**
 - Extreme happiness/ mental alertness/ hypersensitivity to sight, sound, and touch/ Irritability/ Paranoia - extreme and unreasonable distrust of others.
- **About Black Cocaine:**
 - It is a designer drug wherein cocaine is mixed with charcoal and other chemicals to give it black rubbery appearance to camouflage and to evade detection by Canines and field testing kit. This modus operandi to smuggle cocaine is unique and this is the first instance of seizure of "Black Cocaine" by Directorate of Revenue Intelligence (DRI)

5) SCIENCE: SPACE AND ASTRONOMY: STAR BETELGEUSE

- It is one of the brightest and largest known stars in the Milky Way Galaxy. It is located 700 light years away from Earth. It is part of the Orion constellation and is visible to the naked eye in the night sky.
- **Some Key features:**
 - It is a **Red Supergiant** – Thus it is in the last stage in the life cycle of star.
 - **Very Large:** If placed at the center of our solar system, it would extend out to asteroid belt.
 - **Future Supernova:** It is expected to explode as a supernova within the next 100,000 years – a blink of an eye on a cosmic time scale. This explosion will be a spectacular event, potentially visible from Earth even during the day, and the star will outshine the entire galaxy for weeks of months.
- In late 2019, astronomers around the world grew giddy with excitement, because they saw the **Betelgeuse star get fainter than ever before**. There was some speculation that this might be death rattle before the end.

- It was understood that in 2019, Betelgeuse likely underwent an enormous surface mass ejection (SME). An SME happens when a star expels large amount of plasma and magnetic flux into the surrounding space. It is suspected that Betelgeuse lost a large part of its surface material.
- What is remarkable is that Betelgeuse ejected 400 billion times more mass than a typical event on other stars. This is multiple times the mass of Moon, pushed out at incredible speed.

Understanding lifecycle of a star:

- 1) Small or Medium Star (mass less than 8 times the mass of sun):
 - Star -> Red Giant -> White Dwarf (with planetary supernova) -> Black Dwarf
- 2) **Large Stars** (mass more than 8 times the mass of sun)
 - Star -> dying stage (iron core) -> supernova explosion -> Neutron Star -> Black Hole (not all neutron stars will become black hole)

6) ANTHROPOLOGY: DID HOMO NALEDI MADE ROCK ART AND BURIED THEIR DEAD?

A) EVOLUTION OF HUMANS

- The earliest known hominids (man-like species) were members of the ***Australopithecus genus***. They lived roughly between 4.4 and 1.8 MYA and perhaps lived only in Africa (remains have not been found anywhere else so far).
 - ***Ardipithecus*** (or *Australopithecus ramidus*) is the earliest sample of this genus and seems to have evolved from some common ancestor of the hominid and pongid apelines in sub-Saharan Africa about 4.4 MYA.
 - So far, we don't have any evidence to show if *Australopithecus* made any tools. They may have used naturally available material as tools.
- **About Homo Genus:** This is the genus to which humans belong. Like modern humans, other species in the group had large brains and used tools.
- **Homo Habilis:**
 - The earliest known (from fossil evidence so far) representative of '***Homo***' genus is ***Homo habilis*** (hand using man) who was found in Kenya and Tanzania about **2.8 MYA**.
 - The **earliest stone** tool have been found at **Hadar in Ethiopia** and have been dated about 2.5 MYA.
 - These tools were used to scrape flesh from carcasses of animals killed by carnivores, and crack open long bones for their marrow content.
 - These 'first humans', thus became scavengers on animal left-overs. The most probably exploited a time window around mid-day when the carnivores were resting (hyenas arrived nocturnally to devour the leftovers). Walking upright freed their arms to carry bones away to be processed in safe sites to augment the plant-based dietary staples.
 - **Losing of body hairs:** To facilitate mid-day movements -> fur-covered animals will soon overheat.
- **Homo Erectus** (fully erect posture) appeared in east Africa around 1.7 MYA. From here, the species spread to various parts of Africa, Asia and Europe.
 - They are the earliest known humans to have possessed modern human like body proportion with relatively elongated legs and shorter arms.
 - These early humans were efficient hunters.
 - A division of labor came about. Men Hunted; women gathered plants.

- **Homo Neanderthalis** (lived between 400,000 - 40,000 years ago) in Europe and Southwestern to Central Asia.
 - The Neanderthals, *Homo neanderthalensis* or *Homo Sapiens Neanderthalensis*, is an extinct species or subspecies of archaic humans that lived until about 40,000 years ago.
 - They are known from many fossils. The species was first located in 1856 in the Neander Valley of the present day Germany, identified from fossils which were 1,30,00 years old.
 - Whether Neanderthals got merged into *Homo Sapiens* or whether they became extinct remains a mystery. They are the closest extinct human relatives
- **Homo Denisovans:**
 - The **Denisovans** shared a common ancestor with Neanderthals until their population diverged 380,000 to 470,000 years ago. This was much later than the split between modern humans and Neanderthals/Denisovans, which occurred between 5,50,000 and 7,60,000 years ago.
 - ‘**Hominin Denisova**’ was discovered by Swedish Paleo geneticist Svante Paabo, the winner of 2022 Nobel Prize in Medicine.
 - In 2012, Paabo and his team sequenced the DNA of a well-preserved fragment of the bone that was 40,000 years old and found in 2008 in the Denisova Cave in southern Siberia. The result was astounding they had come across an entirely novel hominin, distinct from Neanderthals and even more from modern humans.
 - In the same cave, palaeontologists later discovered the fossil of a girl who was part Neanderthal and part Denisovan, proving that these two species interbred.
 - Little is known about what the Denisovans looked like because they have left few fossilized traces of their time on Earth other than fragments found in Siberia and a jawbone discovered on the Tibetan Plateau in 2019.
- **Homo Sapiens** appeared for the first time around 5,00,000 years ago.
 - From around 130,000 years ago, there is evidence of Homo Sapiens neanderthalis (Neanderthals) in various parts of western and central Asia and in Europe. Whether Neanderthals got merged into Homo Sapiens or whether they became extinct remains a mystery.
- **Anatomically modern humans**, known as *Homo sapiens*, seem to have appeared in Africa between 1,95,000 and 1,50,000 and eventually replaced all other Homo Sapiens.
- **Note:** Evolution is not a neat unilinear process. There are overlap and co-existence of species

B) HOMO NALEDI

Major new research claims smaller brained Homo naledi made rock art and buried the dead. But the evidence is lacking (June 2023: Source - TH)

- Homo Naledi were the short stature, small-brained, ancient cousins who are thought to have lived in Southern Africa between 335,000 and 241,000 years ago.
- They were first discovered in 2013 in South Africa's rising star cave system.
- Rising Star cave system is an exceptional resource for exploring the origins of our species.
- New studies claim that Homo Naledi intentionally buried their dead (a sophisticated practice we generally associate with homo sapiens) and made rock art, which suggests advanced cognitive abilities.
- But these findings have been challenged by several archaeologists

7) BIODIVERSITY: HIMALAYAN BROWN BEAR (URSUS ARCTOS ISABELLINUS)

- **Why in news?**
 - An Himalayan brown bear (*Ursus arctos isabellinus*) as captured by J&K Wildlife Department on May 13, 2023, at Rajwara in the North Kashmir district of Handwara, days after it was found wrecking graveyards, reportedly in search of human cadavers to eat (June 2023: Source - DTE)

It is the largest animal in Himalayas and is usually reddish brown in color. They inhabit altitudes ranging from 2,000 to 2,500 metres, predominantly above the tree line.

It also shows sexual dimorphism (Males (1.5 - 2.2m), Females (1.37 - 1.83m)).

Distribution: Nepal, Pakistan, and Northern India. In Hemis National Park, Great Himalayan National Park, Nanda Devi Park -> this may be seen as the giant mammal walking upright.

IUCN Status: CR

Please note that IUCN status of Brown bear is LC (due to its wide distribution). But the Himalayan subspecies is CR.

Updates:

Human encroachment in wildlife has led to bears straying more often into human-dominated areas. Several incidents from various villages of J&K such as Behnipora, Budshungi, and Shatiam have been reported, where more than one bear may have entered.

Key reasons: Insufficient food in their habitats;



8) BIODIVERSITY: ORCHIDS OF DARJEELING HILLS AND DOAB ARE FACING THREATS

- **What are orchids?**
 - They are a diverse and widespread group of flowering plants, with blooms that are often colorful and often fragrant commonly known as the **Orchid** family. They belong to the family **Orchidaceae**, which is one of the largest family of flowering plants with possibly over 27,000 species and more than 800 genera.
 - **Habitats:** Orchids can be found in nearly every habitat, but most orchid species are tropical.
- **The Botanical survey of India**, in 2019 came up with the first comprehensive census of orchids in India putting the total number of orchid species to 1256.
 - **Orchids can be classified** in three types:

- » **Epiphytic:** (Plants growing on another plants including those growing on rock boulders and often termed lithophyte).
- » **Terrestrial:** (Plants growing on land and climbers)
- » **Mycoheterotrophy:** (Plants that derive nutrients from mycorrhizal fungi that are attached to the roots of a vascular plants).
- » In India, of all orchids 757 are epiphytic, 447 are terrestrial, and 43 are mycoheterotrophy.
- **State wise distribution:**
 - » **Arunachal Pradesh** (612 species); Sikkim (560 species) and West Bengal (with Darjeeling Himalayas having high species concentration) with 479 species.

- Orchids of North Bengal are facing threats (June 2023)

- The wild orchids of Darjeeling Hills and Dooars are facing threats due to habitat loss (mostly due to deforestation).
- **The most endangered** are the epiphytic orchids - the type that grows on another plant/tree merely for physical support. Please note that they are not parasitic and use trees only for support.
- Orchids are also natural gauges of air quality because they don't grow in polluted air
- **Applications:**
- The Oraon and Kharia tribal communities use wild orchids to treat range of diseases - cut and fractures, skin diseases, aches and pains.



Some Important species of Orchids:

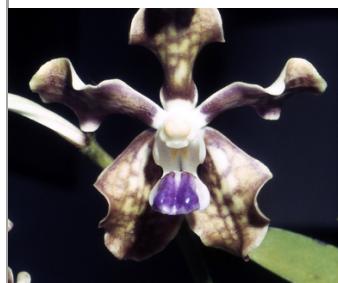
The Dendrobium aphyllum carries pinkish violet, fragrant flowers;



The Bulbophyllum leopardinum, with its pale green and spotted red flowers simulate a leopard's spots;



Vanda Tessellate is greenish with a striking blue purple lip



Dendrobium transparens



Aerides Maculosa - Foxrush Orchid



9) DEFENCE: INS KIRPAN

- **Why in news?**
 - India gifts missile Corvette INS Kirpan to Vietnam (June 2023)
- **Details:**
 - INS Kirpan is a Khukri class missile corvette displacing 1,350 tonnes and was commissioned into the navy on Jan 12, 1991.
 - The ship is fitted with a medium range gun, 30 mm close range guns, chaff launchers, and surface to surface missiles, enabling it to perform a wide variety of roles, including coastal and offshore patrol, coastal security, anti-piracy, HADR operations etc.
- **Gift to Vietnam**
 - India gifted indigenously built in service missile corvette INS Kirpan to Vietnam to enhance that country's Naval capabilities.



CURRENT AFFAIRS PROGRAM

PRE-CUM-MAINS 2024

JUNE 2023 - BOOKLET-4

INFRASTRUCTURE

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LevelupIAS

1. SYLLABUS:

- **INFRASTRUCTURE: ENERGY, PORTS, ROADS, AIRPORTS, RAILWAYS ETC.**
- **INVESTMENT MODELS**

2. PYQS

1. Why is **Public Private Partnership (PPP)** required in infrastructure projects? Examine the role of PPP model in the redevelopment of Railway Stations in India [Mains 2022, 10 marks, 150 words]
2. Investment in **Infrastructure** is essential for more rapid and inclusive economic growth. Discuss in the light of India's experience [Mains 2021, 15 marks, 250 words]
3. "Access to affordable reliable, sustainable and **modern energy** is the sine qua non to achieve Sustainable Development Goals (SDGs). Comment on the progress made in India in this regard [Mains 2018, 10 marks, 150 words]
4. Examine the development of **airports** in India through joint ventures under **Public-Private Partnership (PPP)** model. What are the challenges faced by the authorities in this regard [Mains 2017, 10 marks, 150 words]
5. What are '**Smart Cities**' Examine the relevance for urban development in India. Will it increase rural-urban differences? Give arguments for 'Smart Villages' in the light of PURA and RURBAN mission [Mains 2016, 12.5 marks, 250 words]
6. **National Urban Transport Policy** emphasizes on 'moving people' instead of 'moving vehicles'. Discuss critically the successes of the various strategies of the Government in this regard. [2014, 12.5 marks, 200 words]
7. Explain how **PPP arrangements**, in long gestation infrastructure projects, can transfer sustainable liabilities to the future. What arrangements need to be put in place to ensure that successive generations' capacities are not compromised? [2014, 12.5 marks, 250 words]
8. Adoption of **PPP model** for infrastructure development of the country has not been free of criticism. Critically discuss pros and cons of the model [2013, 12.5 marks, 200 words]
9. Write a note on India's **Green Energy Corridor** to alleviate the problem of conventional energy [2013, 10 marks, 150 words]
10. Are the '**Dedicated Freight Corridor**' railway project and the '**Golden Quadrilateral**' road project mutually complementary or competitive? Assess [10 marks, 150 words]

3. SIGNIFICANCE OF INFRASTRUCTURE SECTOR

Question 1: Investment in Infrastructure is crucial for inclusive and long-term development of the country. Discuss the key recent initiatives by GoI to promote sustainable Infrastructure Development in India [10 marks, 150 words]

Question 2: Investment in **Infrastructure** is essential for more rapid and inclusive economic growth. Discuss in the light of India's experience [Mains 2021, 15 marks, 250 words]

- **Introduction:**

- Infrastructure is the backbone of any economy. The extent and quality of infrastructure determines the ability of the country to utilize its comparative advantage and enables cost competitiveness.

- **Investment in infrastructure is crucial for inclusive and long-term development** because:
 - Infrastructure services like electricity, telecommunications, roads, rail, ports, and airports - are critical to the development of a strong, modern, productive and efficient economy.
 - It reduces logistic cost and promotes export competitiveness.
 - Multimodal transport system provides integrated and seamless connectivity for movement of people and goods.
 - It contributes to national integration and regional development.
 - Infrastructure also contributes to poverty reduction and promoting both rural and agriculture development.
 - For e.g., good roads/Railways/Storage facilities etc. ensure better income for farmers through timely market access.
 - Digital infrastructure further has huge impact on all the sectors including health (e.g., telemedicine), education (e.g. MOOCs) etc.

- Keeping this in mind, GoI has launched several initiatives in recent years to promote sustainable infrastructure development.
 - **Increasing Investment:**
 - **High Capital allocation for infrastructure:** In last few years, government's capital expenditure has regularly increased and the budgetary allocation for the FY24 for the same has reached Rs 10 lakh crores.
 - **National Infrastructure Pipeline (NIP)** aims to mobilize more than 100 lakh crore rupees between 2020-25 for various infrastructure projects.
 - **National Monetization Pipeline** will also contribute to mobilization of resources for infra projects through monetization of various brown field government projects.
 - **National Bank for Financing, Infrastructure and Development (NaBFID)** has been set up as developmental financial institution to set in motion a virtuous investment cycle.
 - **Project Development Cells (PDCs)** have been set up in all concerned ministries and departments of GOI to provide an institutional mechanism to fast track investments.
 - To enhance efficiency and cost competitiveness - PM Gati Shakti and National Logistics Policy has been launched.
 - PM GatiShakti is aimed at breaking departmental silos and bring more holistic and integrated planning and execution of projects.

- **National Logistics Policy (NLP)** aims to reduce the logistics cost in India and bring it on par with developed nations.
- **Sector Specific Initiatives:** Other than these the traditional focus on infrastructure efforts like roadways, railways, airways, ports etc have continued with various initiatives like Bharatmala Pariyojna, Sagarmala Pariyojna, UDAN initiatives, etc.

- **Conclusion**

- These initiatives can collectively bring out untapped potential of underutilized modes of infrastructure. This buffet of reform on all aspects related to infrastructure investment and project execution not just ensure economic growth and economic efficiency but also generates confidence among various stakeholders in the economy towards government functioning. IMF has observed in case of India, increased government spending on infrastructure also leads to crowding in of private infrastructure.

4. PUBLIC PRIVATE PARTNERSHIP (PPP)

- **Practice Questions:**

1. Why is **Public Private Partnership (PPP)** required in infrastructure projects? Examine the role of PPP model in the redevelopment of Railway Stations in India [Mains 2022, 10 marks, 150 words]
2. Explain how **PPP arrangements**, in long gestation infrastructure projects, can transfer sustainable liabilities to the future. What arrangements need to be put in place to ensure that successive generations' capacities are not compromised? [2014, 12.5 marks, 250 words]
3. Adoption of **PPP model** for infrastructure development of the country has not been free of criticism. Critically discuss pros and cons of the model [2013, 12.5 marks, 200 words]

- **Introduction:**

- In 1997, the report of the **Rakesh Mohan Committee (RMC)** concluded that India's problem was that of poor infrastructure holding back development.
- It also highlighted the importance of bringing in the private sector into most areas of infrastructure in the country.
- This private investment in infrastructure has mainly come in the form of **PPPs** in India.

- **Public Private Partnership (PPP)** is a collaborative arrangement between government and private sector to jointly plan, mobilize resources, develop, and/or operate infrastructure projects.
- According to the Canadian Council for Public Private Partnership PPP is defined as "Co-operative venture between the public and private sectors, built on the expertise of each partner that best meets clearly defined public needs through appropriate allocation of resources, risks and rewards".

- **Significance of Public Private Partnerships:**

- **Mobilization of Resources:** PPP helps government in mobilization of enough resources for infrastructure development and thus address infra gaps. (For e.g., in the BOT (Toll/ Annuity) model of road construction, private player invests the entire initial money for the construction of the road project).
 - **Getting Private Sector expertise and Innovation:** E.g., in the EPC model, private sector engineers construct the entire road.
 - **Risk Sharing:** Long gestation period of infra projects bring along its own risks due to uncertain revenue stream in long run. PPP projects allow government to share these risks with private players.
 - **Increased Efficiency and Reduced cost of the project:** Private sector comes along with efficiency and reduced scope for corruption - this leads to timely and economic completion of various infra projects.
 - **Increased Transparency and Accountability:** PPP projects are subject to public scrutiny and the private players are also accountable to their shareholders.
 - **Better Infrastructure:** All the above advantages eventually contribute to better quality and quantity of infrastructure for general public.
- But, the success of PPPs lies in the robustness of institutional structure, financial support, and use and availability of standardized documents, such as Model Requests for Qualifications (RFQ), Model Request for Proposal (RFP) and Model Concession Agreement (MCAs).
- Government of India has taken several measures:
- Government of India has streamlined the appraisal and approval mechanism for Central Sector PPP projects to ensure speedy appraisal of projects, eliminate delays, and have uniformity in appraisal mechanisms.
 - » Procedure for approval of PPP projects was finalized in 2005 and in 2006, the Public Private Partnership Appraisal Committee (PPPAC) for the appraisal of was notified in 2006. It has cleared 79 projects with a total cost of Rs 2,27,268 crore from FY15 to FY23.
 - **Viability Gap Funding (VGF) Scheme, 2006**
 - » It provides financial assistance to financially unviable but socially/economically desirable PPP projects.
 - **Economic Sector Projects** may get upto 40% of Capex as VGF grant.
 - **Social Sector Projects** include higher provisions of VGF grant. It may get upto 80% of CAPEX and upto 50% of the Operating Expenditure (OPEX).
 - **India Infrastructure Project Development Fund (IIPDF) Scheme** notified in Nov 2022
 - » The scheme aims to develop quality PPP projects by providing necessary funding support to project sponsoring authorities, both in the central and the state governments, for creating a shelf of bankable and viable PPP projects by on-boarding transaction advisors.
 - » It has an outlay of Rs 150 crores for a period of 3 years from FY23 to FY25.
 - » Under the scheme a maximum amount of Rs 5 crores for a single proposal, inclusive of any tax implications, can be funded which can include cost of consultants/transaction advisors of a PPP project.
- **Several types of PPP Models** are used in India in different sectors:

- » **EPC Model (Engineering, Procurement, and Construction):** In this model, the cost of project is completely borne by government. Private sector with its expertise is responsible for engineering, procuring raw material and constructing the project. Ownership remains with government.
- » **Built Operate and Transfer (BOT)** model involves private player entity designing, financing, constructing, operating, and maintaining an infra projects for a specific period. After the specified period, the ownership is transferred back to government. This model has been used in sectors like Roadways, Ports, Airports and Power Generation. It can be of two types - BOT (Toll) & BOT (Annuity).
- » **Hybrid Annuity Model (HAM):** It is a mix of EPC and BOT (Annuity) model.
- » **Build Own Operate (BOO):** The private sector entity builds and owns the asset, and then operates it for a specified period of time.
 - Government has agreed to "buy" the goods and services delivered by the project on mutually acceptable terms and circumstances.
- » **Build Own Operate Transfer (BOOT):**
 - It is a model of PPP in which a private company is granted a concession to finance, build, own, and operate a project for a specified period of time. At the end of the concession period, the project is transferred back to government.
 - E.g., of project under BOOT model, Delhi Mumbai Expressway, The Mumbai Metro, the Bangalore International airport etc.
 - It involves a private sector entity being responsible for the complete lifecycle of the project, including design, financing, construction, operation, and maintenance. However, here private sector entity retains ownership of the project even after the concession period.
- » **Build Own Lease Transfer (BOLT):** It is a PPP model in which a private company is granted a concession to finance, build, own and lease a project to the government for the specified period of time. At the end of the concession period, the project is transferred back to government. Some notable BLT projects in India are, the Delhi-Gurgaon Expressway and the Mumbai-Pune Expressway.
- » **Design Build Finance and Operate (DBFO):** It allows a private sector to design, build, finance, and operate a project for a specified period of time. This public sector client retains the ownership of the project, but the private sector contractor is responsible for all aspects of its delivery.
 - E.g. Delhi Metro: Project was awarded to a consortium of private companies, which designed, built, financed, and operated the metro for a period of 30 years. At the end of the concession period, the metro will be transferred back to government.
- » **Lease Developed Operate (LDO) Model:** Private company is granted a concession to finance, develop, and operate a project for a specified period of time. The government sector retains the ownership, but the private sector is responsible for all aspects of its delivery. At the end of the concession period, government may choose to operate the project itself, or it may contract with another private company to operate the project.

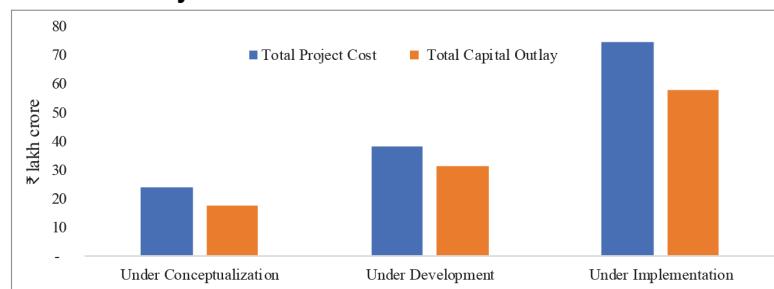
- » **Rehabilitate-Operate-Transfer (ROT) Model:** Under this model, government allows private promoters to rehabilitate and operate a facility during a concession period. After the concession period, the project is transferred back to government / local bodies.

- **Challenges of PPP Model:**

- **Institutional Inadequacies:**
 - » An overly regulated institutional and legal framework with issues such as complexity, fragmentation, and lack of accountability results in inefficient implementation of PPP Projects.
 - **Lack of expertise in identifying projects, forming contract, choosing the right PPP models etc.**
 - » This leads to difficulty in assessing the investment needs and the duration required to improve service and operational efficiencies, which is crucial to the success of PPP.
 - » It leads to projects being stuck due to disputes in existing contracts.
 - **Lack of Transparency and Accountability:**
 - » There is inadequate information on PPPs in public domain. Private companies often don't share data in the name of business secrecy.
 - **Profit Motive as opposed to Public Service:**
 - Service efficiency in the delivery of PPP models is lacking due to profit motive.
 - Crony capitalism has also emerged as a major challenge in several sectors.
 - **Communication and Stakeholder engagement** is generally weak and lacking in the projects.
 - **Lack of balanced assessment and treatment of Risk Sharing** in the PPP projects.
 - Issues such as non-availability of capital and land acquisition challenges also hinder PPP projects.
 - **Long Gestation period and delays** in the implementation has led to a lot of loans becoming Non-Performing Assets (NPAs).
 - **Uncertainty:** The regulatory and legal framework of PPP models in India are still evolving. This can lead to uncertainty for investors.
- **Recommendations of Vijay Kelkar Committee:**
 - » Vijay Kelkar Committee on "Revisiting & Revitalizing the PPP model of infrastructure Development" was set up in the Union Budget of FY15-16. It recommended:
 - The Need of PPP contract to be more focused on service delivery.
 - The need to identify, balance and allocate risks amongst the different stakeholders.
 - Viability Gap Funding for unviable social and economic projects
 - Careful monitoring of performance as well as managing the risk.
 - **Other suggestions:**
 - » **Strengthening Contracts:** PPP model contracts should allow flexibility in resetting the targets or renegotiating funding allocations
 - » **Strengthening Institutional Capacities:** Bringing experts from the area of contract formation, risk assessment etc. Setting up a PPP adjudication tribunal for better dispute redressal.
- **Conclusion:**
- » The success of PPP model in India will depend on the ability of the government to address these factors and to create an environment that is conducive to private investment in infrastructure

5. NATIONAL INFRASTRUCTURE PIPELINE (NIP)

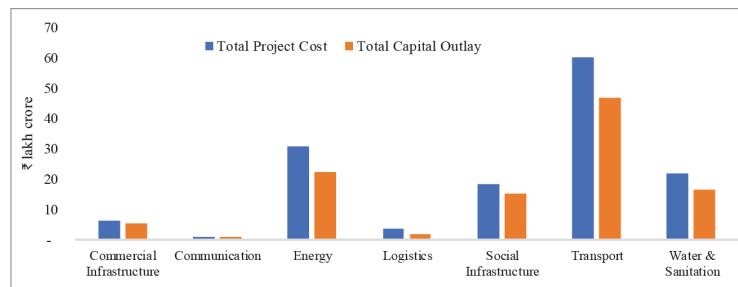
- **Example Questions:**
 - » What is National Infrastructure Pipeline? What is its significance for India's development [10 marks, 150 words]
- Ministry of Finance estimates that to achieve a GDP of \$5 trillion by 2024-25, India needs to spend about \$1.5 trillion (Rs 111 lakh crore) over these years in infrastructure. Keeping this in mind, government has launched National Infrastructure Pipeline (2020-25) with projected infrastructure investment of around Rs 111 lakh crores. It also envisages to improve project preparation and attract investment, both domestic and foreign in infrastructure.
- **Progress So Far:**
 - » The NIP currently has 8,964 projects with a total investment of more than Rs 108 lakh crore under different stages of implementation.
 - » **Status of Projects under NIP**



Source: Department of Economic Affairs.

Note: Data as of 13 January 2023

» Transportation Sector Dominates the NIP



Source: Department of Economic Affairs.

Note: Data as of 13 January 2023

» Jointly funded by Central Government, State Government and Private Sector

- **Some steps to improve the implementation of NIP:**

» **Invest India Grid (IIG):**

- NIP is hosted on the Invest India Grid (IIG) platform and provides opportunities states/UT and ministries to collate all major infrastructure projects at a single location. It is thus a centralized portal to track and review project progress across all economic and social infrastructure sub-sectors. It also provides the project sponsoring authorities to showcase investment opportunities to national and international investors.

» **Project Monitoring Group (PMG)**

- It is an institutional mechanism put in place by the government for resolution of issues related to large-scale projects. It is also involved in fast tracking of approvals/ clearances for projects with an anticipated investment of Rs 500 crore and above. Now it has been proposed to integrate NIP and PMG portals. PMG portal will pick up data, as per requirements (project cost of Rs 500 crore or more), from the NIP database. This will save substantial time and effort by Ministries and States/UTs and ease monitoring of large scale projects.

- **Significance:**

- **Economic Development:** Well planed NIP projects will enable more infra projects, grow businesses, and create more jobs. It will also promote ease of doing business and enhance export competitiveness of Indian products.
- **Inclusive Growth:** Improved infrastructure will improve ease of living, and will provide equitable access to infrastructure for all making growth more inclusive.
- **Government:** Enhanced economic activities will lead to creation of additional fiscal space by improve revenue base of government. It also ensures quality of expenditure focused on productive areas.
- **Advantages for Developers:** NIP provides a better view of project supply, provides time to be better prepared for project building, reduces aggressive bids/failures in project delivery and ensure enhanced access to source of finance as a result of increased investor confidence.
- **Banks/Financial Institutions/Investors:** Confidence in the identified projects are likely to be higher and they are less likely to suffer stress given active project monitoring, thereby less likely of NPAs.

- **Way Forward:**

- **Improving Project Preparation Process** to avoid delays and reduce cost. The preparation framework shall consist of a transparent policy and legislative framework, an empowered public institution for infrastructure planning, multi-stage reviews, audits and approvals for quality assurance etc.
- **Enhancing execution capacity of private sector participants** - There is a need of deep pool of experienced developers with required competence and execution capacity. Here collaboration and joint ventures with strong global infrastructure developers can be crucial.
- **Robust Enabling Environment** through appropriate policy framework and a well developed public institutional capacity.
- **Institutionalization and Efficiency of Dispute Resolution**
 - **Steps already taken:** The Commercial Courts Act 2015, The Specific Relief (Amendment) Act 2018 and the New Delhi Arbitration Centre Act 2019
 - **What more can be done?** Ministry level committees to resolve complex contractual disputes as mediation mechanism that can settle disputes out of courts.
- **Strengthening infrastructure quality** - Creating a National Framework for Infrastructure Quality for each sector based on global and national standards.
- **Financial Sector Reforms**
 - **Revitalizing the bond and credit market**
 - **Strengthening the Municipal Bond Market in India**

- Revitalizing Asset Monetization
- Enabling User Charges to finance infrastructure
- Long term financing Landscape

- **Conclusion:**

- Overall, the National Infrastructure Pipeline (NIP) is a transformative initiative that aims to propel India's economic growth, improve living standards and position country as a global powerhouse.

6. NATIONAL MONETIZATION PIPELINE

- **Practice Questions:**

- » Discuss the objective and significance of the National Monetization Pipeline in the context of India's economic development [10 marks, 150 words]

- **Background**

- » **Asset Monetization** is one of the key recommendations of National Infrastructure Pipeline (2020-25). Consequently, National Monetization Pipeline was announced in 2021. It focuses on the principle of 'asset creation through monetization' and thus taps private sector investment for new infrastructure creation.

- **Details:**

- » Asset monetization entails a limited period license/lease of a brownfield underutilized asset owned by government or a public agency, to a private sector entity for an upfront or periodic consideration.
 - The private sector entity is expected to operate and maintain the asset based on the terms of the contract/concession, generating returns through higher operating efficiencies and enhanced user experience.
 - Public authority, which receives the fund, will invest it in new infrastructure or deploy it for other public purposes.
- » A robust asset pipeline has been prepared to provide a comprehensive view to investors and developers of the investment avenues in infrastructure.
 - It includes selection of de-risked and brownfield assets with stable revenue generation profile (or long rights) which will make for an attractive investment option.
- » Total **indicative value of NMP** for core assets of the Central Government has been estimated at Rs 6.0 lakh crore over 4-year period (FY22 - 25) (5.4% of the total infrastructure investment envisaged under NIP)
- » **National Land Monetization Corporation (NLMC)**: Cabinet approved the setting up of the NLMC to monetize surplus land and building assets of CPSEs and other agencies linked to government (March 2022)

- **Progress so far: ESI 2022-23:**

- » Against the monetization target of 0.9 lakh crore in FY22, Rs 0.97 lakh crore have been achieved during the period under roads, power, coal and mines.
- » NMP's 2nd year target, i.e. FY23 target is ₹ 1.6 lakh crore (27% of the overall NMP target).

- **Significance: Positives**

- » **Infrastructure Upgradation and Development:** The NMP aims to enhance infrastructure development in the country by leveraging the potential of existing assets.
- » **Unlocking of Capital and Revenue Generation:** The funds generated can be used for financing new infrastructure projects without increasing the fiscal deficit.
- » **Efficient Asset Management:** Promotes the use of complete assets which are languishing or it is not fully monetized or is under utilized.
- » **Job Creation and Skill Development:** It will attract investment, promote entrepreneurship, and stimulate economic growth.
- » Clear framework for monetization and given potential investors a ready list of assets to generate investment interest.
- » Along with disinvestment, monetization of idle land is **part of the Centre's strategy to reduce its business presence to a bare minimum** and generate resources for future asset creation.

- **Key challenges:**

- » **Valuation of Assets** is a complex process. There may be challenges in accurately assessing the future revenue, depreciation factors etc.
- » **Lack of government's expertise in designing long term contracts:**
 - Contractual disputes can pose hurdle in implementation process.
- » **Monetizing assets with low revenue potential may be a challenge**
- » **Asset Management and Quality Maintenance** - Poor monitoring may lead to poor quality of asset management.
- » **Sector Specific Challenges:**
 - **Level of capacity utilization in gas and petroleum pipeline networks** -> lack of capacity utilization has been due to lower gas supplies
 - **Regulated tariffs in power sector assets**
 - **Low interest of investors in national highways** of less than 4 lane.

- **Other limitations:**

- » **Threat of monopolization:** Because of limited number of private players, bidding for assets may not be totally fair.
- » **Public welfare** may get ignored (which should be the basic focus of public sector assets)
- » **Why are the assets being poorly managed** at the first place. If its poor management, Asset Monetization makes sense. But if the issues are structural, even asset monetization will not solve the problem.

- **Way Forward:**

- » **Set up a centralized institution with the skills and responsibility to oversee contract design, bidding and implementation**, separate from, but with appropriate assistance of, the concerned line ministries.
- » **Robust dispute resolution mechanism**

- » Government should start with **sectors that offer greatest cash flow predictability** and **the least regulatory uncertainty** before expanding the experiment.
- » Ensure that **resources raised from the NMP are used to fund new asset creation**.

- **Conclusion:**

- » While the ideal of monetization seems great, execution of the plan remains key to its success.

