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PRELIMS CUM MAINS 2025, 2026 & 2027

Approach is to build fundamental concepts and analytical ability in students to enable them to answer questions of Preliminary as well as Mains Exam

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Dear Students,

Memorisation and recollection of information in Current Affairs is as important as understanding the articles. In order to enhance the learning outcomes from the Monthly Current Affairs Magazine, we are introducing following additions:



A thematic based colors has been used in the document in the boxes, tables etc to enable easy identification and recollection of various concepts and topics.



Questions are an important tool to assess and retain information. To enable this we are adding a Smart Quiz at the end of each section in the document for practicing the questions.



A wide variety of infographics have been added to ensure smoother learning experience and enhanced retention of the information. This will also help in effective presentation of information in the answer writing as well.



Places and persons in news are being presented in an objective manner through Maps, Tables & Pictures. This will help in easier recollection of factual information.



फाउंडेशन कोर्स सामान्य अध्ययन

प्रारंभिक एवं मुख्य परीक्षा 2025

इनोवेटिव क्लासरूम प्रोग्राम

- प्रारंभिक परीक्षा, मुख्य परीक्षा और निबंध के लिए महत्वपूर्ण सभी टॉपिक का विस्तृत कवरेज
- मौलिक अवधारणाओं की समझ के विकास एवं विश्लेषणात्मक क्षमता निर्माण पर विशेष ध्यान
- एनीमेशन, पॉवर प्वाइंट, वीडियो जैसी तकनीकी सुविधाओं का प्रयोग
- अंतर - विषयक समझ विकसित करने का प्रयास
- योजनाबद्ध तैयारी हेतु करेंट ओरिएंटेड अप्रोच
- नियमित क्लास टेस्ट एवं व्यक्तिगत मूल्यांकन
- सीसेट कक्षाएं
- PT 365 कक्षाएं
- MAINS 365 कक्षाएं
- PT टेस्ट सीरीज
- मुख्य परीक्षा टेस्ट सीरीज
- निबंध टेस्ट सीरीज
- सीसेट टेस्ट सीरीज
- निबंध लेखन - शैली की कक्षाएं
- करेंट अफेयर्स मैगजीन

नोट: ऑनलाइन छात्र हमारे पाठ्यक्रम की लाइव वीडियो कक्षाएं अपने घर पर ऑनलाइन प्लेटफॉर्म पर देख सकते हैं। छात्र लाइव चैट विकल्प के माध्यम से कक्षा के दौरान अपने संदेह और विषय संबंधी प्रश्न पूछ सकते हैं। वे अपने संदेह और प्रश्न नोट भी कर सकते हैं और दिल्ली केंद्र में हमारे कक्षा सलाहकार को बता सकते हैं और हम फोन/मेल के माध्यम से प्रश्नों का उत्तर देंगे।

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
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1. POLITY AND GOVERNANCE

1.1. MASS MEDIA AND ELECTION

Why in the News?

Taking the note of misuse of social media, (a type of mass media) by political parties during the election campaign the Election Commission of India (ECI) issued **guidelines for the ethical use of social media platforms**.

Key highlights of the guidelines

- The ECI directed parties to **not**:
 - **publish content that is false, misleading, or derogatory**, especially towards **women**,
 - **not use social media platforms** to carry any content which **use children in any political campaigning**
 - **depict violence** or harm to animals.
 - **not impersonate another person**, including political parties or their representatives on a social media platform
- **It also mandated Political parties to**:
 - **remove any violating content within three hours** of notification and **warn** the responsible members,
 - **report any unlawful information and fake user accounts** to the respective social media platforms,
 - and **escalate unresolved issues** to the **Grievance Appellate Committee** as outlined in Rule 3A of the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021.

About Mass Media

- **Mass Media** refers to diverse **communication channels** that **transmit information and entertainment content to a large audience**.
- It includes **print media** (Newspapers, Magazines, Books), **electronic media** (Radio, Television, Films), and **digital media** (Internet, social media).
- It is also termed the **Fourth Estate of a democratic country**, the other three pillars being: the Legislature or the Parliament; the Executive; and the Judiciary
- The fundamental right of **'Freedom of Speech and Expression'** granted to Citizens under Article **19(1)(a)** of the constitution is also available to the press.

Role of the Mass Media in the Election Process

- **Emphasizing Election Importance**: Media coverage underscores the **significance of elections**, highlighting **voter choice**, the need to be **informed**, and the **fundamental right to vote**.
 - This fosters **faith in the electoral process** and encourages citizen participation.
- **Dissemination of Campaign Information**: Media spreads campaign propaganda widely, providing politicians with affordable advertising space and quickly reach a large audience.
 - **Recognised political parties** have been allowed to **freely use state-owned television and radio during polls** since the **1998 Lok Sabha elections** (refer to the box).
- **Influencing Voter Behavior**: Media arouses interest, reduces apathy, and instils a sense of civic duty by emphasizing the importance of every vote and the Right to Vote.
- **Shaping the Public Image of Candidates**: Media portrayal greatly impacts a candidate's public image. Newspaper, magazine coverage, and broadcasts can either help or harm them.
- **Effective messaging**: It ensures **politicians maintain consistent messages**, preventing them from saying different things to different audiences.
- **Facilitating Policy Discussion**: Mass media informs the public about government actions, highlights policy shortcomings, and communicates public expectations to politicians, facilitating a two-way discussion on both current and future policies.

Allocation of time to political parties on State Media

- **National parties**, all put together, get a **minimum of 10 hours** of telecasting time on **Doordarshan's national channel**, and at least **15 hours** on its regional channels.
 - They also get **10 hours of broadcasting time** on the **national hook-up of AIR** and **15 hours** of broadcasting on **regional AIR stations**.
- **State parties**, all put together, get a **minimum of 30 hours of telecasting** time on the appropriate regional Doordarshan channel and AIR radio station.

Challenges posed by mass media to election process

Mass media with all its positive implications also pose **challenges to a free and fair election process when it is not objective** and its reporting are selective and biased (a phenomenon known as media gatekeeping).

With the rapid and widespread dissemination of information on **social media, these challenges are magnified**. Some key challenges to election process posed by social media are as follows:

- **Threat to Sovereignty:** social media can be **manipulated by anyone, inside or outside the country**, to target specific parties or candidates, compromising the democratic process as well as the Sovereignty of the country.
 - For example, **during the 2016 US presidential elections**, Russia allegedly used social media to manipulate the outcome.
- **Misinformation:** Social media is a breeding ground for misinformation and manipulated content, distorting public perception and influencing voter behavior.
 - **AI-generated deepfakes** complicate the issue, making it hard to distinguish real information from fake, **disrupting election integrity**.
- **Sensationalisation:** Social media algorithms **amplify viral content, overshadowing factual narratives** and quickly **setting political narratives**.
 - Many **YouTube-based independent content creators** run online-only news channels, **bypassing traditional media regulations**.
 - ✓ They **set narratives through the sensationalisation of issues and manipulation for more views**. It may result in the marginalisation of more important issues from public discussion.
- **Online Echo Chambers:** Social media can create echo chambers, where **individuals only encounter viewpoints aligning with their own**, resulting in confirmation bias where people are opposed to diverse perspectives.
 - It may worsen societal divisions **leading to polarization**. For instance, Facebook's failure to address platform abuse in Sri Lanka reportedly fueled widespread violence in 2018.
- **Compromising Model Code of Conduct:** The lack of effective regulation on social media platforms makes it challenging to enforce the code of conduct for parties and candidates.
 - Also, regulating content on encrypted platforms like WhatsApp is currently not feasible.
- **Privacy Concerns and threat to voter's objective opinion:** Voters lack control over data collection. They're often profiled by social media, impacting their feed content which may potentially change their behaviour.
 - In 2018, several Indian political parties allegedly hired **Cambridge Analytica**, a data mining and analytics business.

Way ahead for mitigating the adverse impact of Mass Media on Indian elections

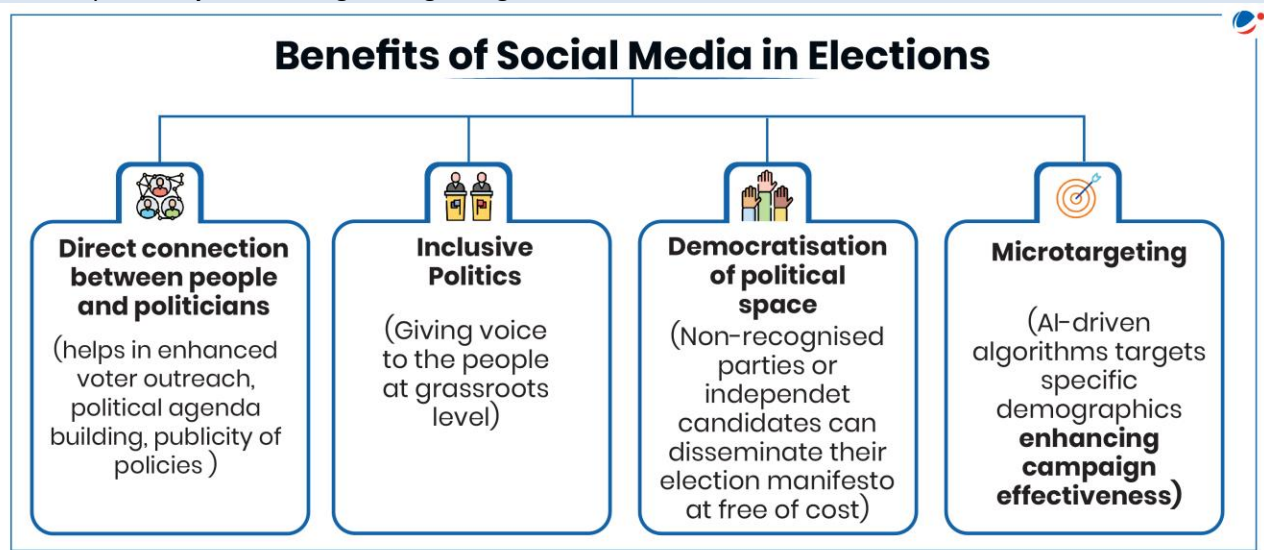
Mass media should be nudged to **follow the advisories of Press Council of India** that called for Press to **give objective reports** about elections and the candidates, **eschew reports** which tend to **promote feelings of enmity or hatred, observe all the directions/ orders/instructions of the Election Commission/Returning Officers or Chief Electoral Officer**, etc.

In addition to these, following steps should also be taken to **prevent the abuse of mass media during election**:

- **Effective Implementation of Voluntary Code of Ethics:** Ensure strict adherence to the Voluntary Code of Ethics for the General Elections 2019, aimed at promoting responsible behaviour on social media platforms during elections.
- **Enhance Social Media Monitoring:** Increase cooperation and exchange of information among stakeholders involved in social media monitoring.
 - Strengthen links between civil society groups and internet platforms to facilitate the timely raising of concerns and consideration of findings by platforms.
- **Foster International Cooperation:** Compare best practices globally and foster networks to share lessons learned and insights gained after elections.
 - Collaborate with other countries to develop effective strategies for mitigating the adverse impact of social media on elections.
- **Strengthen Data Protection Framework:** As India's voting process becomes more modern in terms of data utilisation, enhance the data protection framework to adapt to different levels of data usage.
 - Ensure that voter data is protected and used responsibly to maintain the integrity of the electoral process.

Role of Social Media in Election

- Social media differs from traditional mass media in terms of scale and speed of communication. Social media revolutionizes politics by **instantly transmitting messages to global audiences**.



Existing Regulatory Frame for Social Media

- **The Information Technology Act, 2000** governs all areas of electronic communication, including social media. **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Regulations, 2021** for ensuring accountability of social media and other intermediaries.

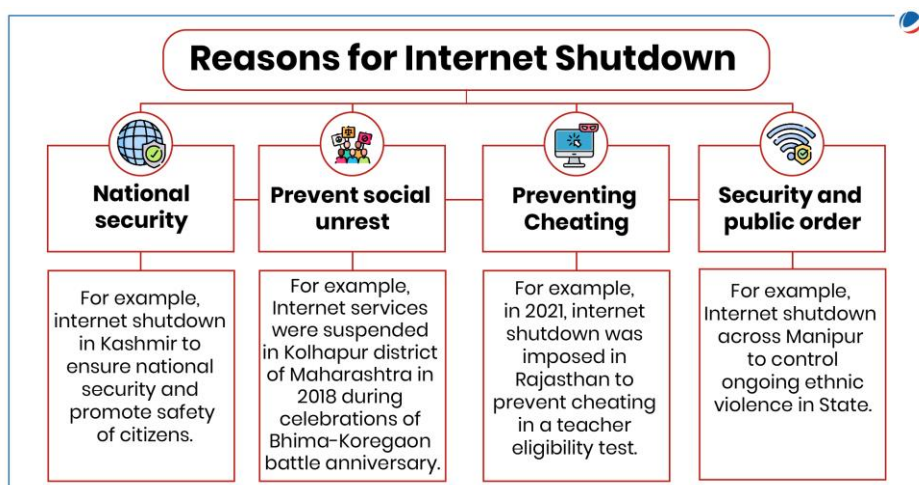
1.2. INTERNET SHUTDOWNS

Why in the news?

As per an 'Access Now' report, **India witnessed 116 shutdowns in 2023**, the **highest** number of shutdown in world for the sixth consecutive year.

Internet shutdown

- It is an **intentional disruption of internet communications for specific population or within a location** for any duration of time, often to exert control over the flow of information.
 - In 2023, **globally the number of internet shutdowns rose by 41% to 283** from 201 in 2022.



Provisions for Internet Shutdown

- Currently, suspension of telecom services (including internet shutdowns) is governed by **Temporary Suspension of Telecom Services (Public Emergency or Public Safety) Rules, 2017**, notified under **Indian Telegraph Act, 1885**.
 - It provide for a **temporary shutdown of telecom services** in a region on **grounds of public emergency** (up to 15 days at once).
 - The 1885 Act empowers the central government to regulate various types of telecom services including internet services and grant licenses for them.
- Orders of temporary suspension of telecom services are to be issued By Union/State home secretary Only.
 - Under 2017 Rules, a **three-member Review Committee headed by Cabinet Secretary** at central level and **Chief Secretary at state level**, reviews telecom/internet shutdown orders by central government and state government, respectively.

Supreme Court Judgement in Anuradha Bhasin vs. Union of India and Ors. 2020

- SC held that **freedom of speech and expression** through medium of internet is an **integral part of Article 19(1)(a)** and accordingly, any restriction on the same must be in accordance with Article 19(2) of the Constitution.
- **In relation to internet shutdown, Court had passed following directions**
 - An order suspending internet services indefinitely is impermissible under 2017 Rules. Suspension can be **utilised for temporary duration only**.
 - Any order suspending internet issued under Suspension Rules, must adhere to principle of proportionality and must not extend beyond necessary duration.
 - Any order suspending internet under the Suspension Rules is **subject to judicial review**.

Impact of Internet Shutdown

- **Economic loss:** Shutdowns reportedly led to **loss of \$118 million in foreign investment** from Jan- June 2023 alone in India.
 - Also, a single-day shutdown can push up to 379 people into unemployment in the country.
- **Fundamental rights:** Internet shutdowns **impacts access to information, curbing digital freedom and fundamental human rights** such as freedom of speech and expression (Article-19), access to information etc.
- **Inequality:** Shutdowns disproportionately affect marginalized communities, hindering their access to newer revenue streams and opportunities. This exacerbates existing inequalities and undermines efforts towards equitable digitization.
- **Disaster management:** Loss of communication due to internet shutdown **hinders information dissemination w.r.t. early warning**, evacuation routes, further exacerbating the impact of disasters.
 - The ongoing internet shutdown in Myanmar exacerbated the effects of Cyclone Mocha, which hit western Myanmar in May 2023
- **Education and Healthcare:** Shutdowns hinders access to online services such as education platforms, healthcare information etc.
- **Protest and Violence:** Internet shutdown disconnects people from the rest of the world, creating ambiguity and frustration. This can trigger strikes or protests that may become violent.
- **Human rights abuse:** Shutdowns impedes accountability where attackers utilise the disruption to cover up their offenses such as killing, arson, gender-based violence etc.

Way ahead

- **Recommendations of Parliamentary Standing Committee on Communications and Information Technology**
 - **Codifying defined parameters** that constitute as public emergency and public safety.
 - ✓ Public emergency and public safety have not been defined in the 1885 Act or the 2017 Rules.
 - Putting in place **a mechanism to decide the merit of an internet shutdown**.
 - Department in co-ordination with Ministry of Home Affairs (MHA) should **lay down a clear principle of proportionality and procedure for lifting of shutdown** so that these are not extended indefinitely.
 - Department of Telecommunications (DoT) should formulate a policy to **selectively restrict use of OTT services instead of banning the internet as a whole** to ensure minimum inconvenience to public and curb misinformation.
 - A **study on the impacts of internet shutdowns and its effectiveness** in dealing with public safety and public emergency should be conducted by DoT and MHA.
- Government should clearly communicate to users any limitations, restrictions, or change to service they may experience and provide regular updates on status and duration of shutdown.

1.3. OTHER BACKWARD CLASSES (OBCS) LIST

Why in the News?

The **National Commission for Backward Classes (NCBC)** is reviewing the state list of Other Backward Classes (OBCs) using powers granted under the 102nd Constitutional Amendment Act.

More on the News

- NCBC has noted **presence of ineligible communities in the OBC lists** of States like Karnataka and West Bengal.