7. LOGISTICS SECTOR

1) LOGISTICS SECTOR

- **Introduction**
 - Logistics including transportation, inventory management, warehousing, material handling & packaging, and integration of information, is related to **management of flow of goods between the point of origin and the point of consumption**.
 - India's logistic sector currently is worth \$160 billion dollars and government expects it to go to \$360 billion by 2032. But it remains **unorganized to a large extent**.
- **LOGISTIC PERFORMANCE OF INDIA:**
 - As per the **Logistics Performance Index, 2023 released by World Bank, India is ranked 38/139 countries in terms of the logistics performance**.
 - **Logistics Cost in India have been in the range of 14-18% of the GDP against the global benchmark of 8%**.
- **Key Problems in India's Logistic Sector:**
 - **The Regulatory Environment** remains **complex and fragmented** due to multiple regulations governed by various stakeholders.
 - For instance, there are **20 government agencies, 37 export promotion councils, 500 necessary certifications ; 200 shipping agencies; 36 logistic services etc.**
 - **Heavy dependency on Road Transport** and **lack of seamless movement of goods across modes**.
 - **Low level of technology adoption among various stakeholders**: Lack of integrated IT infrastructure/ modern technology.
 - **Underdeveloped material handling infrastructure**
 - **High Indirect Costs** due to **unpredictable supply chains and poor first and last mile connectivity add to the logistic cost**.
- **What should be done to improve logistics performance in India:**
 - **Ensuring Efficiency of Clearance Process** (i.e., speed, simplicity, and predictability of formalities) by border agencies, including customs.
 - **Improving the quality of trade and transport related infrastructure** - (e.g., ports, railroads, roads, IT etc.)
 - **Easing of arranging competitively priced shipments**
 - **Enhancing the competence and quality of logistics services** (e.g., transport operators, custom brokers)
 - **Providing for Tracking and Tracing of Consignments**

- Ensuring timeliness of shipments in reaching destinations within the scheduled or expected delivery time.
 - The above aspects would be possible if government focus on new technology, skilling and automation.
 - These aspects have been captured by the LPI, 2023 of the World Bank.
- Key steps taken in this direction include:
 - i. **Infrastructure initiatives** like Bharatmala, Sagarmala, Parvatmala, National Rail Plan, UDAN etc.
 - ii. **Process reforms** include - Introduction of GST, e-Sanchit, Single Window Interface for Trade (SWIFT), Indian Customs Electronic Data Interchange Gateway (ICEGATE), Turant Customs and others.
 - iii. **National Logistic Policy, 2022** was launched to integrate all the above efforts by different government agencies and lay on overarching inter-disciplinary, cross sectoral, and multi-jurisdictional framework for the logistics sector.
 - **It provides a comprehensive agenda to develop the entire logistic ecosystem with two major visions:**
 1. **Reduce Logistic Cost in India by 5% of GDP** over the next five years
 2. Improve India's ranking in the Logistic Performance Index
 - **It also aims to enhance logistics sector competitiveness through a unified policy environment and an integrated institutional mechanism.**
 - iv. Other initiatives improving the logistics sector include:
 - **PM GatiShakti** was launched in 2021 as a National Master Plan for Multi-modal connectivity to bring together 16 ministries, including railways and roadways, for integrated planning and coordinated implementation of infrastructure connectivity project. The scheme envisages efficiency in services like processes, digital systems and regulatory framework.
 - **Plans of 35 Multimodal Logistic Parks:** The **Road Ministry** plans to develop 35 multimodal logistic parks in India that would cater to 50% of the freight movement, enable a 10% reduction in transportation cost and a 12% reduction of CO₂ emissions.
 - **Other Projects** like Bharatmala, Sagarmala etc. are also focused on improving India's logistic sector.
 - **Diesel Deregulation** have made logistic cost more predictable.
 - **Creation of a Logistic Division** in the Department of Commerce
 - **Infrastructure Status to Logistics sector**
 - **Logistic Efficiency Enhancement Program and Vehicle Fleet Enhancement Program**
 1. By Ministry of Road Transport and Highway
 2. To improve India's logistics efficiency
 - vi. **Freight Smart Cities** by Commerce Ministry's Logistic Division.
 - Under this, the Logistics Division under Ministry of Commerce and Industry has decided to work in a planned manner to improve the city freight movement.

2) NATIONAL LOGISTICS POLICY, 2022

- Why in news?
 - PM Modi has launched National Logistic Policy 2022. (Sep 2022)

- **Practice Question:**
 - "The National Logistic Policy 2022 has the potential to impact all three sectors of the economy - primary, secondary and tertiary" Discuss [10 marks, 150 words]
- The **vision of NLP** is " to develop a technologically enabled, integrated, cost-efficient, resilient, sustainable and trusted logistics ecosystem in the country for accelerated and inclusive growth"
 - **The Targets** for achieving the vision of NLP are to
 - reduce the **cost of logistics** in India to be comparable to global benchmarks by 2030;
 - improve the **Logistics Performance Index ranking** - endeavour is to be among the **top 25 countries by 2030**, and
 - create a **data driven decision support mechanism** for an efficient logistics ecosystem.
 - The policy thus seeks to **pave the way for India to become a logistic hub** by leveraging technology, processes and skilled manpower.
- The Policy has **four key features (four key pillars)**: Integration of Digital System (IDS); Unified Logistics Interface Platform (ULIP); Ease of Logistics (ELOG); and System Improvement Group (SIG);
 - **Under IDS**, 30 different systems of **seven departments are integrated** - including data from the road transport, railways, customs, aviation and commerce departments.
 - **ULIP** would bring **all digital services related to the transportation sector into a single platform**.
 - **Ease of Logistics (E-Logs)** is a new digital platform which has been **started for industry associations to resolve issues by reaching out to the government**.
 - **Systematic Improvement Group (SIG)** has been created along with the **Network Planning Group (NPG)** to **improve coordination across government ministries and between the state and central governments**.
- The policy will be implemented through **CLAP (Comprehensive Logistics Action Plan)**, which proposes the following interventions:
 - **Integrating digital logistics systems** to develop a system of unified logistic interface
 - **Sectoral Plan For Efficient Logistics**
 - **Facilitating the development of logistics Park**
 - **EXIM logistics**
 - **Logistics manpower skill development and capacity building**
 - **Service Improvement Program**
 - **Standardizations of physical assets and benchmarking service quality standards**
 - **Engagement with different Indian states**
- The government has also launched a **Unified Logistics Interface Platform (ULIP)** under NLP.
 - The ULIP platform will **enable various stakeholders like industry players to get secure access to information** related to logistics (e.g. cargo movement) and **resource available with various ministries**
 - It will also **democratize information**. It will contribute to **abolition of monopoly and un-levelled advantage**.

- It integrates 7 ministries on one platform. It will also integrate 17 digital platforms from seven ministries on ULIP.
 - It will also help provide cargo movement clearance.
 - It also has dedicated portal that makes the process of data requests simpler, faster, and transparent.
 - ULIP will have direct and benefits to all logistic stakeholders like verification of drivers and vehicles details in a single click, tracking and tracing consignment, route optimization planning, a timely update on the destination of the consignment etc.
- **Significance:**
- NLP has the potential to bring a revolutionary approach to the nation's logistics environment, boosting the effectiveness of supply chains.
 - It would increase warehousing capacity and facilitate quicker movement of goods closer to consumer.
 - It will also lead to strengthening of other sectors like manufacturing tourism etc.
 - It is going to improve overall productivity of workforce by reducing their time spent in travel.
 - Improved logistic sector can also be an important factor attracting foreign investments.
 - It will benefit the farmers greatly as it would allow farmers to market their goods more swiftly, reduce waste, and avoid unnecessary delays, all of which would cut overall price.
 - It will contribute to improved competitiveness of Indian export goods.
 - Reduce complexity by reducing multiplicity of authorities through ULIP.
 - ULIP will also enhance visibility for customers and enable logistic companies to adopt digitization on a much larger scale.
- **Way Forward:**
- Railway freight trains' speed have remained stagnant for many decades at around 25km/hour. This has to be improved on priority to make Logistic sector more effective.
 - Inland waterways have huge potential in the country and have remained under utilized for long.
 - NLP has to function in conjunction with Gati Shakti, Sagarmala, Bharat Mala etc. to achieve the goal.
 - Take feedback from all the stakeholders and evolve the policy and its implementation with changes in technologies and feedbacks.
- **Conclusion:**
- The National Logistics Policy thus aims to bring ease of doing business in the logistics sector by simplifying the logistics processes, improving its efficiency bringing in transparency and visibility, and reducing logistics cost and time.

8. AIRWAYS

1) INTRODUCTION

- India is the **third largest domestic market** for civil aviation in the world and has been growing at a very healthy growth rate of over 14% per annum between FY14 and FY20.
- Covid-19 lockdown led to some hiccups in FY21 and FY22, but as per Economic Survey of India, the aviation industry has crossed the passenger and cargo traffic pre COVID times in FY23.

2) CIVIL AVIATION SECTOR IN INDIA HAS GREAT POTENTIAL

- Growing middle class population
- Growing tourism
- Improved socio-economic conditions -> Higher disposable income.
- Favorable demographics -> More young people who are happy to fly
- Improved penetration of aviation infrastructure due to initiatives like UDAN

3) NATIONAL CIVIL AVIATION POLICY, 2016

- **Introduction**
 - It is the First time since independence that an integrated civil aviation policy has been brought out by the Ministry.
 - **Aims/Objectives**
 1. Make regional air connectivity a reality.
 2. Take flying to masses by making it affordable and convenient
 3. Establish an integrated ecosystem which will lead to significant growth of the civil aviation sector to promote tourism, employment and balanced regional growth.
 4. Enhance ease of doing business through deregulation, simplified procedures and e-governance.
- **Salient Features**
 - **Regional Connectivity Scheme (UDAN Scheme)**
 - **Route Dispersal Guidelines** - to make more services available for Tier-2, Tier-3 cities.
 - **5/20 Requirements replaced with new schemes for starting international flights -> Provides level playing field**
 - All airlines can commence international operations provided that they deploy 20 aircraft or 20% of total capacity (in terms of average number of seats on all departure put together), whichever is higher in domestic operations.
 - **Bilateral Traffic Rights** - Enter into 'OPEN Sky' agreements with SAARC and other neighboring countries ASAP.
 - **Airport PPP/AAI**

- Encourage development of airport by AAI, state government, the private sector or in PPP mode
- Future tariffs at all airports will be calculated on a 'hybrid till' basis, unless specified otherwise in concession agreements.
 - 30% of non-aeronautical revenue will be used to cross subsidize aeronautical charges
- Increase non-aeronautical revenue by better utilization of commercial opportunities of city side land
- AAI to be compensated in case a new green field airport is approved in future within a 150 km radius of an existing unsaturated operational AAI airport (not applicable to civil enclaves)

- **Aviation Education and Skill building**
 - Estimated direct additional requirement of the Civil Aviation Sector by 2025 is about 3.3 Lakh.
 - All training in non-licensed category will conform to National Skill Qualification Framework standards.
 - MoCA will provide full support to Aviation Sector Skill Council and other similar organizations/agencies for imparting skills for the growing aviation sector
 - There are nearly 8000 pilots holding CPL but who have not found any regular employment. MoCA will develop a scheme with budgetary support for Type-rating of Pilots.

4) REGIONAL CONNECTIVITY SCHEME (UDAN)

- **Introduction**
 - Discussion
- **Some challenges of India's Domestic Aviation Sector:**
 - **Traffic concentrated between large airports:** This leads to choking of large airports
 - **Existence of a lot of ghost airports:** Inefficient resource utilization
 - **Poor connectivity to tier-2 and tier-3 cities** -> this also hampers other services and tourism; negatively impacts national integration.
 - **States have ignored aviation sector as Civil aviation is mentioned in the Union List.**
- **UDAN Scheme (A part of National Civil Aviation Policy 2016)**
 - Launched in 2017 with an aim to provide air connectivity to tier II and Tier-III cities and ensuring affordable fares.
 - Under the scheme, government has approved a budget of Rs 4500 crore for revival of existing unserved/underserved airports/airstrips of the state governments, AAI, PSUs, and civil enclaves.
 - Government has also accorded 'in-principle' approval for the setting up of 21 greenfield airports across the country.
- **Key Provisions of the scheme**
 1. **Subsidization of regional flights - to promote regional connectivity.**

- **Regional Connectivity Fund (RCF)** has been created to meet the VGF requirement.
- 2. **Cap on Airfare** at Rs 2,500/hour journey for 50% of the seats.
- 3. **Other steps** which are being taken
 - **Revival of airstrips/airports as No-Frills Airports** at an indicative cost of Rs 50 crore to Rs 100 crore
 - No airport charges
 - Reduce service tax on tickets (on 10% taxable value) for 1 year initially
 - Reduced excise duty of 2% on ATF picked at RCS airports
 - **Steps which states would need to take**
 - RCS only in those states which reduce VAT on ATF to 1% or less, provide other support services and 20% of VGF
 - State government will provide police and fire services free of cost. Power, water and other utilities at concessional rate.
- 4. **Equitable Geographical Allocations:** For balanced regional growth, allocations will be spread equitably across 5 regions - North, South, West, East and North East with a cap of 25%.
- 5. Regional connectivity scheme will be in operation for 10 years with individual route contract for a 3 year span.
- 6. Market based reverse competitive bidding mechanism to determine least VGF to select the airline operator with the right to match the initial proposer.

- **Key Achievements/Significance of UDAN Scheme:**
 - **Increased number of operational airports** to 140+ from 74 in 2014
 - **Increased connectivity** to tier-2 and tier-3 cities
 - **400+ new routes** have been initiated providing air connectivity to 29 states/ Uts across the country
 - **46+ helicopter routes** have been operationalized under previous rounds of schemes benefitting a number of hilly and NE region.
 - **More than one crore passengers** have availed the benefits of the scheme
 - **Better connectivity** will contribute to inclusive growth, through more employment opportunities, and more tourism in the connected region.
- **UDAN 5.1 - Specifically designed for helicopters (May 2023)**
 - For the first time under RCS-UDAN, the round has been designed specifically for helicopter route
 - **Key features:**
 - **Increase in scope of operation** - Even if one of the locations (destination or origin) is priority area, these routes will be allowed.
 - **Airfare caps** have been reduced by as much as 25% to make flying in helicopters more affordable for passengers.
 - **VGF caps** for operators have been increased substantially for both single and twin-engine helicopters to enhance financial viability for operating the award routes.
- **UDAN 5.0**
 - Why in news?
 - Following four successful rounds of bidding Ministry of Civil Aviation launched the 5th round of the Regional Connectivity Scheme (RCS) - UDAN to further enhance the

connectivity to remote and regional areas of the country and achieve last mile connectivity.

- **Key features:**

- Focuses on Category-2 (20-80 seats) and Category-3 (>80 seats)
- Stage length cap of 600 km is waived off and there is no restriction on the distance between the origin and destination of the flight.
- VGF to be provided will be capped at 600 km stage length for both priority and non-priority areas which was earlier capped at 500 km.
- Same route will not be awarded to single airlines more than ones.

- **Some Challenges**

- a. Not all the underserved and unserved (ghost) airports which were envisaged to become operational have been revived and not all the routes for which airlines (new and established ones) had placed bids have been started.
- b. New players (like Air Deccan and Air Odisha) have little experience, lack funds and have struggled with economics and logistics of providing connectivity from remote locations. **Quality of service** has also remained a concern with highest number of cancellations being seen for these new players.
- c. **Concerns about sustainability after VGF funding ends** in 3 years is also keeping the aviation player worried especially now when oil prices are seeing a positive trend.
- d. **States have been reluctant to contribute.**
 - For e.g. VAT on ATF has not been decreased by many.
- e. **Land Acquisition for greenfield airports** have emerged as a major issue.

- **Some criticisms of the scheme**

- Subsidy for air travel will only benefit middle class and upper middle class -> it could be used at other places
- Before COVID-19 crisis, India had the fastest growing aviation market and thus state subsidies could be avoided.

- **Way forward**

- Government should think about extending the VGF beyond three years to bring in more player at the route.
- Regulations for Scheduled helicopter service should be finalized ASAP so that smaller airports can be viably connected.
- There is a need of higher investment on airport infrastructure to increase the quality of service and to complement the efforts by new players in the aviation industry.
- **A Cooperative Federalism Framework** can provide the required impetus to the Civil Aviation Sector.
 - How can states contribute:
 - Reduce VAT on ATF
 - Develop airports on its own or through PPP.

- **Conclusion**

- Travel dynamics through India is evolving and air service development is becoming a major force in this development. The newly connected cities have massive opportunities to boost regional and inter-continental connectivity.
- And with the significant benefits that a new air service brings to community, UDAN will only help to facilitate the further evolution of a modern, well-connected country.

5) PPP IN AIRPORT DEVELOPMENT

- **PPP Definition:**

Public-Private Partnership (PPP) models have been utilized in the development of airports in India to leverage private sector expertise, investment, and efficiency while ensuring public control and oversight.

- **Various PPP models used in airport development in India are:**

i. **Build Operate Transfer (BOT):**

- E.g., Delhi International Airport Limited (DIAL): DIAL was formed as a JV between AAI and GMR Group. The consortium obtained concession rights to design, finance, construct, operate and maintain the Indira Gandhi International Airport in Delhi. After the concession period of 30 years, airport will be transferred back to AAI.

ii. **Design-Build-Finance-Operate-Transfer (DBFOT):** This model is similar to the BOT model, but the private entity is also responsible for the design and construction of the airport facility. The private entity finances, builds, operates, and maintains the airport for a specific period, and then transfers it back to the public authority.

- The **Bangalore International Airport Limited (BIAL)** Project follows the DBFOT model.
 - A consortium comprising Siemens Project Ventures GmbH, Larsen & Toubro Limited, and Unique Zurich Airport developed and operated the airport. The consortium financed the project, designed, and constructed the airport, and operated it for a concession period of 30 years. At the end of the period, the airport will be transferred back to the government.

iii. **Operate Maintain Transfer (OMT):**

- E.g., Chhatrapati Shivaji International Airport (CSIA), Mumbai
- It is owned by AAI, and Mumbai International Airport Limited (MIAL), a joint venture between GVK-led consortium and AAI, operates and manages the airport. MIAL receives the management fee based on performance targets.

iv. **Joint Venture:**

▪ E.g., **Cochin International Airport Limited (CIAL):**

- Cochin International Airport Limited (CIAL) was formed by a joint venture between the government of Kerala and a consortium of NRIs. The consortium provided the necessary capital, and the airport was developed and operated jointly by the government and the consortium.

- **Critical analysis of development of airports in India using JV:**

i. **Positives:**

- PPP models has helped in improving infrastructure and services at some of India's busiest airport, without increasing government's fiscal burden.
 - For e.g. airports in Delhi and Mumbai have undergone major expansion and renovations under PPP model.
- **Government is able to focus on regional connectivity more.**

ii. **Challenges/Limitations:**

- It has been difficult to attract private investors to airports as airports are often seen as risky investments, as they are subjected to fluctuation in air traffic.
- **Higher airport charges for passengers**
- **Other general challenges with PPP** (done in previous topics - Contract issues etc.)

- Overall, the development of airports using PPP model has been a mixed bag in India.

6) EMERGING DUOPOLY IN AVIATION SECTOR

- Duopoly is a market structure in which there are only two sellers of some goods and services. In India's Civil Aviation sector, this duopoly may be emerging for new future due to problems faced by Jet Airways, SpiceJet, GoFirst etc on the one hand and rising of IndiGo and Tata Group Airlines - Air India, Vistara, and AIX Connect (Air Asia India) on the other. Between them, IndiGo and Tata group now control a staggering 87.7% of India's domestic civil aviation market.

- **Market Share of various companies in May 2023:**

- **Further, both these airlines have lined up massive fleet expansion and modernization plans**, with the latest announcement of IndiGo ordered 500 Airbus jets - the biggest ever aircraft order in the history of commercial aviation.

- **This duopoly may lead to reduced competition which may result into:**
 - **Higher Prices**
 - **Lower Quality of Services**
 - **Less Innovation** - When there are limited players in the market, there is slower adoption of technologies.
 - **Reduction in customer choices.**
 - **Increased potential of collusion**
 - **Difficult for others to enter the market** - Duopoly collusions and high cost of entry in aviation sector may further lead to problems.

Airlines	Domestic Market Share (%) in April	Domestic Market Share (%) in May
IndiGo	57.5	61.4
Air India (Tata)	8.6	9.4
Vistara (Tata)	8.7	9
AIX Connect (Tata)	7.6	7.9
SpiceJet	5.8	5.4
Akasa Air	4	4.8
Go First	6.4	0.4*

*Go First operated flights on just two days in May. (Source: DGCA)

- **Way Forward: Meeting the risks of duopoly in the aviation sector:**

- **Government Regulation** to ensure fair competition and consumer rights protection.
- **Incentivizing new entrants** through financial assistance, reduced entry barriers etc.
- **Ensuring transparency and fair play** in the sector could encourage healthy competition. This could involve measures like a clear and equitable allocation of airport slots, unbiased access to infrastructure, and fair distribution of air traffic lights.
- **Consumer Education** can also play a role in mitigating the risks of a duopoly by being aware of the potential problems and by demanding high quality service from airlines.

7) DEVELOPING HUB AIRPORT IN INDIA

- **Why in news?**
 - Experts believe that it is time to transform India's metro gateway airports into a hub airport (June 2022)
- **Background:**
 - India is the third largest domestic aviation market in the world, after USA and China. With increasing population, improved socio-economic conditions, and government initiatives like UDAN, the sector is expected to have high rate of growth in India.
- **What is a Hub Airport?**
 - A hub airport, also known as a hub, is an airport that serves as a central transfer point for connecting flights. It connects several airports through non-stop flights.
 - A typical hub airport operates on the concept of waves, a wave of incoming flights arrives and connects with another wave of outgoing flights that departs an hour or two later.
- **Advantages:**
 - **Economies of Scale** for the airport and airlines alike.
 - Concentrating air traffic at a hub airport enables airlines to achieve economies of scale. By funnelling a large volume of passengers through a central location, airlines can optimize their operations, reduce costs, and maximize efficiency in areas such as aircraft maintenance, ground handling, and fuel consumption.
 - **Better Connectivity**: A hub airport provides extensive flight connections, allowing passengers to travel between different origins and destinations efficiently. Airlines get to serve city pairs that are otherwise economically unviable for non-stop flights.
 - **Greater Choice and flexibility for passengers**- Frequent fliers get greater choice and flexibility with flights, destinations, and service frequencies, as well as lower ancillary costs, such as avoiding the time and cost of overnight stay.
 - **Positive knock-on effect on the wider airport ecosystem**
 - Improved passenger throughput will also benefit aero and non aero service providers at the airport, including cargo and ground handling, fuelling, retail and duty free, vehicle parking etc.
 - **Improved infrastructure** - Hub airports are often focal point of airline alliances and partnerships. These collaborations allow airlines to coordinate schedules, share facilities, and thus improve efficiency.
 - **Propels the economic and social development of the city** and its inhabitants .
- **Consideration of Hub Airports in India**

- There are three basic requirements for becoming a major airport hub:
 - Sufficient local consumer demand
 - Good geographical location
 - Necessary infrastructure to support high-volume of traffic
 - In India's case, the first two requirements are rightly addressed the focus is rightly on addressing the third requirements.
- **Favourable Factors for Airport Hub in India:**
- India has the largest diaspora (around 18 million people across all six continents and regions).
 - India is also located on busy international air corridor which connects Europe, Africa, West Asia, etc with East Asia. Thus it is ideal for a transit hub and alternative/diversion/fuel stop/ technical stop.
 - Since, India is a very large economy, it can support development of more than one hub.
- **Impediments:**
- **Capacity constraints** at all major airports - especially during peak season or peak hours.
 - **Congestion and air traffic management** will be worsened at the hub airport.
 - **Large Geography** - may present challenges in establishing a single or limited number of hub airports.
 - **Land Acquisition** is a huge challenge in all the cities of India
- **Conclusion:**
- Addressing these impediments requires a comprehensive approach involving government support, private sector participation, infrastructure development, airspace management improvements, and strategic planning to ensure the viability and success of hub airports in India.

8) PROMOTING HELICOPTER SERVICES IN INDIA (JUST NOTE SOME FACTS)

- **Why in news?**
 - Minister of Civil Aviation, Shri Jyotiraditya M Scindia inaugurates 4th Heli-India Summit 2022 (Oct 2022)
- **Details**
 - **4th Heli-India Summit 2022** with the theme 'Helicopters for Last Mile Connectivity' at Sher-e-Kashmir International Conference Centre, Srinagar.
- **Multifarious Roles of Helicopters:**
 - Providing Urban Connectivity
 - Emergency Medical care
 - Disaster Management during floods
 - Rescue operations
 - **Infrastructure development:** For e.g. J&K has set an example of the best use of Heli services when it erected transmission lines and towers using heli-cranes (sky cranes) on the Peer Panjal mountain ranges.

- Other initiatives launched in recent times to promote Helicopter sector:
 - UDAN 5.1
 - HeliSewa Portal - it is an online portal being used by all operators for obtaining landing permissions to helipads, and it also is creating a database of helipads in the country.
 - HeliDisha: It is a document that has been prepared as guidance material to state government administration to effectively and safely support civil helicopter operations.
 - Helicopter Accelerator Cell: It is fully active in resolving helicopter issues and the advisory group of industry representatives is helping identify problem areas.
- Fractional Ownership Model:
 - Released in Oct 2022
 - It will lower the barrier on the cost of acquisition of helicopters and aeroplanes through pooled capital by multiple owners.
 - This will allow companies and individuals to minimize their capital outflow by sharing the purchase cost, reducing their exposure to risks and making it financially easier to run a NSOP business (Non-scheduled Operator's Permit Business)
 - Fractional Ownership Model has the potential to energize the NSOP segment by demonstrating ownership of aircraft and it can be a driver to boost the number of aircraft existing in the NSOP industry.

9. DRONE SECTOR

9) UAVS AND ASSOCIATED ISSUES

- Why in news?
 - » Ministry of Civil Aviation issues guidelines for PLI Scheme to support indigenous drone industry (Nov 2022)
- Example Questions
 - » "Drones are frontier technology which has the potential to leapfrog India's economic growth" Elaborate [10 marks, 150 words]
 - » Discuss the key challenges limiting the growth of drone technology and its usage in India [10 marks, 150 words]
- Introduction
 - » Remotely Piloted Aircrafts, popularly referred as drones, are unmanned aircrafts piloted from a remote platform. Drones, with its associated remote pilot station(s), command and control links and other components form a **Remotely Piloted Aircraft System (RPAS)**. It has many wide-ranging applications. But, due to various security concerns, the Govt had, in Oct 2014, banned the use of UAVs by private players and individuals.
 - » After years of deliberations, the new regulations by DGCA which came into force on 1st Dec, 2018 have lifted this ban. It is expected to encourage more investment and R&D in the sector in India.
- Key Areas of Application

Agriculture	<ul style="list-style-type: none"> •Compilation of Plant Count •Crop Supervision, maintenance, fertilizer/pesticide supply etc. •Agri-Insurance: Collecting Crop Yield Data, Surveillance etc.
Media and Entertainment	<ul style="list-style-type: none"> •Aerial documentary, photography, videography etc.
Mining	<ul style="list-style-type: none"> •Thermal imaging, terrain mapping, infrastructure and equipment manufacture
Infrastructure Development	<ul style="list-style-type: none"> •Industrial inspections, 3-D video mapping, Land Audit, Town Planning, Site Management, etc.
Energy and Utilities	<ul style="list-style-type: none"> •Remediation and site monitoring, survey grad maps for siting transmission lines
e-Commerce	<ul style="list-style-type: none"> •Transportation of deliveries
Defence and Policing	<ul style="list-style-type: none"> •Replacing manned aircraft in future •coast guard and navy may use it for surveillance and anti-piracy operations •General Monitoring of the law and order situation
Health Sector	<ul style="list-style-type: none"> •Supplying medicines to remote areas

- **Challenges and limitations hindering the growth of drone sector in India.**
 - » **Evolving Regulatory framework:** The regulatory framework for drone sector in India is still evolving, and this can make it difficult for businesses to operate.
 - » **Poor Demand:** There is a lack of awareness among people and businesses about potential uses and applications of drone sector. This has kept the potential demand on the lower side.
 - » **Safety Concerns:** With increased uses of drones, there may be increased risk of drone accidents/ drone falling. This may create problems specially in a densely populated area.
 - » **Privacy Concerns:** Drones may be used for spying on people without their permission leading to privacy violations.
 - » **Cybersecurity issues:** Drones are vulnerable to cyber-attacks and these attacks may disrupt drone operations.
 - » **Job Losses:** In future, when drones are used for work like delivery by online sellers, food delivery companies etc, it may lead to a job loss situation for a lot of people.
 - » **Military use of drones can also be very devastating:**
 - Easier, violation of sovereignty
 - For e.g., in recent years, sightings of drones along the Indo-Pak borders have increased.
 - Drones have been used by Pakistan based outfits to smuggle arms, ammunitions and drugs in India.
 - Risk of overusing of military options
 - Making it more difficult to identify violations of constraints against targeting non-combatants.

- **Key steps taken in recent times to promote drone sector in India:**

- » Liberalized Drone Rules, 2021
 - » India's Airspace Map for Drone Operations Released by Ministry of Civil Aviation
 - » PLI scheme for Drones, 2021
 - » Guidelines for PLI incentive scheme to support Indigenous drone industry (Nov 2022)
 - » Drone Shakti Scheme - Financial incentives to startups that are developing drone based solutions.
 - » Initiatives to promote the use of drones in different sectors like Agriculture, infrastructure logistics etc.
- **Way Forward:**
- » **Encourage drone use in various sectors** like logistics, infrastructure, agriculture etc.
 - » **Create a favorable regulatory environment:** The 2021 rules need further simplification to promote ease of doing business in the drone sector
 - » **Support Drone Industry**
 - **Launch** a drone startup accelerator program.
 - **More R&D Support:** Government should incentivize/support R&D in drone sector to ensure innovation and development in the drone sector.
 - Organized drone-expos and conferences.
 - » **Encourage PPP models in Drone sector** - This will help pool resources and expertise and accelerate the development of the sector.
 - » **Education and Skill development:** Create dedicated courses for drone sector at both graduation and post graduation level to promote drone sector. Jobs in the areas of drone repairs will be a big deal.
 - » **Promote Industry-Academia collaboration** to support research.
 - » **Focus on Cyber Security**, which is expected to increase in vulnerability
 - » **Plan for sustainable disposal of e-waste** generated by the use of drones.

10) LIBERALIZED DRONE RULES, 2021

- **Key Significance of the new Rules:**
- » **Reduces Operational Complexities and Promotes Ease of Doing Business**
 - The new rules are premised on **trust, self-regulation** and **non-intrusive monitoring** rather than enforced regulation.
 - Rules have been **simplified** by **doing away with several unnecessary approvals** (e.g. Unique Authorization Number, certificate of manufacturing and airworthiness etc.)
 - **Reduction in number of forms (from 25 to 5) and number of fee (from 72 to 4).**
 - **Quantum of fee** reduced to nominal levels and delinked with size of drones.
 - For e.g. the fee for a remote pilot license has been reduced to INR 100 for all categories of drones; and is valid for 10 years.
 - **To promote minimum human interference**, the rules provide for creation of a **Digital Sky Platform**
 - It will serve as a business friendly single-window online system that allows for various approvals to be generated automatically for manufacturers, importers etc.
 - **Interactive airspace map with green, yellow and red zones** shall be displayed on the digital sky platform within 30 days of publication of these rules.

- Max penalty for violation of the norms have been reduced to Rs 1 Lakh.
- » Foreign investment and imports in the sector simplified-> **No restriction on foreign ownership** in Indian drone companies.
- » **Coverage of drones under drone rules 2021**, increased from 300 kg to 500 kg. This will cover drone taxis as well.
- » DGCA shall prescribe drone training requirements, oversee drone schools and provide pilot licenses online.
- » **Safety Measures Ensured**
 - The central government will also be notifying the safety measures to be installed on a drone.
 - Some measures will include 'No permission - no takeoff (NPNT), real-time tracking beacon, geo-fencing etc.
 - A six-month lead time will be provided to industries for compliance.
- » **Infrastructure Improvement:**
 - **Drone corridors** will be developed for cargo deliveries.
- » **Institutional Mechanism to promote the sector**
 - **Drone Promotion Council** will be set up by government with participation from academia, startups and other stakeholders to facilitate a growth oriented regulatory regime.
- » Overall, these rules are expected to leverage India's capability in innovation, technology and engineering to develop India's Drone Sector.

- **Concerns and Way Forward**

- » The rules are vague on privacy infringement and may need to be tweaked to ensure that privacy concerns are not violated.
- » The DGCA would also face technical challenges in integrating unmanned aircraft systems into India's National Unmanned aircraft system.
- » With changes in technology, the drone regulation will need to change and hence this will necessarily remain a work in progress.

- **Conclusion**

- » The new rules definitely spell good news for the Drone Industry in India. But at the same time government should remain flexible to bring changes as and when new challenges appear in the system.

10. NEXT BOOKLET

- Roadways
- Railways
- Waterways
- Ports
- Energy



CURRENT AFFAIRS PROGRAM

PRE-CUM-MAINS 2024

JULY 2023 - BOOKLET-1

INFRASTRUCTURE-2

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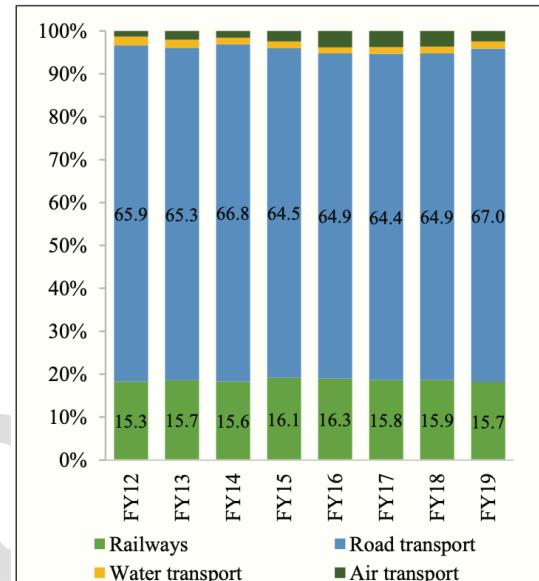
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1. SYLLABUS:

- INFRASTRUCTURE: ENERGY, PORTS, ROADS, AIRPORTS, RAILWAYS ETC.
- INVESTMENT MODELS

2. ROADWAYS

- India has **2nd largest road network** in the world with **63.71 lakhs kms of rural-urban roads** and national state highways.
 - » **Note:** India is next only to the USA that has a road network of 66.45 lakh km.
- Road transport is the dominant mode of transport in India, both in terms of traffic share and in terms of contribution to National Economy (3.08% of GVA (out of total 4.6% by Transport sector)).
 - » According to the **National Transport Development Policy Committee Report**, as of 2011-12, road transport is estimated to handle **69% of countrywide freight** and **90% of passenger traffic respectively**.
 - » Apart from facilitating Indian **movement of goods and passengers**, road transport plays a key role in promoting **equitable socio-economic development** across regions of the country.
 - » In line with the vision of monetisation of public sector assets, National Highways Authority of India (NHAI) launched its InvIT in FY22 not only to facilitate monetisation of roads but also to attract foreign and domestic institutional investors to invest in the roads sector.
 - So far, NHAI InvIT has raised more than ₹10,200 crore from high quality foreign and Indian institutional investors (up to December 2022).



source: Survey calculations based on MoRTH data.

1) TYPES OF ROADS

- Road are generally classified in the following categories
 - **National Highways** -
 - These are the primary roads of the country and connect large cities and big industrial areas.
 - Their development and maintenance are the responsibility of central government.
 - **Further need of development of National Highways:**
 - Out of the total roads only 2.06% is national highway, but it's carrying capacity is 40%.
 - Higher the density of National Highway -> Higher the inter-state trade (Export + Import) as percent of GSDP (ESI)
 - A positive relationship exists between density of NHs and the per capita income in Indian States.

- Presently, more than 70% of NHs are either **two lane or less**. Thus there is a lot of scope of improvement.
- **State Highways**
 - These roads link all the important centre of industry, trade and commerce of the state and National Highways
- **District Roads:**
 - These roads connect different parts of the district, important industrial centres and market centres and usually lead to local railways stations
- **Rural Roads:**
 - These roads are found in villages and usually are of two types - *Pucca (or metalled)* and *Kutcha (or non-metalled)*

2) VARIOUS ROAD DEVELOPMENT PROJECTS IN INDIA

- **The NHDP** was once the largest highways project undertaken (now Bharatmala) in the country since 2000. It included the Golden Quadrilateral and the North-South & East West Corridor.
- **Bharatmala Pariyojna:** It is the biggest ever road and highway development program taken by India.
 - Core idea is of a road built along India's vast west to east land border from Gujarat to Mizoram and linking that to a road network in coastal states, from MHA to Bengal.
 - **Scale**
 - Under this project highways of approximately 25,000 kms was to be constructed (also bridges) with an estimated cost of around 3.85 lakh crore in phase-1 (2017-19 - 2021-22)
 - In addition, Phase-1 included 10,000 km of balanced road works under NHDP. It would cost 1.5 lakh crore.
 - **Total Estimated outlay for phase-1** is Rs 5,35,000 crore.
 - The target was to complete the project in 2022.
 - **Funding**
 - To complete all the ongoing projects of the Ministry government estimates total expenditure of **about Rs 6.92 lakh crore (3.85 lakh crore for Bharatmala)**.
 - The funds are going to come from **fuel cess, budgetary allocation, TOT monetization and market borrowing**.
 - **Bharatmala** is an umbrella scheme which subsumes unfinished part of NHDP and also focus on new initiatives like
 - **Development of border and international connectivity roads**
 - **Coastal and port connectivity roads**
 - **Improvement in Efficiency of National Corridors**
 - **Development of Economic Corridors**
 - **Inter Corridor and Feeder Routes**
 - **Development of Greenfield Expressways**
 - **Significance/Advantages**
 - **Economic Development** - improvement in efficiency of freight and passenger

- **Improvement in average speed of vehicle** will contribute to lower freight cost, efficient fuel utilization.
- **Employment Generation** due to the project is estimated to be around **10 crore may days** during construction phase and **22 million permanent jobs** driven by increased level of economic activities due to development of economic corridor network.
- **Promotion of border trade**
- Economic multiplier effect of better roads on many poorer border states.
- **Strong strategic component**
 - Bharatmala plan has a strong strategic component. It's India's attempted answer to improve reach and connectivity to border areas, right across a large part of which lies China's impressive road infrastructure.
 - Supplies to India's troops as well as military transport currently happen through poor quality road. Bharatmala is designed to address that.
- **Other Road Projects:** Char Dham Highway Project

3) RURAL ROAD CONNECTIVITY

- **Introduction**
 - Rural connectivity is a key component of rural development in India. The construction of rural roads brings various socio-economic benefits to the rural areas and result in forming a strong backbone for the agro-based economy.
- **Positive Impacts of better road connectivity in rural areas are multidimensional.** It results in diversified livelihoods' portfolio and improved quality of life for rural communities.
 - **Agriculture**
 - » Road connectivity leads to increase in the quality of inputs for agriculture in terms of better seeds, fertilizers, motorized agri-equipment, vehicles etc.
 - » Better connectivity to market also triggers increase in production of dairy, poultry and allied activities.
 - **Promotes local industries.**
 - » Better access to raw material and market for the sale of finished products.
 - **Improved Employment opportunities**
 - » Not only due to better agri-productivity and local industries, but also because of access to employment opportunities outside the village.
 - **Improved Health Access**
 - » Due to easy access to health centres which becomes more crucial during emergency situation.
 - **Improved educational opportunities.**
 - » Better connectivity leads to easy accessibility for both school and higher education facilities.
 - » It is expected to contribute to increase in attendance and enrolment of primary and middle school.
 - **Better law and order**

- » Police or other armed forces agencies improve their mobility and thus can reach the crime scene quickly.
 - » This also creates more deterrence among criminals.
 - **Better implementation of government schemes/programs**
 - » For e.g. Pradhan Mantri Ujjwala Yojana which aims to provide LPG cylinders to BPL families will be more effective in those rural areas which are better connected.
 - **Enhanced Disaster Management**
 - » Relief and rescue reaches more effectively
 - » Rehabilitation work can also be faster in better connected areas.
- **Pradhan Mantri Gram Sadak Yojana (PMGSY)**
- PMGSY was launched in the year 2000, as a centrally sponsored program and a one-time special intervention by Ministry of Rural Development (**MoRD**).
 - The primary **objective** of the programme was to provide.
 - **Connectivity by way of all-weather roads** to unconnected habitations of designated population size of more than 500 in plain areas and 250 in north-east, hill, tribal and desert areas as per the census 2001.
 - **Upgradation of selected roads** to provide full farm to market connectivity.
 - **Connecting left wing affected areas Scheme:**
 - To improve rural road connectivity in the left wing extremism affected districts from security angle, the Cabinet had in 2016 approved the centrally-sponsored "Road Connectivity Project for Left Wing Extremism (LWE) Affected Areas" scheme.
 - The Project will be implemented as a vertical under PMGSY to provide connectivity with necessary culverts and cross-drainage structures of 44 worst affected LWE districts and adjoining districts, critical from security and communication point of view.
 - **Development of Major District Roads (MDRs):** PMGSY guidelines don't permit construction/upgradation of MDRs. However, keeping special circumstances of LWE area in view, MDRs would be taken up under the scheme as a special dispensation.
 - Government has taken up task of connecting habitats with more than 100 persons in LWE affected blocks under PMGSY.
- **Key challenges being faced by PMGSY.**
- a. **Adequate Maintenance** of the existing 4.6 million km of road network is emerging as a major challenge.
 - Many parts of the existing road network is either vulnerable or have already suffered damage from climate induced events such as floods, high rainfall, sudden cloud bursts and land-slides.
 - Generating funds for road maintenance has become a crucial challenge.
 - b. **Wide variation in unit costs among states** leads to confusions and delays.
 - Further, the cost is very high in some states which hinders the project
 - c. **Delays in execution**
 - Adverse weather condition
 - Issues in land acquisition
 - Law and order problems

- d. **Non-availability of labor and material** especially in remote areas
- e. **Lack of technically trained staff** to execute and monitor road work
- f. **Providing public transport** in these roads.

- **Way forward**

- i. **Climate vulnerability assessment** during the design process to identify the critical locations affected by floods, waterlogging, submergence, cloud bursts, storms, landslides, poor drainage etc.
- ii. **Special treatment for flood affected areas** through adequate waterways and submersible roads. Use of environmentally optimized road designs.
- iii. **For reducing the cost**, the use of non-traditional but durable and less expensive material such as iron and steel slag, fly ash and lime that are locally and easily available may be adopted.
- iv. **Proper Scheduling**
 - Schedule work after monsoon to avoid delays and cost over-runs.
- v. **Build Operate and Transfer Model** can be considered to deal with the issue of lack of resources.
- vi. **Better Monitoring** can be achieved by giving the responsibility of monitoring and undertaking minor maintenance to Gram Panchayat.
- vii. **Skill development** of rural workforce should also focus on road construction and maintenance activities.

4) PPP MODELS FOR ROADWAYS

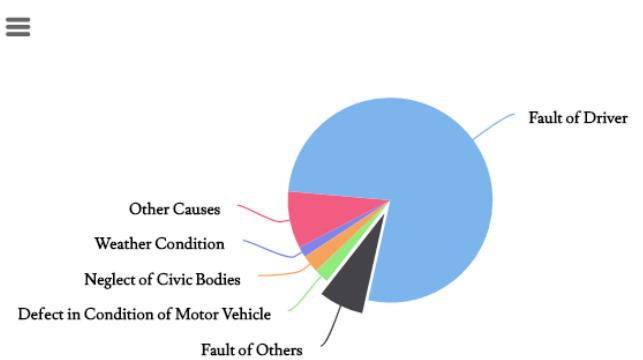
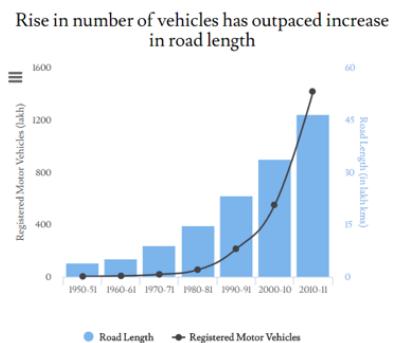
- **Practice Questions:**
 - While the infrastructure financing gap is huge in the developing world, the potential for attracting private investment for infrastructure projects is also huge. In this light discuss the key advantages and limitations of different investment models used for PPP in Roadways sector in India. [15 marks, 250 words]
- **Introduction:** Explain PPP Model
- **Engineering, Procurement and Construction (EPC)**
 - Under this format, the government authority that owns the project hires one or more private companies (or another public company) to construct the project.
 - » The private players bid for the project and build it within pre-specified time and cost. It doesn't have any role in the road's ownership, toll collection, or maintenance.
 - » Government with full ownership of the road, takes care of the toll collection and maintenance of the road.
 - **Risk to companies?**
 - » Almost no risk, barring road construction risk. So margins were also low.
 - **Limitations**
 - » **High Financial burden on government:** EPC was the preferred mode of highway project development in 2013-14 and 2014-15, it suffered from an inherent limitation - the financial resource available with the government.
 - **How much is this model being used?**

- » One of the most common method still being used by government for construction of National Highways
- **Build Operate and Transfer Model (BOT):** In BOT the developer invests in the project. Here the private players owns the asset and recovers his investment through toll charges or collect a fixed annuity from the government for a contractually pre-specified period of time (typically 15 to 30 years).
- A. **BOT (Toll)**
- The private player is also responsible for operation and maintenance once the project is commissioned.
 - **Risk to private players**
 - » Private players are expected to own the traffic risk often considered the tie breaker for the success and failure of the project.
 - » The fundamental assumption here is that private player is equally capable of assessing economic conditions and offering better value for money, even in case of mammoth infrastructure road projects
 - **Number of takers are coming down** since 2012 due to associated risk involved.
- B. **BOT (Annuity)**
- Here the contracting authority (government) pays the pre-specified sum of money semi-annually or annually to the private player and the traffic risk (toll revenue risk) is completely borne by the government(contracting authority).
- **Hybrid Annuity Model (HAM)**
- Approved by Cabinet in Jan 2016
 - **Main Provisions**
 - It is a mix of EPC models (40%) and BOT(Annuity) (60%).
 - This is the fourth PPP model (BOT(Toll), BOT(Annuity) and EPC) to be introduced in India for the execution of road projects and is intended to kick start stalled projects and accelerate highway construction.
 - Under this PPP model, the government invests 40% of the construction cost for building highways over a period and balance comes from the private developer. The government invest money in five equal instalments based on the targeted completion of the road project.
 - Bidding rolls out only after 90% land is available.
 - The government pays a semi annuity/annuity premium to the developer, thus shouldering the traffic risk.
 - Assured returns and insulation from revenue/traffic risk for private players makes the model attractive.
 - **Main objective** is to revive highway projects in the country by making one more mode of delivery of Highway Projects.
 - **Advantages**
 - **Revival of the projects -**
 - Private partner continues to bear the construction and maintenance risks as in BOT (toll) model, it is required only to partly bear financing risk.
 - **Attracting new contractors and return of old ones**

- Stress Free Lending
- Speedy Completion of Project
 - Project cost is allowed to increase with inflation; thus the developer can focus on execution of projects.
- Conclusion
 - » Considering India's large infrastructure investment requirements, only the combination of resources of both private and public sector can ensure fulfilling of financial requirement. In developing countries, the contribution of private sector is still very low and successful PPP models can play a very significant role in enhancing this contribution.

5) ISSUE OF ROAD SAFETY

- Why in news?
 - » After the 2020 COVID blip, road fatalities on the rise again in 2021 (Dec 2022: Source - PIB). In 2021, fatalities (1,53,972) from road accidents were 1.9% higher than 2019 levels, while road accident severity, or the number of people killed per 100 accidents, increased from 33.7% to 37.3%.
- Introduction
 - For any country to make steady progress, safe roads are of paramount importance and India is no exception. But the current situation in India is dismal.
 - Road accidents have become the most dreadful killers in India. According to the report by MoRT&H, more than 1.5 lakh people die every year in road accidents.
 - » WHO's estimate is much higher at more than 3,00,000 for the same period for India.
 - » In fact, a GoI study by the Registrar General and Census Commissioner, India ('The Million Death Study') also reports at least 50% under-reporting of traffic fatalities and a higher share of pedestrian and motorized two wheelers as Road Traffic Collision victims when compared to the MoRT&H report.
 - » According to Geneva-based World Road Federation's World Road Statistics, India is most unsafe country in the world followed by China (63,000 deaths) and the U.S.A (37,000 deaths).
 - As per MoRTH the main causes of road accident deaths are:
 - » Overspeeding (69.6%)
 - » Wrong side driving (5.2%)
 - » Use of mobile phones while driving (1.9%)
 - » Traffic rules violations, drunken driving, no seat belts etc. were some other reasons.



- India has only about 2% of the world's motor vehicles but account for over 12% of its traffic accident deaths, making Indian road network the most unsafe on the planet.

- **3rd Global Ministerial Conference on Road Safety**

- Feb 2020, Stockholm
- **Key Highlights**
 - » **Theme: Achieving Global Goals 2030**
 - » **Stockholm Declaration** calls for new global target to reduce road traffic deaths and injuries by 50% by 2030.
 - » In addition, it invites **strengthened efforts on activities in all five pillars of the Global Plan for the Decade of Action:**
 - better road safety management.
 - safer roads, vehicles and people;
 - and enhanced post-crash care.
 - » It also calls for speeding up the **shift to safe, affordable, accessible, and sustainable modes of transport** like walking, cycling and public transport.
 - » **WHO is asked to continue to produce the series of global status reports**, as a means of monitoring progress towards achievement of the 12 Global Road Safety Performance Targets.

- **Why so many accidents?**

- i. **Rash Driving**
- ii. **Increasing Congestion** on India roads. The rise in number of vehicles have outpaced increase in road length.
- iii. **Poor engineering** (both of roads and vehicles)
 - Presence of black spots on Indian roads
 - Almost all vehicles in India fail the crash test under European standards leading to more injuries and deaths during accidents.
- iv. **Poor traffic management** in India
- v. **Poor enforcement of Traffic rules**
 - This allows people to violate these rules and increase the chances of accidents.
- vi. **Harassment of good samaritans**
 - This has led to people not being enthusiastic in helping an accident victim.
- vii. **Lack of strong laws on road safety**
 - While globally countries have succeeded in reducing road accident deaths by enacting strong laws for road safety, India have been trying this strengthening its road safety legislation for three decades, to no avail.

- **Steps Taken by Government:** The MoRTH is undertaking various measures to improve road safety as detailed under:

- » **MVA amendment, 2019** -> Higher fines, more insurance, focus on golden hour treatment, reduces harassment of good Samaritans.
- » **National Road Safety Policy:**
 - The policy includes measures like promoting awareness, encouraging safer road infra including application of intelligent support, enforcement of safety laws trauma care etc.

- » The Ministry has formed a **multi-pronged strategy** based on 4-E's viz. **Education, Engineering, (both of roads and vehicles), Enforcement and Emergency Care**. Based on this, a draft action plan has been shared with states.
- » **Training:** Setting up of model driving training institutes in states and refresher training to drivers of Heavy Motor Vehicle in the unorganized sector.
- » **Publicity campaign** on road safety through the electronic and print media.
- » **Tightening of safety standards**
 - Seat belts, anti-lock braking system etc.
- » **Improving the quality of roads**
 - Road safety has been made integral part of road design at planning stage.
 - Road Safety Audit of selected stretches of NHs has been taken up.
 - High priority has been accorded to identification and rectification of **black spots** (accident prone spots) on National Highways. At total of 789 such black spots have been identified for improvement.
 - **India Road Assessment Program (IndiaRAP)** launched by MoRTH in Nov 2007. The aim to is tackle high risk roads around the country.

- **Steps that needs to be taken**

- i. Government needs to put more emphasis on public transport to reduce road congestions. It will be an important step towards ensuring road safety.
- ii. **Improvement in Road Design:**
 - Increase road safety audits for new projects (especially in the EPC project where the audit process is not without any conflict of interest)
- iii. Move from piece meal approach to an integrated approach; improve inter-departmental coordination; focus on traffic signal/signage especially in tier-2 and tier-3 cities; improve traffic management in smaller towns;
- iv. Focus on Engineering Aspects of the road to increase road safety. India requires establishing a system or institutional structure which enables the generation of new knowledge-new road standards thereby ensuring safe highways and urban roads.
- v. **More accurate estimation of road accident numbers.**
- vi. **Creating awareness among all stakeholders** - to make our roads safer, dedicated efforts must be made to create awareness among motorists, police, local administration, and judiciary.
 - An ideal way of increasing awareness would be launch of a nationwide Surakshit Bharat Abhiyan, a campaign to educate all stakeholders about the far reaching benefits.

3. INLAND WATERWAYS

- **Why in news?**
- Union Minister of Port, Shipping & Waterways, Shri Sarbananda Sonowal reviewed various developmental works on Barak River (NW16) (Nov 2022)
- **Example Questions**
- "Inland waterways in India may contribute immensely towards sustainable, inclusive and rapid economic growth" Elaborate. [10 marks, 150 words]

- What are the key factors hindering the development of Inland Water Transport in India? Discuss how a consultative, inter-disciplinary approach, as opposed to a techno-centric one, would keep the negative consequences of National Waterways development to its minimum [15 marks, 250 words]

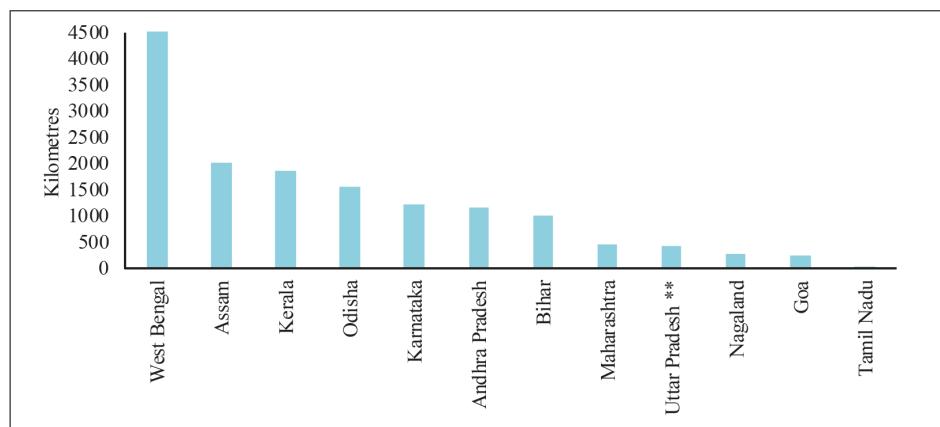
- Introduction

- Inland Water Transport was an important means of trade and communication in ancient India. But, with the development of roadways and railways in 19th and 20th century, it got sidelined. In recent years, Govt has again started emphasizing on the need of developing Inland Waterways because of its inherent advantages like fuel efficiency, competitive potential and thus ability to promote economic development and growth.

- Inland Waterways Potential in India

- Inland water transport holds great untapped potential as a means for the transportation of goods and passengers. India has a large endowment of rivers, canals, and other waterways. The total navigable length of waterways in India is around 14,850 kilometres

Figure XII.9: Navigable Length of Waterways in Different States



Source: Statistics of Inland Water Transport 2020-21, Ministry of Port, Shipping and Waterways

Note: Data pertains to 2020-21. **Data for Uttar Pradesh pertains to 2016-17

- Need for improving and Inland waterways and ports

- Contribution in trade** Only 3.5% of trade in India is done through the mode of Inland waterways, which is 47% in China, 40% in Europe, 44% in Japan and Korea and 35% in Bangladesh.
- Fuel Efficient -> Cost Effective**
- Less Polluting:** Environment friendly as the emission per unit distance per unit weight is lesser.
- Economic growth and jobs:** It will boost economy and provide more jobs especially in inland regions which needs desperate boost to economies.
- Reducing Pressure on Road -> less congestion**
- Fewer accidents** - when compared to any other mode of transport
- Less Land Acquisition Problems and Less Deforestation:** As land capital required in case of water transport is minimal when compared to road and rail transport.

- Challenges faced by Inland Waterways development in the country

- Finance:** According to Ministry of Shipping, India needs Rs 80,000 crores to develop 20,000 km of inland waterways.

- ii. **Who will use inland waterways:** For e.g., there is not a lot of industries situated along the Ganga river. So, the waterways may not be used a lot.
- iii. **Seasonal Variation in Navigable depth**
- iv. **Most river transport routes are short:** River transport routes should run uninterrupted for at least 300 km at a stretch so that desired logistics cost saving might be achieved.
- v. **Dams and Barrages interrupt the water supply:** Tussle between states would lead to unviability of some of these projects.
- vi. **Environmental Concerns** (e.g. how EN Ganges river dolphins are being affected by NW-1)
- **Other Concerns** -> low transport speeds, limited areas of operation etc.

1) STEPS TAKEN TO PROMOTE INLAND WATERWAYS:

A) INLAND VESSELS ACT, 2021

- Purpose:
 - Making legislative framework user friendly and promote ease of doing business.
- **Background: Inland Vessels Act, 1917**
 - The Inland vessels Act of 1917 was conceived to be a pure consolidating legislation having limited applicability and purposes. Though the act has had several amendments, but it still suffered from a number of limitations.
 - Separate rules by different states.
 - Provisions for restrictive movement of mechanically propelled vessels
 - Non-uniform standards, limited applicability and validity of certificates.
 - Variable regulations - varied form one state to another -> led to hurdles in a seamless navigation across states and development sector.
- The **new act** is expected to solve the above problems:
- **The new act provides for harmonized and effective regulation** of the inland vessels and their seamless and safe navigation across the states. The benefits include:
 - i. **Uniformity of rules and regulations** across the states -> seamless, safe and economical transportation..
 - ii. **Standards for classification and categorization of mechanically propelled vessels, standards and processes** involved in registration of vessels.
 - iii. **Preserving the statuses of authorities** established by the respective State Governments and thereby ensuring the effective administration of the provisions of the proposed legislations.
 - iv. The act provides for a **Central database/E-Portal** which will include all information about registration of vessels, vessel crew, and certificates issues.
 - v. A **Development Fund** will be set up for various purposes such as emergency preparedness, containment
 - vi. **Stipulating higher standards** regarding safety, navigation, environment pollution, trade practices, accountability, training of workforce etc.

B) INLAND WATERWAYS AUTHORITY OF INDIA ACT, 1985

- Empowers the government to declare waterways with potential for development of shipping and navigation as National Waterways and develop such waterways for efficient shipping and navigation.
- For development and regulation of inland waterways in the country the Inland Waterways Authority of India (IWAI) was set up in October, 1986
 - IWAI is the nodal agency under the Ministry of Shipping to make National Waterways commercially navigable. It aims to increase the cargo transportation through IWT.
 - Currently, it is developing the National Waterways for commercial navigation, including with assistance from the World Bank.
- It is **headquartered in Noida** and have regional offices at Patna (Bihar), Kolkata (WB), Guwahati (Assam) and Kochi (Kerala) and sub offices at other places throughout India.

C) NATIONAL WATERWAYS ACT 2016

- **Commenced in 2016**
- **Provisions**
 - The act has thus declared 111 rivers or river stretches, creeks, estuaries as National (inland) Waterways (including the five older ones)
- **Other details**
 - These 111 waterways pass through 24 states and two UTs with an approximate length of 20274 km². These will pass through nearly 139 river systems, creeks, estuaries and related canal systems of India.
 - Assam (17) and WB (16) will have the highest number of waterways.
- **Other steps taken to promote National Waterways Recently**
 - i. Sagarmala Project
 - ii. Declaration of 106 new waterways as National Waterways (total 111) through an act in 2016.
 - iii. Implementation of Jal Marg Vikas Project (JMVP) to augment capacity of NW-1 with the technical and financial support of the WB.
- **Way forward**
 - Increased budgetary allocation to Ministry of Shipping which can be used for more allocation to inland waterways project.
 - Simultaneous focus on development of industries in the inland water ways region to ensure that waterways get used more and more and are economically viable.
 - Dams and diversion of water for agriculture can be reduced by focusing on newer dam technologies which limit the amount of water that needs to be stored and promoting efficient utilization of water in agriculture.
 - In undertaking this paradigm shift towards inland transport, India should implement the sustainability practices in Europe.
 - A consultative, inter-disciplinary approach, as opposed to a techno-centric one, would keep the negative consequences to a minimum.

4. PORTS

1) PORT AND SHIPPING SECTOR: GENERAL CHALLENGES AND WAY FORWARD

- **Introduction: Basic Information**
 - » For ages, the sea has been source of opportunity and seashores have acted as the gateway to prosperity for India. The development of ports and shipping sector is crucial for the economy given that most of the international trade is handled through ports (around 90% of international trade cargo by volume and 79.9% by value).
 - » The capacity of major ports, which was 871.5 million tonnes per Annum (MTPA) at the end of March 2014, has increased to 1534.9 MTPA by then end of March 2022. Cumulatively they handled 720.1 MT traffic during FY22.
- **Shipping and Port Sector has a lot of potential in India:**
 - » **India's Geography:** India is endowed with a rich coastline of ~7500 km and has a strategic location on key international maritime trade routes.
 - » **India's fleet** is just 1.2% of the world's fleet and carries only 8% of India's Exim trade.
- **Some challenges faced by India's Shipping Sector:**
 - i. **High Average Turnaround time** vis-a-vis ports of other countries. Most of this delay is caused due to port inefficiency. This undermines the competitiveness of Indian ports.
 - ii. **Inadequate linkage of ports with hinterlands** - The evacuation of cargo is slow, leading to congestion.
 - iii. **Declining share of Indian ships** in the carriage of India's overseas trade (from about 40% in 1980s to 7% in 2015-16). This leads to a lot of forex outflow.
 - iv. **Ageing Indian fleet:** The average age increased from 15 years in 1999 to 19.3 years as on Jan 1, 2017. In fact, around 45% of the fleet is more than 20 years of age.
 - v. **Competition from neighbouring countries** like China and Sri Lanka is also impacting India's port and shipping sector.
- **Steps Taken:**
 - **Maritime India Vision 2030 (MIV 2030)**, released in March 2021
 - Objective of propelling India to the forefront of the global maritime sector.
 - It will act as a blueprint to ensure coordinated and accelerated growth of India's maritime sector.
 - Develop World class mega ports, transhipment hubs, and ensure infrastructure modernization.
 - **Scheme to provide subsidy support to Indian shipping companies** (announced in July 2021) in global tenders floated by Ministry and CPSEs over five years to promote flagging of merchant ships in India.
 - **Expansion of port capacity** has been accorded highest priority by the government through various infra-development projects like Sagarmala, and various PPP initiatives etc.
 - **Various steps are being taken to enhance efficiency of ports:**

- Improving Port Governance; addressing low utilization; modernization of ports with new technologies; etc.
 - **For streamlining the port compliances and for reducing the Turn Around Time (TAT) for vessels**, long strides have been taken at major ports towards digitization of key Exim processes.
 - For e.g., the Port Community System (PCS 1x) has digitized processes such as Electronic Invoice (e-Invoice), Electronic Payment (e-payment), and Electronic Delivery Order (e-DO) for the physical release of cargo by custodians, in addition to the process of generating electronic Bill of Lading (e-BL) and Letter of Credit (LC).
 - RFID solution has been implemented at all major ports to enable seamless movement of traffic across port gates, including substantial reduction in documentation check.
 - **Other initiatives:**
 - Major Port Authorities Act 2021
 - New Captive Policy for Port Dependent Industries has been prepared to address the challenges of renewal of concession period, scope of expansion, and dynamic business environment.
- **Way Forward:**
- i. **Improved investments** for ensuring enough funds for MIV 2030
 - ii. **Incentivize private investment** in port and shipping sector through tax breaks, subsidies and loans.
 - iii. **Operation has to become more efficient.**
 - iv. **Domestic Ship Building Industry** needs to be encouraged to reduce the cost of ships.
 - v. Focus on niche areas like coastal shipping and cruise shipping.
 - vi. **Work towards sustainability:** The shipping sector is a major polluter, and there is a need to promote greener fuel and technology in shipping sector.
 - vii. **Promote Cooperation with neighbouring countries** - the government should promote cooperation with neighbouring countries in the shipping sector. This could include joint ventures, sharing of resources, and harmonization of regulations.
- **Conclusion:**
- » The ports and shipping sector is a vital part of the Indian economy. By taking further steps to develop the sector the government can help boost the economic growth and create jobs.

2) MAJOR PORT AUTHORITIES ACT, 2021

- **The need of this act?**
- » Major Ports Trust Act of 1963 was very restrictive which made it difficult for major ports to function in highly competitive environment and respond to market challenges.
 - » The Board of Trustees was considered too large and disparate to allow efficient decision making.

- The 2021 act provides for regulation, operation, and planning of major ports in India. It was enacted in Sep 2021 and replaced the Major Port Trusts Act, 1963.
- **Key Provisions:**
 - » It vests the administration, control and management of major ports in the **Boards of Major Port Authorities (MPAs)**. It will replace the existing port trusts.
 - **Responsibility:** The boards are responsible for overall planning, development, and operation of the port. They are also responsible for fixing the scale of rates for port services and assets.
 - » **Greater autonomy to MPAs in decision making:**
 - MPAs are now free to enter into public-private partnership (PPPs) for the development and operation of port facilities.
 - **Significance:** This will allow the ports to be more responsive to the needs of their users and to make decisions that are in the best interest of the port community.
 - » They are also responsible for fixing the tariffs for port services based on market conditions.
 - **Significance:** This will allow ports to be more competitive and to attract more traffic.
 - » **Reorient the governance model** in the major ports to landlord port model in line with the global practices.
 - » **Improved grievance redressal mechanism:** The act provides for creation of an adjudicatory board to resolve disputes between MPAs and stakeholders.
- The above changes are also expected to increase investment in the port sector.
- **Key Criticisms/Opposition:**
 - » **No accountability to public:** The act doesn't provide for any specific mechanism to ensure that major ports remain accountable to the public. This could lead to increased corruption.
 - » Critics also argue that the act is the first step towards privatization and can thus be a backdoor for crony capitalism.
 - » Interests of state governments have not been kept in picture
- **Conclusion:**
 - » The MPAA act is a positive step towards the development of India's port sector. It is expected to make Indian ports more competitive and efficient, and to attract more investment in the sector.

3) SEAPORT DEVELOPMENT AND PPP

- **Example Questions:**
 - "PPP projects in the ports sector are of great significance in making Indian ports more competitive and strengthening India's position in international trade" Discuss.
 - Evaluate the impact of the PPP model on the efficiency and performance of ports in India. Provide examples of successful PPP projects and their outcomes. [15 marks, 250 words]
- **What is PPP and different models of PPP** (Already done in the basic's class)

- **PPP Model in Port Sector**
 - It has been 25 years since the PPP model was first introduced in India's major ports. In July 1997, the Jawaharlal Nehru Port entered into first agreement with the private player Nhava Sheva International Container terminal within the Jawaharlal Nehru Port
 - When the PPP started, there was nothing like a Model Concession Agreement. Government came up with various templates and through learning along the way, these agreements are being suitably modified to take care of the concerns of the government sector and private sector.
- **Various PPP Models used in the port sector:**
 - Landlord Port Model
 - Build Operate Transfer (BOT)
 - Build Own Operate Transfer (BOOT)
 - Build Own Lease Transfer (BOLT)
- **How PPP has contributed over the years in port sector?**
 - **Problems:** Before PPP was introduced, the port sector was constrained by limited capacity, traditional infrastructure, and poor equipment levels. These were resolved by roping in the private sector to make ports globally competitive.
 - **Improved Port Infrastructure:** PPP model has hastened the economic growth by introducing international level infrastructure in the port. It has enabled national ports to compete with international ones.
 - **Operational models** has enabled efficient port monitoring.
 - **Port business has become more competitive** with more terminals chasing users.
 - **World Bank** too has praised India's PPP Model, saying the country witnessed considerable growth in PPPs in the last one and a half decade. India has emerged as one of the leading PPP markets in the world, due to several policy and institutional initiatives taken by central as well as many state governments.
- **Scale of PPP Projects:**
 - The PPP investment numbers are quite huge in the port sector with nearly 300 PPP projects costing around 3.5 lakh crores taken up as of Dec 2019.
 - The Sagarmala program has identified 123 PPP projects at an estimated investment of Rs 2.63 lakh crore.
 - Of this around 30 have been completed and around 30 additional are currently under implementation.
- **Some successful examples:**
 - **Mundra Port (BOT Model):** Adani Ports and Special Economic Zone (APSEZ) entered into a BOT agreement with Gujarat maritime board to develop and operate Mundra Port.
 - The port has emerged as one of the largest and most efficient ports in the country. It has seen a substantial cargo handling growth, established strong connectivity, and implemented state of art technology and infrastructure.
 - **Kandla Port (Joint Venture):** Kandla International Container Terminal (KICT) was developed through a JV between ABG port and Deendayal Port Trust.

- Kandla International Container Terminal (KICT) was developed through a JV between ABG Ports and the Deendayal Port Trust. This has significantly enhanced the container handling capacity at Kandla Port.
- **Some challenges:**
 - **Risk Allocation** between public and private sector.
 - **Evolving Regulatory Framework:** The regulatory framework for PPPs in India is still evolving. This can create uncertainty for private investors and make it difficult to attract investment.
 - **Lack of competition:** The huge size and complexity of PPP projects can discourage smaller contractors from bidding, so reducing competition, which may also affect the final cost.
- **Conclusion:**
 - These successful PPP projects demonstrate how private sector participation has positively impacted the efficiency, capacity, and overall performance of ports in India. However, it is important to be aware of the limitations of this approach and to take steps to mitigate the risks involved.