- It has also **stalled request of West Bengal to include various castes/communities in the Central OBC list**, and has asked current report justifying the backwardness of these communities.
- Moreover, NCBC is also planning to **review OBC lists in Kerala, Odisha, Bihar, Maharashtra, and other states to ensure maximum OBC reservation within the 50% limit.**

About OBCs and OBCs list

- **Definition:** There is no standard definition of OBC in the **Indian Constitution**. **Socially and Educationally backward Classes (SEBCs)** are commonly known as **other backward classes (OBCs)**.
- **OBCs list:** Currently, for each state, there are **two OBC lists one at the central level** (for benefits by the Central Government initiatives) and another **at the state level** (for benefits by the State government initiatives).
 - **Central List: Article 342A (1)** of the Constitution **authorized the President** (in consultation of the governor of the state) **to specify the Central list of the OBCs**, in relation to a particular **State or Union Territory**.
 - ✓ Further, **any modification to the central list of the OBCs can be done only by the Parliament.**
 - **State List: Article 342A (3)** empowers every **State or UT** to prepare and maintain for its own purposes, a list of SEBC entries which may be different from the Central List.
- **Reservations for OBCs: Articles 15 and 16** of the Constitution enable **reservation for OBCs** in admission to educational institutions, and in public employment.
 - In **1990**, the Centre implemented **27% reservation for OBCs in Central Educational Institutions and Central Government services as recommended by the Mandal Commission.**
 - Such reservation for OBC was upheld by the **Supreme Court in Indra Sawhney Vs. Union of India 1992** subject to **exclusion of the “Creamy Layer”** (different groups based on income and parental rank).

Commissions constituted for the upliftment of OBCs

- Under **Article 340**, **President, may by order appoint to investigate** the conditions of SEBCs and to make **recommendations** as to the steps that should be taken by the Union or any State **to remove such difficulties and to improve their condition.**
- The **President** had constituted **Kalelkar Commission in 1953**, and **Mandal Commission in 1979** to investigate the conditions of OBCs.
 - The recommendations of Kalelkar Commission was never implemented.
- In 2017, the President appointed a **Justice Rohini Commission**, headed by Justice G. Rohini **to examine the sub-categorisation of OBC** caste groups to ensure more **equitable distribution of reservation benefits** among OBCs in India.
 - The Commission **submitted its report in 2023** but it is **yet to be implemented.**

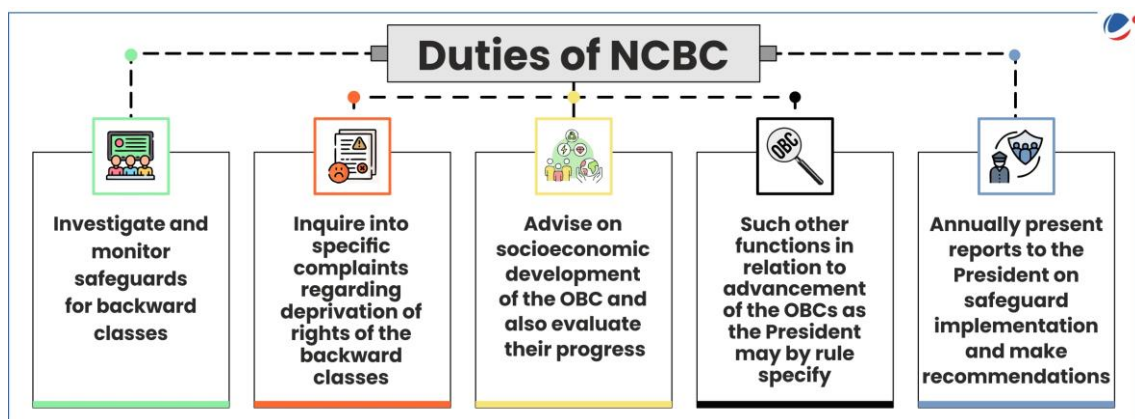
About NCBC

- **Constitutional Body:** NCBC was granted **Constitutional Status** under **Article 338B** (inserted through 102nd Constitutional Amendment Act, 2018).
 - Article 338 B mandates Union and every State Government to consult the NCBC **on all major policy matters affecting the rights of OBCs.**

Composition:

Includes a Chairperson, Vice-Chairperson, and three other members **appointed by the President**. Their **service conditions is also determined by the President.**

- **Power:** The Commission has all the powers of a civil court.



1.4. NEWS IN SHORTS

1.4.1. ARTICLE 39(B) OF THE CONSTITUTION AND PRIVATE PROPERTIES

- Supreme Court will decide if **private properties** can be considered '**material resources of the community**' under Article 39 (b) of the constitution.
 - **Article 39(b) in the Directive Principles of State Policy (DPSP)** says that "the state shall, in particular, direct its policy towards **securing-** that the **ownership and control of the material resources of the community** are so distributed as best to **subserve the common good**".
- The court will also ponder upon the **legal sanctity of Article 31C of the Constitution in the wake of the Minerva Mills judgment.**
 - Article 31C **protects a law made under Articles 39(b) and (c) empowering the State to take over material resources of the community, including private properties**, for distribution to subserve the common good.
 - ✓ Article 39(c) states that "the operation of the economic system does not result in the concentration of wealth and means of production to the common detriment".
 - **In the Minerva Mills case of 1980**, SC had declared two provisions of the 42nd Amendment which **restricted the Judicial Review, as unconstitutional.**
 - ✓ any constitutional amendment from being 'called in question in **any court on any ground**' and
 - ✓ **accorded precedence to the Directive Principles of State Policy over the fundamental rights of individuals,**

1.4.2. ARTICLE 329(B)

- Recently, the Election Commission of India invoked **Article 329(b)** of the Constitution before the Supreme Court to limit judicial intervention in the electoral process.
- **As per 329(b)**, no election to either House of Parliament or to the either House of the Legislatures of a State shall be called in question except by an **election petition** presented to such authority and in such manner as may be provided for by or under any law made by the appropriate legislature.
 - The **articles 324 to 329 of the Indian Constitution**, which are enshrined in **Part XV**, specifically deal with the provisions related to **elections.**
- Supreme Court in **N. P. Ponnuswami vs Returning Officer, Namakkal Constituency & Ors. (1952)** states

that once the Election Commission of India officially notifies the election process, the court cannot intervene or interfere.

- **Also, under Representation of the People Act (1951), Section 80** states that, the validity of any election cannot be challenged or questioned except by filing an **election petition.**
 - Election petitions are filed in the **concerned state's High Court**, which has **original jurisdiction** over them.
 - **Appeals** lie with the **Supreme Court of India.**
 - An election petition can be filed by **any candidate, or an elector** relating to the election personally.
 - ✓ **Elector means** a person who was entitled to vote at the election to which the election petition relates.

1.4.3. FORM 17C

- **Election Commission told the Supreme Court** the rules do not permit sharing Form 17C data **with any entity** apart from polling officials.
- **Form 17 C**
 - **It is associated with the directions under** Conduct of Election Rules, 1961.
 - **Its 1st part provides information related to the number of:**
 - ✓ eligible voters **assigned to the booth**, electors in the register **of voters**,
 - ✓ voters who decided not to exercise their franchise,
 - ✓ voters not allowed to vote
 - Its 2nd part contains information like the name of the candidate and the **total votes they received.**

1.4.4. SILENCE PERIOD

Silence Period was observed in the states where Lok Sabha elections were held.

- The silence period is a **ban on political campaigning** before voting.
- It **begins 48 hours before the voting day** and ends after polling ends.
- Some prohibitions under the **Representation of People Act 1951** during this period (however the Act does not use the term silence period):
 - Section 126 (1) prohibits **displaying any election matter** using **television or similar apparatus**, or propagation of election matters through any **entertainment** (like musical concert).

- **Section 126A prohibits conducting Exit polls** and displaying their result (using print or electronic media).
- **Section 126(1)(b) prohibits** displaying the results of any **Opinion Poll** (in any electronic media).

1.4.5. WORLD PRESS FREEDOM INDEX (WPFI) 2024

- India ranked **159 among 180 countries** in annual WPFI 2024.
 - It is released **by Paris based Reporters Without Borders (RSF)**, one of the world's leading NGOs in defense and promotion of freedom of information.
 - It is **published on World Press Freedom Day (3 May)**.
 - Theme: "A Press for the Planet: Journalism in the face of the Environmental Crisis".
- **About WPFI 2024**
 - Top 3 rankers are **Norway, Denmark and Sweden**.
 - Based on 5 indicators- **Political, Economic, Legislative, Social and Security**.

1.4.6. UGC REGULATION 2018

- Recently, the vice-chancellor appointment in state universities saw a clash between **University Grants Commission (UGC) regulation 2018** and state legislation.
- **UGC Regulation 2018 (UGC Regulations on Minimum Qualifications for Appointment of Teachers and Other Academic Staff in Universities and Colleges and Measures For the Maintenance of Standards In Higher Education, 2018)**
 - Empowered under University Grants Commission Act, 1956, UGC enacted the regulation.
 - **Regulation is applicable on**
 - ✓ All universities established under Central, Provincial or State Acts.
 - ✓ All colleges and institutions affiliated to or recognized by the UGC in consultation with the respective university.
 - ✓ All institutions deemed to be universities by the UGC.
 - **Selection Of Vice Chancellor of Universities:**
 - ✓ A Search-cum-Selection Committee will identify a panel of **3-5 suitable candidates**.
 - ✓ **One member** of the Search cum Selection Committee shall be nominated by the Chairman of UGC, for selection of Vice Chancellors of State, Private and Deemed to be Universities.
- The Vice-Chancellor to be appointed **should be a distinguished academician**, with a minimum of

- ten years of experience as Professor in a University system or
- ten years of experience in an equivalent position in reputed research and / or academic administrative organization.
- Supreme Court in **Gambhirdan K. Gadhvi v. State of Gujarat & Ors(2022) judgement stated that**
 - Being a subordinate legislation, UGC Regulations becomes part of the UGC Act (1956).
 - As '**education**' falls under the Concurrent List (List III) of the Seventh Schedule of the Constitution, both the central and state governments have the power to legislate on this subject.
 - ✓ In the event of a conflict between state legislation and central legislation, the **central legislation shall take precedence by invoking the rule/principle of repugnancy as outlined in Article 254** of the Constitution.
 - **Not part of verdict**, but as per **rule/principle of repugnancy**, if a state law on a concurrent list contradicts an existing central law, the state law shall prevail in that state, provided it received the President's assent after being reserved for his consideration.
 - Therefore, any appointment as a Vice Chancellor contrary to the provisions of the UGC Regulations can be said to be in violation of the statutory provisions.

1.4.7. DIPLOMATIC PASSPORT

One of the incumbent Members of Parliament fled to Germany on a diplomatic passport after allegations of sexual abuse.

Diplomatic passports

- **Eligibility:** Issued to **designated members** authorised by the Government of India. These persons could be
 - Those living or having been granted a **diplomatic status; or**
 - **Government officials** proceeding abroad on **diplomatic assignments or for official purposes**.
- **Validity period:** 5 years or less.
- **Issuance:** External Affairs Minister has the discretion to issue a Diplomatic Passport to a person if the person, in the opinion of the minister, should have such a Passport either
 - because of the **nature of his or her foreign mission** or
 - because of the **position he or she holds or has held in the past**.
- **Advantage:**
 - **Immunity:** Holders of such passports are entitled to **certain privileges and immunities** as per

international law, including immunity from **arrest, detention, and certain legal proceedings in the host country.**

- **Exemption from Visa requirement in some countries:** Typically, MEA also issues visa notes to Indian Government officials going abroad for an official assignment or visit.
 - ✓ However, India has **Visa Waiver Agreements** for the holders of diplomatic passports with **Germany along with 33 other countries.**
 - ✓ This agreement allows **Indian diplomatic passport holders** to visit these countries **without a visa for up to 90 days.**

About Indian passport

- Passports and Visas are mentioned under the **Union list of the 7th Schedule of the Constitution.**
- Issuance of passports in India is **governed by the Passports Act, of 1967** according to which:
 - **All persons who depart or intend to depart from India** are required to have a valid passport or travel document.
 - ✓ However, the **Central government may exempt some people** from the need for possession of a passport.
 - Additionally, the **Central Government may issue a passport to a person who is not a citizen of India** if that Government believes that it is necessary so to do **in the public interest.**
- There are **three classes of passports** issued in India: **Ordinary (blue colour), Diplomatic (white colour) and Official (maroon colour)**



SMART QUIZ

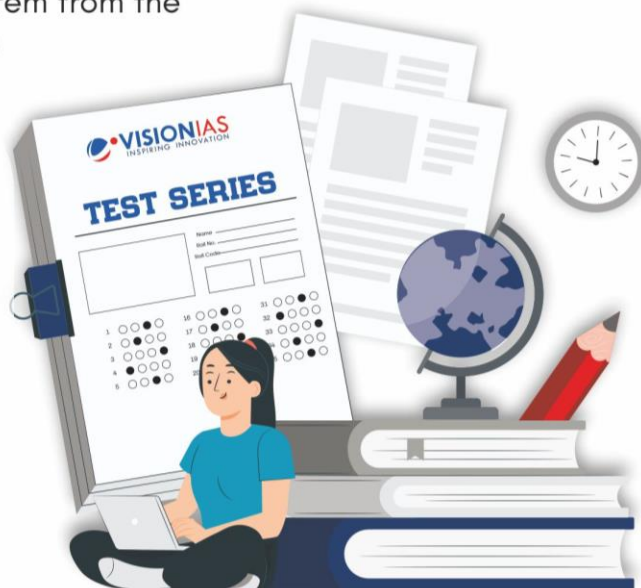
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2. INTERNATIONAL RELATIONS

2.1. INDIA'S ACT OF BALANCING BILATERAL RELATIONSHIP

Why in the News?

Recently, United States of Americas warned of potential sanctions on India as it signed Chabahar port deal with Iran.

More on News

- USA fears that India-Iran Chabahar deal may **act against trade sanctions imposed by USA** to curb its nuclear programme.
- Earlier, there were also apprehensions of sanctions on India as per **Countering America's Adversaries through Sanctions Act (CAATSA)** for purchase of the S-400 missile defence system from Russia (No such sanctions was imposed).
 - CAATSA is a USA federal law in force since 2017, under which the US government can **impose sanctions on any country** that has "significant transactions with Iran, North Korea or Russia".
 - It entails economic & financial penalties for any nation that transacts with Russia on arms.
- Such events, along with the Russia-Ukraine and Israel-Palestine crises, have tested India's strategies to manage its bilateral relationships with various players in the region as well as the globe.

To know more about India's agreement with Iran for the development of the Chabahar Port, kindly refer to Article 2.1 Geopolitical Significance of Ports in April 2024 edition of VisionIAS Current Affairs Magazine.

Strategies Adopted by India in Balancing Bilateral Relationships

- **Maintenance of Strategic Autonomy** in international affairs, which has evolved through policies such as **doctrine of Non-Alignment**.
 - E.g. India maintains its **independent relationship with Russia and the US**, refusing to let either one dictates its foreign policy.
- **De-hyphenation** as a tool to engage with countries involved in conflicts with each other in an independent manner.
 - E.g. India's relationship with Israel and Palestine stand on its own merits and are independent of each other.
- **Wider diplomatic engagements and outreach**.
 - E.g., in 2022, India was able to evacuate students by Operation Ganga during Russia-Ukraine crisis by engaging with countries such as Russia, Ukraine, USA, Romania, Poland, Hungary, Slovakia, etc.
- **Vision of Multi-polarity and Multilateralism** offers India great potential to expand cooperation and advance an original outlook.
 - E.g., India's push for reforms at the United Nations Security Council, World Trade Organization, etc., allows it to engage with like-minded countries worldwide.
- **Offering alternative mechanisms** such as Rupee-Rouble trade, Rupee-Rial mechanism enhances India's credibility in balancing its bilateral relationships.
- **Use of soft power** through outreach to diaspora such as NRIs and PIOs, etc. has helped build India's case at global stage.
 - E.g. Indians in the USA lobbied for the Indo-US Nuclear Deal.
- **Playing the Role of Mediator** by maintaining a neutral stance and capability to bring diverse stakeholders to the negotiating table.
 - E.g. India's hosting of G20 positioned its role as a dealmaker in a fluid international order. Moreover, India has also been able to project itself as a leader and **voice of the Global South**.

Know the term

- **Strategic autonomy:** Denotes the ability of a state to pursue its **national interests** and adopt its **preferred foreign policy** without being constrained in any manner by other states user.
- **Global South:** Generally, refers to countries described as "**developing,**" "**less developed**" or "**underdeveloped**."
 - The concept originated from the **Brandt report** which distinguished between those countries with comparatively higher **GDP per capita** (mostly concentrated in the Northern

Issues and challenges India faces with respect to balancing bilateral relations

- **Accusation of being a “Fence Sitter”:** E.g., Various countries accuse India of being a fence sitter and not taking stand even when it aspires to a world leader.
- **Allegations of Financing Wars in favour of aggressor:** E.g., European powers accused India of funding Russia’s War by buying cheap Russian crude oil and not publicly criticising Russia’s act of aggression.
- **Emergence of New Axis:** E.g., India’s movement towards USA is leading to development of **Russia-China Pakistan axis**.
- **Reputational damage:** Maintaining neutrality while balancing its bilateral with conflicting nations can impact India’s reputation with said nations.
 - E.g., India did not condemn the USA’s withdrawal from the Joint Comprehensive Plan of Action (JCPOA), which allegedly led to reputational damage, pushing Iran towards China.
- **Dependence on Imports** for energy as well as defence at times compromises India’s stand at global position.
 - E.g. Dependence on defence imports from Russia and oil imports from the Middle East at times plays an important role in shaping foreign policy.
- **Emergence of Mini-laterals** in the Indo-Pacific, such as QUAD, compromises the ideal vision of global cooperation.

Way forward

- **Emerge as an alternative:** India is suitably placed to emerge as an alternative to the US and China, and also focus on representing **Global South** in an increasingly polarized world order.
- **Strategic Hedging:** E.g. Balancing China involves developing the capacity and linkages to counter China's political and military efforts against India, despite maintaining civil diplomatic ties and trade.
- **Self-dependency or diversification of risks:** It is especially needed in critical sectors such as defence, energy etc.
- **Following Internationalist and Multi-aligned foreign policy:** Such policy can be based on issues-based coalition (E.g. BRICS, QUAD, G20, G7, SCO).
- **Playing leadership role in tackling global challenges:** Related to climate change, connectivity, terrorism, supply chain resilience (E.g. Supply Chain Resilience Initiative, Biopharmaceutical Alliance, Asia-Africa Growth Corridor).

2.2. GLOBAL INSTITUTIONS IN THE CHANGING TIMES

Why in the news?

Major global institutions such as the UN System, WTO, IMF, and World Bank (WB) among others have been under scrutiny for not being able to fulfil their desired objectives.

Context of formation of major Global Institutions

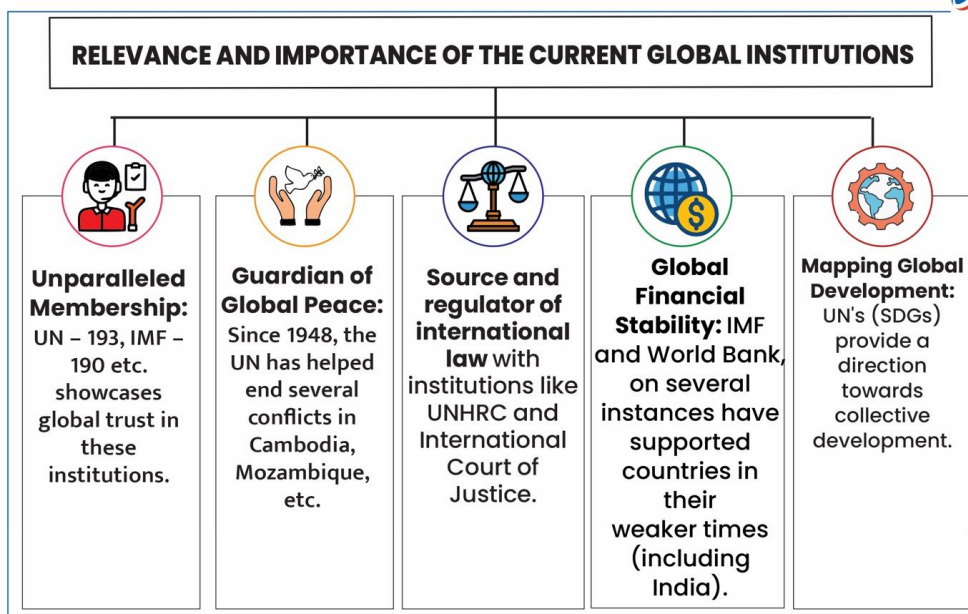
Most of the major global institutions were formed in the context of a War-stricken, bipolar, and highly unequal world with regard to development.

- **United Nations (UN) System:** The UN was formed in 1945 in the background of World War I and II, with a primary agenda to **prevent another global conflict and promote international cooperation**.
 - It aims to **maintain international peace and security**, give humanitarian assistance to those in need, protect human rights, and uphold international law.
- **World Bank and International Monetary Fund (IMF):** Both formed in 1944 at the Bretton Woods Conference, to support economic reconstruction and development in the aftermath of WW II.
 - The WB promotes **long-term economic development and poverty reduction**.
 - IMF aims to establish a **new international monetary and financial system**.
- **World Trade Organization (WTO):** WTO was formed in 1995 in the background of gradual liberalization of international trade and the transition from the General Agreement on Tariffs and Trade (GATT) framework.
 - WTO aims to facilitate the liberalization of international trade by **reducing tariffs, eliminating barriers, and promoting the free flow of goods, services, and investment**.

What are the issues in continuing with current structures?

- **Representation & Inclusiveness:** Global institutions formed in the last century, **don’t reflect the current global power structure** as they do not provide adequate representation to the developing countries.

- E.g., India with the largest population and 3rd largest (in PPP terms) economy in the world but has only 2.75% **Special Drawing Rights (SDR)** quota in the IMF.
- **Growing Bilateral and Multilateral Groupings:** Such as G20, G7, and BRICS, etc. have created alternative forums and thus decreased the overall importance and relevance of global institutions.
 - E.g., **BRICS countries established the New Development Bank (NDB)**, as an alternative to World Bank in funding developmental needs.
- **Misuse of Veto Power:** Veto powers conferred to permanent UNSC members (China, France, Russia, U.K. and U.S.) are often **misused to protect self-interest**.
 - E.g., Russia used its veto power to block resolutions condemning its actions in Ukraine.
- **Rising Protectionism and Trade Tensions:** The surge in protectionist policies, such as tariffs and trade barriers (like Trade Wars between US and China), has disrupted the global trade system and multilateral frameworks like the World Trade Organization (WTO).
 - It threatens **the principles of free trade and economic integration** that have underpinned the post-World War II economic order.
 - The **U.S. also blocked the appointment of WTO's Appellate Body**, effectively crippling WTO's role as an impartial arbiter of trade disputes.
- **Inability to handle emerging challenges:** Global institutions created in the last century are not able to effectively address the issues of 21st century **such as** climate change, cyber-security, data protection etc.
 - The COVID-19 pandemic underscored **the failure of the UN and WHO to bring countries together to respond effectively in times of crisis**.
- **Backlash Against Globalization:** There has been growing public discontent and political backlash against globalization in many countries.
 - It is being fueled by **concerns over job losses, income inequality**, which has led to calls for more inward-looking economic policies.



Way Forward

- **Governance Overhaul:** Bodies like the UN Security Council must be reconstituted to give greater representation and voice to emerging powers. E.g., expanding the permanent membership.
- **Financing Revamp:** Financing should be diversified including tapping private capital and emerging donors, moving away from the dominance of a handful of wealthy nations.
- **Strengthening Enforcement:** Rules and commitments negotiated through global institutions need teeth in the form of stronger enforcement and dispute resolution mechanisms. E.g., empowering institutions like UNCLOS (United Nations Convention on the Law of the Sea).
- **Embracing Technology:** From monitoring climate change to verifying disarmament or human rights, institutions must better leverage technologies like AI, satellite monitoring, and digital data collection.
 - For instance, the Secretary-General has called for **UN 2.0 to tackle 21st-century challenges**. UN 2.0 would emphasize 5 areas - data, digital solutions, innovation, foresight, and behavioral science.
- **Strengthen the global financial system** through robust regulation, supervision, and risk management frameworks to prevent systemic crises.
- **Diversifying Funding Sources:** Exploring **innovative financing mechanisms**, such as voluntary contributions, international taxes, or public-private partnerships.

The choices made in the coming years will determine whether these bodies can rise to meet the challenges or diminish into insignificance.

To know more about **WTO issues**, kindly refer to **March 2024 Monthly Current Affairs article on WTO**.

Scan the QR code to know more about **World Order**.

Weekly Focus #90: World Order_The Rise and Potential Decline



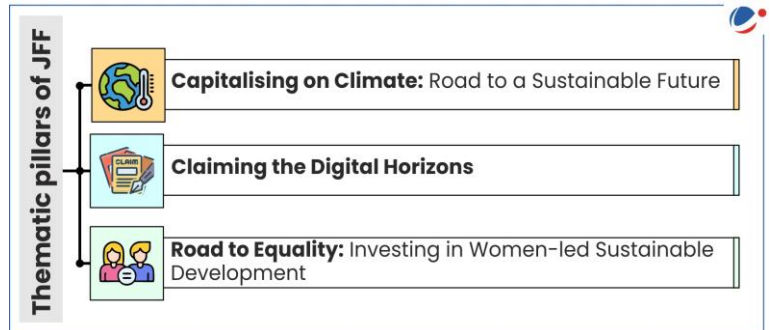
2.3. INDIA AND INDONESIA RELATIONS

Why in the news?

In 2024, India and Indonesia commemorated 75 years of the establishment of diplomatic relations.

More about the news

- Several activities were undertaken to mark 75 years of Track 1.5 Diplomacy in India-Indonesia bilateral ties.
 - Indonesian embassy organised **e-sports show match** at the India Gaming Show 2024 in Pune, underscoring the immense potential of **esports as a platform for cultural exchange and international cooperation**.
 - Embassy of India in Jakarta, in partnership with Observer Research Foundation hosted the inaugural **Jakarta Futures Forum (JFF)** in 2024.
 - ✓ **JFF** is a vision and a commitment from both countries to build a meaningful and inclusive future together.
 - **First-ever “India-Indonesia defence industry exhibition-cum-seminar”** organised in Jakarta.



Significance of India-Indonesia bilateral relations

For both countries

- **Maritime security in the Indian Ocean region:** Joint Exercises like **Samudra Shakti (Navy)**, and India-Indonesia Coordinated Patrol (**IND-INDO CORPAT**) **enhance interoperability** between the two navies and facilitate the prevention drug trafficking, maritime terrorism, armed robbery, piracy etc. in the Indian Ocean region.
- **Synergy in the vision for the Indo-pacific region:** Both countries agreed on the **“Shared Vision of India-Indonesia Maritime Cooperation in the Indo-Pacific”** and share a similar vision for a **free, open, and inclusive Indo-Pacific region which respects ASEAN centrality**.
 - India's **Act East Policy** and **Indo-Pacific Oceans Initiative (IPOI)** and Indonesia's **Global Maritime Fulcrum** vision synergize, enhancing geopolitical engagement.
- **Strategic partnership:** Both countries established **Strategic Partnership in 2005**, later elevated to a **New Comprehensive Strategic Partnership in 2018**, allowing for new collaboration in field of defence industry, science and technology etc.
- **Cooperation in multilateral forums:** Both nations cooperate on matters like maritime security, digital transformation, etc., on multilateral platforms like the G20, Indian Ocean Rim Association (IORA), East Asia Summit, and the United Nations.
- **Sharing of best practices:** India–Indonesia Economic and Financial Dialogue (EFD Dialogue) was launched in July 2023 to provide a distinctive platform for mutual learning and policy coordination.
- **Expanding military-to-military engagements:** E.g., **INS SindhuKesari docked in Jakarta**, as part of **military-to-military engagements**, for the first time in February 2023 for operational turnaround.
- **Shared history and Cultural values**
 - Both countries participated in **the Bandung Conference in 1955**, which led to the establishment of the **Non-Aligned Movement (1961)**.

- Stories from great epics of Ramayana and Mahabharata form source of Indonesian folk art and dramas.
- **Bali Yatra** is celebrated with a great deal of fervour in both India and Indonesia.
- **Swami Vivekananda Cultural Centre** promotes bilateral cultural linkages between India and Indonesia.

For India

- **Enhancing India's Defence exports:** Indonesia has expressed interest in the **BrahMos missile and Light Combat Aircraft** among others.
- **Important trade partner:** Indonesia is **India's largest trade partner in ASEAN region.**
 - **Total Bilateral Trade between both countries stands at around USD 38.85 Billion** (during fiscal year 2022-23)
- **Internationalization of Indian rupee:** MoU to promote the use of local currencies for cross-border transactions were signed by Reserve Bank of India (RBI) and the Bank Indonesia (BI) in 2024.
- **Enhancing maritime Connectivity:** Under Security and Growth for All in the Region (**SAGAR**) initiative, India is helping in development of port infrastructure especially **Sabang port** in Aceh, Indonesia.
 - Sabang port is a **deep seaport** that would allow **India easier access to the Malacca Strait** and there is a proposal to establish **connectivity to Andaman and Nicobar.**



For Indonesia

- **Important export destination:** India is the 2nd largest buyer of coal and crude palm oil from Indonesia.
- **Humanitarian Assistance:** India launched **Operation Samudra Maitri** to provide humanitarian assistance to Indonesia, post-earthquake and tsunami in 2018.
- **Development Partnership:** Indonesia is a major recipient of capacity-building platforms like ITEC (Indian Technical and Economic Cooperation Programme), and Technical Cooperation Scheme (TCS) of the **Colombo Plan**.

Challenges in the relationship

- **Trade Imbalance:** The balance of trade favours Indonesia due to India's large imports of palm oil and coal.
- **Unrealized trade potential:** As per some estimates bilateral trade potential is US\$ 61 billion, 33% higher than current trade.
- **Dominance of China:** Indonesia has accepted substantial Chinese investment under **the Belt and Road, which has raised concerns.**
- **Regulatory and procedural Challenges:**
 - **Joint production and defense supplies have failed** due to differing acquisition processes.
 - A special window for addressing Indian investors' concerns has been dysfunctional.
- **Lack of connectivity:** Limited direct air connectivity and visa issues have hindered greater people-to-people interactions.

Way Forward

- **Tourism Diplomacy:** India-Indonesia should establish '**RICH**'- Religious, Cultural & History, theme-based **tourism plan to strengthen the sector and people to people exchanges.**
- **Enhancing Trade:** Need for greater economic cooperation, including accelerating **of a Comprehensive Economic Partnership Agreement (CEPA)** to address trade and investment barriers.
- **Enhance strategic Interfaces:** Indonesia, as a neighbour, should consider joining **International Solar Alliance, Coalition for Disaster Resilient Infrastructure, and Global Biofuels Alliance.**
- **Substantive Cooperation through Engagement:** Both countries shall **utilize regional multilateral forums** such as the ASEAN Regional Forum, Indian Ocean Rim Association (IORA), and Indian Ocean Naval Symposium (IONS).

2.4. INTERNATIONAL CRIMINAL COURT (ICC)

Why in the news?





ICC prosecutor sought arrest warrants for Israel's Prime Minister and Hamas leaders **for committing crimes against humanity and war crimes.**

More about the news

- Earlier, in March 2023, ICC **issued arrest warrant against Russian President** in the context of situation in Ukraine.
- **Consequences of the ICC issuing arrest warrants:** The accused would be arrested and if not, **would restrict their freedom of movement**, as member states are obliged to arrest the accused.

About International Criminal Court (ICC)

- It is the **first international permanent court** to investigate and prosecute individuals accused of serious international crimes,
- ICC's founding treaty, called the **Rome Statute** (adopted in 1998 entered into force in 2002), grants the ICC jurisdiction over 4 main crimes (see infographic).

4 Categories of crimes under ICC			
 Genocide	 Crimes against humanity	 War crimes	 Crime of aggression
<ul style="list-style-type: none"> • Specific intent to destroy a national, ethnic, racial or religious group by killing its members or by other means. 	<ul style="list-style-type: none"> • Serious violations committed through large-scale attack against civilian population • 5 forms listed in the Rome Statute includes offences like murder, rape, imprisonment, enforced disappearances, enslavement, torture, apartheid etc. 	<ul style="list-style-type: none"> • Grave breaches of the Geneva conventions in the context of armed conflict • Includes use of child soldiers; killing or torture of civilians/prisoners of war; intentional attacks against hospitals, historic monuments etc. 	<ul style="list-style-type: none"> • Use of armed force by a State against the sovereignty, integrity or independence of another State.

- **Membership:** 124 countries are States Parties to Rome Statute of ICC.
 - **India, Israel, the US, Russia and China** are **not parties** to the Rome Statute.
 - Palestine became the **123rd member (2015)** and **Malaysia became 124th State party (2019)**.
- **Assembly of States Parties**, with 1 representative from each party, is the Court's management oversight and legislative.
- **Official languages:** English, French, Arabic, Chinese, Russian and Spanish.
- **Enforcement:** ICC's decisions are **binding**.
 - However, it **does not have its own police force** and relies on State cooperation, which is essential to the arrest and surrender of suspects.
- **Additional Components**
 - **Trust Fund for Victims (2004):** Provides assistance, support, and reparations to victims.
 - **Detention Centre:** Holds detainees in safe, secure, and humane custody.
- **Complementarity Principle:** The ICC complements national criminal systems and prosecutes only when states are unwilling or unable to do so genuinely.

Jurisdiction of ICC under the Rome Statute

- **In case of Genocide, crimes against humanity or war crimes** (committed on or after 1 July 2002) which are-
 - Committed **by a State Party national**, or in **territory of a State Party**, or in a State that has accepted the jurisdiction of the Court.

- Referred to the ICC Prosecutor by the United Nations Security Council (UNSC) under chapter VII of the UN Charter.
- In case of Crimes of aggression:
 - Crimes referred to the ICC Prosecutor by the UN Security Council, irrespective of whether it involves States Parties or non-States Parties.
 - Prosecutor may also initiate an investigation on own initiative or upon request from a State Party.
- No jurisdiction with respect to any person under age of 18.

Limitations of the International Criminal Court (ICC) in Criminal Justice

- Lack of Enforcement Mechanism as it relies on cooperation with countries for arrests, transfers, asset freezes, and sentence enforcement.
 - Further, Non-States Parties (such as Israel) have no obligation to cooperate with the Court on its requests for arrest and surrender.
 - Some major countries are not parties to the ICC.
- Many State Parties are reluctant to cooperate with the Court's requests for arrest and surrender.
 - So far, the ICC has issued 46 arrest warrants, with only 21 of them having been detained with the help of its member states.
- Insufficient Checks and Balances due to lack of effective oversight on the authority of the ICC prosecutor and judges.
- Lack of Retrospective Jurisdiction as ICC can only address crimes committed after 1st July 2002, when the Rome Statute came into force.
- Scarcity of human resources and funds, impacting its efficacy.
- Allegations of Bias with ICC being criticized as a tool of Western imperialism and biased against weak states, especially Africa.



Why did India not join the Rome Statute?

- Subordination of the ICC to the UN Security Council, may potentially lead to political interference.
 - As per Article 16 of Rome statute, no investigation may be commenced after the Security Council has requested ICC to that effect.
- UN Security Council's power to bind non-States Parties to the ICC, violates principles of sovereignty.
- Wide competence and powers of the ICC prosecutor on a proprio motu basis (without a referral from the Security Council or a state party) could be misused for political purposes.
- Exclusion of nuclear weapons and terrorism from ICC jurisdiction whose use would constitute a war crime.

Conclusion

For effective functioning of ICC all States Parties should put in place effective national frameworks to cooperate fully with the ICC. There should be Concrete arrest strategies required to arrest the suspects. Also, ICC member states should focus on electing highly qualified judges

with knowledge and experience in criminal law and procedure.