4) DIFFERENT TYPES OF PPP MODELS USED IN PORT SECTOR

- **Example Question:** Highlight the advantages and limitations of the different types of PPP models used in the development of ports in India [10 marks, 250 words]
- **Introduction:**
 - » Write about need of PPP in Ports sector.
- **Different types of PPP models used in Port development include:**
 1. **Landlord Port Model**
 - The landlord port model is a port management model in which the port authority acts as a landlord, leasing the port infrastructure to private companies that operate the port.
 - **The port authority** retains the ownership of the port infrastructure and retains the responsibility of the strategic port function, such as planning, regulation, and safety.
 - **The private companies** are responsible for the day-to-day operations of the port, such as cargo handling, stevedoring, and terminal management.
 - **Advantages:**
 - **Port Authorities** can focus on core competencies, while the private companies bring in their expertise in operations and management. This leads to a more efficient and effective port operations.
 - **Investment:** The model also attracts private investment, which can help to improve the port's infrastructure and facilities.
 - **Limitations:**

- Private sector may not be willing to invest in the construction and operation of the superstructure if the revenue risk is very high.
 - E.g.:
 - Jawaharlal Nehru Port (India) became India's first 100% landlord port in July 2022.
2. **Build Operate and Transfer (BOT) Model**
 3. **Build Own Operate Transfer (BOOT) Model**
 - Here, a private player is responsible for financing, constructing, owning and operating the port facility for a specified period before transferring it to the government.
 - **Advantages:** During concession period, private players have greater control over operations
 - **Limitations:** The private sector may not be willing to take on the risks associated with the project if the returns are not attractive.
 4. **Build Operate Own (BOO) Model**
 - The private sector builds a new port or terminal, operates it indefinitely, and own it outright.
 - Unlike BOT and BOOT, the private sector party owns the project and doesn't have to transfer it to the government entity at the end of the term.
 - **Advantages:**
 - Efficiency gains associated with private sector.
 - Private sector has incentive to invest in long term infra.
 - **Limitations:**
 - Private sector may not be interested if there is no guarantee of long term return.

5. Management Contract Model

- Private sector manages the port or terminal on behalf of the public sector. They bring their expertise and resources to bring efficient operation.
 - **Advantages:**
 - Government benefits from private entity's expertise in port management
 - Reduced financial risks for the private entity compared to other models.
 - **Limitations:**
 - Limited incentives for the private players to invest in infrastructure upgrade.
- **Landlord port** model is the most common type of PPP model used in India. It is because it offers a good balance between risks and rewards for both the public and private sector.
- The choice of PPP model will depend on a number of factors, including the size and complexity of the project, the risks involved, and the objectives of the public and private sectors. It is important to carefully evaluate all these factors before selecting the PPP model.

5) SAGARMALA INITIATIVE

- **Example Questions:**
 - Explain the vision and objective of the Sagarmala initiative in India's maritime sector. How does it contribute to the country's economic development and coastal community welfare?

- **Background: Need of Sagarmala Program:**
 - **Institutional Challenges:**
 - » Involvement of multiple agencies in development of infrastructure to promote industrialization, trade, tourism and transportation.
 - » Presence of dual institutional structure that had led to development of major and non-major ports as separate, unconnected entities.
 - **Infrastructure challenges:**
 - » India lags behind in port and logistic sector.
 - » Lack of requisite infrastructure for evacuation from major and non-major ports leading to sub optimal transport modal mix
 - Limited hinterland linkages that increases the cost of transportation and cargo movement
 - » Lack of scale, deep draft and other facilities at various ports in India.
 - » Limited mechanization.
 - **Poor Manufacturing sector** - Low cargo availability for shipping sector.
 - **High cost of logistics in India** hampers India's export competitiveness.
 - **Low penetration of coastal and inland shipping** in India
 - **Procedural bottlenecks.**
- **Sagarmala is envisaged to solve the above problems.** It was approved by Union Cabinet in 2015.
- The objective of the Sagarmala program is to bring Indian ports at par with the best global ports and promote port led development through port modernization, hinterland connectivity, port-led industrialization, and coastal community development along with development of Coastal Economic Zones.
- The initiative has **following main objectives:**
 - The **main vision** of the program is to reduce logistic cost for international and domestic trade with minimal infrastructure investment.
 - Optimizing the cost of transporting domestic cargo through optimizing modal mix.
 - Optimizing time/cost of EXIM container movement.
 - Lowering logistics cost of bulk commodities by locating future industrial capacities near the cost.
 - Improving export competitiveness by developing port proximate discrete manufacturing clusters.
- The **prime objective** of the Sagarmala project is to:
 - **Develop world class Ports and Terminals:** It aims to develop 100 new ports and terminals by 2025.
 - **Promote port-led direct and indirect development;**
 - **Provide infrastructure to transport goods to and from ports quickly, efficiently and cost effectively.**
 - Developing new lines linkages for transport (including roads, rails, inland waterways and coastal routes)
 - **Create new infrastructure for coastal shipping:** It will include development of new waterways, the construction of new jetties, and the dredging of existing channels.

- **Simplifying Procedures** used at ports to ensure quick, efficient and hassle free and seamless cargo movement.
- **Establishing Industries and manufacturing centres** to be served by ports in EXIM and domestic trade.
 - It involves development of Coastal Economic Zones.
- **Improvement in quality of Life:**
 - **Coastal Community Development Plan** includes skill development, coastal tourism etc.
 - **For Human Resource development**, two Centres of Excellence in Maritime and Shipping (CEMS) with campuses in Vizag and Mumbai has been envisaged.
 - In collaboration with other ministries, there would also be focus on improving capacity development and social development through fishery, cold chain and aquaculture development.
 - **Promoting Tourism** in convergence of with Ministry of Tourism and state governments. The coastal tourism projects include: Development of coastal tourism, cruise tourism, lighthouses etc.
- **Significance:**
 - Sagarmala will thus contribute to increased trade, improved connectivity, new Industries, more jobs and social improvement of coastal community.

Conclusion: The success of the Sagarmala initiative will depend on a number of factors, including the availability of funding, the cooperation of state governments, and the participation of private sector. However, if the initiative is successful, it will have a significant impact on India's economic development and coastal community welfare.



CURRENT AFFAIRS PROGRAM

PRE-CUM-MAINS 2024

JULY 2023 - BOOKLET-2

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1. GENERAL STUDIES – PAPER-2

1) POLITY: UNIFORM CIVIL CODE (UCC)

- **Why in news?**
 - The 22nd Law Commission of India on Wednesday sought fresh suggestions from various stakeholders, including public and religious organizations, on the Uniform Civil Code (June 2023)
- **Example Questions**
 1. Discuss the possible factors that inhibit India from enacting for its citizens a uniform civil code as provided for in the Directive Principles of state policy. [12.5 marks, 200 words] [CSM 2015]
 2. What is meant by a Uniform Civil Code (UCC). What are the key arguments put forth by its proponents and opponents? Examine the challenges associated with implementing a UCC in a diverse and multicultural country like India [15 marks, 250 words]
 3. 'Legislature should first consider guaranteeing equality 'within communities' between men and women, rather than 'equality between communities'. Discuss in light of the debate around Uniform Civil Code. [15 marks, 250 words]
- **Introduction**
 - Uniform Civil Code means **same law for every citizen of the country** in civil matters such as marriage & divorce, succession & inheritance; Minority & Guardianship; and adoption & maintenance.
 - » It doesn't only mean same law (or equality before law) between different communities, but also within the communities (i.e., between men, women, transgenders etc.)
 - **Article 44**, of the Constitution of India declares that the state shall endeavor to secure the citizens a Uniform Civil Code.
 - » Further **Article 37** of the constitution states that "the principles laid down under DPSP are fundamental in the governance of the country and it shall be the duty of the state to apply these principles in making laws".
 - At the time of independence, **UCC was only accommodated as a DPSP** due to communal disharmony and resistance to remove personal laws against the backdrop of partition.
 - » There was a need to placate every community by providing that their way living was not endangered in India.
- **Need of Uniform Civil Code**
 - **National Integration:** Different civil laws for different religious group, "communalize" the society. It is an affront to the nation's unity.
 - **Absence of UCC can be seen as Violation of Fundamental Right to Equality**
 - Different civil laws complicate the legal system and leads to more delays.

- UCC will provide an **opportunity to reform personal laws** which are currently discriminatory because of patriarchal influence (Polygamy, Property Rights, Maintenance Rights etc.)
- **Supreme Court has supported introduction of UCC in a number of rulings:**
 - **Shah Bano Case, 1985:** The SC upheld the right of a Muslim woman to seek alimony. The court had said that "A common civil code will help the cause of the national integration by removing disparate loyalties to law which have conflicting ideologies".
 - The judgment set off a political battle as well as a controversy about the extent to which courts can interfere in Muslim personal law and the decision was undone by Parliament.
 - In **Sarla Mudgal vs Union of India (1995)**, the SC prohibited conversion to Islam to benefit from the laws that allow polygamy and added that the need for polygamy can hardly be doubted.
- **Why has India not been able to implement UCC yet?**
 - **Lack of understanding of UCC among people:**
 - » Perception of UCC being an encroachment on religious freedom. It is seen as a threat to minority culture and way of life.
 - » For e.g., the All-India Muslim Personal Law Board (AIMPLB) has been consistently opposing a UCC because it fears that such a code will undermine Muslim identity.
 - **Diversity of personal practices in India**
 - » For e.g.
 - In South India, marriage among cousins is acceptable among Hindu community, whereas it would be considered a big taboo in northern India.
 - Some tribes follow the custom of asking the husband to move over to the wife's place after marriage and the wife has the right to drive the man out any time during their married cohabitation if she decides to do so in consultation with the community.
 - In some Indian communities, property is inherited by daughters, not by sons. Among the Khasis in Meghalaya, a woman is treated as the head of the family, and she plays the role for all legal purposes.
 - Among the Kinnaurs of Himachal Pradesh, the custom is for a woman to take up to five husbands.
 - » A prominent Constitutional expert - Upendra Baxi asks, "Do we know enough about the personal law of various tribal communities from which the UCC may choose?"
 - **Contradictory Provisions of the Constitution (UCC vs other provisions of the Constitution)**
 - » The sixth schedule of the Constitution was added for the administration of tribal areas in Assam, Meghalaya, Tripura and Mizoram and confers powers on district councils and Regional Councils in those states to make laws with respect to inheritance, marriage, divorce and social customs.
 - » **Special Provisions** (Article 371A for Nagaland, 371F for Sikkim, and 371G for Mizoram) provide special provisions protecting the religious or social practices and customary laws.

- Various laws allow for diversity in Civil Code:
 - » For e.g., PESA Act, 1996; the Chota Nagpur Tenancy Act, 1908; and the Santhal Parganas Tenancy Act, 1876, recognize various customary practices among tribals. This is also protected under 5th schedule of the Constitution.
- Politicization of the issue -> The issue is now perceived as a Hindu-Muslim issue.
- Some criticisms of UCC
 - 'United' Nation does not mean uniformity.
 - » A 'united' nation need not necessarily have 'uniformity', it is making diversity reconcile with certain universal and indisputable arguments on human rights.
 - » The diversity both religious and regional, should not be subsumed under the louder voice of the majority.
 - Secularism cannot contradict the plurality prevalent in the country. Secularism has meaning only if it assures the expression of any form of difference.
 - Society is not ready.
 - » Implementation of UCC in the absence of proper awareness about its need in the society can be counterproductive and result into political and social tensions.
 - » 21st Law Commission of India had suggested changes in personal laws of all the religions to reduce discrimination against females, disabled or transgenders. It had said that "**UCC is neither necessary nor desirable at this stage**".
- Way forward
 - Don't politicize the issue (no chest thumping).
 - Educate people about significance of UCC and remove misconceptions and apprehensions from among them.
 - For now, in the absence of any consensus on UCC, the best way forward, as suggested by 21st Law Commission of India in 2018, will be to preserve the diversity of personal laws but at the same time ensure that personal laws don't contradict the fundamental rights guaranteed under the Indian Constitution.
 - For this there is a need of the "codification of all personal laws" so that the prejudices and stereotypes in every one of them would come to light and would be tested on the anvils of Fundamental Rights guaranteed by the Constitution.
- Conclusion:
 - Uniform Civil Code in India is a complex and nuanced issue, and opinions of the matter vary widely across different sections of society. The decision to implement a UCC ultimately lies with the Indian government and will require careful consideration of the diverse perspectives and interests involved.

2) SOCIAL JUSTICE: ELDERLIES

- Example Questions:

- i. "Proof of a truly developed country lies in the way it not only nurtures its young but also cares for its elders, equally". In this light discuss the key initiatives in India for the welfare of Elderlies. Do you think these initiatives have been effective. Give reasons. [10 marks, 150 words]
- ii. "Phenomena of population aging is becoming a major concern for policy makers all over the world". Discuss. [150 words, 10 marks]
- iii. Discuss the key challenges faced by elderly population in India. What steps should be taken to truly make the decade 2020-30 as the Decade of Healthy Ageing. [200 words, 12.5 marks]
- iv. Examine the main provisions of the National Policy for Older People (NPOP) and throw light on the status of its implementation. [10 marks, 150 words]
- v. Critically analyze the provisions of "The Maintenance and Welfare of Parents and Senior Citizens (Amendment) Bill, 2019" [10 marks, 150 words]

- **Quotes**

- » "*By despising all that has preceded us, we teach others to despise ourselves.*" - William Hazlitt
- » "*To care for those who once cared for us is one of the highest honors.*" - Tia Walker

- **Introduction**

- » **Ageing is a natural process**, which brings a lot of challenges for elderly people, which are mostly engineered by the changes that occur in their body, mind and pattern of living.
- » The phenomena of population aging are becoming a major concern for policy makers all over the world, both for developed and developing countries. India too is not immune to this demographic change. The changing demographic profile has thrown many new challenges in the social, economic and political domains.

» **Elderly Population in India**

- According to the Report of the Technical Group on Population Projections for India and States 2011-2036, there are nearly 138 million [10.1%] elderly population in India in 2021 (67 million males and 71 million females) and this is further expected to increase by around 56 million [to 13.1%] elderly persons in 2031.
- States with higher Human development performance has higher percentage of elderly population - E.g., **Kerala** (16.5%), **Tamil Nadu** (13.6%) etc. and states with poor human development have very low elderly population (e.g., **Bihar** (7.7%), **Uttar Pradesh** (8.1%) etc.

- **Key Problems faced by Elderlies in India**

1. **Lack of Financial Security**

- Elderlies are in urgent need of care, as nearly 90% of them have/had been associated with the unorganized sector and thus, are not included in any sustainable social security scheme.
- Both center and states have pension schemes for the elders, but these provide very low amounts - sometimes as low as Rs 350 to Rs 400 a month in some states.
- Even these pension initiatives are not universal.

2. Poor Health Services -> Limited access; low expense on old age health; lack of geriatrics care facilities; poor health insurance cover; missing emergency response infrastructure.

- As the growth rate of elderly population increase, we will have to enhance the range of quality, affordable, and accessible health care services to the elderly.

3. Poor institutional support and Infrastructure

- Very few governments run elderly homes and elderly recreational homes exist.
- There are very few public ramps and elderly friendly infrastructure available for less mobile elderlies.

4. Psychological Problems: Isolation/Loneliness due to increased nuclear families and migration.

- Care-management of elderlies who are living alone also becomes difficult.
- Mental Health and Depression is becoming more prevalent. A recent study by Abdul Latif Jameel Poverty Action Lab (J-PAL) and the Government of TN shows that among elderlies around 30-50% have symptoms of being depressed. In most cases the depression remains undiagnosed and untreated.

5. Poor Legal Aid

- Though a number of legal provisions exists for the protection of elderlies, these provisions are hardly implemented as elderlies find it difficult to access legal aid in case of violation of their rights.

6. Elderlies are generally among the worst affected during any kind of disaster.

7. Other Recent Emerging Problems

A. **Digital Illiteracy:** Makes it difficult to access government benefits.

B. **Feminization of Aging**

- Sex ratio among elderlies - 1033 women for every 1000 men - According to 2011 census.
 - Women represent an even greater majority of the 'Oldest Old' population of 80 years and above.
- Discrimination and neglect faced by women exacerbate as they age.

C. **Ruralization of elderlies**

- In case of India, 71% of elderlies live in villages where income insecurity, access to healthcare and isolation are more acute.

D. **Climate Change** has impacted elderlies more:

- Conditions like heatwaves, floods, cyclones, air pollution etc. are exacerbated by climate change. They tend to impact elderlies more than the rest of the population.

- **Constitutional Protection to Elderlies**

- **Article 41:** The state shall, within the limits of economic capacity and development, make effective provisions for securing the right to work, to education and to public assistance in cases of unemployment, old age, sickness and disablement.

- **Legal Provisions**
 - A. **Under Personal Laws**
 - **Section 20 of the Hindu Adoption and Maintenance Act** imposes obligation on children to maintain their parents. (Note: the obligation is not confined to sons only and daughters also have an equal duty)
 - **Similarly, Muslim Personal law** also provides for maintenance by Children
 - **Though under Christians and Parsi** personal laws, there are no provisions for maintenance of elderlyies, they can also be directed to take care of elderlyies as per the **provisions of CrPC**.
 - B. **Section 125 of Code of Criminal Procedures (CrPC)**
 - Introduced in 1973
 - Provision for maintenance of elderlyies if children (i.e. even daughters are responsible) have sufficient means.
 - C. **Maintenance and Welfare of Parents and Senior Citizens Act, 2007**
- **Policies/Schemes / Other Steps taken.**
 - i. **National Policy for Older Person (NPOP), 1999**
 - It was formulated by MoSJ&E with the goal of ensuring well-being of older persons.
 - It focuses upon providing financial security, health care, Shelter, re-employment opportunities, concessional rail/air fares etc.
 - ii. **Atal Vayo Abhyuday Yojana (AVYAY): Empowering the Elderly for a Dignified Life**
 - iii. **Indira Gandhi National Old Age Pension Scheme**
 - iv. **Rashtriya Vayoshri Yojna (2017)** -> for providing assisted living devices for BPL senior citizens
 - v. **Pradhan Mantri Kisan Man Dhan Yojna:** Launched in 2019; a voluntary, contribution based scheme which ensures a minimum pension of Rs 3,000 per month for small and marginal farmers who turn 60 years of age.
 - vi. **Annapurna Scheme (MoRD)** - Senior citizens above the age of 65 years and who are not getting pension under NOAPS are provided 10 kgs of food grain per person per month free of cost under the scheme.
 - vii. **Financial Concessions/Benefits**
 - a. **Special FD rates for senior citizens in banks.**
 - b. **Discount in income tax** (Income Tax Act)
- **Other Recent Initiatives:**
 - » **SAGE Project (Sep 2021)** -> It is aimed at promoting private enterprise to bring innovation in products to benefit elderlyies.
 - » **SACRED PORTAL** (Senior Able Citizens for Re-Employment in Dignity (SACRED) Portal)
 - The focus of this portal is to provide opportunities for employment for older persons by involving society at large specially by involving private firms, educational institutes, government sector, local bodies, NGOs, media and public at large.
- **International Initiatives for Elderlies**
 - » **International Day of Older Persons:**

- **1st October** is celebrated as the **International Day of Older Persons**, as declared by United Nations, to recognize, enable and expand the contributions of older people in their families, communities and societies at large and to raise awareness towards the issues of ageing.
- » **UN Decade of Health Ageing:**
 - The UN Decade of Healthy Ageing (2021-2030) is a global collaboration, aligned with the last ten years of the Sustainable Development Goals, that brings together governments, civil society, international agencies, professionals, academia, the media, and the private sector to improve the lives of older people.
 - **Ministry of Health and Family Welfare** launched Decade of Healthy Ageing (2020-2030) on International Day for Older Persons (Oct 2020)
- **Way Forward**
 - **Standing committee on Social Justice and empowerment** had suggested following **measures** which have still not been implemented:
 - a. A scheme for awareness generation of Maintenance act, 2007.
 - b. Establish a National Commission for senior citizens.
 - c. Establishing a National Trust for aged.
 - d. Strengthening of MoSJ&E for proper implementation of various old age schemes.
 - e. Expansion in old age homes and geriatrics care.
 - Specialized guidelines for old age homes, especially related to design of buildings and expertise required to manage these homes.
 - f. Tax exemption to elderlyies should be raised periodically.
 - **Universal Pension Scheme:** A universal pension scheme for all elderlyies (currently it is only for BPL).
 - » Link it with Adhaar so that elderly will be able to receive pension wherever she is living.
 - » It will ensure there is no exclusion error.
 - **Focus on healthy ageing.**
 - » India should reimagine its healthcare policy for the next few decades, with an elderly prioritized approach.
 - Legislate pro-elderly healthcare and insurance policies
 - Increase public healthcare spending, and invest heavily in the creation of well-equipped and staffed medical care facilities and home-healthcare and rehabilitation services.
 - Emphasis on requirements of people with chronic conditions like dementia.
 - » More awareness about the issues of elderlyies among citizens need to be spread.
 - » Create human resource -> The ASHA program can be a template.
 - » Promoting awareness about the concept of healthy ageing and the health problems and to involve the community in the process of mitigation.
 - **Dealing with urban isolation**
 - » Communities and NGOs can play an important role.
 - » More elderly recreation centres needs to be created

- **Use of technology**
 - » Use social media platform and technology to help
 - » To advertise community-based initiatives and bring elderlyies together
- **Database of vulnerable elderlyies**
 - » Local government should keep a database of elderlyies living alone so that they can be helped in disaster/emergency situation.
- **Increasing Socio-economic participation of elderlyies**
 - » Elderlies are a massive resource of experienced, knowledgeable people.
 - » Certain strategies and approaches at different levels of policy making, planning and programming etc. will have to be adopted in order to harness this vast human resource for promoting the involvement and participation of senior citizens in socio-economic development process on a much larger scale
 - » This will reduce their social isolation and increase their general satisfaction in life.
- **Discussion over making old age care a fundamental right**
 - » At least the discussion should start. Elderlies are perhaps the most vulnerable groups in our society and it is important that they get the highest priority in every government policy.
- **Conclusion**
 - » This is the decade of Healthy Ageing as well as the Decade of Action to achieve the SDGs. As Asia-Pacific, with the rest of the world, seeks to 'build back better' from the devastating effects of the COVID-19 pandemic, let us seize this moment to transform the challenge of population ageing into an opportunity. We must collectively prioritize greater action, funding, and implementation.

A) PRELIMS FACTS: ATAL VAYO ABHYUDAYA YOJANA

- By MoSJ&E
- Central Sector Scheme Yojana
- The National Action Plan for Senior Citizens (NAPSrc) has been revamped, renamed as Atal Vayo Abhyudaya Yojana. It is a comprehensive initiative aimed at empowering and uplifting senior citizens in India. It also aims to ensure their active participation and inclusion in all aspects of life. It recognizes the invaluable contribution made by elderly to society seeks to ensure their well-being and social inclusion.
- It has a component called **Integrated Program for Senior Citizens (IPSRc)**: It provides financial assistance to eligible organizations for running and maintenance of senior citizen homes/ continuous care homes to improve the quality of life for senior citizens, especially indigent senior citizens by providing basic amenities, entertainment opportunities and by encouraging productive and active aging.
 - **Achievements:**

- Presently a total of 552 Senior citizen homes, 14 continuous care homes, 19 mobile Medicare units and 5 physiotherapy clinics are being assisted and maintained by different NGOs across the country.
- Another component under the scheme is **Rashtriya Vayoshri Yojana** (RVY). It provides eligible senior citizens suffering from any of the age-related disability/ infirmity, with assisted living devices which can restore nearly normalcy in their bodily functions, overcoming the disability/infirmity manifested such as low vision, hearing impairment, loss of teeth and loco-motor disabilities.
 - **Financial criteria** - BPL elderly or he/she has income upto Rs 15,000 per month.
 - **Achievements:** A total of 269 camps have been held till date and the number of beneficiaries of these camps is over 4 lakh.
- The scheme thus stands as a testament to the government's commitment to the well-being and empowerment of senior citizens in India

2. GENERAL STUDIES – PAPER-3

1) INDUSTRY/ENVIRONMENT: ELECTRIC VEHICLES

- **Example Questions**
 - » Discuss the key factors hindering the growth of Electric Vehicle sector in India. Enumerate some of the recent initiatives by government to promote this sector. [15 marks, 250 words]
 - » Evaluate the government policies and incentives aimed at promoting the adoption of e-vehicles in India. What can be done to accelerate their adoption. [15 marks, 250 words]
 - » Discuss the role of research and development in advancing electric vehicle technology. What are the key areas of future innovation in this field [10 marks, 250 words]
- **Introduction**
 - » According to ESI 2021-22, the automotive industry is expected to play a critical role in the transition towards green energy.
 - The domestic electric vehicle (EV) market is expected to grow at a compound annual growth rate (CAGR) of 49% between 2022 and 2030 and is expected to hit 1 crore unit sale by 2030. Further, it will create 5 crore direct and indirect jobs by 2030.
 - **Note:** As per the Federation of Automobile Dealers Association (FADA), 4.29 lakh electric vehicles were sold in 2021-22 in India. 2.31 lakh of these were electric two wheelers.
 - » **Factors:** Government initiatives; expansion in charging infrastructure; increased prices of diesel and petrol.
- **Why we need to promote electric vehicles in India?**
 - i. **Energy Security** (India imports around 80% of its crude oil requirements), reducing import dependency; reducing CAD; saving forex etc.
 - ii. **Transition to renewable** is simplified if vehicles run on electricity instead of fossil fuels.
 - iii. Dealing with **air pollution and Noise Pollution** in big cities
 - iv. **Reducing Greenhouse gas emission -> Achieve Paris Targets on Climate Change**
 - v. **Competitive Domestic Manufacturing Ecosystem: Technology Development and Make in India**

- In automobile sector, India couldn't be a pioneer and had to depend on other countries to bring in the technology in the country and initiate the development of the sector.
- It's important that in electric vehicle sector, India develops its own indigenous industry which not only serves our domestic needs but is also able to earn us export revenues in future.
- The development of electric vehicle sector will provide employment opportunities through 'Make in India' across a range of skillsets and would also grow export opportunities.

vi. **Making Transportation less expensive:**

- E.g., travelling a distance of 100 km in a conventional vehicle costs about INR 435, whereas in an EV, INR 97.

vii. **Power sector growth**

viii. **EVs can act as storage for Solar Energy**

- Thus, the development of electric vehicle sector will benefit all citizens, will promote 'Ease of Living' and enhance the quality of life.

- **Schemes / Programs / Policies / Other steps to promote EV in India**

1. Subsidy, Tax Incentives and PLI

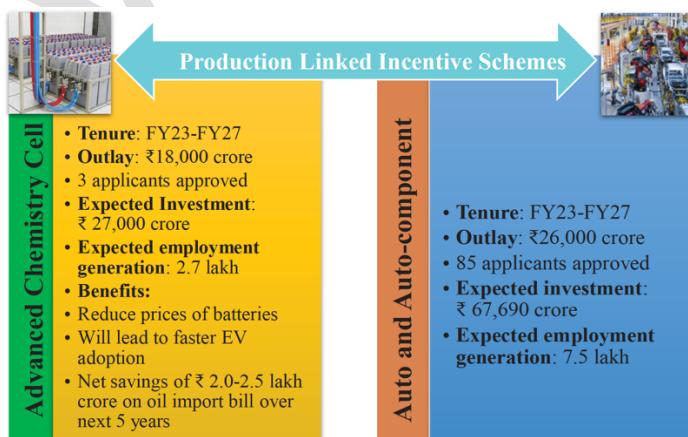
a. FAME (Faster Adoption and Manufacturing of Electric (& Hybrid) Vehicles):

- It is the key subsidy scheme for electric vehicles through which government incentivizes buyers to purchase e-vehicles.
- Phase-1 had started in 2015 and Phase-2 has been running since 2019.
- Under phase-2 companies may offer a discount of upto 40% on the cost of locally manufactured vehicles and claim it as a subsidy from government.

a. Tax Incentives:

- GST on Electric Vehicles is on the lower bracket of 5% as against 28% for conventional vehicles.
- Budget 2019-20: Tax Subsidies for EVs: Additional income tax deduction of Rs 1.5 Lakh on the interest paid on the loans taken to purchase electric vehicles before 31st March 2023.

c. PLI Schemes:



Source: Ministry of Heavy Industries

- In April 2023, government released SOP for the PLI scheme for the automobile and auto component industry.

2. EV Policies of Select States and Uts:

- A number of state/UT governments have formulated policies for the successful implementation of the national EV mission and FAME scheme.
 - For e.g., Delhi targets that 25% of all new vehicles registration should be EVs by 2024.

3. National E-Mobility Program of Ministry of Power (Launched in March 2018)

- Aggregate demand by procuring electric vehicles in Bulk to get economies of scale

4. National Mission on Transformative Mobility and Battery Storage (approved by cabinet in March 2019)

- The mission recommends and drive the strategies for transformative mobility and PMPs for EVs, EV components, and Batteries.
 - The mission will ensure holistic and comprehensive growth of the battery manufacturing industry in India.

5. E-Amrit Portal: It is a web portal on electric vehicles and provide one stop solution for all information related to EVs - bursting myths around the adoption, details about policies/ subsidies etc.

- Achievements of the above initiatives

- More than 200+ EV car models have been registered by the original equipment manufacturers (OEMs) availing benefits.
- More than 6 lakh vehicles have been sold-supported under FAME.

- Key challenges of India's EV Sector:

1. Battery Cost

- Commercial EVs run on lithium-based batteries and India imports most of Lithium and Lithium-ion batteries making it very expensive.
- Therefore, India needs to invest in research for battery technology and material sciences.

2. Low Lithium Reserves in India: -> Chinese firms are already occupying stakes in countries such as Chile, Bolivia, and Australia which have substantive reserves, thus creating a kind of monopoly situation.

- Lithium reserves in India (Mandya Karnataka) will not be enough to keep up with the future demand.
- Further, exploration of lithium reserves would be expensive, and hazardous to humans as lithium is a rare earth metal found with other radioactive elements like beryllium, niobium, tantalum etc.
- Therefore, we need to step up battery recycling capacity in India. Battery Waste Management rules, 2022 has to be effectively implemented.
- Further, India needs to invest in research into alternative battery technologies using different metals.
 - Aluminium, sodium, and zinc based batteries have emerged as viable alternatives to lithium ones.

- Aluminium based batteries could be beneficial for India as India is the fourth largest producer of aluminium and production has been consistently increasing. It is also cheaper than lithium, thus reducing the cost of EV batteries. Further, since Aluminium has higher valency (+3) than Lithium (+1), the aluminium batteries can have higher energy density.
- **Sodium ion battery technology** is another option which could reduce India's Lithium reserves.

3. Limited availability of Charging Infrastructure and long time for EV Charging

- Currently, India has about 2,000 charging stations operational and the number of EVs crossed 1 million in mid-2022.
- City planners, Municipal bodies, local administrative bodies, electricity companies, government etc. need to build a comprehensive policy document to meet future charging demands of EV.
- Further, the option of **battery swapping stations** also need to be explored.
 - There are some practical challenges associated with this as the batteries need to be standardized and made interoperable with all EVs for easy removal and reattachment of battery back.
 - With improved batter swapping services and battery-as-a-service (BaaS) setting in, sales in the segment could see further growth.
- **Provide information on public chargers to the users of EVs** through online maps and other means such as physical signage.
 - This will encourage increased use of adoption of EVs.

4. **Policy Conundrums:** Provisions of Electricity Act, 2003 is restrictive in nature and hinder setting up of charging stations - it is important to bring reforms here to promote ease of doing business.

5. **Safety Issues:** The occurrence of some incidents involving EVs catching fire has raised doubts about its safety.

- In response to this, MoRT&H have developed a new set of safety standards for EV batteries.

6. **Other Infrastructure concerns:**

- Poor electricity distribution network; Surge in demand of electricity etc.

7. **Human Resource**

- The Indian auto industry is also facing a talent crunch as there aren't enough engineers with expertise in the field.

8. **Subsidizing e-vehicles** is being criticized as some activists feel that it is subsidizing a small affluent section of the car-owning population, when there is better alternative to fossil fuels available.

9. **E-vehicle alone will not decarbonize transport** -> we will have to decarbonize the electricity sector.

10. **Public Awareness:** There is still very less understanding of EVs among the public, in terms of its benefits, risks, subsidies available, charging methods and tariffs, battery life, maintenance costs, and resale value.

- A significant step to get rid of this problem is the - e-Amrit Portal.

- **Conclusion**
 - » Electric vehicles have the potential to positively impact India's environment, climate target, economy and job market. We need to prepare ourselves by installing charging infrastructure, battery making factories and smart incentives for car companies and consumers to go electric.

2) S&T: SODIUM ION BATTERIES

- **Practice Question:**
 - Discuss the key advantages of Sodium ion battery technology for India [10 marks, 150 words]
 - "Recent developments in developing sodium-ion battery technology might provide a solution to the materials crisis in the electric mobility transition" Discuss [15 marks, 250 words]
- **Introduction:**
 - Though, lithium-ion batteries are the most common type of batteries used in electric vehicles sector in India today, it has created a number of limitations for us.
- **Key Problems associated with Lithium-Ion Batteries:**
 - **Resource Scarcity:**
 - » The most popular battery chemistry used by the global automotive industry currently is Lithium-Nickel, Manganese, and Cobalt (Li-NMC).
 - With increased demand for electric vehicles, Lithium has faced shortage and the prices per ton had touched US\$60,000 and above.
 - **Cobalt** mining (primarily from DRC) have led to persistent concerns regarding ethical mining.
 - **Nickel** prices have shot up in recent times due to Russia-Ukraine war.
 - » Due to these factors it is believed that there will be a shortage of batteries in 2024-25, followed by a lack of raw materials by 2027-28.
 - **Expensive:** Scarcity have led to these metals becoming expensive.
 - **Thermal Stability:** Lithium batteries have raised issues related to thermal stability and fire accidents.
 - **Chinese Domination and India's tense relation with China:**
 - » China has amongst the world's largest proven reserve of Lithium, Chinese companies control mines in Australia and increasing in South America as well.
 - » It also controls much of the Cobalt today in DRC.
 - » Therefore, China also dominates the Lithium Cell Manufacturing with companies like CATL, BYD, and Gengfeng Lithium accounting for over three-quarters of global cell production. It also dominates the manufacturing of Charing system.
- Therefore, there is a gradual shift to Lithium Ferro Phosphate (LFP). This is because iron and phosphate are significantly cheaper and more environment friendly to extract and refine than the metals in L-NMC. However, it suffers from heavier weight and battery memory.
- **Sodium Ion Batteries and how it mitigates the above challenges for India:**
 - **Easy Availability:** Na can be easily extracted from readily available salt and washing soda.

- **Less Corrosive:** Sodium is much less corrosive when compared to current version of Lithium being used. This will allow usage of cheaper materials like aluminium instead of copper both in the electrolyte as well as the battery frame.
 - » The usage of these cheaper and lighter material will offset some of the weight disadvantages of Sodium over Lithium.
- **Doesn't use Cobalt:** Thus, the dependency on unethical mining concerns in Democratic Republic of Congo reduces.
- **Nickel** whose prices have skyrocketed is also used in much lesser quantity in Na-ion batteries.
- **Thermal stability** of Na-ion batteries is much higher than the Li-ion batteries reducing the chances of fire accidents which have occurred on many occasions in India.
- **Lower Cost** of lithium-ion batteries may also lead to reduction in the cost of electric vehicles.