Comparison between ICC and ICJ		
Parameters	 ICC	 ICJ
Genesis	Rome Statute	Established in 1945 by UN Charter
HQ	Hague (Netherlands)	Peace Palace in The Hague (Netherlands)
Composition	18 judges, with 9-year, non-renewable term, in 3 divisions: Pre-Trial, Trial, and Appeals elected by Assembly of States Parties	15 judges elected to 9-year terms by UN General Assembly and the Security Council.
Cases	Holds only individuals criminally responsible for offences.	Hears 2 types of cases: • Legal disputes between States submitted to it by them (contentious cases) • Requests for advisory opinions on legal questions referred to it by UN organs/ specialized agencies

2.5. NEWS IN SHORTS

2.5.1. BIMSTEC ACQUIRES 'LEGAL PERSONALITY' AFTER CHARTER COMES INTO FORCE

- The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) charter was signed and adopted during the **5th summit of the grouping in Sri Lanka, in 2022.**
- With the **endorsement of the charter by Nepal**, all member states completed the ratification of the foundational document and the charter **came into force on May 20, 2024.**
- **About BIMSTEC Charter**
 - **BIMSTEC Charter** is a foundational document that outlines the goals, principles, and structure of the BIMSTEC.
 - Charter **confers legal personality** on the grouping and paves the way for **external partnerships and admission of observers and new members.**



The infographic features the BIMSTEC logo at the top left, with the acronym 'BIMSTEC' in large bold letters and 'HQ Dhaka, Bangladesh' to its right. Below the logo, five key facts are listed, each with a small icon: 1. 'Genesis' with a flask icon, stating it was established in 1997 with the signing of the Bangkok Declaration. 2. 'Members' with a globe icon, listing Bangladesh, India, Sri Lanka, Thailand, Myanmar, Nepal, and Bhutan. 3. 'Secretariat' with a building icon, located in Dhaka, Bangladesh. 4. 'Purpose' with a document icon, to create an enabling environment for rapid economic development and social progress while maintaining peace and stability in the Bay of Bengal region. 5. 'Major Projects' with a train icon, including the BIMSTEC Master Plan for Transport Connectivity. 6. 'Exercises' with a person icon, including the BIMSTEC Disaster Management Exercise (DMEX).

- **Significance for India**
 - Give boost to **India's Act East and Neighbourhood First policy.**
 - It acts as a **bridge between South Asia and SouthEast Asia.**

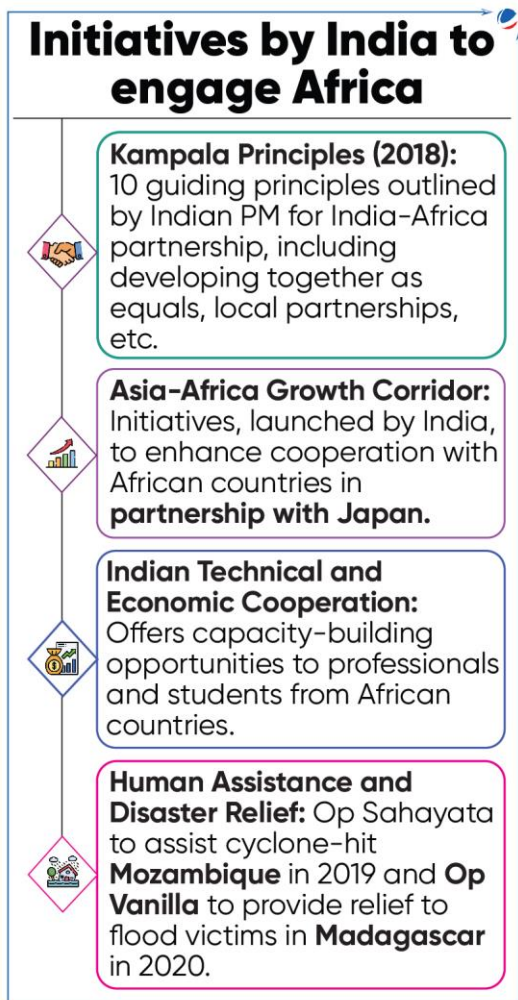
- **BIMSTEC would provide an alternative platform** especially after dysfunction of SAARC since 2016.

Challenges:

- **Slow Organizational progress:** The charter enforced after 27 years of formation.
- **Absence of a Free Trade Agreement among BIMSTEC members:** Members involved in bilateral, multilateral trade with non-members.
- **Strained relations between members:** Bangladesh-Myanmar relations over the Rohingya refugee crisis, the India-Nepal border issue, etc.

2.5.2. SECOND INDIA-US STRATEGIC DIALOGUE ON AFRICA HELD IN WASHINGTON DC

- Dialogue aims to share ideas and explore ways to develop institutional, technical and bilateral synergies to work together in Africa.
- This is the **first such dialogue on Africa** between India and the US **after the inclusion of the African Union as a permanent member of the G20** during India's presidency of the G20.
- **Significance of Africa for India**
 - **Strategic:** Africa is vital for India's maritime security, protect trade in the Indian Ocean Region from piracy, etc.
 - **Economic:** Africa's vast natural resources, including oil, gas, minerals, etc., and growing market provide both demand-side and supply-side opportunities for the Indian businesses.
 - **Energy Security:** Collaboration in the renewable energy sector, such as under International Solar Alliance, aligns with shared goals of sustainable development.
 - **Multilateral:** Cooperation with African countries in multilateral forums like UN, Commonwealth, and Non-Aligned Movement enhances India's global influence and prospects of South-South cooperation.
- **Challenges in India-Africa Relations**
 - **China factor:** China's growing influence in Africa through its Belt and Road Initiative (BRI) and investments poses a challenge to India's interests.
 - **Security:** Persistent conflicts and political instability in parts of Africa pose risks to Indian investments, expatriates, and development projects.
 - **Racial tensions:** African students complain of harassment and discrimination.



- **Achievements of Telecom Diplomacy**
 - Indian companies have exported Rs 25200 crores worth of telecom equipment and accessories 2023-24.
 - **Securing Indian Interests and leadership positions in international forums**
 - ✓ India's active participation at the **World Radio Conference (WRC)** resulted in **safeguarding spectrum for Indian operations** in airspace and sea and **enabling future 5G deployments**.
 - **The World Telecommunication Standardization Assembly (WTSA)** will be held for the **first time in India (October 2024, New Delhi)** to decide the **future direction of standards** for the **next generation of telecommunication systems**.

2.5.4. ANIMAL DIPLOMACY

- Malaysia is aiming to improve its environmental image by putting forward “**orangutan diplomacy**”, a type of Animal diplomacy.
- **About Animal Diplomacy**
 - Involves **giving or lending animals** as a **sign of friendship or goodwill between countries**.
 - ✓ These creatures possess **cultural significance** or are **indigenous to the country** that gifts them.
 - Considered as an element of **soft power**.
 - **Key Examples:** China’s panda diplomacy; Australia’s koala diplomacy, etc.
 - **Ethical Concern:** Animals are being used as a means (considering them as an object) to fulfil interest of Nations.

2.5.5. SOUTH-CHINA SEA

- Philippines denied China’s claim on agreement over disputed South China Sea’s **Second Thomas Shoal**.
- **South China Sea** is a **part of western Pacific Ocean** stretching roughly from Singapore and the Strait of Malacca in the southwest, to the Strait of Taiwan in the northeast.
- **Key Disputes in the South-China Sea: Nine-dash line (imaginary line) of China** which covers most of the South China Sea and overlaps with the exclusive economzone claims of **Brunei, Indonesia, Malaysia, the Philippines, Taiwan, and Vietnam**. It includes
 - **Paracel Islands:** Controlled by China but also claimed by Taiwan and Vietnam.
 - **Spratly Islands:** Claimed by China, Taiwan, Vietnam, Philippines, and Malaysia.
 - ✓ Second Thomas Shoal, a submerged reef is located near this Island.
 - **Scarborough Shoal:** Claimed by China, Taiwan, and Philippines.

2.5.3. INDIA’S TELECOM DIPLOMACY

- India celebrated its ‘Telecom Diplomacy’ on World Telecommunication and Information Society Day.
- Telecom Diplomacy has helped attract new business ventures, forge partnerships, and demonstrate India’s commitment to secure its leadership position in the global telecommunications landscape.
- **Steps taken for Telecom Diplomacy**
 - **Strategic Partnerships with partner countries and Telecom chip companies:** ‘US-India OpenRadio Access (ORAN) Network Acceleration Roadmap’.
 - **Exchange of Best Practices:** India-USA collaboration facilitated dialogue on international best practices in spectrum allocation, quality of service assurance, etc.
 - ✓ The DoT explored **potential collaborations to elevate R&D, foster innovation, and fortify the startup ecosystem** in Quantum Communications within India.
 - **Transforming India Mobile Congress (IMC):** Significant efforts were undertaken to make IMC a global event like Mobile World Congress by 2025.

To know more about the South China Sea Dispute, refer to Article 2.6 of October 2023 Monthly Current Affairs Magazine.

2.5.6. MIDDLE-POWER

- Middle powers, lacking a universally agreed-upon definition, typically rank below great powers but **exert influence** over **global politics**.
 - Great powers are countries with a permanent seat on the United Nations Security Council.
- Middle powers have extensive **diplomatic, economic, multilateral, and military** heft.
- **They comprise:**
 - **Global North countries** like Australia, Canada and South Korea.
 - **Global South nations** like India, Argentina, Brazil and Indonesia.

- **Significance:** Strengthen multilateralism; represent the voice of the global south, etc.

2.5.7. GEOPOLITICAL RECESSION

- Political scientist Ian Bremmer defines a geopolitical recession as a situation where **established global power frameworks are crumbling**.
 - According to him, **like economic recession, Geopolitics have boom and bust cycles, too.**
- During geopolitical recession, responding to a crisis becomes **significantly more challenging due to the decreased resilience of political institutions**.
- **Reasons for current geopolitical recession**
 - **Long-term rise of China and the Global South**, combined with a decline of European and Japanese economic power.
 - **Tensions over trade** between the US and China.



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3. ECONOMY

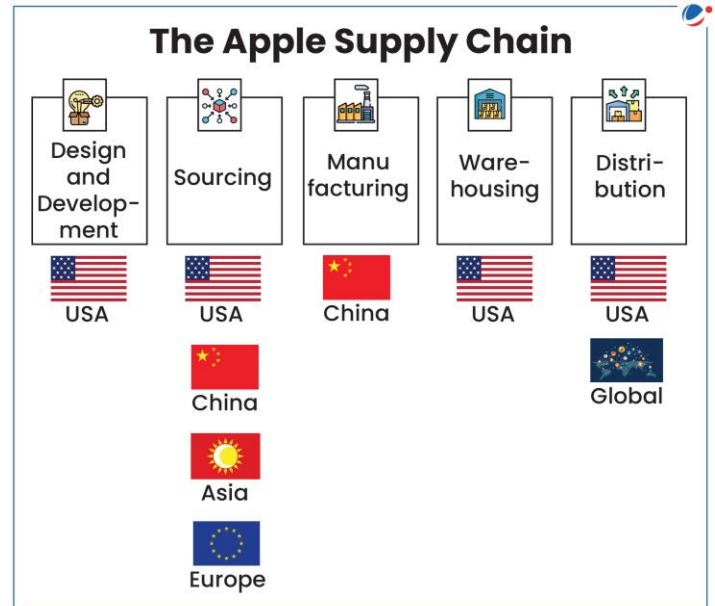
3.1. INDIA AND GLOBAL VALUE CHAINS (GVCS)

Why in the News?

NITI Aayog CEO highlighted the need for India to get into global value chains (GVCs) to boost exports and secure supply chains.

What are Global Value Chains (GVCs)?

- It refers to a **production sequence** for a final consumer good, with each stage **adding value** (e.g., production, processing, marketing, transportation, distribution) and with at least **two stages taking place in different countries**.
 - For example**, a smartphone assembled in China might include graphic design elements from the United States, computer code from France, and silicone chips from Singapore.
- As per OECD, an estimated **70 % of trade occurs through GVC**.
- Countries can participate in GVCs by engaging in either **backward or forward linkages** based on their economic specialisation.
 - Backward linkages:** when one country **uses inputs** from another country for domestic production.
 - ✓ **For example**, India imports cotton fabric from Italy to make and export shirts.
 - Forward linkages:** when one country **supplies inputs/intermediate goods** that are used for production in another country.
 - ✓ **For Example**, India supplies **auto components** to a German automaker for use in car production.



Importance of Global Value Chains (GVCs)

- Increase in Productivity:** By accessing a variety of cheaper or higher quality imported inputs, increased knowledge sharing, leveraging economies of scale in firms and higher value added (most productive) tasks etc.
- Reduced Poverty:** According to the World Bank, a **1% increase in GVC participation** is estimated to boost **per capita income** levels by more than **1%** (about twice as much as conventional trade).
- Employment Creation:** GVCs can lead to the creation of more jobs when they catalyze **structural** transformation or generate **new linkages** in and around the chain.
 - For example, In Bangladesh, the emergence of the GVC-oriented **export apparel sector** has significantly contributed to employment.
- Labour intensive and female-driven:** In sectors most intensively traded in GVCs (such as apparel, footwear, and electronics) lower-skilled, young, female workers account for the **largest share of employment**.
- Greater scope for Specialisation:** Due to the international fragmentation of production and unbundling of operations, countries **no longer need to create complete products or value chains**.
 - Instead, they can **create targeted industries** for a particular stage of production along the value chain that suits their existing level of capability. E.g., Integration of Vietnam into global textile value chains.

India's participation in GVC

- Low Participation:** India's GVC-related trade (**as per cent of gross trade** was at **40.3%** in 2022) is **significantly low**, not only when compared to large economies like the United States, China, and Japan but also, smaller countries like South Korea and Malaysia.

- Although, the post-COVID-19 redistribution of supply chains has given an opportunity to India to increase its participation.
- **Low export of Network products:** such as electronics, computers, telecommunication equipment and vehicles for which GVCs are the dominant mode of production, account for only **10% of India's total merchandise exports**.
- **Key products driving India's GVC participation:** include coal and petroleum, business services, chemicals, transport equipment etc.
- **Predominance on forward linkages:** India still depends heavily on exports of raw materials and intermediate products.

Reasons behind India's weak GVC integration

- **Poor trade infrastructure:** GVCs often require tight production schedules. For example, smartphones and laptops need rapid production to keep up with technology trends.
 - The poor quality of road and rail infrastructure, suboptimal regional integration etc. adversely impact GVC integration.
- **Uncertainty in trade and tariff policy:** Average tariffs in India have jumped to **18.1 % (2022) from 13% (2014)**, which in turn has made India uncompetitive with respect to countries such as Vietnam, Thailand, Mexico etc.
- **Suboptimal quality standards:** For example, due to high export standards and strict delivery pressures, Indian garment firms find it easier to supply to the domestic market.
- **Biased towards capital-Incentive Sector:** Despite having comparative advantages in unskilled labour-intensive manufacturing activities, India's commodity composition of exports is **biased towards capital- and skill-intensive products**.
- **Lack of information:** Information regarding **markets, partners, EXIM (Export-Import) rules**, and even trade finance plays an important role for companies in creating partnerships.
- **Domestic policy challenges:** Complex tax policies and procedures, complex labour laws, and uncertainty in trade policy create obstacles in efforts to scale up production in India.

Measures Taken to Integrate India in GVC

- **Foreign Trade Policy 2023:** It aims at **process re-engineering and automation** to facilitate ease of doing business for exporters.
- **Production linked incentive (PLI) scheme for large scale Electronics manufacturing:** Launched in 2020, it has encouraged GVC participation. E.g., 3 of Apple Inc's contract manufacturers have set up manufacturing bases in India.
- **One District One Product- Districts as Export Hubs (ODOP-DEH) initiative:** To focus on districts of the country as unit for converting into a manufacturing and export hub by identifying products with export potential in the district.
- **Make-in-India Initiative:** It was launched in 2014 for making India a hub for manufacturing, design and innovation
 - It is one of the key reasons for **FDI equity inflow** in the manufacturing sector between 2014 and 2022 increasing by **57%**.

Way forward

- **Improving the Business Environment:**
 - Ensuring clarity on dispute settlement in the **post-Bilateral Investment Treaty system**.
 - Promoting **financial access** by improving creditworthiness assessments (especially for SMEs).
 - Ensuring early Implementation of **New labour Codes**.
- **Facilitating Trade:**
 - Establishing stable **tariff rules**.
 - Simplifying and streamlining border procedures.
 - ✓ Establishing a **National Trade Network** (an online platform for all export-import compliance processes)
 - Implementing the **Indian National Strategy on Standardisation** to increase firms' capacity to meet international standards.
- **Stabilizing regulatory environment:** Tax regulations and procedures must be uniformly implemented. Further, these should align with **trade policies** to assist firms in scaling up production.
- **Target High-Value GVC Segments:** Focus on high-value segments of GVCs, such as product conceptualization, design, prototype development, and after-sales services etc.
- **Promote labour-intensive Sector:** Domestic firms in the labour-intensive sector need to be incentivised to undertake activities which enable participation in GVCs.

Scan the QR code to know more about **Global Value Chains**.



Weekly Focus #98: Global Value Chains (GVCs)- Prospects and Challenges for India

3.2. RBI SURPLUS TRANSFER

Why in the news?

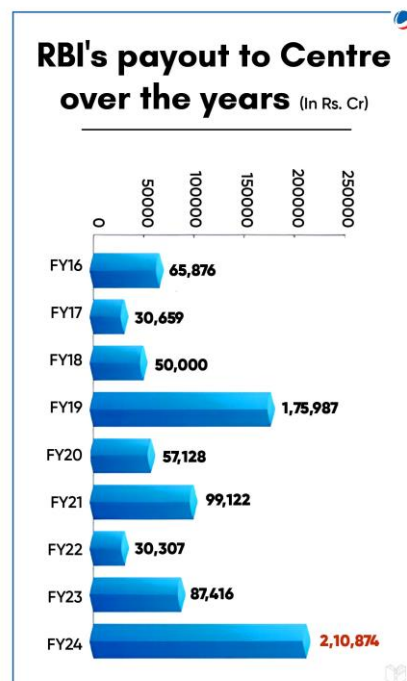
Reserve Bank of India (RBI) **approved highest-ever surplus transfer of Rs 2.11 lakh crore to government** for FY24 which is more than double the previous year's ₹86,416 crore.

More about the news

- The sharp jump in the surplus amount **could be attributed to higher income from the forex holding of the central bank, among other factors.**
- The surplus transfer is for the fiscal year 2023-2024, but will **reflect in the government's account in the fiscal year 2024 - 25.**

About RBI Surplus

- Surplus implies **excess of income over expenditure.** RBI's total expenditure is only about 1/7th of its total net interest income, thereby generating surplus.



RBI's Income	RBI's Expenditure
<ul style="list-style-type: none"> • Interest on holding of Rupee Securities (RS): Interest earned on holding RS adjusted with Profit/Loss on sale and redemption, Depreciation and Amortization of RS. • Interest earned on LAF and MSF operations: Net interest earned on Liquidity Adjustment Facility (LAF) and Marginal Standing Facility (MSF). • Interest earned on Loans & Advances: Interest income on loans and advances extended to Central and State Governments, banks and financial institutions and employees. • Interest earned from Foreign Sources: Consists of Interest Income from Foreign Currency Assets (FCA). 	<ul style="list-style-type: none"> • The RBI incurs a major chunk of its expenditure in making Risk Provisions. There are two risk provisions of the Reserve Bank, viz., Contingency Fund (CF) and Asset Development Fund (ADF). <ul style="list-style-type: none"> ○ CF: kept for unforeseen contingencies like depreciation of securities values, risks from monetary rate policy, etc. ○ ADF: It represents provisions made towards investments in subsidiaries and associated institutions and to meet internal capital expenditure. • Printing of notes • Agency charges which includes commission to banks, primary dealers etc. • Employee cost

Provisions regarding RBI transfer surplus to the government

- **RBI Act, 1934:** Under section 48 of the RBI Act, 1934, the RBI is not liable to pay income tax or super tax on any of its income, profits or gains. However, it transfers its surplus to Government after **making provisions for contingency funds and ADF.**
 - **Section 47 of the RBI Act, 1934** mandates that **any profits made by the RBI** from its operations be sent to the Centre.
- **Committees' recommendations:** Earlier, RBI used to keep a major chunk of this surplus for its **Contingency Fund (CF)** and **Asset Development Fund (ADF)**. However, after the Malegam Committee (2013) recommendations its transfer of surplus to government increased.
 - **Various committees** i.e., V Subrahmanyam (1997), Usha Thorat (2004), Y H Malegam (2013) and Bimal Jalan (2018) were formed to decide the ideal amount of surplus transfer.

- **Economic Capital Framework (ECF):** It provides a **methodology** for determining the **appropriate level of risk provisions and profit distribution** to be made under **Section 47 of the RBI Act, 1934.**
 - As per this Revised ECF recommended by **Bimal Jalan Committee**, the amount of surplus that the RBI must transfer to the Centre is determined based on two factors -
 - ✓ **Realized equity (essentially existing amount in CF):** The CF is maintained within a range of 6.5% to 5.5% of the RBI's balance sheet and the excess amount is to be transferred to the government.
 - The RBI's Central Board decided to maintain the realized equity level at 5.5%.
 - ✓ **Economic capital (essentially CGRA):** It should be kept in the range of 20.8-25.4% of the balance sheet and rest should be transferred to government.
 - CGRA includes its **capital, reserves, risk provisions and revaluation balances** which are unrealized gains, net losses resulting from movement of exchange rate, gold price or interest rate.

Benefits of Surplus Transfer for Government

- **Reduce Fiscal Deficit:** It will help the government to meet the 5.1 % fiscal deficit target it has set for the fiscal year 2024-25.
- **Meeting Revenue Targets:** It's an important source of non-tax receipts for the government and helps the government to spend more to ensure economic growth in the economy.
- **Reduce Government Borrowing:** It may help government to reduce its gross borrowing for the current financial year (2024-25/FY25) by up to Rs 1 trillion or to step up capital expenditure.
 - If the government borrows less, **government security (G-Sec) yields could soften, thereby lowering its borrowing cost.**
- **Keeping Interest Rates Low:** A fall in government bond yields mainly due to surplus transfer lowers borrowing costs across the economy as sovereign debt yields are the benchmarks for determining the price of corporate borrowing.

Conclusion

In the past, surplus transfers by RBI have been subject to debate on issues like **Adequate Contingency Fund with the RBI and the Autonomy and credibility of RBI.** However, the current surplus transfer by the RBI constitutes an important element which is considered by the Central Govt. in arriving at overall budget provisions for the fiscal year. These additional funds can be utilized for public spending or specific projects, which could lead to a revival in demand in certain sectors and boost economic activity.

3.3. LOGISTICS SECTOR OF INDIA

Why in the news?

India's logistics cost has been worked out to be in the range of **7.8-8.9 %** of Gross Domestic Product (GDP) in **2021-22** (in contrast to the widely circulated number of more than 10%).

More on the news

- The cost has been computed by the **National Council of Applied Economic Research (NCAER).**
 - The task was assigned to the think tank by the **Department for Promotion of Industry and Internal Trade (DPIIT).**
 - The **World Bank** has reviewed the methodology and has acknowledged that it has an **appropriate baseline and framework to fine-tune it in future.**
- **Earlier available estimates included:** NCAER's 8.9% of GDP for 2017-18; CII's 10.9% of GDP in 2015; and Armstrong and Associates' (A&A) 13.0% of GDP in 2016.
 - **The A&A estimate** was the **most widely circulated number** and became the basis of the National Logistics Policy's agenda to reduce the logistics cost to global benchmarks by 2030.

Logistic Performance Index Report (2023)

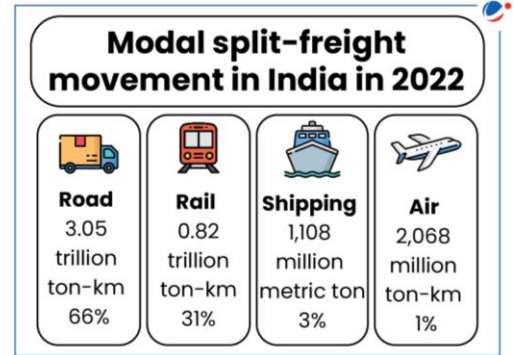
- Released by **World Bank.**
- India ranks **38 out of 139** countries (2023).
 - It Improved by 6 places from **44** in **2018.**

Six LPI parameters

- Customs
- Infrastructure
- Ease of arranging shipments
- Quality of logistics services
- Tracking and Tracing
- Timeliness

Logistics Landscape in India

- The **major components of logistics** are:
 - **Procurement** of materials from outside suppliers, including negotiation, order placement, inbound transportation etc.
 - **Material handling** in such a way that the warehouse can process orders efficiently.
 - **Warehousing, packaging and inventory control of finished goods** until they are sold.
 - **Transportation** i.e., physical delivery of goods from the organisation to the distributor or dealer and from the dealer to the end customer.
- **Importance of efficient logistics infrastructure:**
 - **Supply chain efficiency:** vital for businesses to meet consumer demand promptly and optimise production processes.
 - **Connectivity and accessibility:** contributes to economic integration by enabling businesses to reach a wider customer base.
 - **Cost reduction and competitiveness:** due to reduction in transportation, storage and distribution costs.
 - **Job creation:** in transportation, warehousing, distribution, and related services.



Steps Taken for Improvement of Logistic Sector in India

National Logistics Policy (NLP) 2022

- It addresses the **soft infrastructure and logistics sector development aspect**.
 - It includes process reforms, improvement in logistics services, digitization, human resource development and skilling.
- It was launched in **2022** to complement PM Gati Shakti National Master Plan (NMP).
 - PM Gati Shakti NMP addresses integrated development of the **fixed infrastructure and network planning**.
- **The targets of the NLP are to:**
 - **Reduce cost** of logistics in India - Comparable to global benchmarks of **8-9%** of GDP.
 - **Improve the Logistics Performance Index ranking** – endeavour is to be among top 25 countries by 2030.
 - Create **data-driven decision support mechanism** for an efficient logistics ecosystem.
- **Comprehensive Logistics Action Plan (CLAP)** as part of the NLP was launched covering eight action areas including Integrated Digital Logistics Systems, Services Improvement Framework etc.

Other Steps Taken

- **Unified Logistics Interface Platform (ULIP)**
 - It is an indigenous **data-based platform** which integrates 34 logistics-related digital systems /portals across Ministries / Departments.
 - **GST data** is also being integrated with ULIP.
 - By signing **Non-Disclosure Agreements (NDAs)** and after due diligence, data on ULIP can be accessed by **private players for use cases**.
- **EXIM (Export-Import) Logistics:** To Address infrastructure and procedural gaps in India's EXIM connectivity and create an efficient and reliable logistics network.
 - Also, the **Logistics Data Bank (LDB)** provides visibility for 100% of India's EXIM containers.
- **Logistics given infrastructure status:** It enabled the logistics sector to access infra-lending at easier terms.
- **Logistics Ease Across Different States (LEADS):** An indigenous logistics performance index on lines of the World Bank's LPI for logistics performance monitoring across states.
 - The survey is conducted **annually** and **States are ranked** according to their performance.
- **Multimodal Logistics Parks (MMLPs):** They will act as freight aggregation and distribution hubs, and enable long-haul freight movement to reduce transport costs.
 - Government has planned **35 MMLPs** with an investment outlay of **\$6.2 Billion**.

- **Bharatmala Pariyojana:** About **65,000 km** of National Highways are to be constructed in two phases under the program.
- **Dedicated Freight Corridors (DFC):** To assist in achieving the target mandated under the National Rail Plan 2030 of increasing the share of rail freight traffic from **27% (2019) to 45% (2030)**.
- **Sagarmala and Inland waterways:** It is a flagship programme of the government to promote **port-led** development in the country through harnessing India's **7,500 km** long coastline and 14,500 km of potentially navigable waterways.

LEADS 2023: Performance snapshot

Groups/ Categories	Achievers	Fast Movers	Aspirers
 Coastal	Andhra Pradesh, Gujarat, Karnataka, Tamil Nadu	Kerala, Maharashtra	Goa, Odisha, West Bengal
 Landlocked	Haryana, Punjab, Telangana, Uttar Pradesh	Madhya Pradesh, Rajasthan, Uttarakhand	Bihar, Chhattisgarh, Himachal Pradesh, Jharkhand
 North-East	Assam, Sikkim, Tripura	Arunachal Pradesh, Nagaland	Manipur, Meghalaya, Mizoram
 Union Territories	Chandigarh, Delhi	Andaman & Nicobar, Lakshadweep, Puducherry	Daman & Diu Dadra & Nagar Haveli, Jammu & Kashmir, LadaKh

Challenges before the Indian logistics sector

- **Fragmented supply chain:** With numerous small players operating independently across supply chain segments. This fragmentation results in **suboptimal utilisation of resources**, lack of **standardisation**, and difficulties in coordination and collaboration among stakeholders.
- **Regulatory complexity:** It includes **multiple layers of taxation**, compliance requirements and bureaucratic procedures, creating barriers to entry and hindering business operations.
- **Last-mile connectivity:** encounters challenges such as inadequate road infrastructure, traffic congestion and poor address mapping.
- **Skill shortage:** Lack of qualified personnel proficient in supply chain management, transportation, and logistics operations.
- **Security concerns:** It involves protecting goods, assets, and information from theft, fraud, cyberattacks, terrorism and natural disasters.

Way forward

- **International Collaboration:** It enables shared infrastructure, data exchange and coordinated decision-making, resulting in improved efficiency, flexibility, and resilience in logistics operations.

- E.g., The **India-Middle East-Europe Corridor (IMEC)** envisions a seamless linkage between India and Europe via the Arabian Peninsula.
- **Focusing on sustainable logistics:** This includes complying with key regulations and initiatives such as the **Energy Efficiency Existing Ship Index**, **carbon intensity rating** and emissions trading system.
- **Technological Innovation:**
 - **Artificial intelligence (AI)-powered Predictive analytics** enables businesses to anticipate demand fluctuations, optimise inventory levels and enhance supply chain resilience.
 - **Internet of Things (IoT)** sensors and connectivity facilitate real-time tracking and remote monitoring.
 - **Automation technologies** such as robotic process automation and autonomous vehicles, reshape warehouse operations and **last-mile delivery**.
- **Attract investment and investor interest:** Adopting new policies to attract private and foreign investment as levers to fast-track infrastructure development.
 - E.g., **Singapore continues to invest in transport infrastructure** to maintain the country's position as a world-class city in logistics.
- **Increase the share of rail transport:** The National Rail Plan envisages that the share of freight traffic by rail should go up from the current share of **27% to 45%** by 2030.

To know more about the PM GATI Shakti Initiative, refer to Article 3.5 of the November 2023 Monthly Current Affairs Magazine.

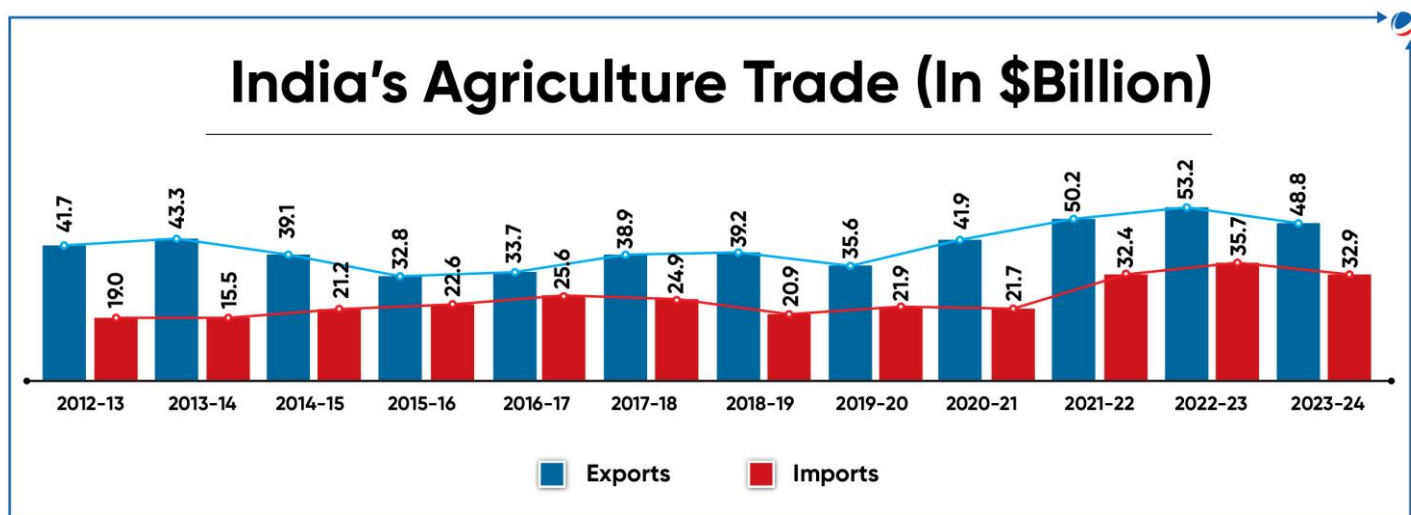
3.4. INDIA'S AGRICULTURE EXPORT POLICY

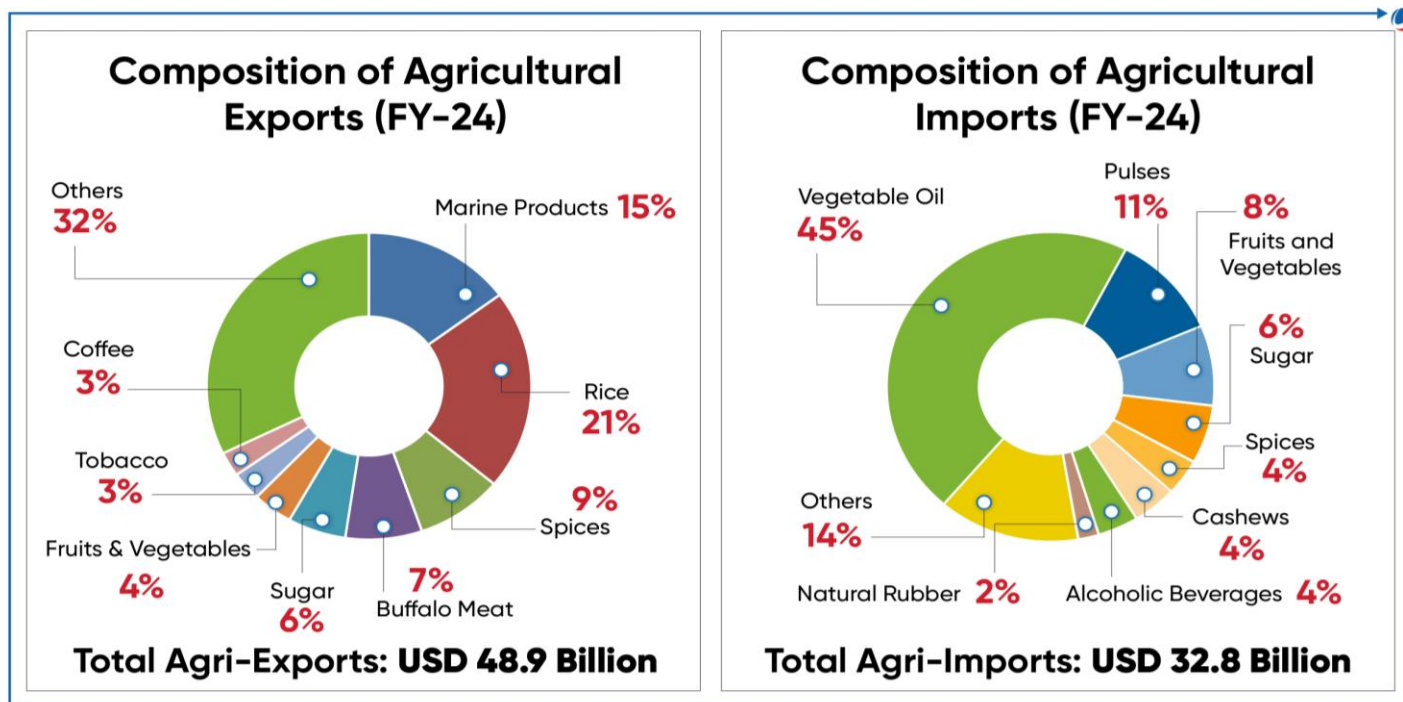
Why in the News?