- **Limitations of Sodium-ion technology:**

- Sodium is heavier -> Na-ion cell will be heavier.
- They are also less energy dense than li-ion cells. (For e.g., the latest generation of Li-NMC cells can store 250Wh/Kg as well as run at higher voltages which allows faster charging. Whereas the first-generation Na-ion cells is at just 160 Wh/kg currently and run at lower voltages.
- Further, we are in the early stage of development of Li-ion batteries and many issues may come as more development happens. These may include number of cycles they can be charged before getting degraded; do they have the ability to be fast charged.

- **Way Forward:**

- More R&D to mitigate limitations of Sodium batteries.
- Incentivize investments in Na-ion technology by private entities with subsidies and PLI schemes.
- Increased international collaboration on Lithium: India-Australia can work together to mine Lithium deposits from western Australia.

- **Conclusion:**

- Both automotive and cell manufacturing industry are still learning, but it is imperative to not put all the eggs in the lithium basket specially India has no lithium resource.

3) CHANDRAYAAN 3.0 (LVM3-M4) MISSION

- **Why in news?**

- ISRO launched India's third lunar mission Chandrayaan-3 perched on GSLV Mark-3 heavy lift launch vehicle, named 'Bahubali' rocket, at 2:35 pm on 14th July from Sriharikota (July 2024)

- **Details**

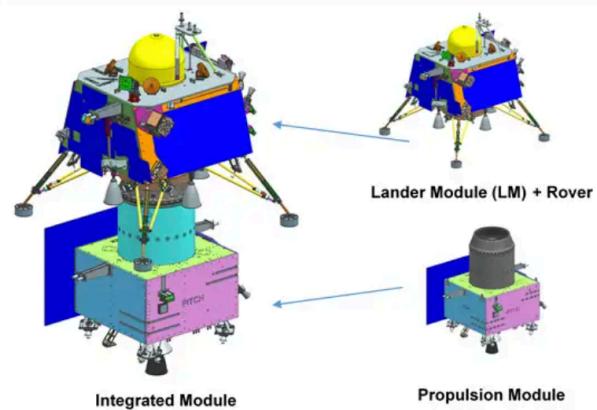
- It is a follow-on mission to Chandrayaan-2 to demonstrate end-to-end capability in safe landing and roving in lunar surface. It is thus ISRO's second attempt at soft landing robotic instruments on the lunar surface after the previous attempt, Chandrayaan-2, failed in 2019.
- So far, only three countries, USA, Russia and China, have successfully soft landed on Moon.
- It has been launched by LVM-3 from SDSC SHAR, Sriharikota. It has placed the integrated module in an elliptical Parking Orbit (EPO) of size ~ 170 x 36500 km.

- It consists of a **Propulsion Module (PM)**, **Lander Module (LM)**, and a **Rover** with an objective of developing and demonstrating new technologies required for inter-planetary mission. **Note:** It doesn't have an orbiter module.

Propulsion Module (PM)

The main function of PM is to carry the LM from launch vehicle injection till final lunar 100 km circular orbit and separate LM from PM.

This propulsion module has Spectro-Polarimetry of Habitable Planet Earth (SHAPE) payload to study the spectral and Polarimetric measurements of Earth from the lunar orbit.



The Lander will have the capability to soft land at a specified lunar site and deploy rover.

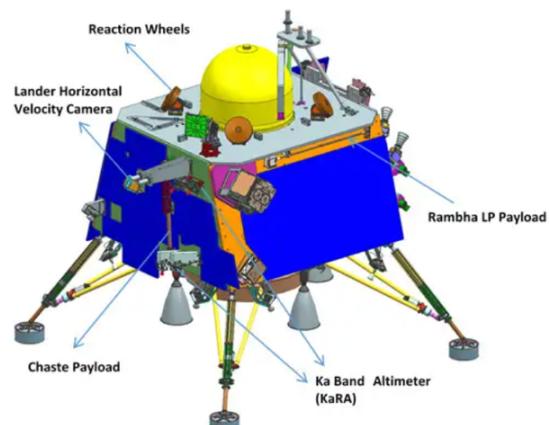
Lander Payloads:

Chandra Surface Thermophysical Experiment (ChaSTE): To carry out the measurements of thermal properties of lunar surface near polar region.

Instrument for Lunar Seismic Activity (ILSA) for measuring the seismicity around the landing site and delineating the structure of the lunar crust and mantle.

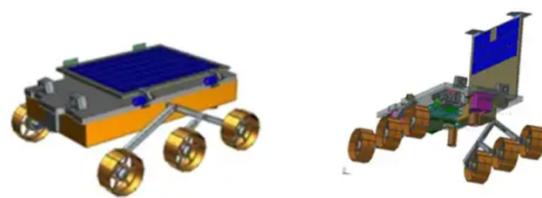
RAMBHA- LP (Radio Anatomy of Moon Bound Hypersensitive ionosphere and atmosphere) - RAMBHA: To measure the near surface plasma (ions and electrons) density and its changes with time.

A passive Laser Retroreflector Array from NASA is accommodated for lunar laser ranging studies.



Rover Payload:

Alpha Particle X-Ray Spectrometer (APXS) and **Laser Induced breakdown Spectrometer (LIBS)** for deriving elemental composition in the vicinity of landing site.

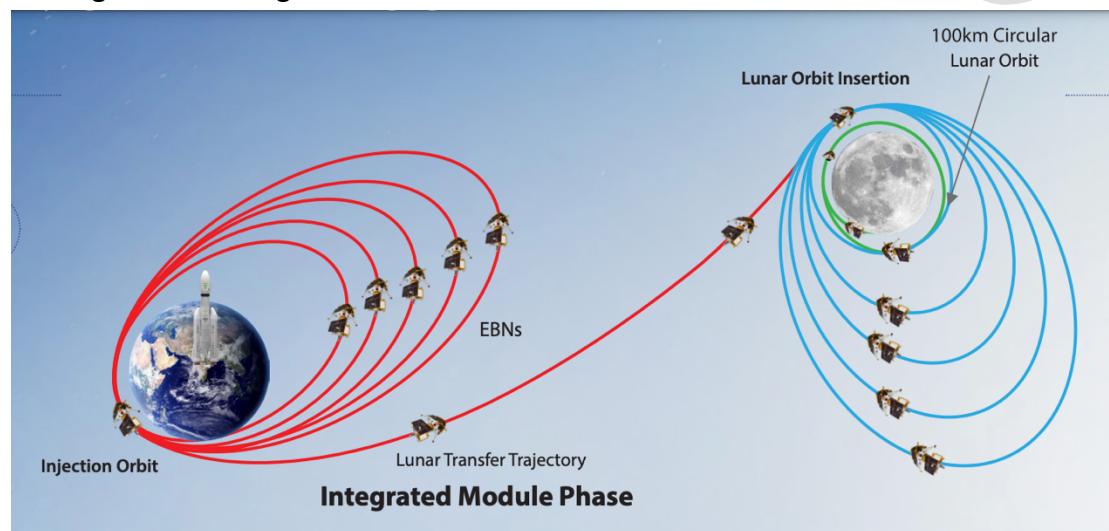


- Mission objectives of Chandrayaan 3.0**

- To demonstrate safe and soft landing on Lunar Surface
- To demonstrate Rover roving on the moon
- To conduct in-situ experiments.
- Where would the lander land?
 - In the highlands near the south pole of the Moon.

A) UNDERSTANDING THE DIFFERENT PHASES

- Chandrayaan was launched on 14th July 2023. The whole process will take 42 days, with the landing slated on Aug 23 at the lunar dawn.



B) LEARNING FROM CHANDRAYAAN-2.0, SOME CHANGES HAVE BEEN DONE

- In case of Chandrayaan 2.0, the lander had failed to reduce its speed to the desirable level in the final seconds of descent.
 - Scientists later detected problems in both software and the hardware – in consequence, the software and hardware in Chandrayaan-3 have been equipped with several additional capabilities.
 - **Landing area** has been expanded. Instead of trying to reach a specific 500mx500m patch for landing as targeted by Chandrayaan-2, the current mission targets to land safely anywhere in a 4kmX2.4km area.
 - **Lander has been provided more fuel** so it can travel longer distance to the landing site or an alternate landing site.
 - **Lander will no longer depend only on the pictures it clicks during the descent** to determine a landing site. High resolution images from Chandrayaan 2 orbiter have been fed into the lander and it will click images just to confirm that it has reached the correct location.

- **Physical structure of the lander** has also been modified – The legs have been made sturdier to ensure it can land even at a higher velocity. More solar panels have been added to the body of the lander.

C) LANDING IS THE MOST COMPLICATED PART HERE:

- Landing is the most complicated part of the mission. The Lander and Rover get ejected at a speed of around 6,000 km/hr and have to be slowed down to roughly 3 km/hr before it lands. Since moon doesn't have atmosphere, parachute kind of mechanism can't be used. Here, thrusters had to be fired in opposite direction to slow down the lander.

D) WHERE WILL LANDER LAND?

- The landing site, at around 70-degree S near the southern pole of the moon, was selected as there are several craters here that remain permanently in shade and can be the store house of water ice and precious minerals.

E) COMPARING CHANDRAYAAN-1, CHANDRAYAAN-2 AND CHANDRAYAAN-3

	Chandrayaan-1	Chandrayaan-2	Chandrayaan-3
Year	2008	2019	2023
Rocket Used	PSLV	LVM-3	LVM-3
Payloads	Orbiter + Impact Module (for crash landing)	Orbiter (Vikram) + Lander (Pragyan)	Lander + Rover
Successful	Yes	Partially Yes (Lander failed)	Let's hope

F) WHY DO WE WANT TO GO TO MOON?

- The moon is the closest cosmic body to earth, where the space discovery can be attempted and documented.
- Moon is also a promising test bed to demonstrate technologies required for future deep-space missions.
- It would further help "stimulate the advancement of technology, promote global alliances and inspire a future generation of explorers and scientists."

4) DISASTER MANAGEMENT: FLOODS – THE MOST RECURRENT DISASTER FOR INDIA

- **Why in news?**
 - » Last week, parts of North India witnessed rains that triggered flash floods and left train of destruction (July 2023)

- Homes were flooded, roads and bridges washed away and communication networks disrupted. At least 50 deaths were reported.
 - » 94% of the districts in Assam were impacted by floods in 2022.
 - » Flash floods in Amarnath killed more than a dozen people in July 2022.
- **Past year Questions**
 - » Why are floods such a recurrent feature in India? Discuss the measures taken by the Government for flood control (1985, 20 marks)
 - » In what way can flood be converted into a sustainable source of irrigation and all-weather inland navigation in India. [2017, 250 words]
- **Other Practice Questions**
 - » "Floods - fluvial or pluvial - are often triggered by extreme weather events, but they translate into disaster risk due to anthropogenic factors" - Elaborate [15 marks, 250 words]
 - » "Floods are natural, but disasters are manmade" Discuss [12.5 marks, 200 word]
- **Introduction**
 - » Inundation of land and human settlements by the rise of water in the channels and its spill-over presents the condition of flooding. Flood is a natural disaster which affects some or the other part of the country for almost every year now. (Kerala, Chennai, Assam, Bihar, UP etc.).
 - » According to ADB, floods are the most devastating among climate related disasters in India. They account for more than 50% of all climate related disasters in the country.
- **Situation in India**
 - » In India, around 40 million hectares area is flood prone, which is 1/8th of the total area.
- **Causes of Floods**
 - » **Natural Causes:** Flood is generally seen as a natural phenomenon. It is associated with:
 - **Heavy Rainfall**
 - Cyclones etc.
 - Monsoon Climate - all rainfall confined to a period
 - **What caused heavy torrential rain in Himachal, Punjab, J&K and Delhi** in the first week of July 2023
 - **Interaction of Western Disturbance with the Monsoon Low Pressure System.**
 - **A western disturbance (WD)** is an extra tropical storm in the upper layers of the atmosphere that is carried towards India by the subtropical jet stream, a band of fast flowing winds that circulates the Earth.
 - **A Low Pressure System (LPS)**, is an area of low pressure that generally forms over seas and oceans and cause rainfall.
 - **This is rare phenomenon** as the WD generally don't occur during Monsoon season. But, global warming have brought variability and have increased the instances of WD during monsoon.
 - **A Heat wave in northern Bay of Bengal:**
 - The Bay of Bengal, especially its northwestern part, is usually warm. This enables it to play an important role in NW Monsoon trajectory.

- **Deep Convection** triggered by orographic uplift combined with the steep terrain of Himalayas.
- **Sediment Deposition**
 - Causes rivers to overflow or change paths
- » **Manmade causes:** Experts believe that the recent increase in intensity of floods have to do a lot with human activities:
 - i. **Climate Change** has led to extreme variability in the intensity of rainfall which has increased the chances of floods.
 - For e.g., global warming has caused rainfall due to western disturbances even in Monsoon season in July 2023 causing huge rainfalls in NW India.
 - ii. **Unplanned development along the natural drainage system** has led to rivers losing its buffer areas and thus any increase in the water levels is causing floods. This include colonization of flood plains and river beds.
 - The number of people living in floodplains across the world increased by 58-86 million during 2000-2015
 - iii. **Indiscriminate Deforestation** has led to increased devastation due to floods. Trees generally acted as a breaker in the intensity of floods.
 - For e.g. According to Madhav Gadgil, if we would have protected Western Ghats, the loss and devastation by the Kerala floods of 2018 would have been less severe.
 - iv. **Unsustainable agri-practices** can also be considered an important factor behind the recent rise in floods.
 - v. **Inefficient Dam Management** sometimes lead to large scale release of water in small time period leading to flood conditions
 - E.g. Kerala floods pf 2018
 - vi. **Urban Floods** are also mostly a result of human made factors
 - **Blocking the natural flow of rivers**
 - **Destroying the natural sinks** like ponds, lakes etc.
 - **Concretization** - Reduces the seepage of water - all water flows and cause floods
 - **Improper Urban Planning** -> siltation of drainage system, Insufficient drainage system
- **Consequence of floods** - Life, Property, Infrastructure, Agriculture, Water Borne diseases etc.
 - » According to Central Water Commission, the total flood related losses in the country were estimated to be over 37 lakh crore from 1953 to 2017.
 - » As per the the State of the Climate in Asia 2021 report, loss and damages from floods, storm cost India **\$7.6 billion in 2021** alone.
- **Some positive impact**
 - » It deposits fertile alluvial soil and thus perpetuates the fertility of the area.
- **Dealing with Flood Disasters/ Flood Management in India**

a. Risk Reduction, Preparedness

- **Flood Plain Zonation (FPZ)** to mitigate damages caused by floods and to allow rivers their '**Right to Way**'. As a policy flood plain zonation has two major components: Removing Encroachment and Regulating Land Use.

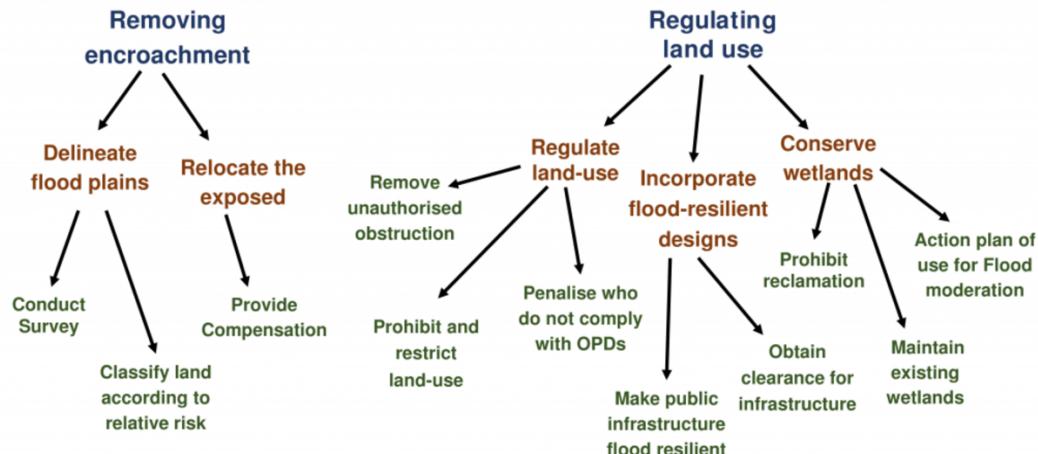


Figure 2: Flow Diagram showing the Operational Attributes of the proposed Floodplain Zoning Policy in India. Source – Modak and Kapuria (2020)

- **Other River Related Steps**

- **Embankments:** e.g. Embankments on Yamuna in Delhi has been successful in controlling the flood to large extent.
- **Periodic desilting of river**
- **Watershed based master planning** and development legislated guidelines for each major river basin is needed.
 - It should demarcate ecologically sensitive zones.
 - There must be clear land use plan for these zones specifying flood plains, protected forest areas, agricultural and plantation zones.
- **Continuous modernization of flood forecasting, early warning and decision support systems**
 - There is a need of more accurate rain forecast and more detailed warnings in place of the current categorization as "heavy" or "very heavy".
 - **IMD** needs more Doppler weather Radars which can extend the lead time of forecast by three days.
 - E.g. **IFLOWs-Mumbai** was launched in June 2020 as an state of art integrated flood Early Warning system for Mumbai to enhance the resilience of Mumbai specially during high rainfall events and cyclones.
- **Reservoirs:** Construction of reservoirs in the course of rivers could store extra water at the time of flood.
 - Such measures **have not been much successful**. Moreover it has led to increased deposition of silt in the river and reducing the water flow and further increasing the flood. (e.g. Farakka Barrage causing problems in Bihar)
 - Moreover, **during huge floods, dams are double-edged sword**. (e.g. Kerala floods of 2018)

- **Afforestation:** the fury of flood could be minimized by planting trees in catchment areas of the river
- **Planned Scientific Development of Cities**
 - Protect natural sinks like Ponds, lakes etc., development away from the river channel, proper drainage infrastructure, regular cleaning of this infrastructure.
 - Review and revise **building by laws** to focus more on environmental sustainability. They should clearly provide that natural drainage and streams shall not be obstructed by this development/ building permit.
- **Improving awareness and preparedness of all stakeholders** in the flood prone areas.
 - **Regular Drills in Flood Prone Areas** to ensure preparedness of NDRF and awareness among masses regarding steps to be taken during floods.
 - Introducing **capacity development interventions** for effective Flood Management (including education, training, capacity building, R&D, documentation) etc.
- **International Cooperation** with neighboring countries on flood controls as a number of rivers which cause flood in India originate from other neighboring countries.
 - For e.g. Dams on Rivers in Nepal can play an important role in controlling floods in the state of Bihar.

b. Response

- Improve the response system of NDRF especially for rural states like Bihar and Odisha.
- Need to enhance capacity building for catastrophic weather events
 - Serious attention needs to be given to fast tracking the setting up of relief camps, crisis proof health infrastructure and stockpiling of dry ration and medicines.
- Increased use of technologies like drones to identify people who are trapped in flood

c. Recovery

- Special Focus on Water borne diseases as they are the biggest killer in the post flood situation.
- Ensure that the new infrastructure created is resistant to floods.
- Bring in changes like broadening ecologically sensitive domain to protect more area from environmental degradation.

- Conclusion1:

- By recognizing the increasing threat of extreme precipitation and implementing proactive measures, India can improve its resilience to extreme weather events.

- Conclusion2:

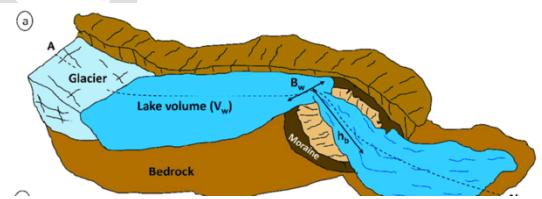
- India being a sub-tropical country with Monsoon kind of climate will remain vulnerable to floods due to heavy rainfall and increased climate variability. An efficient disaster management

mechanism will ensure that these floods remain a natural phenomenon and doesn't become a natural disaster.

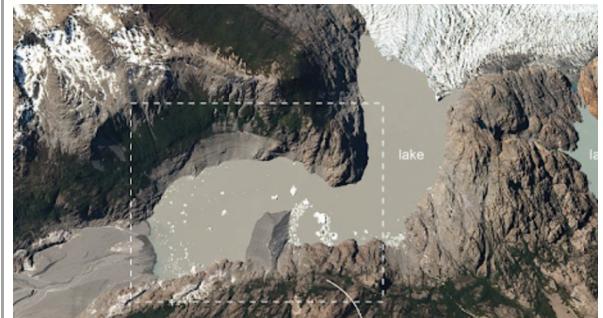
5) DISASTER MANAGEMENT: GLACIAL LAKE OUTBURST FLOOD (GLOF)

- **Why in news?**
 - India and Pakistan make up one-third of the total number of people globally exposed to GLOF - around three million people in India and around 2 million people in Pakistan (Feb 2023)
- **Example Questions**
 - » Discuss the key factors which is making Himalayan region more vulnerable to Glacial Lake Outburst floods (GLOF). In light of the recent NDMA guidelines, suggest measures to reduce risks of GLOF disasters (15 marks, 250 words)
- **Introduction**
 - » GLOFs are sudden fast flowing release of glacial lake water that move downslopes as a result of dam failure. They are recognized in the National Disaster Management Plan (NDMP) 2019 of India as a **potential climatological disaster**.
- **Glacial lakes are either moraine dammed or ice margin dammed.**

Moraine Dam Glacial Lakes are formed due to the retreating of glaciers, which leave behind soil and rocks and lead to an increase in capacity of lake, making it prone to bursting.



ICE Dam Lakes are created when ice from upper parts of glaciers fall and block passing rivers, giving rise to glacial lakes.



- **Different types of lakes may have different hazard potential:**
 - For e.g. Moraine-dammed lakes have high probability of breach and hazard potential, whereas the rock dammed lake have little chance of breach and low hazard potential.
- **Current Situation:**
 - A study, 'Glacial Lake outburst floods threaten million globally' published in the journal **Nature** in Feb 2023 highlights that:
 - Around 15 million people globally face the risk of GLOF.
 - Around 20% of them (**3 million**) live in India.
 - India, Pakistan, Peru and China have more than 50% of the vulnerable people.

- **Causes of increasing GLOF**
 - **Global Warming -> Climate Change**
 - Increasing number of Glacial Lakes due to acceleration of glacier melt in recent decades.
 - Increased water pressure due to more water being available due to Global Warming.
 - **Ice or rock avalanches, Erosions or other natural disruptions**
 - **Earthquakes** - Himalayan region is especially prone to earthquakes
 - **Human Activities ->** increased tourism, expansion of roads and hydropower projects, deforestation etc have also increased the vulnerability of burst in these lakes.
- **Adverse Impact**
 - These floods pose **severe geomorphological hazards and risks**
 - It can wreck havoc on all man made structures located along the path and thus endanger people, infrastructure, fields and livestock.
 - For e.g. the **Chamoli Flash floods of 2021** may have caused economic damages worth Rs 4,000 crore. It swept away the Rishiganga Hydel Power Project and inflicted substantial damage on the Tapovan Power Project.
 - Similarly, the Kedarnath flash flood in 2013 was caused by GLOF.
 - **Long term Climate Impact** may be caused by large glacial lake as they would increase the amount of water in ocean and reduce it in Himalayas.
- **Steps taken so far:**
 - **CWC** has done some work towards identification of such lakes;
 - Some other aspects are still work in progress including a robust early warning system, and a broad framework for infrastructure development, construction and excavation in vulnerable zones.
 - **Geological Survey of India (GSI)** carries out assessment of the GLOF threats and provide input to the National Disaster Management Authority (NDMA) for developing risk mitigation strategies.
 - **National Disaster Management Authority (NDMA)** in collaboration with Swiss Agency for Development and Cooperation (SDC) have prepared **Guidelines on the Management of Glacial Lake Outburst Floods (GLOFs)** (Oct 2020)
 - The guidelines are aimed at improving the administrative responses, drawing on international best practices; and bringing together the relevant scientific capabilities of the nation to eliminate potential losses from glacial hazards.
- **Key Highlight of the NDMA Guidelines**
 - i. **Inventorization: Hazard and Risk Mapping**
 - Regular monitoring of glacial lakes using satellite observations.
 - Cooperation with neighbouring countries (Nepal, Bhutan and China) to identify transboundary threats and manage it properly.
 - ii. **Reduction of Hazards**
 - **Short term actions** - lowering the lake level through siphoning
 - For instance, high density PVC pipes were installed in **South Lhonak lake in Sikkim**, to reduce the pressure on the lake

- **Long Term Actions**
 - **Artificial drainage channels** to lower lake levels
 - Reinforcement of dam
 - Enhancement of river cross section/ protection from erosion
 - **Restricting constructions and development in GLOF prone areas** is a very efficient means to reduce risks at no cost.
 - **Develop regulation for Land Use Planning** in GLOF areas.
- iii. **Reduction of Exposure**
 - Establishment of Early Warning System.
 - **Comprehensive alarm system** - including classical alarming infrastructure as well as modern technology using smart phone notifications etc.
 - Evacuation based on EWS
 - Involve local population closely from the beginning in the design, planning and implementation of risk reduction and management strategies in a transparent collaboration mechanism.
- iv. **Awareness and Preparedness** through posters, social media, apps etc.
- v. **Capacity Development** -
 - Apart from specialized forces such as **NDRF, ITBP**, and the **ARMY**, the guidelines emphasize on need for trained local manpower.
 - Training of professionals and practitioners;
 - Strengthening Academic Education in relevant disciplines from natural and social sciences.
 - **Heavy earthmoving and search and rescue equipment**, as well as motor launches, country boats, inflatable rubber boats, life jackets etc.
 - Setting up **Quick Reaction Medical Teams, mobile field hospitals, Accident Relief Medical Vans**, and heli-ambulances in areas inaccessible by roads.
- vi. **Promote R&D in GLOF Management**
 - Promote development of **Modelling tools** to simulate the entire chain of mass movement and outburst process
 - **Historical records** should be effectively used to understand flood processes.
 - Expand the use of local knowledge, experience of local people. Engaging the local population in **joint-knowledge production** is considered indispensable for effective community based disaster risk management.
- vii. **Regulation and Enforcement**
 - A well drafted **techno-legal regime** is necessary to prevent future development of GLOF and protect existing Glaciers.
 - The regime should include a Himalaya GLOF mitigation Policy, no habitation and construction zones; and provisions for strict implementation.
- **Other steps**
 - Need of a **nodal agency** to coordinate all the researches related to glaciers in the region .
 - Fighting Climate Change
 - **Sustainable Development**
 - Restricting Tourism in these areas or promoting only sustainable tourism

- **Detailed Project Reports** and **Environmental and Social Impact Assessment** needs to take into account the **Glaciology study** to better understand the impact of these projects on glaciers and glacial lakes.
- **International Cooperation:** GLOF risk is transboundary in nature, thus there is an urgent need for a comprehensive regional risk governance framework including India, Nepal, Bhutan etc

6) DISASTER MANAGEMENT: CLOUDBURST

- **Practice Questions:**
 - Explain the mechanism and occurrence of cloudburst in the context of the Indian subcontinent. Discuss two recent examples. [Mains 2022, 10 marks, 150 words]
 - Cloudbursts are often associated with flash floods. Explain the relationship between cloudbursts and flash floods and discuss the challenges in managing flash flood events. [10 marks, 150 words]
- **What is cloudburst?**
 - A cloudburst refers to an extreme amount of rain that happens in a short period, sometimes accompanied by hail and thunder. IMD defines it as unexpected precipitation exceeding 10 cm per hour over a geographical region of approximately 20-30 sq km.
 - For e.g. the 2013 floods in Kedarnath were caused by Cloud Burst. In 2021, Amarnath region was impacted by cloudburst.
 - **Impact:** This sudden discharge of rain leads to floods including flash floods, landslides etc. which may result into human casualties, and property loss.
- **Mechanism: How does cloudburst occur?**
 - When cumulonimbus clouds (which stretch to even 13-14 kms in height) are trapped over a region or there is no air movement for them to disperse, they discharge over a specific area.
 - Here, saturated clouds ready to condense into rain can't produce rain, due to the upward movement of the very warm current of air.
 - Instead of falling downwards, raindrops are carried upwards by the air current. New drops are formed and existing raindrops increase in size. After a point, the raindrop are too heavy for the cloud to hold on to, and they drop down together in a quick flash
- **Other key aspects:**
 - It is very difficult to forecast the event due to its very small scale in space and time.
 - To monitor or nowcast (forecasting few hours of lead time) the cloudburst, we need to have dense radar network over the cloudburst-prone areas or one need to have a very high resolution weather forecasting models to resolve the scale of cloudburst. Doppler radar can be very useful in predicting them.
 - **Mountain regions are more prone** to cloudburst due to orography (terrain and elevation), though they may occur in plains as well.
- **Way forward:**
 - **Hazard zonation mapping:** Identifying the areas vulnerable to flash floods.
 - **Improving forecasting (nowcasting) Infrastructure:** Increasing the coverage of doppler radars. Currently Himalayan region has 7 doppler radars (2 each in J&K and Uttarakhand, 1 each in Assam, Meghalaya and Tripura).

- **Building flood resistant infrastructure:** To reduce damages due to flash floods
 - **Regulating settlements** in the river banks
 - **Strengthening institutions** to provide quick response at the time of cloudburst in the form of emergency evacuation, medicine etc.
- **Conclusion:** By taking steps to predict, prepare, and respond to these events, we can reduce the loss of life and the property damage that they cause.



CURRENT AFFAIRS PROGRAM

PRE-CUM-MAINS 2024

JULY 2023 - BOOKLET-3

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HISTORY
Foundation Batch 2.0
CSE 2024

by **Nikhil Sheth**



by **Vishal Singh**

Starts 6th AUGUST 2023

Class Timings **5:00 PM – 7:30 PM (Monday-Friday)**

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1. GENERAL STUDIES PAPER – 3

1) ECONOMY: TEXTILE SECTOR

- **Why in news?**
 - » 43 new partners empaneled under SAMARTH; additional training target of 75,000 beneficiaries (July 2023: Source - PIB)
 - » PM MITRA mega textile parks will bolster productivity, foster innovation and generate many employment opportunities: PM (July 2023: Source PIB)
- **Practice Question:**
 - » What role does the textile sector play in the economic development of India? What are the major challenges faced by the industry in the current scenario. [15 marks, 250 words]
- **Introduction:**
 - » The Textile Sector, also known as the textile and apparel industry, is a crucial part of global economy. It involves the production, processing, and distribution of various types of fabrics, fibers, and clothing.
- **Role of Textile Sector in India's Economic Development:**
 1. **Employment:** Textile sector directly engages around 5 crores of the population and is the 2nd largest employer after Agriculture.
 - It also has huge employment potential as it is a labor intensive sector.
 2. **Industrial Output:** It contributes to around 10% of India's industrial production and adds to value addition.
 3. **Export Earning:** It is one of the largest contributors to India's exports. In 2022-23, India's textile and apparel exports were worth more than \$40 billion.
 4. **Inclusive Growth:**
 - Textile mills provide a lot of opportunities weaker section and under privileged.
 - Apparel sector provides opportunities for women who constitute
 - Requires less training period (3-4 months) and thus is suitable for even unskilled workforce.
- **The sector has a lot of potential to grow:**
 - » Rising cost of manufacturing in western countries (USA, Europe)
 - » Structural shift in Global industry
 - China who was an undisputed leader for the 1980-2010 period have lost momentum after the 2009 economic crisis.
 - It is vacating the global export markets due to high wages and shift in focus to the domestic market.
 - India stands a good chance to capture a mammoth share of space ceded by China in global textile and apparel trade leveraging its raw material and manpower advantages
 - » Abundance of skilled and cheap manpower
 - » Vast natural resources and favorable economic policies
 - Easy raw material available of natural as well as manmade fibers

- » Large domestic demand - increase in disposable income of consumers and their increasing propensity to spend on clothing items has been driving a double digit growth of the domestic market.
- **Key Challenges of textile sector:**
 - » **Financial Stress due to overcapacity:** As per the Confederation of Indian Textile Industry (CITI), there is a 30% over-capacity in spinning and weaving sector. PM-MITRA parks may add further capacity in few years.
 - » **Moderating Exports** (compared to FY2021-22) due to Inflation, Russia Ukraine war etc.
 - » **Cotton Import Duty**
 - » **Supply disruptions** due to COVID-19 and war.
 - » **FDI inflow** in textile sector are yet to recover to pre-pandemic levels.
 - » **Lack of Innovation:** Indian textile industry has been slow to innovate. This has prevented the sector from penetrating certain markets.
 - » **Lack of focus on man-made fibers** whose demand has increased globally.
 - » **Pollution:** Textile and apparel effluents account for 17-20% of all water pollution.
- **Steps taken by government to promote textile sector:**
 1. **PM MITRA** announced in Budget 2022-23 is aimed at creating seven PM MITRA Parks which will increase investments, production and competitiveness of India's textile sector. It will also lead to improved quality of the products and reduced logistics cost. All this will also contribute to employment generation in India.
 2. **Production Linked Incentives (PLIs)** related to textile sectors have been launched to promote investment and increase the production of Man-Made Fibre (MMF) Apparel, MMF Fabrics and Products of Technical Textiles.
 3. **Scheme for Capacity Building in Textiles Sector (SAMARTH)** is a demand driven and placement-oriented umbrella skilling program of Ministry of Textiles. It aims to incentivize and supplement the efforts of the industry in creating jobs in the organized textile and related sectors.
 4. **Labor Reforms** like introduction of fixed term employment to ensure that the sector is able to easily hire workers during the peak season.
- **Way Forward:**
 - » **Digitalization and Automation** in areas such as design, prototyping, and production are the key to the future. It will improve the production quality and timely delivery.
 - » **PM MITRA and National Logistic Policy 2022**, if implemented properly can be crucial in reducing the logistic cost.
 - » **Focus on Sustainability:** Regenerative organic farming (that focuses on soil health, animal welfare, and social fairness), sustainable manufacturing energy, and circularity should be adopted.
 - » **Adaptability in meeting the demands** of man-made textiles, other complex products and services are also important.
 - » **Reskilling and upskilling** of the labor force should be a priority for the region to stay aloft in the market.
 - » Finally, there is a need of government's proactive support in infrastructure, capital, liquidity and incentivization.

A) PRELIMS: PM MITRA (PM MEGA INTEGRATED TEXTILE REGION AND APPAREL)

- **Why in news?**
 - » PM Modi lauded the foundation stone laying of 2 PM-MITRA mega textile parks in Maharashtra and Gujarat over the last few years (July 2023)
- **Details of the Scheme:**
 - » Announced in the Budget 2023
 - » **Ministry of Textiles**
 - » Government has approved setting up of seven PM MITRA Parks.
 - » The parks will not only reduce logistics costs and improve competitiveness of Indian textiles but also boost employment generation, attract domestic investment and FDI, and position India firmly in the global textile market.
 - » Government expects the parks to attract investments worth Rs 70,000 crores, generate jobs for 20 lakh people, and can create integral value chain for the products.
- The Centre has selected sites in TN, Telangana, Karnataka, Maharashtra, Gujarat, MP and UP to set up new textile parks.
- As of July 2023, foundation stone for 2 PM-MITRA mega textile parks have been laid. These parks will be in Amravati, Maharashtra and Navsari, Gujarat.
 - » These parks are expected to create one lakh direct and two lakh indirect employment.