Agricultural exports in India registered 8% decline this year (2023 – 24) and fell short of the ambitious target of \$60 billion by 2022 (set by India's Agricultural Export Policy, 2018).

More on news

- **Agricultural Exports** touched **\$48.9 billion in 2023-24**, registering a decline from **\$53.2 billion in 2022-23**.
- **India's agricultural imports** in Year 2023-24 also registered a notable **decline of 8%**, dropping from **\$35.7 billion in 2022-23** to **\$32.9 billion in 2023-24**.
- As per available **WTO's Trade Statistical Review (2023)**, the share of India's agricultural exports and imports in world agriculture trade in 2022 were **2.4% and 1.9%**, respectively.
 - India was ranked **9th** in ranking of the global Agri exporters.

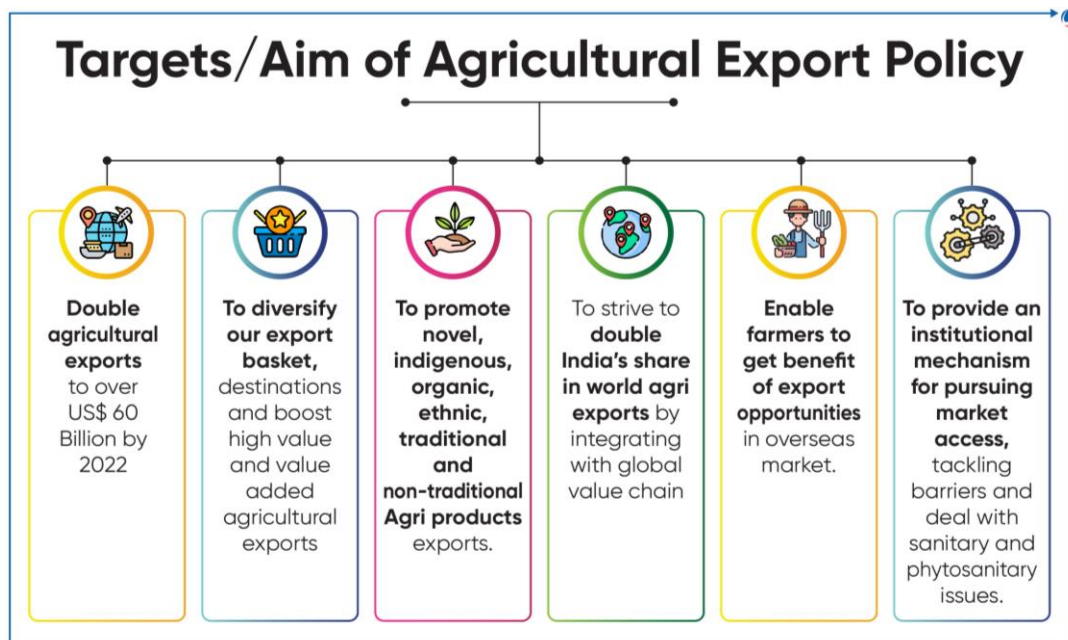




Agriculture Export Policy (AEP) 2018

- **About:** It is framed with a focus on agriculture export oriented production, export promotion, better farmer realization and synchronization within policies and programs of Government of India.
- **Objective:** To Increase Farmer income through value addition and minimize losses across value chain.
- **Elements of Agriculture Export Policy Framework:**

- **Strategic Recommendations:** Consist of Stable trade Policy Measures, Infrastructure and Logistics Support, Holistic Approach to boost exports & Greater involvement of State Governments in Agriculture Exports.



- **Operational Recommendations:** It provides focus on building Clusters, Promoting Value added exports, Marketing and promotion of "Brand India", Attract private investments into production and processing, Establishment of Strong Quality Regimen, & Increased Research & Development.

Need for New Export Policy

- **Prevalence of Export Restrictions:** E.g. Export prohibition, export duties, minimum export price etc.
 - It can create **uncertainty and unpredictability for India's agricultural producers and exporters**. Proliferated use of trade policy instruments makes AEP dichotomous, ambiguous, and paradoxical.

- It may also lead to ambiguity on **India emerging as a reliable supplier** of agricultural products to world markets.
- **Global Price Sensitivity:** India's export competitiveness is heavily influenced by dynamics between domestic and global commodity price.
 - When global prices are on upswing, **India's agri-exports also surge**. But when global prices fall, our **price-competitiveness also gets blunted**, and agri-exports suffer.
- **WTO issue:** Use of export restrictions on sensitive agriculture products has been a **contentious issue in World Trade Organization (WTO)** as they are seen as a **violation of WTO rules**.
 - As India announced its rice export restrictions, the international price of rice surged by approximately 25%.v
- **Limited Basket of Export:** Rice and sugar account for 37.4% of India's exports. They face frequent export bans in India, for example export of non-basmati rice is currently banned from India.
- **Virtual water export:** Producing rice uses a lot of water (3,000-5,000 liters per kg) and exporting 16.3 million tons of rice equals exporting 32.6 billion cubic meters of water. Subsidies on power and fertilizers make rice artificially cheap, hiding the real environmental cost.

Way-forward

- **True export competitiveness:** Focusing on improving domestic production through productivity growth, product differentiation, value addition, market access, and branding to promote sustainable growth in agricultural exports.
- **Bringing more technology:** Promote advanced agricultural technologies, precision farming, and efficient irrigation, while supporting agri-startups and innovative solutions to boost productivity and export efficiency.
 - **Netherlands** has used **advances in vertical farming, seed technology and robotics** to become a global model. Despite being a small country, it is second largest exporter of agriculture.
- **Focus on Organic & Processed food products:** There is also a need to ensure the development of organic or pesticide-free clusters through farmer producer organizations to boost export of organic products to high-income countries.
 - Centre's policy should be in direction of **nurturing food processing companies**, ensuring low cost of production and **global food quality standards**.
- **Environmental sustainability:** Emphasis on crops like pulses and oilseeds that require less water and fertilizers. Farmers' interests need to be balanced with environmental sustainability.
- **Considering Climatic variations while determining Import Policies:** To ensure food security and stabilize market prices.

Steps taken for promoting Agricultural - export:

- **Trade Infrastructure for Export Scheme (TIES):** By Ministry of Commerce to assist Central and State Government agencies in creating appropriate infrastructure for the growth of exports.
- **Market Access Initiatives (MAI) Scheme:** By Ministry of Commerce, it is an Export Promotion Scheme envisaged to act as a catalyst to promote India's export on a sustained basis.
- **Agricultural & Processed Food Products Export Development Authority (APEDA):** It is a statutory organization under administrative control of Department of Commerce, with mandate to promote export of agricultural products, including millets, from India.
- **State specific Action Plans:** prepared by some states and State Level Monitoring Committees (SLMCs), Nodal Agencies for agricultural exports and Cluster Level Committees have been formed in a number of States.
- **Farmer Connect Portals by APEDA:** It has been set up for providing a platform for farmers, Farmer-Producer Organizations (FPOs) and cooperatives to interact with exporters.
- **Transport and Marketing Assistance Scheme:** A central sector scheme which aims to provide assistance for the international component of freight and marketing of agricultural produce to mitigate disadvantage of higher cost of transportation.

3.5. LAND SQUEEZE

Why in the News?

A report, titled 'Land Squeeze' has been released by the **International Panel of Experts on Sustainable Food Systems (IPES-Food)** showcases pressures on land leading to land inequality in India and across the globe.

More on the News

- **IPES-Food** is a global think-tank which provides expert guidance for sustainable food systems around the world.

- The report highlights how land across the world is facing a series of **unprecedented pressures leading to squeezing of land and driving land inequality**.

Key Highlights of the report

- **Global:**
 - **Land inequality:** 1% of world's largest farms now control **70% of world's farmland**.
 - **Price volatility:** Between **2008 and 2022, land prices have nearly doubled globally** and tripled in Central-Eastern Europe.
- **India:**
 - **Land inequality:** Top **10% of landowners own 45% of farmland** in India.
 - **Land degradation:** **>70% of India's arable land** is undergoing one or more forms of **land degradation**.

Know the term

- **Land Inequality:** It refers to instances of highly unequal distribution of landholdings among households.
 - **In India,** it is generally assessed through **agricultural census** conducted every five years.

Drivers of Land Squeeze

- **Land Grabbing:** Appropriation of land through the privatization of common land with instruments such as lease, concessions, quotas. This includes-
 - **Deregulation:** Governments deregulating their land markets and adopt pro-investor policies. E.g., for creation of 'special economic zones' and 'growth corridors'.
 - **Financialization:** Land ownership transferred from farmers to financial actors
 - **'Water grabs' and 'resource grabs':** Land deals focused on rapid resource extraction (e.g. through water-intensive cash cropping).
- **Green Grab:** Appropriation of land through **top-down conservation schemes**. E.g. for Carbon and biodiversity offset, 'biodiversity net gain' initiatives, biofuels and green energy production etc
 - It accounts for **~20% of large-scale land deals**.
- **Expansion and Encroachment of farmlands:** For mining, urbanization and development of mega-cities
 - E.g., Mining projects accounted for 14% of recorded large-scale land deals over the past ten years.
- **Food System Reconfiguration:** Entails **industrialization and consolidation of agri-food sector** with concepts of **contract farming, value chain integration**.
- **Other reasons:**
 - **Colonial Reasons:** E.g. Extractive landlord-based revenue collections such as **Zamindari System**
 - **Social Inequalities and Discrimination:** E.g. Historical practices such as caste system, untouchability, patriarchy etc.

These drivers are exacerbated by other enabling factors like **failure to build 'just transition' pathways**, insecurity of tenure, **economic limitations, limited political representation** of Small-scale farmers/ marginalized groups, development strategies guided by Structural transformation, **ongoing trade liberalization biases** etc.

Impacts of Land Squeeze

- **On Local and Farming Communities**
 - **Land Loss, concentration and fragmentation** due to increased input costs, land price volatility, and undermined security of tenure., **especially for smallholder agriculture**
 - ✓ As per the report, **34%** of land grabbed since 2000 was from **smallholder farmers**.
 - **Exacerbation of persistent rural poverty and livelihood pressures** on small-scale food producers.
 - **Wealth inequality** as methods such as contract farming are reducing farmers' autonomy and leading to fewer potential users of credit or insurance products.
- **Impact on Indigenous People:** **Land conversion and dispossession of land** are leading to various forms of **oppression and discrimination, mass displacement, land conflicts**, etc.
- **On Environment**
 - **Loss and damage to biodiversity**
 - ✓ As per the report, **87%** of land grabs occur in regions of **high biodiversity**.

- **Land degradation** due to promotion of techno-centric, capital-intensive, and chemical input-intensive modes of agriculture.
- **Water stress** due to Land Diversion to water-intensive projects such as ‘green hydrogen’.
 - ✓ More than half of land grabs are intended for **water-intensive crop production**
- **On food security:** Conversion of farmland to solar parks, land degradation, concentration, and fragmentation means shrinking land available for (sustainable) food production.

Steps taken to address land inequality in India

- **Post-Independence Era**
 - **Abolition of the Zamindari system** removed the layer of intermediaries who stood between the cultivators and the state.
 - **Tenancy abolition** attempted either to outlaw tenancy altogether or regulated rents to give some security to the tenants and was most successful in West Bengal and Kerala.
 - **Land Ceiling Acts** imposed an upper limit on the amount of land that can be owned by a particular family.
 - **Bhoodan Movement** initiated by **Acharya Vinoba Bhave** aimed at provisioning of land by gift for the common benefit of the landless.
- **Post 2000**
 - **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition Of Forest Rights) Act, 2006** (Forest Rights Act, 2006) to ensure land tenure, livelihood and food security of the forest dwelling Scheduled Tribes and other traditional forest dweller.
 - **Ministry of Panchayati Raj’s Svamitva Scheme** provides legal ownership cards to the property owners by mapping land parcels using drone technology.
 - **Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act, 2013** to ensure a humane, participative, informed and transparent process for land acquisition for industrialisation
 - **Model Tenancy Act** aims to balance the rights of all types of tenant and landlords and create an accountable and transparent ecosystem for renting of premises in disciplined and efficient manner.

Way Forward: Recommendations of the report

- **Strengthen self-determined land governance systems** by democratic spatial planning processes, community led mapping and digitization etc.
- **Establish integrated land, environmental, and food systems governance** to halt green grabs and ensure just and human rights based transition.
 - **The right to land** should be at the heart of climate governance as enshrined in the **UN Declaration on Rights of Indigenous Peoples (UNDRIP)** and the **UN Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP)**
- **Move from Commodity to community-led and decentralized conservation** focussed on agro-ecology, land-sharing and integrated agriculture energy projects.
 - E.g. **Joint Forest Management (JFM)** program aims to transform previously state-managed forest land into commons managed by communities
- **Halt green grabs and remove speculative investment from land markets** by capping of farmland investment, granting pre-emptive rights to communities etc.
- **Forge a new social contract, and a new generation of land and agrarian reforms** by strengthening small-scale food producer’s livelihoods through fair prices, financial support, pension and insurance systems etc.

3.6. NEWS IN SHORTS

3.6.1. COMMODITY DEPENDENCE

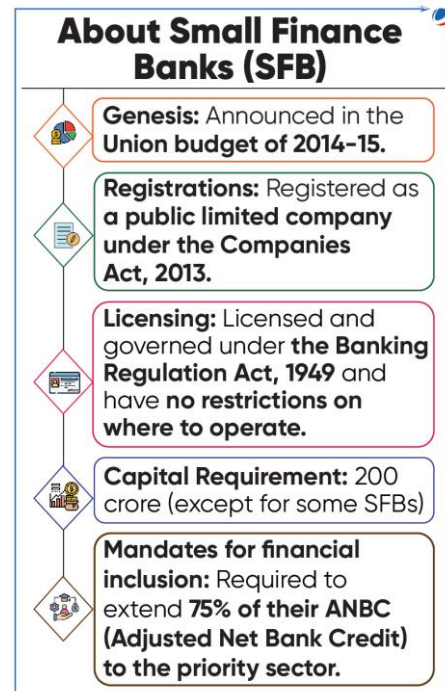
- The President of the United Nations General Assembly recently highlighted the issue of commodity dependence.
- **About Commodity dependence**
 - A country is dependent on the export of commodities (or “commodity-dependent”) when **its merchandise exports are heavily concentrated on primary commodities (like crude oil, coal, iron ore, etc.)**.
 - The **source of commodity dependence** can be linked to a country’s **persistent or structural conditions**, such as its **resource endowment** and factor composition, institutional framework, **geographic situation, history** among other factors.

- **Issues with Commodity dependence**
 - **Exposes countries to shocks:** Dependence can leave an economy highly exposed to shocks, such as the COVID-19 pandemic, and price swings in international markets.
 - **Linked to lower human well-being:** In 2021, 29 out of the 32 countries with low HDI scores were commodity dependent.
 - **More vulnerable to climate change:** More than 60% of the world's small island developing states – on the front lines of the climate crisis – are commodity-dependent.
 - **Profound social consequences:** E.g., mining industry-dependent countries engage in trade but most of the benefits go to capital owners rather than the workers.
- **Way ahead:** Developing a Diversification Strategy, promoting education and Skill Development, garnering support for commodity-dependent countries and encouraging strong national political will.

3.6.2. ELIGIBILITY FOR UNIVERSAL BANKING BY SFBS

- RBI set eligibility criteria for Small Finance Banks (SFB) to transit into universal banking under on-tap licensing.
- 'Universal banks (UBs) are banks that offer a wide range of financial services, beyond commercial banking and investment banking, such as insurance.
 - Until now, SFBS were allowed to primarily undertake basic banking activities of acceptance of deposits and lending to unserved and underserved sections
- **On-tap licensing:** It was introduced in 2016 to allow banks to apply for banking licenses with the RBI throughout the year.
 - Prior to this, banking licenses were granted upon invitation of applications by RBI to prospective players.
- **Eligibility for SFBS to transitioning into UBs**
 - **Net Worth:** SFBS must have a minimum net worth of Rs 1,000 crore.
 - **Status:** SFBS must be scheduled banks with a satisfactory track record of performance for a minimum of 5 years.
 - **Financial Health:**
 - ✓ **Profitability:** Should have net profits in the last two Financial Years.
 - ✓ **Asset Quality:** Gross non-performing assets (G-NPA) and net NPA (N-NPA) must be less than

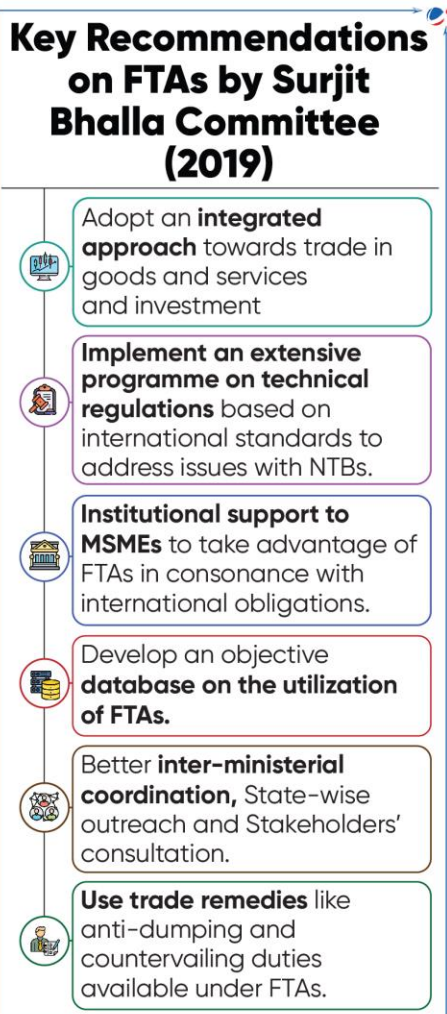
- or equal to 3% and 1%, respectively, over the last two FYs.
- **Stock Listing:** Shares must be listed on a recognized stock exchange.
- **Promoter Requirements:** No addition of new promoters or changes to existing promoters are permitted during the transition.
 - ✓ No changes are allowed to the promoter shareholding dilution plan previously approved by the RBI.
- **Preference:** SFBS with a diversified loan portfolio will be preferred.



3.6.3. 'FIVE-YEAR REVIEW OF INDIA'S MERCHANDISE TRADE' REPORT

- Report, released by **Global Trade Research Initiative (GTRI)**, assesses impact of international disruptions and domestic hurdles and reviews market shifts in trade performances.
- Report also highlights **varied impact of Free Trade Agreements (FTAs)** on India's global trade dynamics.
- **About FTAs**
 - FTAs are **treaties between two or more countries** to reduce or eliminate certain barriers to trade and investment, and to facilitate **stronger trade and commercial ties between participating countries.**
 - It can cover areas such as trade in **goods, services, intellectual property rights (IPRs)**, etc.
- **Key findings of the report on India's FTAs**
 - India's **merchandise imports** from FTA partners grew by **~38%** whereas exports grew by just **~14.5%**.

- **FTA with Asean** (signed in 2010), saw **growth in imports** at a faster pace than **exports**.
- Overall, **India ranked 17th globally in merchandise exports** whereas it is ranked **8th in merchandise imports**.
- **Issues with India's FTAs**
 - **Lower FTA utilisation:** India's FTA utilization remains low at around **25%**, as against 70-80% for developed countries.
 - **Higher compliance cost:** Due to **complex certification processes and rules of origin**.
 - **Non-tariff barriers (NTBs):** Persistence of stringent standards, sanitary and phytosanitary measures and technical barriers by partner countries like Japan.
 - **Limited awareness:** Inadequate promotion and outreach activities about of FTA benefits among exporters.



3.6.4. AUTHORISED ECONOMIC OPERATOR (AEO) STATUS

- The Centre has extended AEO status to the gem and jewellery sector.

- **About AEO program**
 - It is under the aegis of the **World Customs Organization (WCO) SAFE Framework**.
 - Aims to enhance **international supply chain security and facilitate movement** of legitimate goods.
 - It is in sync with the commitments made under the **World Trade Organisation trade facilitation agreement**.
 - It enables **Indian Customs to enhance and streamline cargo security** through close cooperation with the principle stakeholders of the international supply chain.

3.6.5. INDIA INTERNATIONAL BULLION EXCHANGE (IIBX)

- State Bank of India has become the first trading-cum-clearing member at IIBX.
 - **Bullion** refers to **physical gold and silver of high purity** that is often **kept in form of bars, ingots, or coins**.
- **About IIBX**
 - Established at **GIFT International Financial Services Centre (IFSC), Gandhinagar, Gujarat in 2022**.
 - **Regulated by IFSC Authority (IFSCA)**.
 - **Promoted by India's leading market infrastructure institutions** like National Stock Exchange, Multi Commodity Exchange of India etc.
 - **Benefits**
 - ✓ **Gateway to import bullion** into India.
 - ✓ **Provide world class bullion exchange ecosystem** to promote bullion trading, investment in bullion financial products and vaulting facilities in IFSCs.

3.6.6. INDIA VOLATILITY INDEX (VIX)

- Recently, India VIX surged above the critical threshold of 21, indicating heightened volatility in India's stock market.
- **About India VIX**
 - It is a measure of the amount by which an **underlying Index is expected to fluctuate**, in the **near term (30 calendar days)**.
 - ✓ Higher the India VIX values, higher the expected volatility and vice-versa.
 - It is based on **index option prices of NIFTY**.
 - **Uses computation methodology of Chicago Board of Options Exchange (CBOE)**.
 - ✓ CBOE was first to introduce a **volatility index for US markets** in 1993.

3.6.7. COST INFLATION INDEX (CII)

- **CBDT Notifies CII For Financial Year 2024- 25** for calculating **long-term capital gains (LTCG)**.
 - LTCG is the **profit arising from the sale of a capital asset** (i.e., Stocks, Bonds, jewellery, buildings, etc.) held for a duration of **12 to 36 months** (based on the asset type)
- **About CII**
 - CII is notified under the **Income-tax Act (1961) every year.**
 - It is used by taxpayers to **compute gains arising out of sale of capital assets after adjusting for inflation.**

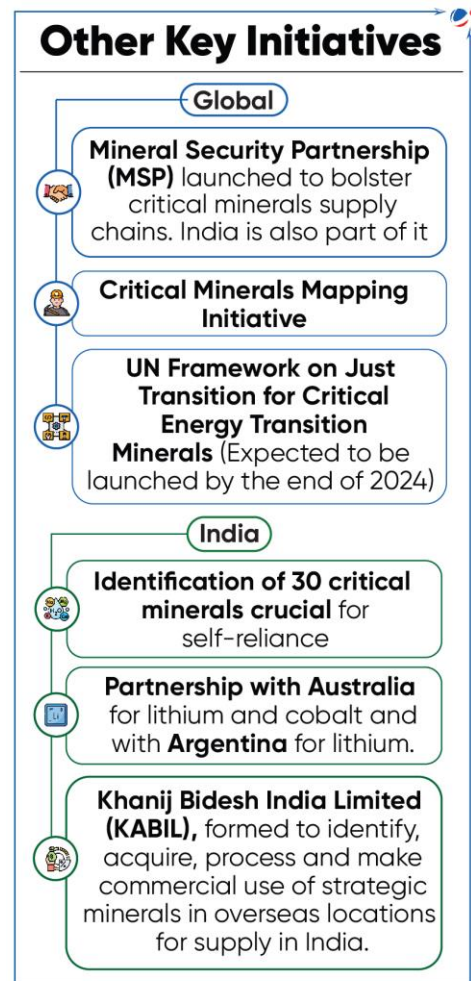
3.6.8. PARADOX OF THRIFT (POT) THEORY

- This Economic theory was popularised by British economist **John Maynard Keynes**.
- **About PoT**
 - A rise in individuals' savings, by reducing the amount of money spent on goods and services, can cause a fall in overall savings and investments.
 - It believes that **higher savings is bad for the wider economy** and an economy can grow only by boosting consumer spending.
- **Criticisms of PoT**
 - It ignores the potential for saved income to be lent out by banks.
 - It also **ignores the potential of inflation and deflation** in an economy.

3.6.9. UN PANEL FOR CRITICAL ENERGY TRANSITION MINERALS

- The United Nations (UN) **appointed panel on Critical Energy Transition Minerals**.
- The Panel aims to bring all stakeholders across the entire **critical energy transition minerals** value chain to develop a set of **global common and voluntary principles** for energy transition.
 - It will address issues relating to **equity, transparency, investment, sustainability and human rights**.
- The panel comprises Government and intergovernmental actors including the **European Union, African Union, Australia, Indonesia, Colombia, India**, etc.
- **Critical Energy Transition Minerals** are **essential components** in many of **today's rapidly growing clean energy technologies**, from wind turbines and solar panels to electric vehicles.
 - E.g. copper, lithium, nickel, cobalt etc.

- **Challenges/Issues related to Critical Energy Transition Minerals**
 - **Geographical concentration:** Few countries have major reserves; it may exacerbate **geopolitical tensions and supply chain disruption**.
 - ✓ E.g. **Lithium triangle**- consists of Argentina, Chile and Bolivia
 - **Unsustainable Mining and processing:** It can lead to water pollution, destruction of ecosystems, etc., and human rights issues (such as child labour).
 - **Growing Demand:** Mismatch in demand and supply.
 - ✓ According to the **International Energy Agency**, demand of critical mineral is set to grow by three and a half times by 2030.



3.6.10. DRIP PRICING

- The Department of Consumer Affairs has issued a warning against drip pricing.
- **About Drip Pricing**
 - It is a **pricing technique in which firms advertise only part of a product's price** and reveal other charges later as the customer goes through the buying process.

- It is used as a tactic to attract customers into initiating the purchasing process
- It has been identified as a dark pattern under Guidelines for Prevention and Regulation of Dark Patterns, 2023.
 - ✓ A **Dark pattern** refers to practices adopted by online platforms that mislead people into paying for items or services they did not intend to do originally.

- **TTCI is flagship index of WEF** that has been in production since 2007.
- **India's rank improved to 39 in 2024 from 54 in 2021.**

3.7.12. ISHAN INITIATIVE

- The **Airports Authority of India (AAI)** has started work on **ISHAN (Indian Single Sky Harmonized Air Traffic Management)** Initiative.
- **About ISHAN**
 - It involves **Combining India's four Flight Information Regions (FIRs) into a single system** overseen from Nagpur.
 - ✓ Currently, Indian airspace is divided into 4 FIRs i.e. Mumbai, Kolkata, Delhi, Chennai, and a sub-FIR in Guwahati, each managed separately.
 - Unifying these FIRs under a single authority in Nagpur is projected to **improve efficiency, safety, and seamlessness in air traffic operations.**

3.6.11. TRAVEL & TOURISM DEVELOPMENT INDEX, 2024

Travel & Tourism Development Index (TTDI), 2024 was released by the **World Economic Forum (WEF)**.

About TTDI, 2024

- TTDI **measures the set of factors and policies** that enable the **sustainable and resilient development of Travel and Tourism.**
- It is the second edition of an index that evolved from the **Travel & Tourism Competitiveness Index (TTCI)** series.



SMART QUIZ

You can scan this QR code to practice the Smart Quiz of Economics at our open test online platform for testing your understanding and recalling of the concepts.



ESSAY

ENRICHMENT PROGRAMME 2024

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4. SECURITY

4.1. POKHRAN-I

Why in the News?

India is celebrating 50 years landmark of its **first nuclear tests in Pokhran, Rajasthan**, as part of the **‘Smiling Buddha’** operation conducted **on 18th May 1974**.

More about the news

- **Operation Smiling Buddha (Pokhran I)**, was India’s first nuclear explosion which was described as a peaceful nuclear explosion (PNE). PNEs are nuclear explosions for non-military purposes.
- India became **the first nation apart from the P5 countries (five permanent United Nations Security Council (UNSC) members) – China, Russian Federation, France, the United Kingdom and the United States** – to conduct the test.

About Operation Smiling Buddha or Pokhran I

- **Location:** Secret army test range located in the desert of Pokhran, Rajasthan
- **Technique:** A fission device using Plutonium as fuel.
- **Importance**
 - Raised **India’s credible deterrence and national security**.
 - ✓ India had already fought three wars (1962 China war and 1965 & 1971 wars against Pakistan). Also, China had conducted its nuclear tests during 1964.
 - It highlighted **India's technological prowess in nuclear research**.

Impact of the test

- **Technological Apartheid with India:** In 1978, the US came out with the **Nuclear Non-Proliferation Act and stopped any nuclear assistance to India**.
 - India’s nuclear policies was put under the technology restrictions by various western countries.
 - India’s strategic sector suffered because of **no international technology collaboration**. This period is famously known as the period of **Technological Apartheid**.
 - ✓ **Example:** India’s space program suffered in 1991, as **USA had forced Russia** to not transfer the **cryogenic engine** technology to ISRO.
- **India as responsible nuclear power:** India affirmed its status as a **nuclear-capable state**, laying the groundwork for future **endeavours such as Pokhran-II in 1998**.
 - This nuclear explosion also **laid the foundation for India’s nuclear doctrine** wherein India **aimed to be recognized as a responsible nuclear power**.
 - ✓ **After Pokhran II India** also declared to follow the doctrine of **‘No First Use policy’**.
 - ✓ Also, post Pokhran- II, **India and USA signed the 123 Nuclear Agreement for peaceful uses of Nuclear Energy**.



Conclusion

The Pokhran-I nuclear test in 1974 was a turning point in Indian history. India has still not joined the NPT, but its intent is now clear, and the status of India as a responsible nuclear power has been largely accepted by the world. Nations like the


USA have signed the Indo-US Nuclear Agreement of 2005-2008, and other Western countries are also cooperating with DRDO and ISRO.

To know more about India's Nuclear Test and India's Nuclear Doctrine, refer to Article 2.1, "25 Years To Pokhran Nuclear Tests" in May 2023 Current Affairs Magazine

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Weekly Focus Documents:



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4.2. TECHNOLOGY ABSORPTION IN DEFENCE

Why in the news?

The Indian Army is observing the year 2024 as the year of Technology Absorption.





What is meant by technology absorption?

- It means **acquisition, adaptation and integration of technologies** into existing structures (also known as legacy systems).
- In present times, technology adoption is synonymous with **integration of disruptive technologies such as artificial intelligence, hypersonic weapons, biotechnology, quantum technology** etc.

<h3>Technological Applications in defense</h3>	
Technology	Application
 <p>Autonomous technologies, such as robots and drones</p>	Undertake dangerous tasks like strikes or repetitive tasks
 <p>Block Chain, Cloud Computing</p>	To make communication and data transfer seamless, secure and fast
 <p>AI and Big Data Analytics</p>	For surveillance, reconnaissance , and Strengthening situational awareness
 <p>Nano-Technology</p>	To create self-healing and adaptive camouflage materials , smart skin etc.
 <p>New weapons technology</p>	<ul style="list-style-type: none"> • Directed energy weapons (High Power Lasers and High-Power Microwaves): Use focused energy to destroy, degrade or neutralize a target. • Loiter Munitions (E.g Kamikaze drones): Loiters around an area, locate the target and then crash into it

Need of Technology Absorption in Defence for India

- **Emergence of hybrid warfare:** It is leading to the emergence of new threats such as:- (see infographics)
- **Maintenance of military superiority and strategic competition:** The world powers (e.g USA and China) are increasingly integrating disruptive technologies in their military.
- **Maintenance of Regional Security:** Strong technological capability is essential to maintaining and asserting India's status as a 'Net Security Provider' and securing its legitimate security interests in the region.
- **Enhance operational efficiency of defence forces:** Various technologies can also help **free up human soldiers for more strategic tasks.**
- **Achieve targets of Defence production and export:** Indigenous innovation and technologies are key to enhancing defence exports.
 - The government of India expects to generate annual defence production worth Rs 3 lakh crore and exports worth Rs 50,000 crore by 2028-29.
- **Emergence of new digital technologies:** New applications like micro-electronics, precision attack systems, Loiter Munitions etc. are challenging traditional ecosystems.

<h1>Emerging Warfare</h1>	
Types of Warfare	meaning and Examples
 Information warfare	Management and use of information to pursue an advantage in offensive or defensive strategies E.g. Deep fake Technology, Narratives Warfare
 Electronic Warfare	Capability to disrupt enemy's defences and protect our own with use of electromagnetic spectrum E.g. Directed Energy Systems
 Weaponisation of Space	Placing of space based devices in orbit having destructive capabilities E.g. Development of Anti Satellite Weapons
 Cyber Warfare	Use of internet to attack information system destabilising financial systems, energy grid etc.

Challenges related to technology adoption in defence

- **Low expenditure on defence R&D budget:** According to the **Parliamentary standing committee** on defence report (2023-24) actual expenditure on defence R&D in 2021-22 amounted to ₹ 18,669.66 crore against Budget Estimate allocation of ₹ 20,757.44 crore.
 - Moreover, Committee also highlighted that the private Defence industry is also in a nascent stage and lacks the capability of spending huge sum on R&D.
- **Strain on defence budgets:** Due to **High Initial Cost in procurement** and development of cutting edge technology.
- **Import dependency:** India has been largely dependent on foreign technology for advanced weapons.
- **Complexities involved in integration of new technologies:** New defense equipment are difficult to integrate in existing defense strategies due to issues like their obsolescence and long service lives of equipment, and compatibility issues.
- **Administrative issues:** Such as need of organisational restructuring, human resources management, civil-military fusion etc.
- **Cyber Security vulnerability:** Inadequate domestic manufacturing capabilities for cyber and communication equipment resulting in over-reliance on import of communication equipment.
 - This can result in security threats due to concerns like '**backdoor setup**' in **operating systems, communication hardwares, etc.**

Measures taken by India for tech-Absorption

- **Acing Development of Innovative Technologies with iDEX (ADITI) scheme:** Launched in 2024 to promote innovations in critical and strategic defence technologies.
- **2022 Amendment to Defence Acquisition Procedure (DAP) 2020:** Mandates all modernisation requirements of the Defence Services and Indian Coast Guard are to be indigenously sourced irrespective of the nature of procurement.
- **Technology focused Organisational framework:** Achieved by synchronising the efforts of **Defence Research and Development Organisation (DRDO), Indian Space Research Organisation (ISRO)** and other institutions such as Army Design Bureau (ADB) and the Naval Indigenisation and Innovation Organisation (NIIO).
- **Signals Technology Evaluation and Adaptation Group (STEAG):** Established as an elite unit by Indian Army for researching futuristic technologies like 6G, artificial intelligence (AI), quantum computing etc.
- **Mission Shakti [Anti-Satellite Missile Test (A-SAT)]:** Developed by DRDO has demonstrated India's capability to defend its assets in outer space in a 'Hit to Kill' mode.
- **Indian Naval Indigenisation Plan (2015-2030):** Identifies domains and technologies to accomplish self-reliance in cutting-edge defence technologies.
 - It signs agreements under 'SPRINT' initiative to boost usage of indigenous technology
- **BOLD-QIT (Border Electronically Dominated QRT Interception Technique) under CIBMS (Comprehensive Integrated Border Management system):** It includes technologies such as cameras, sensors for day-and-night surveillance and intrusion detection
- **Project Akashteer:** It is an automated air defence control and reporting system inducted by the Indian Army.
 - It has been developed by **Bharat Electronics Limited (BEL)** as part of the 'Atmanirbhar Bharat' initiative.

Way Forward

- **Implementation of Recommendations of Prof K Vijay Raghavan Committee:**
 - **Creation of "Department of Defence Science, Technology, and Innovation"** headed by a technocrat, to promote defence research and development in the academic and start-up ecosystem.
 - **Establishment of "Defence Technology Council"** chaired by Prime Minister along with Defence Minister and National Security Advisor as its vice-presidents to determine the country's defence technology roadmap
 - Setting up **national-level laboratory facilities** instead of DRDO labs.
- **Streamlining Regulatory and Procurement Processes** by simplifying documentation requirements and reducing processing times.
- **Prioritizing technology over cost** to encourage the selection of advanced and niche technologies.
- **Promoting private sector participation** in manufacturing of defence equipment by simplifying the licensing and regulatory procedures, creating a level playing field, and providing access to technology
- **Creation of specialist officers and specialised cadres** such as cyber experts by providing specific training and education through civil-military infusion.