B) PRELIMS: TEXTILE PLI SCHEME

- Approved outlay of Rs 10,683 crores (over five years starting from Jan 2022) to promote investment and increase the production of Man-Made Fibre (MMF) Apparel, MMF Fabrics and Products of Technical Textile.
- This will enable the textile sector to achieve size and scale, enhancing export competitiveness.

C) PRELIMS: SAMARTH (SCHEME FOR CAPACITY BUILDING IN TEXTILE SECTOR)

- **Why in news?**
 - » In a meeting of the Empowered Committee for Scheme for Capacity building in Textile Sector (SAMARTH), the panel of implementing partners has been broadened with empanelment of 43 new implementing partners and additional target of training around 75,000 beneficiaries. (July 2023: Source - PIB)
- **Details about SAMARTH:**
 - » It is a flagship skill development initiative of Ministry of Textiles. Launched in 2017, it aims to provide demand-driven, placement-oriented skilling programs to incentivize and supplement the efforts of the industry in creating jobs in the organized textile and related sectors.
 - » It was formulated under the broad skilling policy framework adopted by M/o Skill Development & Entrepreneurship (MSDE).
 - » It has provisions for skilling in Apparel & Garmenting segments both at the entry level as well as upskilling/reskilling of existing workers.
 - » It also caters to the upskilling/reskilling requirement of traditional sectors such as handloom, handicraft, silk and Jute.
- **Progress:**

- » As of July 2023, the Ministry of Textiles has partnered with 157 Industries/Industry associations, 16 central/state government agencies and 3 sectoral organizations of the Ministry undertaking the training program SAMARTH.
- » Out of the skilling target of 4.72 lakh beneficiaries allocated so far, 1.88 lakh beneficiaries have been provided training.
- » More than 85% of the beneficiaries trained so far under the schemes are women. More than 70% of the beneficiaries trained in organized sector course have been provided placement.

2) ECONOMY: INTERNATIONALIZATION OF RUPEE

- **Why in news?**
 - An RBI appointed working group recommended various measures to accelerate internationalization of the rupee (July 2023)
- **Example Questions:**
 - Discuss the major challenges and obstacles faced by the Indian Rupee in achieving internationalization and becoming a global reserve currency. [15 marks, 250 words]
 - Discuss the key advantages and disadvantages of having the Indian Rupee as an International currency for cross-border transactions [10 marks, 150 words]
- **What is Internationalization of Rupee?**
 - Internationalization is a process that involves increasing the use of the rupee in cross-border transactions. It involves promoting the rupee for import and export trades, and then other current account transactions, followed by its use in capital account transactions.
 - It will also require:
 - » **Full capital account convertibility** (currently India allows only full current account convertibility, capital account convertibility is limited).
 - » **Availability in sufficient quantities**
 - » **Opening up of currency settlement and a strong swap and forex market.**
- **Advantages of Internationalization of Rupee:**
 - **Reduces exchange rate risks**, while curtailing the demand for US dollar.
 - This not only promotes ease of doing business but also improves the chances for Indian businesses to grow globally.
 - **Reduces the need of forex war chest** to meet the external vulnerabilities.
 - **Reduces risk to economy** due to sudden withdrawal of capital from market.
 - **Lower cost of capital** due to better access to international financial markets.
 - **Bargaining power of Indian businesses** will increase, adding weight to Indian economy and enhancing India's global stature and respect.
 - **Reduced transaction costs**: They will not have to incur exchange rate fees.
 - **Geopolitical Significance**: US-dollar dominated global currency system can become limitations for the economy if India's relations with US and Europe becomes tense in future. In that scenario, business in domestic currency can be a savior.

- Internationalization of currency is closely linked with a nation's economic progress.
 - Currently, the US \$, the Euro, the Japanese Yen and the pound sterling are the leading reserve currencies in the world. China's efforts to make its currency renminbi (yuan) a reserve currency has met with only limited successes so far.
 - US\$ is said to enjoy an 'exorbitant privilege', which refers to the innumerable benefits that accrue to the US on account of all other countries of the world using the US\$ as their currency in most of their international transactions, among global currencies.
 - Factors behind US\$ being the most common currency of reserve and exchange:
 - **Size of US Economy** (largest in the world)
 - **Reach of its trade and financial market**
 - **Depth and liquidity** of the US financial market
 - History of macro-economic stability
 - Currency convertibility
 - Lack of viable alternative.
 - Is there are challenger to US dominance?
 - The obvious challenger to US dominance is the Chinese Renminbi. However, its ability to rival the US dollar will depend on future policies in both the US and China and the ability of Chinese economy and its financial system to demonstrate long term resilience, integrity, transparency, openness and stability.
- China's Experience:
 - Before 2004, RMB couldn't be used outside China.
 - By 2007, the "Dim Sum bond" and offshore RMDB bond market had been created.
 - Post 2008, China pursued a phased approach.
 - First, it allowed use of RMB outside China for Current account transactions and for select investment transactions (FDI, outward direct investment) etc.
 - By 2009, it had signed currency swap agreements (i.e., an exchange of an equivalent amount of money, but in different currencies) with countries like Brazil, UK etc.
 - Then, Central banks, offshore clearing banks and offshore participating banks were allowed to invest excess RMB in debt securities.
 - Singapore Free Trade Zone was launched in 2013, to allow free trading between non-resident onshore and offshore accounts.
 - In this way, overtime RMB was internationalized, with reserve currency status increasingly enabled. For e.g. in Q2, 2022, the RMB's share of international reserves had reached around 2.88%.
- Steps Taken towards Internationalization of Rupee:
 - **Liberalization of Capital Account**: Over the years, government has relaxed FII and FDI norms, facilitating greater cross-border investment and trade.
 - Enabling of ECB in rupee.
 - Currency Swap Agreements with several countries, which allow for the exchange of rupee and foreign currency between the central banks of the two countries.
 - RBI allowed banks from 18 countries to open Special Vostro Rupee Accounts (SVRAs) for settling payments in Indian Rupees.

- RBI constituted Inter-departmental group (IDG) headed by RBI Executive Director **Radha Shyam Rathi** to frame roadmap for the Internationalization of Indian Rupee has submitted its report.
 - During PM Modi's visit to UAE in July 2023, Reserve Bank of India (RBI) signed two MoUs with Central Bank of UAE. One of the MoU focuses on establishing a framework to promote the use of local currencies from cross-border transactions, the other was for linking payment systems.
- **Challenges in achieving internationalization:**
- » **Little traction for international trade in rupee:**
 - The daily average share of Rupee in the global foreign exchange market hovers around 1.6%, while India's share of global goods trade is around 2%.
 - For e.g. Russia reportedly preferred Yuan or Dirham as a medium of transaction for Indian imports of oil, rather than rupee.
 - » **Large Trade Deficit:** It would make acceptance of Rupee in global economy would be limited due to its depreciation problem.
 - » **Lack of Liquidity:** For now, Indian rupee is not as liquid as other major global currencies and thus it may be difficult to buy and sell large amounts of rupees.
 - » **Underdeveloped Financial Markets:** India's financial market are still relatively under-developed when compared to major economies, which can limit the range of products and services available to international investors.
 - » **IDG has also highlighted following limitations that may arise due to internationalization of Rupee:**
 - Exchange rate volatility in rupee's exchange rate will increase in initial stages of internationalization
 - Triffin Dilemma: Obligation of a country to supply its currency to meet the global demand may come in conflict with its domestic monetary policies.
 - Accentuation of external shock may take place due to open channel of flow of funds into and out of the country and from one currency to another.
 - » However, the IDG itself said that the advantages of internationalization far outweigh the above limitations. Moreover, the internationalization of rupee will be a long drawn process and would enable timely redressal of these challenges.
- **Recommendations given by RBI's Inter-Departmental Group:**
- » **Short term measures:**
 - Adoption of Standardized approach for examining the proposals on bilateral and multilateral trade arrangements for invoicing, settlement, and payment in the rupee and local currencies.
 - Encouraging the opening of the rupee accounts for non-residents both in India, and outside India.
 - Incentivizing exporters to use Indian currency for trade settlements.
 - Integrating payment systems to provide seamless cross border transactions.
 - Strengthening the financial markets by fostering a global 24X5 rupee market
 - Recalibration of FPI regime.
 - » **Medium Term Measures (2-5 years targets)**
 - Synchronizing tax regimes of India and other financial centres.
 - A review of taxes on masala bonds
 - Allowing banking services in the rupee outside the country

- Allowing international use of RTGS for cross border trade
 - Inclusion of Indian government bonds in global bond indices
- » **Long Term**
 - Measures to have rupee included in the IMF's SDR.
- **Other steps that can be taken:**
 - » **Focus on increasing exports** - As India increases exports and accepts money in rupee, it will lead to more acceptance of rupee internationally.
 - » **Rupee should be made fully convertible** - letting financial investments move freely between India and abroad.
 - » **Deeper and more liquid rupee bond market** - This will allow foreign investors and Indian trade partners to have more investment options in rupees, enabling its international use.
 - » **Additional Currency Swap Agreements** (as with SL) would further allow India to settle trade and investment transactions in rupees, without resorting to a reserve currency like dollar.
 - » **Tax incentives to foreign businesses** to utilize rupees in operations in India would also help.
 - » **Currency Management Stability:** RBI and Finance Ministry has to ensure currency management stability through consistent and predictable issuance/retrieval of notes and coins.
 - » **Improvement in general macro-economic parameters** - The Tarapore Committee's recommendations must be pursued including a push to reduce fiscal deficits lower than 3.5%, a reduction in gross inflation rate to 3%-5% and a reduction in gross banking NPAs to less than 5%.
- **Conclusion:**
 - » As the Indian economy grows in size, as its trade linkages with other countries grow stronger, more space will be created for using the rupee in international transactions.

3) ECONOMY: AGRICULTURE: TOMATO PRICES

- **Why in news?**
 - » Prices of tomatoes hovered between Rs 100 to Rs 200 in various parts of the country (July 2023)
- **Example Question:**
 - » Discuss the key factors responsible for annual increase in prices of Tomato in India. How can sustainable production and technological interventions be leveraged to enhance tomato production while addressing the concerns of both farmers and consumers? [15 marks, 250 words]
- **Introduction**
 - » Among the vegetables consumed in India, Tomato ranks 3 after potato and Onion, but globally it is the 2nd most consumed vegetable after Potato.
 - Note: Botanically, tomatoes fit the definition of fruit as they form from a flower and contain seeds.
 - » In terms of area under tomato cultivation and in terms of total production, India ranks 2nd in the world.
 - The major tomato producing countries in the world are China, India, USA, Turkey and Egypt.

- **About Tomato production in India**

- » **India's total tomato production** is around 20 million tonnes. It peaked in 2019-20 at 21.187 million tonnes and has been **declining since**. The production in 2021-22 dropped to 20.69 MT and 20.62 MT in 2022-23.
- » It is typically a 90-100 day crop that starts yielding fruits 60-70 days after transplantation.
 1. The seeds are first sown in nursery beds to raise seedlings that are transplanted in fields after around 25 days.
 2. Production happen in flushes.
- » There are two major crops of tomato annually - **Kharif and Rabi**.
- » There are two main crops of tomato grown in the country.
 1. The first one transplanted from around mid-June in Central and South India (places such as Shivpuri, Sagar in **MP**, Nasik In **MHA**, Madanapalle in **AP**, Kolar and Mysore in **Karnataka** and Dindigul in **TN**) and mid-July to Aug in North India (Jhalawar and Jaipur-chomu belt in Rajasthan; Sonabhadra, Varanasi, Lucknow, Bareilly and Agra in Uttar Pradesh) and stretching to end of Sep in Eastern India (Purulia in West Bengal, Buxar in Bihar and Ranchi in Jharkhand)
 - **The autumn to late kharif crop supplies the market from Sep onwards**. This along with a smaller rabi crop transplanted during October-November, contributes to the familiar low tomato prices through the winter.
 2. The second main crop is transplanted during January-February. This is a longer duration crop typically taking 130-150 days, yielding an average of 25 tonnes per acres.
 - This is the **summer tomato** as it is harvested during May-July is grown mostly in regions where maximum temperature don't go beyond the mid-to-late thirties range during the flowering and fruiting season.
 - Such conditions are mostly found in relatively cool or hilly areas such as Madanapalle, Mysore, Kolar in Karnataka; Sangamner and Narayangaon in Maharashtra, or Solan and Mandi in Himachal Pradesh.

- **Why increase in Prices:**

- » **Dip in overall tomato production due to:**
 - i. **Lower acreage of tomato**
 - ii. **Extreme Weather Conditions**
 - i. **Heatwaves and High temperatures** in April and May along with delayed Monsoon showers in southern India and Maharashtra led to attack on tomato crops.
 - **Farmers in Maharashtra have said their tomato crop was impacted by attacks of the Cucumber Mosaic Virus (CMV) and growers in Karnataka ad other South Indian States have blamed the Tomato Mosaic virus (ToMV) for crop loss.**
 - ii. Later, incessant rains in tomato-growing regions further affected the new crop and also made transportation to non-growing regions difficult.

- iii. **Low commercial realization of the crop for farmers** in the months of June as well as the last year.
 - iv. **Seasonal Fluctuation:** July and August are the lean tomato production.
- **Other general challenges:**
 - » **Perishability of tomato** is much higher than Onion and Potato.
 - » **Supply chain issues** in transporting the vegetable from areas where it is grown to regions where it is not compounds the problem.
- **Way Forward** for dealing with Price Fluctuations in Tomato:
 - » **Improved Supply Chain** - to deal with wastage due to perishability
 - Analyze why initiatives like TOP scheme and Operation Greens has failed and what lessons can be learned from the scheme.
 - Government should identify pre-existing clusters and invest in infrastructure in these areas. This infrastructure could include cold storages at the block or village levels, supported by solar dryers and cottage level processing plants.
 - Similarly, improvement of connectivity in hilly areas such as Himachal Pradesh, Uttarakhand, Kashmir, and parts of north-east will be very crucial. These reasons facilitate major off-season production.
 - » **Special MSP for TOP Crops** - supported by government led production - This will ensure stability in acreage.
 - » **Improved food processing** - Linking tomato value chain to processing of at least 10% of tomato production into tomato paste and puree during peak seasons, and using them in lean season (July-Aug), when tomato prices are high.
 - » **Reforming Marketing:**
 - **Eliminating middleman** and **encouraging FPOs** to sell produce directly
 - **Amending APMC laws** to reduce cartelization, commission and other fees.
 - » **Increasing Yield:**
 - Tomato yield in India at 25 tonnes per hectare (25t/ha) is very low than the global average of 37t/ha.
 - ICRIER suggests encouraging cultivation in structures called poly houses and greenhouses (as done in many European countries), which can control pest attacks.
 - » **Accurate weather forecasts** should be made accessible to farmers. If there are sufficient advanced predictions of heavy rain or floods, farmers can prematurely harvest and save at least a part of their crop that can come into the market.
 - » **Satellite mapping of sowing area and dissemination of this data for better supply side planning**
 - Both over-production and under-production creates multiple wastages and should be avoided.

A) PRELIMS: CUCUMBER MOSAIC VIRUS (CMV) AND TOMATO MOSAIC VIRUS (TOMV) (JULY 2023)

- Farmers in Maharashtra have said their tomato crop was impacted by attacks of the Cucumber Mosaic Virus (CMV) and growers in Karnataka ad other South Indian States have blamed the Tomato Mosaic virus (ToMV) for crop loss.
- The two plan pathogens have similar names and cause similar damage to crops, but they belong to different viral families, and spread differently.

- **About Tomato Mosaic Virus (ToMV):**
 - » It belongs to the **Virgaviridae** family and is closely related to the **Tobacco Mosaic Virus (TMV)**.
 - » **Hosts:** ToMV hosts include tomato, tobacco, peppers, and certain ornamental plants.
 - » **Spreading mechanism:** It mainly spreads through infected seeds, saplings, agricultural tools and often, through the hands of nursery workers who have failed to sanitize themselves before entering the field. It would require only few infected saplings for virus to take over an entire field in matter of days.
 - » In the present case, farmers have blamed seed manufacturers and nurseries.

- **About Cucumber Mosaic Virus (CMV)**
 - » It was first identified in cucumber in 1934, which gave the virus its name.
 - » **Hosts:** It has much larger host pool that include cucumber, melon, eggplant, tomato, carrot, lettuce, celery, cucurbits (member of gourd family, including squash, pumpkin, zucchini, some gourds, etc.) and some ornamentals.
 - » **Spreading mechanism:** They spread by aphids, which are sap-sucking insects. CMV too can spread through human touch, but the chances of that are extremely low.

- **Impact of these viruses:**
 - » Both viruses can cause almost 100% crop loss unless properly treated on time.
 - The foliage of **plants infected by ToMV** shows alternating yellowish and dark green areas, which often appears as blisters on the leaves. Distortion of leaves and twisting of younger leaves are also symptoms. The fruit develops **necrotic spots**, which leads to **overripening**. Younger plants are dwarfed, and fruit setting is affected.
 - CMV too cause distortion of leaves, but the pattern is different. Often **leaves at the top and bottom are distorted** while those in the middle remain blemish free. Overall it causes stunting and lower production.

- **Controlling these viruses:**
 - » Following biosafety standards in nurseries, and compulsory seed treatment to stop spread of ToMV.
 - » **Awareness among farmers:** Farmers who buy trays of saplings should check before planting, and discard any visible infected material. They should also look for signs of infection during cropping cycle and remove any infected plants without allowing it to touch the healthy ones.
 - » Any eye must be kept on aphid migration so that measures can be taken while planting the crop.

4) INFRASTRUCTURE: RENEWABLE ENERGY: DISTRIBUTED RENEWABLE ENERGY

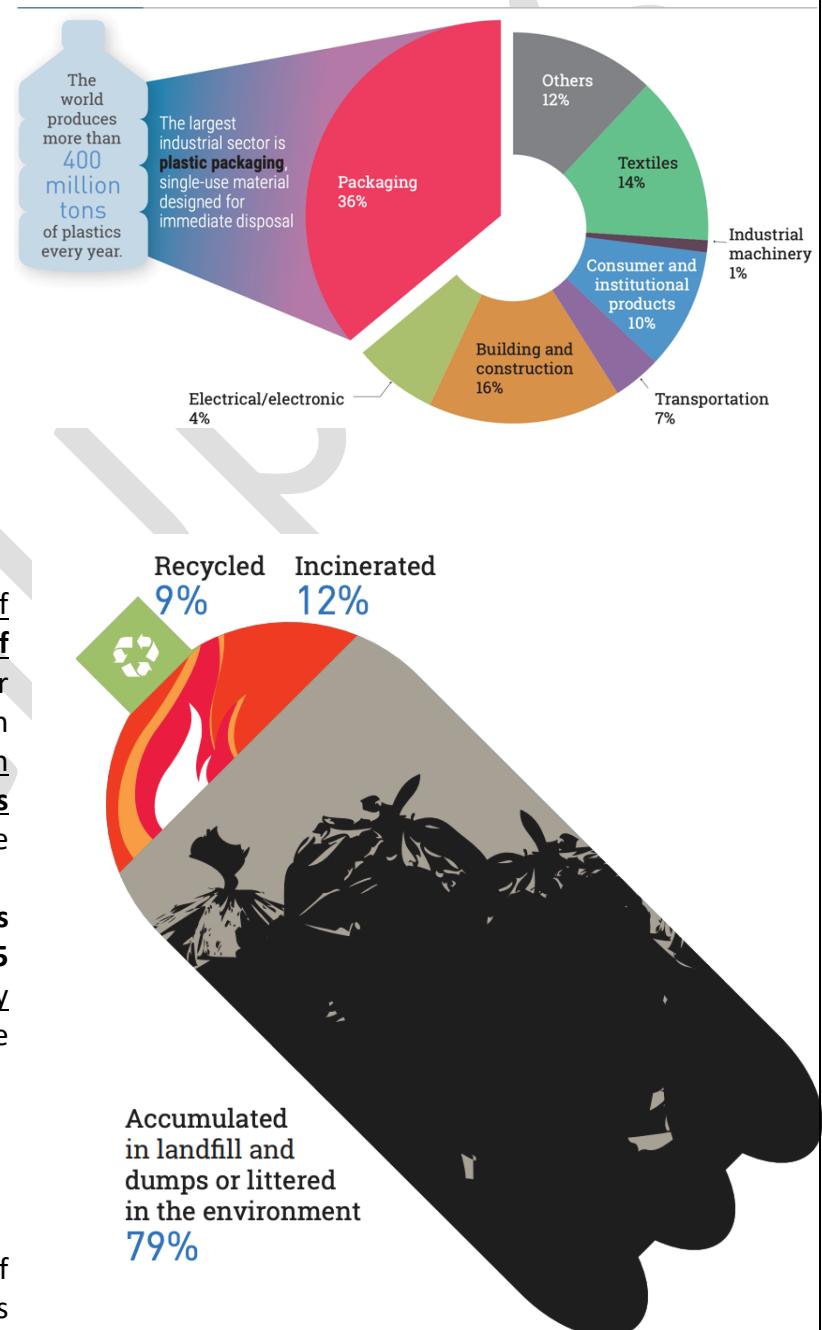
- **Why in news?**
 - Distributed Renewable Energy (DRE) can help achieve SDG 7 - access to affordable & sustainable energy for all: G20 Energy Transitions Working Group Side Event (July 2023, Source: PIB)
 - Decentralized clean energy tech can impact 37 million livelihoods in India's agri sector, textile sector: Study (May 2023, Source: DTE)

- **Example Question:**

- "Decentralized renewable energy play a vital role in transitioning towards a more sustainable and resilient energy future, particularly in areas where centralized grid infrastructure is inadequate or non-existent" Critically Analyze [10 marks, 150 words]
- **Decentralized Renewable energy** refers to generation and distribution of renewable energy at a small and localized level, typically closer to the point of consumption.
 - Currently, India has 12 mature technologies powered by DRE. These include high capacity irrigation pumps, as well as micro-pumps, silk reeling machines, dryers, charkhas, small horticulture processors, small refrigerators/deep freezers, cold storages, vertical fodder growing institutions units, grain milling machines etc.
 - The DRE technologies include solar run textile manufacturing units, biomass powered cold solar storages and micro solar pumps etc.
- **Key characteristics** include localized generation, distributed energy resource, Off-Grid or Mini-Grid Solutions;
- **Advantages:**
 - **Environmentally sustainable:** DRE doesn't lead to environmental damages which are caused by large scale hydropower plants, large scale solar parks etc.
 - **Energy Security:** Technologies like rooftop solar, micro hydel power plants etc. can lead to sustainable energy production and thus can ensure long term energy security.
 - **Inclusive Growth:** DRE can ensure energy supply and thus other associated services in remote, under-developed regions.
 - **Scalability and Flexibility:** DRE can be scaled gradually depending on the local needs.
 - **Job Creations:** DRE will stimulate local job opportunities in manufacturing sector, installation, operations etc.
 - As per MNRE, DRE has a market potential of Rs 4 lakh in rural and peri-urban communities in India.
- **Challenges and way forward**
 - **Repairing** remained a challenge: Enough human resource and contact with manufacturers is still poor, especially in remote areas.
 - Skill development can not only improve the repair services but can also provide increased job opportunities.
 - **Affordability** - For a lot of people, affordability is a major concern and increased access to loans/government incentives is crucial for accessing the DREs.
 - At the same time, development of DRE industries in India, more R&D, etc. would be important for reducing the cost of the technology.
- **Conclusion:**
 - DRE can play a vital role in transitioning towards a more sustainable and resilient energy future, particularly in areas where centralized grid infrastructure is inadequate or non-existent.

5) ENVIRONMENT: PLASTIC POLLUTION

- **Practice Questions:**
 - What is Extended Producer Responsibility (EPR) in plastic waste management. Why has EPR provisions have not been effective so far in dealing with plastic pollutions in the country. Suggest some measures to improve its implementation. [15 marks, 250 words]
- **Introduction**
 - Plastic is a lightweight, hygienic and resistant material which can be molded in wide range of applications and is cheaply manufactured. Because of these reasons, since the 1950s, the production of plastic has outpaced almost all other materials.
- **Extent of Plastic Pollution:**
 - Globally, plastic production stands at about 400 million tonnes, and could double by 2040.
 - **Global Plastic Production by Industrial Sector, 2015**
- **How is plastic disposed off?**
 - According to the UNEP, as of 2015, of the 9 billion tonnes of Plastic that the world has ever produced, only 9% has been recycled and 12% has been incinerated, the balance 79% has accumulated in landfills or in the natural environment.
- India produces around **10 million tonnes of plastic** per year of which around 5 million tonnes is rendered waste every year. Therefore, its crucial that this waste is properly managed.
- **Harmful Impacts of Plastic Pollution**
 - **Physical Pollution:** Pieces of plastics interact with living bodies and ecosystems. It causes physical harm through ingestion, choking and entanglement hazards to wildlife on land and in ocean.



- For e.g. UAE in the UAE an estimated 1% mortality rate of dromedary camels is attributable to plastic pollution.
- Similarly, microplastics can be ingested by organisms at the bottom of food chain like oceanic planktons. This may reduce photosynthesis and growth.
- **Chemical Pollution:** A number of chemicals used in plastic are toxic and carcinogenic and are responsible for infertility, recurrent miscarriage, feminization of male foetuses etc.
- **Environmental Impacts:**
 - **Plastisphere:** Sometimes called the 'Plastisphere', bacteria, viruses and other life colonize the surface of plastic waste, creating distinct communities and population structure.
 - They may also contribute in growth of invasive species. For e.g., more than 80% of invasive species in the Mediterranean may have arrived on floating plastic waste.
- **Health and Social Impact:** Health losses, welfare losses -> unusable parks, Sewage Blocking -> Malaria, Dengue etc.
 - As per a study published by World Wildlife Foundation (WWF) in 2019, an average human may be ingesting as much as 5 grams of plastic every week. This is because 1/3rd of the plastic waste that is getting generated ends up in nature, especially water, which is largest source of plastic ingestion.
 - **Welfare loss** associated with visual disamenity of a park being contaminated with litter.
 - **Blocking of sewage** due to plastics also contribute to vector borne diseases like Malaria and Dengue.
- **Economic Impact**
 - Visual pollution negatively impacts the tourism sector.
 - Further, future cost of removing these plastics from nature is higher than the cost of preventing the littering today.
- **Exacerbate disasters like floods** - an important cause of urban floods.
- **Even the biodegradable plastics** have many unintended consequences.
- **Exacerbates Climate Change:** Plastics are 80% carbon and more than 99% of plastics use crude oil, fossil gas or coal as feedstock. Manufacturing also involves burning of large quantities of fossil fuels to provide high energy demands of the industrial processes.
 - By 2015, the total estimated lifecycle emissions from plastics were **1.78 billion tonnes** of CO₂ equivalent (GtCO₂e). For context, if the whole plastics lifecycle were a country, it would be fifth largest emitter of greenhouse gases in the world.

A) SOME RECENT DOMESTIC EFFORTS TOWARDS REDUCING PLASTIC WASTE AND ENSURING BETTER PLASTIC WASTE MANAGEMENT

a. Plastic Waste Management Rules 2016 (as amended in 2021)

- **Min thickness** of plastic carry bags has been increased to 120 microns from 31st Dec 2022 (after the 2021 amendment to the rules)
- **Ban on Several Single Use Plastic:** The manufacture, import, stocking, distribution, sale and use of several single use plastics (e.g ear buds with plastic sticks, plastic sticks for balloons, plastic plates, cups, glasses etc.) including polystyrene and expanded

polystyrene commodities shall be prohibited wef from 1st July 2022. (as per the 2021 amendment)

- **Plastic Packaging Waste**, which is not covered under the phase out of identified single use plastic items, shall be collected and managed in an environmentally sustainable way through the **EPR** of producer, importer and Brand Owner (PIBO), as per the Plastic Waste Management Rules, 2016.

1. For effective implementation of EPR, the Guidelines for EPR being brought out have been given legal force through the Plastic Waste Management Rules, 2021.

- **Expand the coverage to rural areas.** The earlier regulations only covered urban municipal areas.
- **Introduces Extended Producer Responsibility** for producers and generators of Plastic Waste
- **Shopkeepers and Vendors** can only use plastic carry bags which have been properly labelled and marked for use or else there will be imposition of fines.
- **ULB and Panchayats** have been provided with the responsibility of establishing and operating waste management systems.

b. **Guidelines on EPR for Plastic Packaging** under 'Plastic Waste Management Rules, 2016: Notified in Feb 2022

- **Mandatory Registration** on the centralized portal developed by CPCB of entities such as producer, importer, brand owners and waste processors of plastic.
- The guidelines categorizes SUPs in 4 categories and provides targets for minimum level of recycling.
- **Environmental Compensation** shall be levied based upon polluter pay principle, with respect to non-fulfilment of EPR targets.
- **Sale and Purchase of surplus EPR certificates are allowed** -> this has thus set up market mechanisms for plastic waste management.
- **Focus on Digitization:** Implementation of EPR will be done through a customized online platform which would act as the digital backbone of the system. It will allow tracking and monitoring of EPR obligations and will reduce the compliance burden for companies through online registration and filing of annual returns.
- Further, to ensure monitoring on fulfilment of EPR obligations, the guidelines have prescribed a system of verification and audit of enterprises.
- Producers, importers, & brand owners, may operate schemes such as deposit refund system or buy back or any other model.
- CPCB shall constitute a committee under chairpersonship of Chairman, CPCB that shall be responsible for recommending measures to MoEF&CC for the effective implementation of EPR that shall include amendments to the EPR guidelines.
- **Promote development of new alternatives** to plastics
- **Significance:**
 - Gives boost to formalization and further development of plastic waste management sector.

- By operationalizing EPR, the amendment implements the '**Polluter Pay Principle**'. It aims to hold manufacturers and producers of ecologically unsustainable plastic items financially and socially accountable for the pollution these materials cause.
 - Online Monitoring mechanism -> Increase accountability
 - Market based approach -> Promotes Ease of Doing Business.
 - The amendment demonstrates India's political will to address the challenge of plastic pollution.
 - Promote Development of Alternatives
 - **Concerns/Challenges**
 - The biggest challenge will be to implement highly ambitious recycling and reuse targets in a country where various existing waste management rules haven't been implemented.
- c. **Strengthening of waste management infrastructure** through Swatch Bharat Mission.
- d. **Promotion of Alternatives:**
- CPCB has already provided certificates to more than 300 manufacturers of **compostable plastics**.
 - India Plastic Challenge - Hackathon conducted for development of innovative alternatives to SUP.
- e. **Steps for Effective Monitoring** (E.g., an SUP Public Grievance App, an SUP compliance Monitoring Portal etc.)
- g. **Stricter Punishment:**
- Those found violating the SUP ban would be penalized under the Environment Protection Act, 1986 - which allows for imprisonment upto 5 years, or a penalty upto Rs 1 lakh or both.
- h. **Awareness Generation:**
- **Mascot 'Prakriti'** has been launched to spread awareness about how small lifestyle changes can play a big role in environmental sustainability.
- i. **Promoting Alternative uses of Plastic Waste:**
- For e.g.
 - waste plastic is being used as replacement of coking coal (by upto 1%) in steel manufacturing.
 - MoRT&H have also issued guidelines for use of plastic waste in road construction.
- j. **WWF-India and CII** have joined hands to develop a platform to promote a circular system for plastics. The new platform is called, the '**India Plastic Pact**'.

B) INTERNATIONAL EFFORTS

- a. **Steps towards Plastic Pollution Treaty:** In 2022, the UN member states agreed to start negotiating new global treaty to end plastic pollution. Now it is crucial that the treaty that is finalized is ambitious and effective enough to truly address the plastic crisis.
 - As of July 2023, 2 negotiation meetings, for the new treaty has taken place.
- b. **Awareness and Education:**
 - The theme of **World Environment Day, 2018** was "**Beat Plastic Pollution**" and it focused on increasing awareness related to plastic pollution across the world.

- c. EU Parliament bans 10 single use Plastics with effect from 3rd July 2021
- d. Other International Initiatives which deal with Plastic Waste
 - i. #Clean Seas campaign of UN Environment
 - To reduce and eliminate the use of single use plastic, cosmetics and micro-plastic sources
 - ii. Stockholm Convention on POPs
 - It is an international environment treaty that came into force in 2004 and aims to restrict or eliminate the production of PoPs.
 - iii. Honolulu Strategy by UNEP aimed at reduce **marine debris**

C) KEY CHALLENGES FACED BY PLASTIC WASTE MANAGEMENT IN INDIA

- Problems like lack of people's participation, source segregation, absence of a suitable alternatives etc are increasing the load on plastic management sector.
- **Domination of Informal sector:** Around 70% of the plastic waste management industry is informal in nature and yet no major effort towards formalizing the industry has been pushed in recent times.
- **Plastic Waste management** has been put under a **5% GST bracket** hurting the formal sector, which already lacks a concrete action plan.
- **Implementation of Plastic waste management rules** have been poor in all aspects.
 - In the past too, many states in India have banned plastic at state level. However, these bans have a very little impact on ground.
 - A CAG Report in Dec 2022 highlighted that MoEF&CC has no mechanism to assess the collection and safe disposal of plastic waste. This has led to poor implementation of the 2016 rules as well as the EPR guidelines.
- Since waste management is the responsibility of the local bodies, the resource constraints with our local bodies in terms of **human resource and infrastructure** is another major challenge.
- **COVID-19 pandemic** has increased the plastic pollution burden drastically - masks, gloves, sanitizer bottles, PPE kits etc.

D) WAY FORWARD FOR INDIA

- **Improving the Waste Management System**

IMPROVE WASTE MANAGEMENT SYSTEMS	Segregation of waste at sources: plastics, organic, metals, paper, etc.	Effective collection of the segregated waste, transport and safe storage	Cost-effective recycling of materials (including plastics)	Less landfilling and dumping in the environment
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- **Promoting Circular Economy:** As per a recent report by UNEP titled - "*Turning Off the Tap: How the world can end plastic pollution and create a circular economy*" - Global Plastic Pollution can reduce by 80% by 2040 if countries and companies make deep policy and market shifts using existing technologies and shift to circular economy.
- **Reducing the Usage of Plastic**
 - **Focus on Packaging Innovation -> Promote Eco-friendly alternatives:** This will reduce the use of plastic for packaging purpose which has expanded in recent years, especially due to e-commerce.
 - Companies need to invest more in R&D to find sustainable alternatives.

- **Taxing Plastic Production** can also increase the cost of plastic and thus help in reducing the usage
 - **Awareness generation** among end users.
- Steps to **implement EPR** -> innovative solutions such as offset mechanism and deposit refund schemes
 - The producers/generators may also form **waste cooperatives** and employ informal waste pickers if offset mechanism is in place.
- **Strengthening Local Bodies** -> **More resources with local bodies** can be ensured by support from producers. This resource can contribute in more sustainable waste management system by ensuring better infrastructure.
- **Social Awareness and Public Pressure**
- **International collaboration and coordination** -> A Global pact like Montreal Protocol and Paris Agreement for the reduction of plastic production and usage.

- **Conclusion**

With a worldwide crisis due to plastic waste, India has to find a way to curb its plastic pollution at the earliest and that is only possible when all the stakeholders take the responsibility of ensuring minimization, reuse and recycling of plastic to the maximum.

6) ENVIRONMENT: PLASTIC POLLUTION – NEED OF A GLOBAL TREATY

- **Why in news?**
 - 2nd Session of Intergovernmental negotiation Committee (INC) on plastic pollution was held in Paris in June 2023.
- **Background:** In 2022, the UN member states agreed to start negotiating new global treaty to end plastic pollution. Now it is crucial that the treaty that is finalized is ambitious and effective enough to truly address the plastic crisis.
 - The Intergovernmental Negotiation Committee (INC) on Plastic Pollution is in the process of developing "an international legally binding instrument on plastic pollution, including in the marine environment"
 - As of July 2023, 2 negotiation meetings, for the new treaty has taken place.
- **Why is a global Treaty on Plastic Pollution required?**
 - i. **Plastic Pollution is a global problem** which requires global solution. Most of the plastic is being dumped into oceans. This is eventually converting into micro-plastics, entering food chain and affecting everyone.
 - ii. Plastic pollution is harmful to wildlife and biodiversity which is impacting everyone.
 - iii. **Increased International Cooperation** will be feasible through a global treaty.
 - iv. The treaty may set global target for reduction
 - v. A global treaty may make the fight against plastic pollution more fair -> by giving higher responsibility to developed economies and giving more time to under developed countries.
- **Way Forward:**

- **Fast Track the Negotiation** to finalize the treaty quickly (unlike the agreements under UNFCCC which took many years of negotiations).
 - The treaty should have plans to reduce production and consumption of plastics and chemicals used in plastics, especially by businesses.
 - It should have provisions to regulate priority sectors like packaging which use unsustainable amounts of plastics.
 - Along with reduction, transparency with respect to production, consumption and import/export of plastic and plastic waste has to be created and nurtured at a global level.
- **Conclusion:** A strong global plastic treaty would be a major step forward in the fight against plastic pollution. It will not only help environment, but will also be crucial for human health and our future.

7) ENVIRONMENT: GROUND WATER ISSUES

- **Why in news?**
 - India's farmers need financial motivation to check indiscriminate use of groundwater for irrigation (July 2023: Source - DTE)
 - Increased rainfall alone will not help groundwater recovery (June 2023: Source - TH)
 - A study by IIT Delhi shows that - climate change led excessive rainfall will not be able to compensate for depletion of ground water. The periods of high precipitation may not directly translate to an overall increase in groundwater storage.
 - The increasing influence of evapotranspiration will become dominant in the far period and at higher warming levels.
- **Example Questions:**
 - What are the major factors contributing to the depletion of groundwater resources in India? Suggest sustainable measures to address this issue [15 marks, 250 words]
- **Introduction: Global Situation**
 - As per World Water Development Report, 2022, Ground water accounts for 99% of the liquid freshwater on earth. It has continued to serve humankind for many millennia and currently around 50% of water used in domestic purpose and 25% of water used for irrigation globally comes from groundwater.
 - Yet, despite its enormous importance, this natural resource is often poorly understood, and consequently undervalued, mismanaged and even abused.
- **India's Situation:**

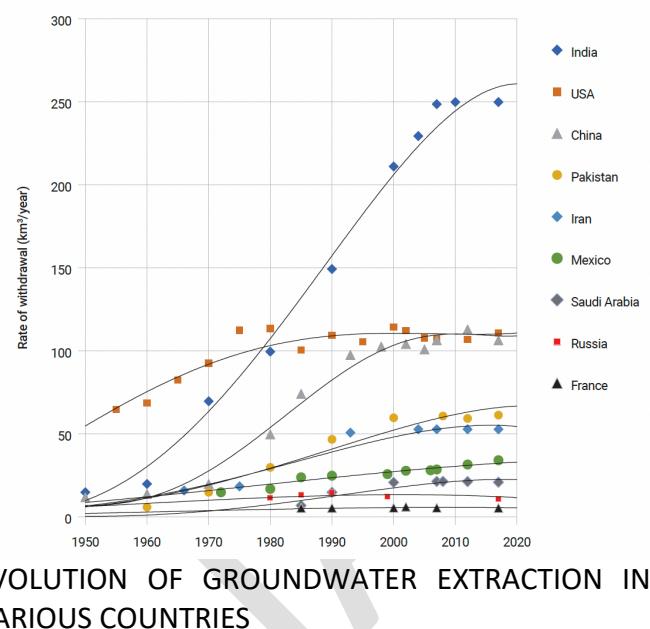
Annual extractable groundwater availability in India (2017) is 393 BCM.

India is the largest user of ground water in the world, extracting **253 BCM** per year, which is 25% of the global ground water extraction. It extracts more groundwater than USA and China combined together. Most of the ground water extracted in India is for Irrigation (228 Billion Cubic Meter (BCM)) which accounts for 90% of the total extraction.

- In India, 60% of irrigation requirement is fulfilled by groundwater.

The remaining **10%** (225 BCM) is for drinking, domestic as well as industrial uses.

Industrial use accounts for only 5% of the total extraction



- **Satellite Gravimetry** has provided convincing evidence in support of the alarming rates of groundwater depletion.
- The data is supported by local level water table measurements in wells, where in 61% decline has been seen by CGWB.
- As per the 2022 assessment by the CGWB, 14% of assessments units in the country (1006/7089) have been categorized as 'Over-exploited' where the annual groundwater extraction is more than annual available Ground Water Resource. 4 States/Uts viz. Haryana, Punjab, Rajasthan, Dadra & Nagar Haveli and Daman & Diu have stage of Ground Water Extraction greater than 100%.

Key Challenges:

- **Depletion due to Over-extraction:**
 - Over the years, groundwater has become the dominant source of irrigation as well as for domestic purpose. This is primarily due to unavailability of surface irrigation in regions such as Rajasthan.
 - Installation of tube-wells have increased in north-western plains. Since the 1980s, 77% of the total addition to irrigation has come from tubewells. This has allowed farmers in the region to grow water intensive crops like Wheat and Rice. It has also allowed increase in cropping intensity by allowing for sowing of crops during dry winters.
 - **Electricity Subsidy for agriculture and increased rural electrification** has also been a factor behind over-exploitation of ground water.
 - **Expansion of solar powered irrigation systems** which have led to very affordable cost of ground water extraction.
 - **Weak law and regulations** to prevent or limit diffuse groundwater pollution.
 - Industry that withdraws groundwater include manufacturing, mining, oil, and gas, power generation, engineering, and construction.
 - Bottled water industry is emerging as a major extractor.

- **Destruction of wetlands, aquifers etc.** which used to act as water sinks and contributed to ground water recharge.
- **Pollution:** Many sources of groundwater pollution are located in or near surface, but several other sources inject pollutants into the subsurface at greater depth below the surface.
 - Pollution due to Agriculture is widespread and difficult to control as it is a diffused source and includes large quantities of nitrates, pesticides, and other agronomics.
 - Industrial effluent discharge; Leaching through coal ash waste dumps; Fracking of natural gas, particularly in shallow aquifers can present considerable risk of groundwater contamination.
- **Irreversibility:** Once polluted, the aquifers tend to remain with polluted water.
- **Climate Change:** CC impacts groundwater through impacting precipitation, leakage from surface water, sea water intrusion into coastal aquifers
- **Key Efforts for Groundwater:**
 - **Recent Schemes:**
 - **Jal Shakti Abhiyan:** First launched in the year 2019, it focuses primarily upon effectively harvesting the monsoon rainfall through creation of artificial recharge structures, watershed management, intensive afforestation, awareness generation etc. JSA for the year 2023 was launched on 4th March 2023 with the theme "Source Sustainability for Drinking Water".
 - **Amrit Sarovar Mission** - launched in April 2022 - focuses on developing and rejuvenating 75 water bodies in each district of the country as part of celebration of Azadi ka Amrit Mahotsava.
 - **Atal Bhujal Yojana** is being implemented by central government in collaboration with states. It has an outlay of Rs 6,000 crores and is being implemented in certain water stressed areas of Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh. The Primary aim of the scheme is demand side management through scientific means based on water budgeting of the area involving local communities at village levels leading to sustainable groundwater management in targeted areas.
 - **Institutions:**
 - **Central Ground Water Authority (CGWA)** has been constituted under Section 3(3) of the "Environment (Protection) Act, 1986" for the purpose of regulating and control of ground water by industries, mining projects, infrastructure, projects etc. in the country.
 - The latest guidelines in this regard with Pan- India applicability was notified by Minsitry in 2020. CGWA and State issues No Objection Certificate (NOC) for extraction of groundwater to various industries/project proponents as per their jurisdiction and as per the extant guidelines.

- CGWA is also implementing **National Acquifer Mapping Program (NAQUIM)** in the country. These reports along with management plans are shared with States/Uts for suitable intervention.
 - MoHUA has formulated **Model Building By Laws (MBBL)**, 2016 for the states/ Uts, wherein adequate focus has been given on requirement of rainwater harvesting and water conservation measures. 35 states/Uts have adopted the features of the Model Bye Laws.
 - Major and Medium projects under Accelerated Irrigation Benefit Program are also reducing dependency on ground water extraction.
- **Way Forward:**
- **Controlling over-extraction:**
 - i. **Rationalizing Energy Pricing** - to make it expensive to withdraw groundwater
 - ii. **Reforming MSP regime** - to encourage the production of oilseeds, pulses etc. instead of water guzzling crops.
 - iii. **Incentive Driven - Volumetric Water Pricing** - This will motivate the economy in water-use.
 - Direct and visible incentives are required for the economy in terms of water use and diversifying the cropping pattern in the state.
 - iv. **Improving Water Use Efficiency in Agri-Sector:** Micro-irrigation, less water intensive crops.
 - v. **Development of high yielding varieties** of crops such as pulses, millets etc. The increased productivity can play a crucial role in encouraging farmers to move away from water guzzlers.
 - vi. Enforcing Groundwater regulations - To ensure groundwater is used in a sustainable manner.
 - **Recharging Groundwater:**
 - **Protecting and rehabilitating wetlands; Watershed Management** (small and large check dams)
 - For e.g. the state of Maharashtra have started their own Managed Aquifer Recharge Program such as the Jalyukt Shivar.
 - **Rainwater Harvesting** in urban areas could be crucial in reducing the extraction of groundwater.
 - Effectively implementing Building Laws - to make it mandatory for large houses to provide water harvesting facilities.
 - **Pollution Control:**
 - Reducing the Open Dumping of Municipal Solid Waste, controlling surface water pollution and strict action against water polluting industries.
- **Conclusion:** Through these efforts, India can help to address the issue of groundwater depletion and ensure that this vital resource is available for future generations.

2. PRELIMS FACTS

1) CULTURE: PASHMINA SHAWLS

- **Why in news?**
 - A first of its kind initiative is helping women artisans recreate authentic Pashmina shawls that are making comeback in the valley (July 2023)
- **About Pashmina Shawl**
 - A Pashmina Shawl (also known as Kashmiri Shawl) is a luxurious shawl made from Pashmina; a type of fine wool obtained from Pashmina Goats (Changthangi Kashmeri goat).
 - They are known for their softness, warmth, and elegant appearance.
 - A shawl costs anywhere between Rs 25,000 to Rs 2,00,000 depending on the intricate work and yard used. The raw pashmina is procured from high-altitude regions of Ladakh and engages artisans from Kargil and Leh.
- **Details about efforts to bring back artisans/women artisans in Pashmina sector:**
 - **Background:** Power looms and poor wages drove 10,000 women artisans away from the job of spinning in the state.
 - **Wajahat Kazi**, a writer-turned-entrepreneur came up with a novel idea to stem the attrition. He set up the first Karkhana in the valley (website: website zaevyul.com) encouraging women to travel to work and paid them monthly wages, besides a cut from the profits. Through this he has been able to revive and retain centuries-old ways and means of shawl production, without introducing machine at any stage.

2) GEOGRAPHY: PLACES IN NEWS – KERCH BRIDGE (CRIMEAN BRIDGE)

Kerch Bridge (Crimean Bridge) : It is a 19 km bridge which links Russian mainland with Ukrainian Peninsula in the black sea. The bridge has two parallel rail and roadways. It was opened in 2018 by Russian President Vladimir Putin with great fanfare, four years after Russia annexed Crimea from Ukraine after a contested referendum.

In July 2023, According to Russian authorities, one of the sections of the bridge was blown up killing two people and injuring a child. Russians have claimed that this was an attack by Ukraine.

The **bridge is so important for Russians for symbolic, administrative and operational reasons**.

- **Connectivity:** Before Russia had control over Donbas and Kherson, the bridge was the only connection between mainland Russia and Crimea.
- Even now, when it has control over the Donbas and Kherson, it is not far from the frontline and well within the range of Ukrainian fire. So, the **Kerch bridge remains a**



critical logistical supply link for the Russian troops in the south.

3) S&T: NUCLEAR SCIENCE AND TECHNOLOGY: PERSONALITY – OPPENHEIMER

- **Why in news?**
 - » Christopher Nolan's new film on the American Physicist who built most destructive weapon known to man was released on 21st July 2023.
- **J Robert Oppenheimer** (1904-1967) was an American physicist and one of the most prominent scientists of 20th century. He is best known for his role as the scientific director of the Manhattan Project, the top-secret US government program during WW-II that led to the development of the first atomic bomb.
- **Education:** He was born in 1904, in New York City. He attended Harvard University and studied Physics there. He completed his PhD in theoretical physics at University of Gottingen in Germany under the supervision of Max Born in 1927. Later he returned to USA, and taught in University of California, Berkely, and the California Institute of Technology (Caltech). He made significant contribution to physics, especially in the area of quantum mechanics and quantum field theory, earning him the recognition as one of the leading theoretical physicists of his time.
- In **1942**, he was appointed as the scientific director of the Manhattan Project. He played a crucial role in organizing and coordinating the efforts of various scientists and engineers to develop an atomic bomb. The project resulted in successful detonation of the first atomic bomb on 16th July 1945, in the New Mexico desert, in an area known as the Trinity Test Site.
- **The use of Atomic Bomb** over Hiroshima and Nagasaki in Aug 1945 led to the end of WW-II and raised profound ethical and moral questions about the use of nuclear weapons. Oppenheimer was deeply affected by the destruction caused by the bombs and became an advocate for arms control and international cooperation in the peaceful use of atomic energy.
- **His political views** and opposition to nuclear weapons led to him coming under scrutiny during the era of McCarthyism and the Red Scare. In 1954, his security clearances were removed and he was also ostracized from the scientific community.
- Inspite of these controversies, he continued serving at Princeton from 1947 – 1966. In 1963, he received the Enrico Fermi Award, one of the highest honors in the field of nuclear science.
- He passed away in 1967, leaving behind a complex legacy of a brilliant physicist and a controversial figure in American History.
- It was only in 2022, that the US government nullified its 1954 decisions, and affirmed his loyalty. President Joe Biden's Energy Secretary, Jennifer M Granholm, said the decision to revoke Oppenheimer's clearance was the result of a “flawed process”, and that with time more evidence of his loyalty and love of country have only been further affirmed.

4) BIODIVERSITY: CHANGTHANGI GOAT

Changthangi or Pashmina Goat is a special breed of goat indigenous to the high altitude regions of Ladakh. They are raised for ultra-fine Kashmere wool, known as Pashmina once woven. The textile is home spun and were first woven in Kashmir.

These goats are generally domesticated and reared by nomadic communities called the Changpa in the Changthang region of Great Ladakh. They live in tough and hostile terrain of **Changthang** and are solely dependent on Pashmina for livelihood. At present there are around 2,400 families rearing around 2.5 lakh goats.

Ladakh produces around 50 MT of the finest grade Pashmina in the world (12-15 microns).

IUCN: LC

In 2019, PASHMINA products have received BIS Certifications.

- BIS has published an Indian standard for identification, marking and labelling of Pashmina products to certify its purity

Significance of BIS Certification

- It will discourage counterfeit or substandard products presently mislabeled and sold as genuine Pashmina in the market.
- It will also ensure better prices for the goat herding community in Ladakh as well as Local handloom artisans producing genuine Pashmina products. They are till now disadvantaged due to rampant marketing malpractices.



5) BIODIVERSITY: SNAKES: WORLD SNAKE DAY

A) WORLD SNAKE DAY: 16TH JULY

- **History:**
 - World Snake Day is an annual event celebrated on July 16th to raise awareness about the importance of snakes and to dispel some of the myths and fears that surround them.
 - It was first celebrated in 2006 by the Snakebite Survivors Network (SSN) and the International Society of Herpetologists (ISH).
- **National Zoological Park, New Delhi** has celebrated World Snake Day on 16th July 2023.

B) SNAKES OF INDIA:

- Snakes have been slithering on earth for more than a 100 years. These creatures have evolved from lizards

- Globally, more than 34,00 species of snakes have been identified. India, is home to 350 species of snakes. Thus number is increasing constantly as a result of new discoveries. But only 15% of these are venomous.

THE BIG FOUR:

- The four venomous snake species responsible for causing the greatest number of medically significant human snake bite cases on Indian subcontinent are sometimes collectively referred to as the **Big Four**.
- They Include the following snakes:

Russel's Viper: Daboia russelii:

It is native to Indian subcontinent. They are mainly nocturnal.

Their hiss is amongst the loudest hiss of the snakes in the country.

IUCN Status: LC

They are responsible for more than **40% of snake bites in India**.



Common Krait (Bungarus caeruleus):

It is a nocturnal snake and thus most of the human encounters happen at night.

IUCN: Not Evaluated

They are responsible for around **18% of snake bites in India**.



Indian Cobra (Naja Naja):

Indian Cobra is a species of the genus Naja found in India, Pakistan, Bangladesh, Sri Lanka, Nepal and Bhutan. It is also known as the spectacled Cobra, Asian Cobra, or binocellate Cobra.

Conservation Status:

It is not a threatened species and is not listed in IUCN Red List.

It is listed under Appendix II of CITES because it closely resembles other species that are threatened and in need of protection.

About Genome Sequencing

A large international team of researchers affiliated with corporate and academic institutions has sequenced the genome of the Indian Cobra. They have published their paper in the journal Nature Genetics. The group describes their goal to develop an anti-venom.

With gene sequencing scientists are hoping that it would be lead to development of an antivenom based on synthetic recombinant venom built from protein.



Indian Saw Scaled Viper (Echis Carinatus):

It is a venomous viper species found in West Asia, Central Asia and South Asia.

It is the smallest member of the big four snake that are responsible for causing the most snakebite cases and deaths, due to various factors including their frequent occurrence in highly populated region, and their inconspicuous nature.

IUCN: Note Evaluated



C) KING COBRA (OPHIOPHAGUS HANNAH)

Details about King Cobra: It is one of the most venomous snakes in the world. They can reach upto 18 feet in length, making them longest of all venomous snakes.

Habitation and Distribution

- King Cobra lives mainly in the **rain forests and plains in India, southern China and Southeast Asia**. They are comfortable in a variety of habitats, including forests, bamboo thickets, mangrove swamps, high altitude grasslands, and in rivers.
- In India, they are known from Odisha and Jharkhand. Recently (Aug 2022), it has been confirmed that their habitat has expanded to Central India (Chhattisgarh) as well.

Food:

- They are carnivores and it other snakes, lizards, eggs, and small mammals.

Other special features

- They are the only snakes in the world that build nests for their eggs, which they guard ferociously until the hatchlings emerge.
 - It is best known as the species of choice for the snake charmers of South Asia. Though, they can hear, they are actually deaf to ambient noises, sensing ground vibrations instead.
 - **Snake charming** is “often a sad con game in which an exhausted cobra is put on the defensive, yet conditioned (with pain) not to strike the flutist,” Smithsonian’s National Zoo says



Protection Status: They face a variety of threats stemming from human activities, these snakes are vulnerable to extinction.

- **IUCN Status: VU**
- **CITES: Appendix-II**
- **WPA: Schedule-II**

Note: It is different from **Indian Cobra (Naja naja)** which is not a threatened species.

Increase in sightings in Human Settlement in Odisha

- Disturbances caused by forest fires and other human activities may cause the king cobras to come to their natural habitats in the forests to human habitats.
- The dwindling population of prey in forests could be other reason.

Sightings of King Cobra in Chhattisgarh for the first time (Aug 2022)

- **31 nesting spots of King Cobras** have been confirmed in the Korba forest range.
- **Note:** Earlier, there was no known evidence of the longest venomous snake in Chhattisgarh or all of central India before this.
- King Cobras require a continuous forest patch. Their presence indicates that the habitat is performing better in terms of ecosystem services.

D) RETICULATED PYTHON

It is the longest snake (third heaviest) in the world regularly reaching 6.25 m in length. The longest reticulated python ever recorded was 10 metres.

It is a non-venomous snake.

IUCN: LC (wide distribution)

Distribution: Native to South and South-east Asia

Habitat: Rainforests, woodlands, grasslands.



E) INDIAN RAT SNAKE (PTYAS MUCOSA)/ ORIENTAL RAT SNAKE / INDIAN RAT SNAKE

It is a common non-venomous species of Columbidae family found in south and Southeast Asia. In northern India they are also called **Dhamans**.

They are famous for their crawling speed and large size. They are a farmer's friend, as they help control the rodent population from destroying crops.

They are favorite meals of King Cobra.

Ptyas mucosa



Indian rat snakes (grey and yellow)

Conservation status



F) INDIAN ROCK PYTHON

It is one of the heaviest and longest snakes found in India.

Despite being common in most part of the country it is difficult to see them in the wild as they are nocturnal and arboreal snakes. They have a thermal sensing pit on their jaws.



G) OTHER VULNERABLE SNAKES OF INDIA

Burmese Rock Python (*Python bivittatus*)

It is one of the five largest species of snakes in the world. It is found in SE Asia, Southern China and North-Eastern Indian region.

Note2: It is an invasive species in Southeastern United States and it reached there as a result of pet trade.



Useful Video: [The Bounty Hunters Catching Pythons In Florida \(HBO\)](#) (The bounty hunters Catching Pythons in Florida)

6) DFENCE EXERCISE: JIMEX 23

JIMEX (Japan India Bilateral Maritime Exercise)	India Japan	JIMEX 23, Naval Exercise 7th Edition: In Bay of Bengal, hosted by Indian Navy When: July 2023	The exercise was <u>first held in 2012</u> with special focus on <u>maritime security cooperation</u> . JIMEX 23 witnessed <u>complex exercises</u> , undertaken jointly by the two navies. Both sides engaged in advanced level exercises in all three domains of maritime warfare - surface, sub surface and air.
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by **Nikhil Sheth**



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HISTORY

Foundation Batch 2.0
CSE 2024

Starts 6th AUGUST 2023

Class
Timings

5:00 PM - 7:30 PM (Monday-Friday)

Optional
Fee

₹47,000/- (Offline)

₹45,000/- (Online)



Offline/Online
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1) PARLIAMENTARY PROCEDURE: NO CONFIDENCE MOTION

- **Why in news?**
 - Lok Sabha Speaker Om Birla admitted a motion of No-Confidence against the government moved by Congress Deputy Leader in Lok Sabha Gaurav Gogoi (July 2023)
- **Example Questions**
 - What is meant by Vote of No Confidence? Discuss the significant role that vote of no-confidence plays in Indian political system [10 marks, 150 words]
- **Introduction**
 - Article 75(3) of Indian Constitution says that the council of ministers shall be collectively responsible to the Lok Sabha.
 - Similarly, in Part VI of the Constitution, Article 164(2) says "The Council of Ministers shall be collectively responsible to the Legislative Assembly of the State."
 - This means that majority of the Lok Sabha members/Legislative Assembly members must support the PM/CM and her Council of Ministers.
 - In other words, Lok Sabha/Legislative assembly can remove the ministry from office by passing a no-confidence motion.
 - A no-confidence motion is an attempt, usually by an opposition party, to get the government of the day to prove its majority on the floor of the house.
 - Rule 198 of the **Rules of Procedure and Conduct in Lok Sabha** specifies the procedure for a motion of no-confidence.
 - Any member of the Lok Sabha can move the motion. The member moving the motion doesn't have to give reasons in support of the motion.
 - If the speaker is of the opinion that the motion is proper, then she reads the motion to the house. A minimum of 50 members have to accept the motion. If not, the motion fails and the member who moved the motion is informed about it.
 - **If a no-confidence motion is passed** (i.e., accepted by the majority)
 - Government has to resign.
- **Significance of No Confidence Motion**
 - The motion helps in testing the majority of the government. Thus, it ensures collective responsibility and thus accountability of council of ministers towards the Lok Sabha.
 - When the motion is being taken up, members of Lok Sabha have an opportunity to present their views on performance of the government.
 - It provides an opportunity to debate and discuss key issues of national significance.
- **History of No-Confidence Motion in India:**

- **27 No-Confidence Motion** have been moved so far. None of these motions, including the one against the PM Modi government in 2018, has been successful.
 - In **1979**, PM Morarji Desai realized that he didn't have the support of the majority of MPs, and therefore resigned before the house votes on the motion.
- **Note2:**
 - Difference between "No-Confidence Motion" and "Motion of Confidence / Trust Vote"
 - Motion of confidence/trust vote is moved by government, as an ordinary motion under Rule 184.
 - The term '**No-confidence motion**' is **not mentioned in the constitution of India**. It is provided in the Rules of Procedure of the Lok Sabha.

2) STATUTORY BODIES: NATIONAL COMMISSION OF WOMEN (NCW)

- **Why in news?**
 - After the leak of Manipur videos, a lot of questions are being raised about the functioning of National Commission of Women (July 2023)
- **Practice Questions:**
 - Is the National Commission for Women able to strategize and tackle the problems that women face at both public and private spheres? Give reasons in support of your answer [Mains 2017, 15 marks, 250 words]
 - What are the limitations and challenges faced by the National Commission of Women in terms of its jurisdiction and enforcement of recommendations? Suggest ways to overcome these challenges and strengthen its impact? [15 marks, 250 words]
- **Basics:**
 - NCW was set up as a statutory body in **Jan 1992** under the National Commission for Women Act, 1990.
 - It consists of a chairperson, five members and a member secretary all to be nominated by Central government.
 - **Key Functions of the National Commission of Women (NCW)** includes:
 - **Reviewing the existing constitutional and legal framework** related to women and recommend changes to make them more effective.
 - Take up violation of rights of women with appropriate authority.
 - Act on complaints suo motu in relation to issues concerning deprivation of women.
 - **Inspect institutions where women are kept** as prisoners or otherwise and if necessary, take up with relevant authorities any remedial action.
 - The commission also has powers that are vested in a **Civil Court**.
 - It submits an annual report before the central government. Apart from this, it submits other reports which it deems to be fit.
- **Key Achievements of National Commission of Women (NCW)** in the last 21 years of its existence:
 - **Gender Mainstreaming:** The NCW has collaborated with non-governmental organizations and civil society groups to extend its reach and impact in addressing women's issue.

- **Addressing Violence against women:** The NCW has played a crucial role in addressing violence against women, including domestic violence, dowry-related violence etc. It has also raised awareness, provided support to victims, and advocated for stronger legal measures to protect rights of women.
 - **Policy Advocacy:** NCW has been involved in laws and policy related to women including Protection of Women from Domestic Violence Act and the Sexual Harassment of Women at Workplace (Prevention, Prohibition, Rehabilitation) Act etc.
 - **Gender Sensitization and Awareness Programs** are being run by the Commission
 - For e.g. in collaboration with Kendriya Vidyalayas they are running these kinds of programs for class XI and Class XII students.
 - **Helplines and Support Services:** To provide assistance to women facing various forms of violence and discrimination. These helplines offer counselling, legal aid, and other forms of support.
 - **International Engagements:** NCW has engaged in international collaborations and partnerships to address gender issues.
 - **Research cell** of the NCW also looks after emerging problems of Indian women due to discrimination and gender bias.
- **But,** over the years NCW has also been criticized for failing to tackle the problems faced by women in various parts of India.
- Serious issue of sexual violence against women during the Manipur Violence.
 - The practice of dowry in direct and indirect forms is rampant within the country
 - The representation of women in senior leadership position including as MLAs and MPs is still below the global standards.
- **Key Criticisms and Limitations:**
- **Limited power to enforce its recommendations:** This has made it challenging for them to ensure compliance with its directives.
 - **Women's Commissions** at the National Level and State Levels have become toothless tigers, merely pushing papers around.
 - They seem busy more in paper work, failing to prioritize field visits.
 - **Political Appointments** in the commission: Since the members of the commission are nominated by government, most of the commission (National Commission as well as State Commissions) are wary of even minor criticism of the government. Also, they are over-enthusiastic in taking up matters in states ruled by opposition.
 - **Resource Constraints:** The commission suffers from financial and logistical constraints, limiting its reach and effectiveness in addressing issues at grassroot levels.
 - They are dependent on grants offered from central government which are very less to cater to its needs.
 - For e.g. in the recent case of Manipur violence, NCW was so overwhelmed with the number of complaints that it could just forward the complaints to appropriate authority.
 - **Lack of Awareness:** Many women are not even aware of the NCW's existence or its services, leading to underutilization of its resources.
 - **Complex legal framework** also hinders the work of NCW in ensuring grievance redressal of women.

- **Deep rooted Social and Cultural Norms, stereotypes and attitudes towards women** continue to perpetuate gender-based discrimination and violence, making it difficult to eradicate such issues solely through institutional interventions.
- All these factors hinder the grievance redressal in various women issues and the evil of dowry, domestic violence, sexual harassment etc. against the women continued.
- **Way Forward:**
 - **The NCW** needs to be provided with more executive power to ensure enforceability of its recommendations.
 - **Reforming the Selection Process for Chairperson and Members of Commission:**
 - Advertise for the post of chairpersons and members.
 - From the people who have applied and have required qualifications, selection should be made by a committee consisting of member from ruling party, from opposition party, a Supreme Court Judge and a representative of Women NGOs.
 - **Regular Social Audit of the performance of the Commission:** This would give citizens an idea of their actual working and increase their accountability towards citizens.
 - **Allocate more resources to NCW**, enabling it to conduct comprehensive investigations, outreach programs, and awareness campaigns to reach to marginalized and vulnerable communities.
 - **Foster collaboration with Civil Society** to better understand the situation on ground and impact of various initiatives.
 - **NCW along with other stakeholders** also need to continuously work towards changing societal attitudes towards gender roles.

- **Conclusion:**
 - By the implementation of suggested solutions, the National Commission for Women can enhance its effectiveness and play a proactive role in safeguarding women's rights, promoting gender equality, and addressing the challenges faced by women in India.

3) SOCIAL JUSTICE: MANUAL SCAVENGING

- **Why in news recently?**
 - 530 districts reported as free of manual scavenging: Centre (July 2023: Source: TH)
- **Example Questions**
 1. What is manual scavenging? Discuss the key factors hindering the eradication of manual scavenging in India. [10 marks, 150 words]
 2. Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013 is definitely an improvement over the previous laws against manual scavenging, but, it has not been able to eradicate manual scavenging from the country. Why? [15 marks, 250 marks]
- **Introduction**
 - Even after more than seven decades of independence, India is still striving to put a stop to one of the most inhumane and humiliating of human activities- manual scavenging.
 - Manual scavenging is the practice of manually cleaning excrement from private and public dry toilets, pipes, sewerage, open drains etc.

- It is a hereditary, caste based occupation that predominantly involves forced labor. More than an occupation, it is a custom or practice that has continued un-interrupted despite all the available technology and alternatives.
- ILO recognizes three forms of manual scavenging in India
 - i. Removal of human excrement from public streets and dry latrines
 - ii. Cleaning septic tanks
 - iii. Cleaning gutters and sewers

- **Why Manual Scavenging needs to end?**

i. **Human Rights Violation:**

- Manual Scavenging is modern day slavery. Its continuance in 21st century should horrify and outrage us all. It degrades and dehumanizes a human being by forcing one human to take excreta of other human.
- Supreme Court of India has held that manual scavenging violates international human rights law and has called for prohibition of manual scavenging.
- In 2014, in **Safai Karmchari Andolan & Ors vs Union of India** it also provided for a compensation of Rs 10 lakh to the family of a person who dies while working as manual scavenger.

ii. **Health Hazards**

- Several studies on occupational health hazards among sewage and sanitation workers in India reveal that the direct handling of human excreta without any protective gear by these workers lead to **serious health consequences**, and often **death**.
- **Exposure to harmful gases** like methane and hydrogen sulfide leads to cardiovascular degeneration, skin problems, respiratory system problems, infections like hepatitis, leptospirosis and helicobacter.

iii. **It perpetuates caste discrimination**

- Traditionally, people from a particular caste group were responsible for this work. Today, on many occasions, they are forced to continue to work as manual scavengers.
- This **caste-designated occupation reinforces social stigma** that they are unclean or untouchable and perpetuates the wide-spread discrimination.
- Further, village panchayats and urban local bodies hire people only from particular caste groups for manual scavenging.
- The discrimination then extends to all facets of their lives, including in access to education for their children, makes it more likely that their children will have no choice but to continue to work as manual scavengers.
- These sub castes of Dalits are considered untouchables by other Dalit communities too.

iv. **It perpetuates gender discrimination**

- Of all the manual scavengers in the country, most of them are women. Especially in rural areas, it is women from weaker communities who walk out every morning to manually clean excreta in other households.

v.Hinders fight against Open defecation

- Manual Scavenging becomes one of the reasons which perpetuates open defecation as people defecating in open know that someone would be available to clean the excreta.
- So eradication of manual scavenging will also reduce/eliminate open defecation.

- Steps Taken by government of India.

▫ Laws dealing with manual scavenging

1. The Protection of Civil Rights Act, 1955 -> banned forced manual scavenging.
2. The employment of Manual Scavengers and Construction of Dry Latrines (Prohibition) Act, 1993
 - Declared the employment of manual scavengers and construction of dry toilets to be punishable with fines (upto Rs 5 Lakh) and imprisonment (upto 5 Years).
 - **Has the law been effective?**
 - Not a single conviction has taken place under the law in 25 years.
3. Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013
 - It supersedes the 1993 act.
 - Extends the coverage: Goes beyond prohibition of dry latrines, and prohibits not only cleaning of dry latrines but also outlaws all type of manual cleanings such as cleaning of sewers, gutters and septic tanks without protective gears.
 - Local authority or agency is required to use appropriate technological appliances for cleaning of sewers, septic tanks and other spaces to eliminate manual scavenging.
 - Rehabilitation Package: It recognizes the constitutional obligation to correct the historical injustices and indignity suffered by manual scavenging communities by providing alternate livelihood opportunities and other assistance in the form of cash assistance, Housing Provisions, Scholarships for children, legal assistance etc.

- Present Schemes which deal with ending manual scavenging

i. NAMASTE Scheme

- National Action For Mechanized Sanitation Ecosystem (NAMASTE) is a central sector scheme launched in 2022.
- It is undertaken jointly by the MoHUA and MoSJ&E and aims to eradicate unsafe sewer and septic tank cleaning projects.
- The objective of the scheme is to achieve zero fatalities in sanitation; achieve all sanitation work by skilled workers; No sanitation worker should come in direct

contact with faecal matter; Sanitation workers are collectivized in SHGs and are empowered to run sanitation enterprises.

- Key features:

- Identification of sewer/septic tank workers (SSWs)
- Occupational Training and Distribution of PPE Kits to SSWs
- Assistance to Safety Devices to Sanitation Response Units (SRUs)
- Extending health Insurance Benefits to identified SSWs and families
- Livelihood Assistance: Promote Mechanization and Enterprise development by providing funding support and subsidy (capital + Interest) to the sanitation workers, to procure sanitation related equipment
- IEC (Information Education and Communication) Campaign: Massive Campaigns would be undertaken jointly by ULBs & NSKFDC to spread awareness about NAMASTE

ii. Swatch Bharat Mission

- One of the goals was to make Indian manual scavenging free by 2019
- Under this scheme all the dry latrines were converted into watered latrines.

- **Current Situation:**

- **As per Government:**

- The Union Government in Parliament has said that India had seen no deaths due to manual scavenging in the last five years, while adding that 330 people have died while engaged in cleaning sewers and septic tanks (July 2023)
- The MoS&E also said that a total of 530/766 districts across the country had so far reported themselves to be free of manual scavenging with rest yet to do so.
- According to data released by the government in Parliament in 2021, over 90% of manual scavengers identified in the surveys till 2018, were from scheduled caste communities.
- The government also says that surveys conducted in 2013 and 2018 had identified all existing manual scavengers (58,000).
 - According to Scheme for rehabilitation of manual scavengers, the 58,000 identified sewer workers have been given a one-time cash payout of Rs 40,000 each.
 - In addition, around 22,000 of them have been connected to skills and training program.
 - Subsidies and loans are available to any of them wishing to set up their own business.

- **NGO's and other Critics say that the above classification is inappropriate.**

- The Central government does not identify deaths due to manual scavenging and instead calls them deaths due to hazardous cleaning of septic tanks and sewers. According to Bezwada Wilson, the definition of manual scavenging is clear and that the Centre is trying to manipulate it.

- **Why the scourge still continues:**

- **Failure to properly identify people still engaged in manual scavenging.**
 - **Lack of modernization of the sanitation infrastructure** -> forces Railways, local bodies to hire manual scavengers either directly or indirectly.
 - **Lack of political pressure** - the manual scavengers constitute a miniscule % of voters and that too is not concentrated in particular constituencies but distributed throughout the country. Thus, it hasn't emerged as an important political issue.
 - **Socio-Economic Conditions**
 - **High Unemployment rate** -> Forced labor
 - **Deep rooted cultural and religious traditions** are also responsible for the continuation of the scourge.
 - **Poor implementation of anti-manual scavenging laws and weak law and order situation**
 - There is a shortage of sanitary inspectors (officers responsible for implementation of 2013 act) in most of the ULBs -> Not a single person has been convicted under the law in last 25 years.
 - Further poor law and order situation allows forced manual scavenging to continue.
- **Way Forward / How to deal with Manual Scavenging**
- i. **Identification of Manual Scavengers**
 - An accurate estimation of the number of dry latrines and the number of people involved in manual scavenging would be the first step towards ending the scourge.
 - ii. **Upgrading Sanitation Infrastructure**
 - It is impossible to end this scourge without creating an advanced sanitation infrastructure. ULBs and state governments across the country, following the example of Delhi and Hyderabad, must ensure that every sanitation worker is provided with equipment that ensures their safety.
 - Mechanized cleaning of sewers and septic tanks should be made mandatory, the word "manhole" should be replaced by "machinehole" in official usage;
 - Steps like completely watered toilets in home, bio toilets in Railways are good initiatives and should cover the whole country quickly.
 - iii. **Timely and Proper Implementation of various laws and schemes**
 - Effective Implementation of NAMASTE will lead to proper identification, infrastructure improvement and leading to people moving away from manual scavenging.
 - **Enforce law against local government officials and bodies** who employ people to work as manual scavengers
 - **End Coercion:** Ensure that officials effectively intervene to stop communities from being coerced to practice manual scavenging, including when members of such communities face threats and intimidation for attempting to leave manual scavenging.
 - **Ensure the rehabilitation entitlement under the 2013 act**
 - iv. **Annihilation of caste**
 - **Caste system** has played an important role in perpetuation of this practice and decreasing the role of caste in society will play a very important role in ending manual scavenging.

- Issue has roots in cultural and religious tradition of India -> Religious leaders can play a very important role -> integrates members of the community within society by taking them to temples, eating with them etc.

4) SOCIAL JUSTICE: HEALTH – GENERIC MEDICINES

- Why in news recently?
 - Will generic supply of Bedaquiline be accessible (July 2023: Source - TH)
 - On 18th July 2023, the patent on Bedaquiline expired.
 - J&J have filed secondary patents over Bedaquiline till 2027 which have been granted in 66 low- and middle-income countries.
 - But the Indian Patent office has rejected the U.S. corporations J&J's secondary patent.
 - Indian Manufacturers will now be able to supply affordable, quality assured generic version of Bedaquiline. However, they will not be able to export the medicine to 34 of the 43 countries with high burden of TB.
- Example Questions
 - "Generic medicines can play a key role in making India's health sector affordable". Discuss. [15 marks, 200 words]
- What is a generic drug?
 - Generic drug is a low cost version of pharmaceutical drug that is equivalent to a brand-name product in dosage, strength, route of administration, quality, performance and intended use.
 - They usually enter market after patent protection of the original drug expires.
 - Branded Generics
 - Even after expiration of patents, drugs are made available under certain brands and are called branded generics.
- Government's attempt in promoting generic drugs
 - Making it mandatory for all chemists to display generic medicines prominently
 - Medical Council's code of conduct advises generic prescriptions by doctors as part of their duties and responsibilities. MCI has issued a circular saying doctors to face disciplinary action if they prescribe brand name drug
 - **Pradhan Mantri Bhartiya Janaushadhi Pariyojna (PMBJP)** was launched by Department of Pharmaceuticals, Ministry of Chemical and Fertilizers, Government of India as a direct market intervention scheme in 2008.
 - As of Jan 2023, 9,000 Jan Aushadhi Kendras are functional across the country.
 - The government has set up a target to increase the number of Jan Aushadhi Kendras to 10,000 by March 2024.
 - It offers 1759 medicines, and 280 surgical devices covering all major therapeutic groups.
- Advantages
 1. Affordable healthcare

- Products sold as unbranded generic medicines are cheaper than the branded medicines
 - It doesn't include manufacturer's marketing cost, cost spent on prescribing doctors.
 - Various studies have shown that high out of pocket expenditure is pushing a lot of families into poverty.
2. **Breaks the doctor-pharma nexus**
 - Presently, doctors and pharma companies have a nexus under which doctors prescribe only the brand of companies giving them some kind of advantages.
 3. **Reduce unnecessary prescription**
 - This is resorted to by doctor if pharma companies are paying them
 4. **Promotes domestic pharma companies**
 - As India is a world leader in generic drug manufacturing, promoting it would further improve the growth of domestic pharma sector.
 5. **Difficult for quacks to function**
 - They might not even know the generic names

- **Limitations**

1. **Quality concerns**
 - There are concerns about lack of uniformity in the quality of generic versions
 - Clinical practices have shown than many generic versions don't work.
 - Doctors trust the popular, visible and multinational brand more.
2. **Erode doctor-patient relationship**
 - As by prescribing generic drugs, doctor refuse to take responsibility for clinical outcomes.
3. **Low profit margins for retailers**
 - Retails pharmacists, in turn, have little incentive in stocking and selling low price generic medicines since they have lower profit margins.
4. **Shortage**
 - Availability of generic medicines have faced shortage. Even the few Jan Aushadhi stores that have been opened since 2008 have not been able to continuously supply these medicines regularly.
 - Still, 90% of the Indian pharmaceutical needs are fulfilled by the branded versions.
5. **Difficult for common person to understand**
 - Salt names, especially for FDCs will be difficult for common people to understand.
6. **May discourage big pharma companies to launch their new medicines in India**

- **Way forward**

- **Increasing production and availability**
 - » Government should ensure more Jan Aushadhi kendras to ensure easy availability and accessibility of generic medicines before taking any such decision.
- **Improving regulations of pharma sector**
 - » Currently, ensuring the quality of drug is a problem in the absence of adequate regulations and shortage of drug inspectors and lab facilities to check drug quality
 - » There is a shortage of drug quality inspectors with only about 18,00 inspectors for the entire country.

- **Allow pharmacist to substitute for alternative:** Laws for enabling substitution of generic and branded equivalents by pharmacists need to be introduced.
 - **No Branding for out of patent drugs**
 - » Medicines out of patent should not be allowed to be sold in branded form.
 - **Increased awareness** on generics needed among consumers, pharmacists
 - **Short names for generic FDCs**
 - » Briefer officially approved trade names for all rational fixed dose combinations so that doctors do not have to painfully write out the generic names of their multiple constituents
 - **Improving government health facilities**
 - » We also need a fully functioning health system with free healthcare for all like in UK, Canada and Scandinavian countries is needed.
- **Conclusion**
- Overall, generic prescribing is a good move in the right direction and will have several positive ramifications for healthcare in India. However, like everything, successful implementation would require a series of enabling steps at different levels from production to prescription and from Quantity to Quality.

1) ECONOMY: EXTERNAL SECTOR – FOREIGN DIRECT INVESTMENT (FDI)

- Why in News?

- » Total FDI inflows (which includes equity inflow, re-invested earnings, and other capital) declined by 16% to \$70.97 billion in FY23 (May 2023). Last year, i.e., FY22, India has recorded FDI inflow of US\$84.8 billion which was the highest ever.
 - FDI equity dip 22% to \$46 billion in FY23 (May 2023)
- » Finance Ministry is pushing for reforms to spur FDI inflows in India. It called for more attention to issues faced by global investors, including infrastructure issues and the inability to set up larger factories (July 2023)

- Example Questions

- Justify the need for FDI for the development of the Indian economy. Why there is a gap between MoUs signed and actual FDIs? Suggest remedial steps to be taken for increasing actual FDIs in India (CSE Mains 2016, 200 words, 12.5 marks).
- "Too much focus on FDI may be associated with certain limitations for economy". Elaborate (10 marks, 150 words)
- Despite economic slow down due to COVID-19, the last two financial years have seen record FDI inflows in India. Why is it so? Suggest some measures to sustain this FDI growth.

- Introduction

- » FDI is a major driver of economic growth and a source of non-debt finance for the economic development of the country.
- » Government has put an investor friendly policy on FDI, under which FDI upto 100%, is permitted on the automatic route in most sectors/ activities.
- » **Intent and Objective of India's FDI Policy**
 - Attract and promote FDI in order to supplement domestic capital, technology and skills, for accelerated economic growth.

- Basics for prelims

- Foreign Direct Investment (FDI) is the investment through capital instruments by a person who is a resident outside India:
 - A. In an unlisted Indian company
 - B. In 10% or more of the post issue paid-up equity capital on a fully diluted basis of a listed Indian company
 - » (If the investment comes below 10% subsequently the FDI shall be continued to be classified as FDI. It will not be reclassified as FPI), i.e., once an FDI, always an FDI.

- FDI inflows in India:

- » **FY23: \$70.97 billion**
- » **Top Source Countries (FY23)**
 - Singapore (\$17.2 billion); Mauritius (\$6.13 billion); the US (\$6 billion), the UAE (\$3.35 billion), the Netherlands (\$2.5 billion).
 - Other important source countries include Japan, UK, Cyprus, Cayman Islands, and Germany.

- » **Top Five Sectors** to receive FDI.
 - **Computer Software (\$9.4 billion); (Dip from last year)**
 - **Service Sector (\$8.7 billion) (Rise from last year)**
 - **Trading, Telecommunication, pharma and Chemicals** have also recorded growth in FDI inflow.
- » **Statewise FDI reception:**
 - **Maharashtra** received the **highest inflows of \$14.8 billion** during the last fiscal year (though the inflow are down when compared to \$15.44 billion) of last year.
 - **Karnataka, Delhi, TN, Haryana, Telangana** and WB also saw a dip in FDI inflow.
 - **Gujarat** saw an **increase in FDI to \$4.71 billion** (against \$2.7 billion in FY22).
 - **Rajasthan** also saw a positive growth.
- **Why decline in FY23 and what are FDI threats for future:**
 - » Escalation in **geopolitical** stress
 - » Enhanced **volatility in global financial systems**
 - » **Sharp Price corrections** in global stock market
 - » High magnitude of **El-Nino**
 - » Frail Global Demand
- **Why has India emerged as an attractive destination for FDI:**
 - » **Liberalization of investment restrictions**
 - In India **FDI upto 100% is allowed in non-critical sectors through the automatic route, not requiring clearance from the Ministry of Home Affairs (MHA).**
 - Even in **strategic sectors like Defence**, government has allowed **FDI of upto 74% through automatic route and 100% through government route.**
 - Consultation activities with representation of different sectors
 - » **Make in India, Atmanirbhar Bharat, PLI Schemes, PM GatiShakti etc.**
 - » **Reforms in Indirect and Direct taxes:**
 - Corporate tax for most companies has been reduced to 25% and for new companies in manufacturing, it has been reduced to 15%
 - GST system has been streamlined, leading to simple tax regime.
 - » **Increased public capex expenditure** - It is also crowding in private and foreign investment.
 - » Strengthening of **India's footing in global supply chains**
 - » **Elimination of Regulatory barriers**
 - » **Improved Ease of Doing Business**
 - » **Improved International Relations**
- **Need of FDI in India**
 - » **Lack of Domestic Resources:**
 - Neither the government, nor the private sector in India has enough resources to fulfill India's infrastructure and industrial needs. For e.g. infrastructure sector alone needs more than 1 trillion dollars over the next few years. COVID-19 crisis has further deteriorated the situation.
 - » **Diffusion of new Technology:**
 - FDI, along with it brings in new technology which is very important for the growth and advancement of India.

» **Virtuous Cycle of Investment:**

- High FDI in any country gives confidence to other investors and creates a virtuous circle of more investments. So, increasing FDI will also increase private investments which has gone stagnant over the years.

» **Other advantages associated with FDI**

- **Economic Growth:** More Investment leads to more growth which in turn leads to higher incomes, more employment etc.
- **Improved performance of governments at state level:** Increases competition among states to attract FDI -> promotes good/efficient business practices among the states
- **Provides opportunity to government to focus more on social sector**

- **Main Problems that are restricting FDI inflows in the country**

- » Complex and rigid Labour Laws
- » Significant Delay in Land Acquisition due to slow environmental clearance and difficult Land Acquisition Act.
- » Bureaucratic Red Tapism and Corruption still dissuades foreign investors from investing in the country.
- » Regulatory framework also needs simplification as it is still too complex for many investors.
- » Regulatory Certainty is something the investors crave the most.
 - Frequent rule changes, including retrospective changes worry the investors.

- **Problems associated with increasing dependency on FDI:** Till now, we have only discussed the positive aspects associated with FDI, but, if not managed properly FDI can bring along with it certain disadvantages.

1. **Volatile Investments:** Unreliable in the long term

- FDI tend to switch to countries where there is more profit, cheap labor and cheap land.

2. **Diffusion of technology is limited:**

- It is in the interest of foreign firm to withhold profitable technology. Thus, generally diffusion of new technology is very less.
- Moreover, in a developing country like India, where the state of both physical and human capital is not yet on a par with advanced countries, the diffusion also becomes difficult.

3. **Job Creation Not very effective due to FDI** -> FDI is mostly coming in service sector or capital-intensive sector.

- Despite the central government's push to boost manufacturing sector through 'Make in India' and various PLI initiatives, FDI's continue to chase bets in the services sector.
 - For e.g. in FY23, the highest FDI came in sectors like IT, Services etc.
- Further, the bulk of FDI in manufacturing is not greenfield.

4. **Regional inequities are perpetuated** -> Most FDI come in already industrialized regions.

- For e.g. Maharashtra, Karnataka, Gujarat and Delhi - collectively accounted for 83% of the FDI between Oct 2019 and March 2022.
- This further leads to metro - non metro divide and inequitable distribution of opportunities throughout the country.

- **Way Forward:**

- **Promote Ease of Doing Business in Manufacturing sector:**
 - » Fast track the implementation of labor reforms
 - » Last mile infrastructure issue has to improve.
- **Deal with problems faced by foreign players in setting up large capacities (large factories)**
- **Focus on other impending downside risks** like
 - » Carbon Border Adjustment Mechanism (CBAM), for which carbon content reporting is mandatory from 1st Oct 2023.
 - » Polarization risks arising out of the prevailing geopolitical situation reflected in the possible adoption of trade-restrictive measures.
- **Conclusion:**
 - While India has achieved a healthy growth in FDI, to sustain it we need to ensure sound trade policy, inclusive development, implementation of labor codes etc.

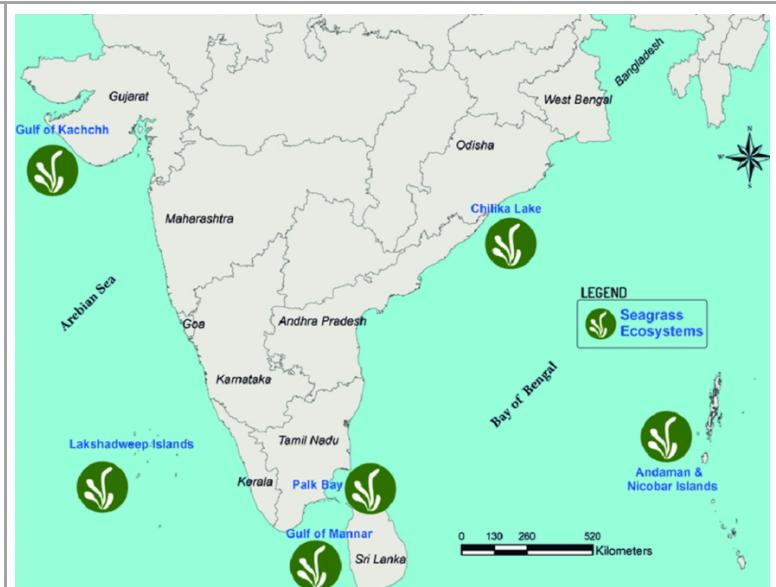
2) EB&CC: SEAGRASS

- **Why in news?**
 - » In Baltic sea, citizen drivers restore seagrass to fight climate change (July 2023)
 - This is part of a new project that trains local citizens to restore seagrass meadows in the Baltic Sea. The hope is that this painstaking work can help tackle climate change. **Seastore Seagrass Restoration Project**, run by the GEOMAR Helmholtz Centre for Ocean Research in Keil, Germany, is one of the first that aims to enable citizens to restore seagrass autonomously.
- **Practice Questions**
 - » Discuss the key ecosystem services provided by seagrass. Explain the factors responsible for the degradation of seagrass habitats globally. Suggest key measures to reverse this degradation [15 marks, 250 words]
- **Introduction:**
 - » Seagrasses are marine flowering plants that thrive fully submerged in shallow oceanic and estuarine habitats. They are one of the most important coastal habitats.
 - » **Global** coverage of seagrass is estimated to be **$3.45 \times 10^5 \text{ km}^2$** , which represent **about 0.1% - 0.2% of the ocean floor**.
 - » In India, total seagrass cover is estimated to be 517 km^2 with 14 reported species and six genera.
 - ***Halophila beccarii* (IUCN: VU)**, is the most commonly distributed species reported from all the coastal states except islands, acts as a pioneer species in the succession process of mangrove formation.
 - » **Distribution of seagrasses in India:**

The overall distribution of seagrass meadows in India occurs from the intertidal zone to a maximum depth of 15 m with varying species diversity.

The Major seagrass ecosystem along the coast of India are found in:

1. Gulf of Mannar and Palk Bay regions on the east coast comprise the largest seagrass meadows in India, covering 80 and 320 km² respectively.
2. The Ramasar site of Chilika Lagoon in Odisha state also has seagrass meadows that have expanded from 20 km² to 80 km² after the opening of the new bar mouth.
3. Gulf of Kuchchh on the west coast;
4. The lagoons of islands in the Lakshadweep in the Arabian Sea and;
5. Andaman and Nicobar Islands in Bay of Bengal.



Significance of Seagrasses Ecosystem:

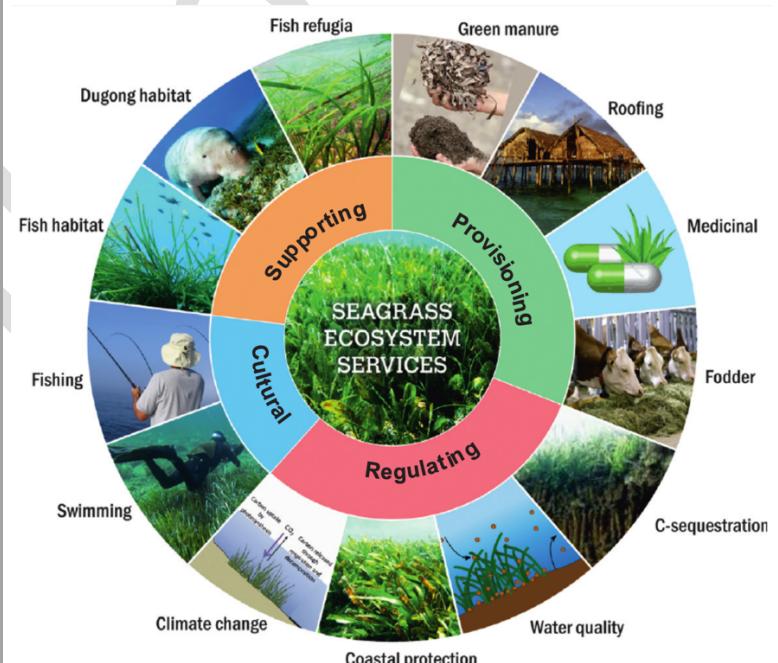
Provisioning Services:

- **Medicine** (treatment of heart conditions, sea sickness etc.)
- **Food** (Nutritious seeds)
 - » Recently, a study has shown the presence of various biological metabolites in some India seagrass that can be used effectively in the food and pharmacological industries.
- **Fertilizer** (Nutrient rich biomass)
- **Livestock feed** (food for goats sheep etc.)
- **Building Material** (Such as roofing for houses)

Supporting Services:

- **Key Fishing Grounds** as they offer a complex habitat for a variety of fish and other marine organisms like Dugongs.
 - » Seagrass based fisheries are globally important and are present wherever seagrass exists, supporting subsistence, commercial and recreational activities.
 - » Their high rates of primary production result in well-oxygenated waters that support complex food webs.

Regulating Services:



- **Coastal Protection:** Seagrass reduce the energy of waves and thus protect the seashore.
- **Carbon Sequestration:** Seagrass store more than twice as much carbon from planet warming CO₂ per square mile than forests do on land, according to a 2012 study. They accumulate CO₂ from both in-situ production and sedimentation of particulate carbon from the water column.
- **Water Purification:** They trap fine sediments and suspended particles in the water column and increase water clarity.

Threats to Seagrass Ecosystems: Globally, seagrass habitations have declined in area and several species are threatened due to several natural and anthropogenic stressors:

- » **Natural Stressor:** Cyclones, heavy rainfall, coastal uplift and subsidence, grazing herbivores, and diseases
- » **Anthropogenic Stressors:**
 - Commercial Fishing and trawling activities:** this is the most important threat to seagrass in India.
 - Boat activities** for recreational purposes
 - Runoff (Pollution)** from coastal aquaculture and agriculture
 - Shell Harvesting and Seaweed cultivation**
 - Accidents like Oil Spills.**

- **Key Steps** which protect Seagrasses:

- **CRZ Notification** 2011, issued under Environmental (Protection) Act, 1986, has classified seagrass meadows as CRZ1-A (Ecologically sensitive area). It prohibits developmental activities in its vicinity.

- **Way Forward:**

- **Mapping of existing seagrass areas and areas with potential of growth of seagrass.**
 - Here steps can be taken for natural expansion of seagrass.
- **Effective implementation of available legislation** may help reduce the threats.
 - Ensuring that the provisions of protection accorded to CRZ-1 are strictly followed can prevent degradation and can lead to self-restoration of seagrass meadows.
- **More study** on the various uses of seagrass by local communities and then spreading awareness among all the stakeholders about the various ecosystem services provided by the seagrasses, especially their role in carbon sequestration.
- **More R&D** on the various applications of seagrass by local communities
- **Research** is also needed on the techniques for seagrass transplantation to increase the coverage of seagrass.
 - Learn from **Seastore Seagrass Restoration Project** on how to train local population to autonomously transplant and increase seagrass cover.

- **Increased collaboration between various stakeholders** - Government, researchers, local communities etc to develop an action plan for seagrass conservation.

3) EB&CC: BIOLOGICAL DIVERSITY ACT, 2022

- **Introduction**
 - In order to help it realize the objectives of CBD, India has enacted an umbrella legislation called the Biological Diversity Act 2002. India was the first country, to pass a law to uphold the CBD nationally.
 - The objective of the act are conservation, sustainable utilization, and fair and equitable sharing of benefits arising out of use of biological resources and associated knowledge.
 - The act extends to whole of India.
- **Institutional Framework for the implementation of the law**
 - The act is being implemented through three tiered institutional structure
 - i. National Biodiversity Authority (at central level): It performs facilitative, regulatory and advisory function for Government of India on issue of Conservation, sustainable use of biological resource and fair equitable sharing of benefits of use
 - ii. State Biodiversity Boards (at state level)
 - iii. Biodiversity Management Committees (at local level)
- The act works towards biodiversity protection in the following ways:
 - **Regulation of extraction to biological resources**
 - **Protection of Biodiversity Heritage Sites**
 - **Biodiversity Management Committees** play a crucial role in promoting conservation and sustainable use of biological resources within their respective areas and facilitate people's participation in biodiversity conservation.
 - **Conservation of Endangered species**: The act prohibits the transfer of any endangered species, parts, or products without the permission of the State Biodiversity Board (SBB) or the NBA
 - **Conservation of Traditional Knowledge** – the act recognizes the importance of traditional knowledge associated with biodiversity conservation and ensures its protection and preservation.
- **The act recognizes the contributions of Indigenous local communities in conservation of biodiversity** and a company using these resources is required to share 0.5% of the sales post tax to these ILCs. Only those companies whose turnover is more than 3 crore are required to make this payment.

A) ISSUE OF FAIR AND EQUITABLE SHARING OF BENEFITS ARISING OUT OF USE OF BIOLOGICAL RESOURCES AND ASSOCIATED KNOWLEDGE

- **Introduction**
 - **The Biological Diversity Act, 2002** regulates the extraction of biological resources through the state Biodiversity Boards and the National Biodiversity Authority.

- » Broadly, all foreign entities (companies, institutions and individuals) are within the jurisdiction of NBA while all Indian entities are the subject matter of the state board.
- **What does the law say about sharing of Benefits?**
 - » Before a commercial entity extracts biological resources, it must make prior approval of the state board or the NBA and also undertake to share benefits arising out of the use of such biological entities within the local community, which has conserved and protected these biological resources. **The benefits** can be in the form of monetary compensation as well as 'joint ownership of IPRs' and/or 'transfer of technology'.
- **Divya Pharmacy vs Union of India case:** Landmark Judgment by Uttarakhand High Court on Dec 28, 2018
 - **Background of the judgment**
 - Divya Pharmacy had opposed either seeking prior approval from the State Biodiversity Board or sharing a part of its revenue with the local communities as 'fees' under what is termed as 'fair and equitable sharing of benefits'.
 - It raised contentions such as 'a swadeshi company' was not required under the law to share its revenue with desi people and only a Videshi company should share its revenue with Indian people.
 - **Core Issue:** Whether the State Biodiversity Board could impose 'Fair and Equitable Benefit Sharing' as one of the regulatory functions on the Indian entities using Biological Resources.
- **Key Highlights of the Judgment:**
 - Indian companies which are extracting biological resources are liable to seek prior approval as well as share part of their revenue with the local communities that are responsible for conserving and protecting such resources.
 - The court also referred to international conventions and treaties such as Nagoya Protocol on Access to Genetic Resources and Fair and Equitable Sharing of Benefits arising from their utilization to the Convention on Biological Diversity.
 - The court held that rights of indigenous and local communities have to be protected, equally from outside as well as from within.
 - The court finally ordered that the **State Biodiversity Board** does have jurisdiction to demand "fair and equitable sharing of benefits" from Divya Pharmacy and, by implication, from all Indian companies.
- **Significance of the judgment**
 - **Bringing clarity** on the matter
 - **Many big industry players** will have to follow this order and thus get in benefit sharing agreement with the respective SBBs.
 - **Better protection of rights** of indigenous people
- **Way Forward**

- The real test will be the implementation of the HC judgment and transfer of the money to real beneficiaries. Further, it is important that a favourable and equitable sharing of benefits are collected and reaches the indigenous people.

B) THE BIOLOGICAL DIVERSITY (AMENDMENT) BILL, 2021

- The bill was introduced in LS by MoEF&CC in Dec 2021. It was later referred to the Joint Parliamentary Standing Committee which submitted its report in Aug 2022. The bill was finally passed in Lok Sabha in July 2023.
- **Key Highlights**
 - i. **Simplify compliance requirements for domestic companies:**
 - ii. **Users of codified traditional knowledge and AYUSH practitioners will be exempted from sharing benefits with local communities**
 - **Issue/Criticism:** The term Codified Traditional Knowledge hasn't been defined by the bill or by CBD. A broad interpretation might exempt all local traditional knowledge from benefit sharing requirements.
 - Legal experts also feel that exemption to Ayush practitioners would be detrimental to ecology and go against the principle of sharing commercial benefits with indigenous communities.
 - iii. Removes **research and bio-survey from the purview of benefit sharing.**
 - iv. Benefit sharing will be based on terms agreed between the user and the local management committee represented by the National Authority
 - **Issue/Criticism:** The bill removes direct role of local communities in determining the benefit sharing provisions.
 - v. **Simplifying the IPR Process:**
 - The act specifies that approval of NBA is required before applying for IPR involving biological resources obtained from India, or (ii) sealing of patent.
 - The bill says that approval would be required before the approval of IPR instead of before the application itself.
 - vi. The bill **decriminalizes all offences** under the act and provides for wide range on penalties. Further, it authorizes government officials to hold enquiries and determine penalties.
 - **Issue/Criticism:** Such discretion with government official may promote corruption/rent seeking.
 - vii. The bill allows for foreign investment in research into biodiversity. However, this investment will necessarily have to be made through Indian companies involved in biodiversity research.
 - viii. **A new section - 36(A)** has been added emphasizing on the monitoring of the Biological Resources obtained from foreign countries for use in India as per the provisions of the Nagoya Protocol on access to benefit sharing.
 - ix. **Section 36(B)** enables state government to develop strategies and plans for conservation and sustainable use of biological diversity.
- **Other criticisms:**
 - » **Lack of Focus on Biodiversity Conservation:** the bill prioritize intellectual property and commercial trade at the expense of the key aim of conserving biological diversity.

- **Positives:**
 - » The bill encourages a conducive environment for investments - by promoting Ease of Doing Business
 - » Simplification of patent process would encourage innovation in India and ensure more IPR for companies in India.

- **The report by the joint parliamentary committee** examining Biological Diversity Amendment Bill 2021, was finally submitted in Parliament in Aug 2022. **Key Recommendations:**
 - **Promoting Indigenous Medicines:**
 - Reducing the pressure on wild medicinal plants by encouraging cultivation of medicinal plants.
 - Indian system of medicine should be encouraged by clearly defining codified traditional knowledge.
 - Promote indigenous research
 - **Exemption to Ayush Practitioners** (agreed with the provisions of the bill)
 - **FDI Inflows:**
 - There is a need to attract more foreign investments in the chain of biological resources, including research, patent, and commercial utilization, without compromising national interest by defining foreign companies as per the companies act and by defining a protocol for utilization of biological resources from India.
 - The committee recommended that **biodiversity management committee** under the proposed law and indigenous communities should be empowered by clearly defining benefit claimers to be conservers of biological resources.
 - Offences should attract civil penalties with **proportionate fine structure** so that the violators don't escape. It shouldn't be too meagre.

4) EB&CC: FOREST CONSERVATION (AMENDMENT) BILL, 2023

- **Why in news?**
 - » The Joint Parliamentary Committee (JPC) on the Forest (Conservation) Amendment Bill, 2023, approved all proposed amendments to the principal Act on July 20, 2023

- **Introduction**
 - » The Act came into force on 25th Oct, 1980 and was enacted for the conservation of forests by restricting de-reservation of forest and forest land for non-forest purposes.
 - Section 2 and Section 3 of the act states that such dereservation of the forest and forest land can't be done without prior approval of the central government under the advice of an advisory committee .
 - **Compensatory Afforestation is mandated** under the FCA for any diversion of forestland for non-forest purposes.
 - » **The Act also covers**
 - Requirement for declaring an area as a protected forest, Wildlife Sanctuary or a national park.

- Maintenance of water supply in springs, rivers and tanks.
 - » The act thus conserves country's forests and facilitate growth of forest biodiversity.
- **Supreme Court Verdict and Expansion of the Conservation Function:**
 - » In 1996, the Supreme Court in a verdict in TN Godavarman Thirumulpad vs Union of India had expanded the definition and scope of forest land to include all areas recorded as forest in government record, irrespective of ownership, recognition and classification. Before this, the act was primarily applicable to reserve forests and national parks.
 - » The court expanded the definition of forests to encompass the "dictionary meaning of forests", which would mean that a forested patch would automatically become a "deemed forest" even if it is not notified as protected, and irrespective of ownership. The order was also interpreted to presume that the act is applicable over plantations in non-forest land.
- **Exemptions Provided by the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights Act), 2006:**
 - In this act, certain exemptions to forest clearance for the forest dwelling scheduled tribes and other forest dwelling communities have been provided.
 - Section 3 of the act provides that the Central government can provide diversion of forest and for providing certain facilities managed by the government such as for creation of schools, hospitals, anganwadis, fair price shops, roads, electric and telecommunication lines, tanks and other minor water bodies, minor irrigation canals etc.
 - This clearance shall be subjected to the condition that the same is recommended by Gram Sabha.
 - Thus, it can be understood that the 2006 Act brings in a balance between conservation of forest rights and protection of rights of forest dwelling communities and even this is achieved only by an elaborate procedure after seeking sanction of various communities.

A) FOREST CONSERVATION (AMENDMENT) BILL, 2023

- Adding of a preamble to the act.
- Changing the name to Van (Sanrakshan E�am Samvardhan) Adhiniyam, i.e. Forest (Conservation and Augmentation) Act.
- The bill provides that two types of land will be under the purview of the act:
 - i. Land declared/notified as a forest under Indian Forest Act, 1927 or under any other law, or
 - Note: The land which has not been notified will not be included under the purview of the act.
 - ii. Land notified as a forest on or after Oct 25, 1980 in a government record.
 - Note: Land which changed from forest use to non-forest use before Dec 12, 1996 will not be included.
- **Exempted Category of Land:**