Conclusion

As nations undergo military modernisation, driven by larger geopolitical shifts, advanced technologies are becoming pivotal in warfare. The future battlespace will be shaped by technology, and technological superiority is expected to determine the outcome of future battles to a large extent. Thus, it becomes essential to focus on technological self-reliance.

To know more about the Weaponization of Space, refer to Article 4.3 of the April 2024 Monthly Current Affairs Magazine.

4.3. SUBMARINES AND ANTI-SUBMARINE WARFARE

Why in the news?

Defence Research and Development Organisation (DRDO) conducted a successful flight-test of Supersonic Missile-Assisted Release of Torpedo (SMART) system.

SMART System

- SMART is a next-generation **missile-based light-weight torpedo delivery system** to enhance the **Anti-Submarine Warfare (ASW)** capability of the Indian Navy.
- It has been **designed and developed by DRDO.**

- **Components:** This **canister-based** missile system consists of several advanced sub-systems, namely two-stage **solid propulsion** system, electromechanical actuator system, precision inertial navigation system etc.
 - The system carries advanced **light-weight torpedo as payload** along with **parachute-based release system**.
- **Significance:** SMART system comprises a mechanism by which the **torpedo is launched from a supersonic missile system taking it to a far longer range** than its own.
 - Torpedoes are self-propelled weapons that travel underwater to hit the target.

Know the term

○ **Anti-Submarine Warfare (ASW)** is a branch of **underwater warfare** that uses surface warships, aircraft, submarines, or other platforms, to find, track, deter, damage, and/or destroy enemy submarines.

Submarines

- A submarine is a vessel, or ship, that can go underwater. Militaries and scientists use submarines to travel deep under the ocean.
 - Unlike a ship, a **submarine can control its buoyancy**, thus allowing it to sink and surface at will.
 - A submarine has huge tanks, **called ballast tanks**, that allow it to dive and to surface.
 - ✓ **To submerge**, the submarine **fills ballast tanks with water**, increasing weight. **To surface**, water is released, and **tanks fill with air**, making the submarine buoyant enough to float.
 - For power, submarines use engines, batteries, nuclear power sources, or a combination of these. Propellers push submarines through the water.
- **Significance of Submarines**
 - **National defence:** Capable of operating for months from the deep, these are quieter and harder to detect, thus enabling critical defence and attack capabilities.
 - **Lethal capabilities:** They can deploy a variety of lethal weapons such as mine laying on ports, shipping channels, targeting surface ships with torpedoes, usually without warning.
 - **Strategical advantage:** It can also conduct reconnaissance, act as a barrier and provide advance warning of enemy movements.
 - **Nuclear Deterrence:** In a conflict where adversaries launch a nuclear first strike on land and air-based assets, **submarines guarantee a second-strike capability**.

India's submarine force

Diesel-Electric Submarines	<ul style="list-style-type: none"> • Kalvari Class: These are six scorpene class submarines built under Project 75 by Mazagon Dock Shipbuilders Limited (MDL) under a technology transfer from French defence firm, Naval Group. <ul style="list-style-type: none"> ○ Six submarines are Kalvari, Khanderi, Karanj, Vela, Vagir and Vagsheer (currently undergoing sea trials). • Sindhughosh Class: These are the Kilo class diesel-electric submarines commissioned between 1986 and 2000 and built under contract between Russian firm Rosvooruzhenie and Ministry of Defence. <ul style="list-style-type: none"> ○ Seven Sindhughosh class submarines – Sindhughosh, Sindhuraj, Sindhuratna, Sindhukesari, Sindhukirti, Sindhuvijay and Sindhushashtra. • Shishumar Class: These have been developed by German yard Howaldtswerke-Deutsche Werft (HDW) and commissioned between 1986 and 1994. <ul style="list-style-type: none"> ○ Four Shishumar Class Submarines – Shishumar, Shankush, Shalki and Shankul.
Air Independent Propulsion (AIP) Submarines	<ul style="list-style-type: none"> • These are diesel electric submarines but have a secondary powerplant that can operate while submerged by using onboard consumables/fuel. AIP systems can allow submarines to operate underwater for longer periods of time. • INS Kalvari in the process of getting Fuel Cell-based AIP system of DRDO's Naval Materials Research Laboratory (NMRL).
Nuclear Powered Submarines	<ul style="list-style-type: none"> • Arihant class: These are being developed and built indigenously under the Advanced Technology Vessel (ATV) Project <ul style="list-style-type: none"> ○ Presently only one – INS Arihant is operational. ○ Second – INS Arighat – in advanced sea trials. ○ Akula Class: India signed an agreement with Russia to get an Akula Class nuclear powered attack submarine, christened as Chakra-3, on lease. <ul style="list-style-type: none"> ✓ It is currently being refitted in Russian shipyard as per Indian specifications.

India's ASW capabilities

- **ASW Shallow Watercrafts (SWCs):** Cochin Shipyard Limited is building eight ASW SWCs for Indian Navy, **three of which have been launched** namely, Mahe, Malvan, and Mangrol.
 - Garden Reach Shipbuilders & Engineers (GRSE), Kolkata is building another eight ASW SWCs, **six of which have been launched** namely, Arnala, Androth, Anjadip, Amini, Agray and Akshay.
- **Kamorta Class Ships:** They are designed as the super-sophisticated frontline warships with Stealth features, having ASW capability with low signature of radiated underwater noise.
 - India has four Kamorta-class corvettes (Project 28) namely, **INS Kamorta, INS Kadmatt, INS Kiltan and INS Kavaratti.**
- **Integrated ASW Defence Suites (IADS):** Ministry of Defence (MoD) has concluded a contract with Mahindra Defence Systems Limited for procurement of 14 IADS.
 - IADS comes with an integrated **capability for detecting enemy submarines and torpedoes** at extended ranges as well as diverting incoming torpedoes fired by enemy submarines.
- **Maritime patrol and reconnaissance aircraft:** India operates 12 **Boeing P-8I (Poseidon)**, which it bought from US to sharpen ASW capabilities.
- **ASW helicopters:** Indian Navy commissioned first squadron of newly inducted **MH-60R Seahawk multi-role helicopters.**

Challenges to India's submarine capabilities

- **China challenge:** China is increasing its naval presence in the Indian Ocean and has a large fleet of 78 submarines to support its expansion.
 - China is also helping Pakistan acquire diesel-electric submarines.
- **Resource constraints:** Presently, India has only 16 submarines and **resource allocation and prioritization** of requirement remains the limiting factor.
- **Age-old systems:** Various submarines, airborne assets and corvettes need critical upgrade.
 - There is emergence of **new-age technologies** for ASW such as **Non-Acoustic ASW** (detection of submarines via satellites).
 - ✓ Non-acoustic submarine detection technologies are those that **do not rely on the collection of soundwaves emitted or reflected** by a submerged vehicle for location

Way Forward

- **New investments:** Indian Navy should continue to invest in niche underwater warfare domains like imaging, sensing & navigation, AIP system, deep sea autonomous vessels etc.
- **Indigenous development:** DRDO and other defence research organizations should continue developing indigenous weapon systems and naval assets in collaboration with Indian defence industry.
- **Collaborations:** Indian Navy needs to continue its collaboration with other Indian Ocean littoral countries to augment its ASW capabilities and strengthen its presence.

4.4. THREAT OF ONLINE RADICALISATION

Why in the News?

At the 19th Interpol Conference of Heads of National Central Bureau (NCB), India highlighted the threat of the online radicalisation.

More about the News

- Along with online radicalisation, India also highlighted issue of **organized crime, terrorism, drug trafficking, money laundering, and cyber enabled financial crimes.**
- Also, India condemned all forms of terrorism and conveyed that there can be no distinction between "good terrorism, bad terrorism".

About Online Radicalisation

- **Definition of Radicalisation:** It can be seen as a **phenomenon of people embracing views** which could lead to development of extremist ideas.
 - However, there is no universal definition of **radicalisation**.
 - These views **can be social, political or religious**.
- **Online penetration of radicalisation:** In the recent years, the trend of **online radicalisation** has increased due to rising **internet penetration**.
 - Encrypted messaging apps such as WhatsApp provide safe environment for communication.
 - **Gamification techniques** are also being used. In this, gaming elements are used to transmit extremist ideology to children.
- **Radicalisation often encourages** a threat of **lone wolf operations**.
 - **Lone-wolf** operation is the term used to describe someone who acts alone in a terrorist attack without the help or encouragement of a government or a terrorist organization.

Factors Responsible for Online Radicalisation	
Push Factor	Pull Factor
<ul style="list-style-type: none"> • Economic Factor: for e.g. lack of employment opportunities for youth • Socio-religious Factor: Lack of access to education (however, educated are also becoming its prey), ethnic or religious marginalization, Ideological belief (considering one's religion or faith superior than other) etc. • Political Factor: Loss of trust in institutions such as judiciary • Psychological Factors: Lack of personal identity, feelings of alienation, etc. 	<ul style="list-style-type: none"> • Propaganda: Religious philosophies are distorted by the violent extremist group. Social Media has emerged as key sphere for it. • Capitalising crisis: Crisis events create an environment of fear, anger, and insecurity, driving individuals towards extremist ideologies. E.g. Recent Israel-Gaza conflict is used to radicalise youth worldwide. • Economic Factor: Economic incentive provided by the group • Other: Ideals of alternative outlet for political engagement, Sense of adventure etc.

Major Challenges in Curbing Online Radicalisation

- **Regulation and International cooperation:** Radicalisation and related terms such as terrorism, violent extremism, and de-radicalisation are still loosely defined; there is no universal consensus on their definition.
 - Many Countries primarily view such activities from their national interest rather than from the perspective of humanity. E.g., Houthis (a rebellion group in Yemen) is supported by Iran.
- **Technological Advancement: Dark Web and Virtual Private Network (VPN)** are being used for radicalisation.
 - **Additionally**, online radicalisation activities are generally carried out from foreign territories making it difficult to trace them.
- **Foreign Funding:** Radicalisation is fueled by the cross-border foreign funding which gets further reinforced due to nexus between State and Non-state actors .
- **Political Narrative: Hate speech and communal tension** which are often used in public speeches and elections are uploaded on online platform and widely circulated to create environment of hatred.

Key Initiatives to curb Online Radicalisation

Global

- **United Nations Global Counter-Terrorism Strategy:** It enhances capacity of the nations to tackle online radicalisation.
- **European Union's Digital Services Act (DSA):** Its main goal is to prevent illegal and harmful activities online and the spread of disinformation.
- **Global Internet Forum to Counter Terrorism (GIFCT):** An NGO, founded by Meta, Microsoft, YouTube and X, in 2017, the Forum was established to foster technical collaboration among member companies, advance relevant research, and share knowledge.
- **Tech Against Terrorism:** A partnership between technology companies, governments, and **United Nations Counter-Terrorism Committee Executive Directorate (CTED)**.
- **Christchurch Call:** A community of over 130 governments, online service providers, and civil society organisations acting together to eliminate terrorist and violent extremist content online.

India

- **Legal: Unlawful Activities (Prevention) Act (UAPA) 1967** has been enacted. Organisation like 'Students Islamic Movement of India (SIMI)' has been declared as an 'Unlawful Association' under it.
 - In 2020, Ministry of Home Affairs (MHA) has, for the first time, approved a research study on status of radicalisation in India. The study would attempt to legally define "radicalisation" and suggest amendments to the UAPA.
- **Administrative/Institutional: Counter-Terrorism and Counter-Radicalisation Division (CT-CR)** has been established under the MHA to help state governments, security agencies and communities in preventing the youth from embracing extremism.
- **Cyber-related: Enaction of the Information Technology Act of 2000, Indian Cybercrime Coordination Centre (I4C)**, established by MHA etc.
- **State-led Initiative:**
 - **Maharashtra Police's de-radicalisation programme (Maharashtra Model of de-radicalisation):** Under it no criminal case be registered against a "candidate" selected for the programme and complete confidentiality is maintained.
 - **Operation Pigeon (Kerala):** Under it, counselling sessions for the youth were organized.
- **Initiatives by Indian Army:**
 - **Sahi Raasta programme** to bring back the radicalised or vulnerable youth of Jammu & Kashmir into the mainstream.
 - **Operation SADBHAVANA'** for welfare activities such as running of Army Goodwill Schools, Infrastructure Development Projects etc. for the children living in remote areas of UT of Ladakh.

Conclusion

Technology companies are key stakeholder in it. They should ensure content moderation with the help of Artificial Intelligence, removing content on reporting, blocking accounts which spread prohibited content etc. India must develop a comprehensive policy that focuses both on de-radicalisation and counter-radicalisation and works in tandem with the peculiarities of each state.

Related News:

India contributes to UN Counter Terrorism Trust Fund

- India contributes **half a million dollars** to U.N. Counter-Terrorism Trust Fund
- It was **announced by Minister of External Affairs** during UN Security Council's Counter Terrorism Committee meeting, held in 2022 under India's presidency.
- India's contribution would **support UNOCT's global programmes** mainly Countering Financing of Terrorism (CFT) and Countering Terrorist Travel Programme (CTTP).
 - **CFT** aims at **strengthening capacity of member-states to understand risks of terrorism.**
 - **CTTP** assists beneficiary Member States in building capabilities to detect and counter-terrorists.

United Nations
Office of Counter-Terrorism (UNOCT)

Genesis: Established in 1945.

UN Counter-Terrorism Trust Fund: It was established in 2009 by Secretary-General and transferred to UNOCT.

Functions

- ▶ Improve visibility, advocacy and resource mobilization for UN counter-terrorism efforts.
- ▶ Strengthen delivery of UN counter-terrorism capacity-building assistance to Member States.
- ▶ Advice and support to UN system in comprehensive implementation of United Nations Global Counter-Terrorism Strategy.

Capacity-building arm:
UN Counter Terrorism Centre (UNCCT)

To know more about India's Anti-Terrorism Approach, refer to Article 4.2 of the October 2023 Monthly Current Affairs Magazine.

4.5. CYBER THREATS AND FINANCIAL SECTORS

Why in the news?

Global Financial Stability Report 2024 released by **International Monetary Fund (IMF)** warns cyber risks as a growing threat to macro financial stability.

Key Findings of the report

- Nearly **one-fifth of all cyber risks** affect financial firms.
- Number of **cyber-attacks has doubled** since COVID-19 pandemic.
- Only **47%** of the surveyed countries had formulated a **national and financial sector-focused cyber-security strategy**.

Reasons Behind rise in cyber attacks

- **Rapid Digital Transformation and Technological Innovations:**
 - Covid-19 Pandemic has led to surge in **remote work, delivery applications, and contactless payments**.
 - **Evolution of fin-tech companies** exposes financial systems to cyber threats due to digitalized operations and interconnectedness leading to platform frauds.
- **Heightened global geopolitical tensions:** E.g. surge in cyber-attacks after Russia's invasion of Ukraine
- **Lack of strong internal controls:** As per PwC's Global Economic Crime and Fraud Survey 2022 **four out of every ten platform frauds in India** were conducted by internal perpetrators.
- **Lack of Swift Action and Detection** discourages individuals to report these crimes.

Impact of Cyber risks on Financial Systems

- **Impact on macro-financial stability:**
 - **Loss of confidence** in the viability of the targeted institution may lead to instances of Cyber run and result in liquidity problems.
 - ✓ Cyber run is **deposit withdrawals (outflows)** from banks in large amount leading to liquidity crisis and default risk
 - **Lack of substitutes** for a key institution or financial market infrastructure would lead to disruption in the financial system.
 - ✓ E.g. A ransomware attack on payment systems, hacking of a central bank or electronic trading systems could lead to halts in trading, asset price volatility,
 - **Potential of systemic shock** due to the interconnected nature of institutions through
 - ✓ **technological linkages** (such as multiple firms using the same software) or
 - ✓ **financial linkages** (e.g., interbank market and settlement systems)
- **Affects government functioning** as it disrupts the management of government debt and may give rise to sovereign risks etc.
- **Credit and market losses** due to loss of businesses, remittances, reputational damage, and increased investments in cyber security.
 - **Economic losses to the tune of 1 to 10% of the global GDP** is caused by these frauds (IMF).
- **Issues related to data integrity** due to loss or compromise of data and its systems raising the **problem of data confidentiality**.








International Monetary Fund (IMF)

Washington DC

- Genesis:** Founded at the Bretton Woods Conference in **1944**.
- Objectives:** Achieve sustainable growth and prosperity for all
- Members:** 190 (India is a Member)
- Key Reports**
 - World Economic Outlook
 - Global Financial Stability Report
- Other key facts:** Countries must first join the IMF to be eligible to join the World Bank Group.

Different modes of Financial Cyber Crimes

 Phishing Tricks individuals into divulging sensitive information	 Identity Theft Stealing of personal information. E.g. Aadhaar, PAN	 ATM Skimming Devices capturing card information and PIN of ATMs	 Ransom ware Attacks: use of malicious software to encrypt data and demanding hefty ransoms for decryption	 Unauthorised Digital lending applications etc.
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Challenges in dealing with Cyber Threats to Financial Systems

- **Lack of regulatory and supervisory frameworks and cyber-security workforce:** This leads to-
 - **Lack of effective oversight** of third-party service providers.
 - **Gaps in national and financial sector cyber-security strategies** and coordination among stakeholders.
- **Technological innovations:** Artificial Intelligence, quantum computing could further amplify cyber risks.
- **Complex regulatory environment** caused due to lack of seamless cooperation between regulators such as Reserve Bank India (RBI), Securities and Exchange Board of India (SEBI) etc.
- **Challenges related to legal framework:** For instance, India lacks a dedicated legal framework or a dedicated court to deal with online financial frauds.
- **Nature of Crime hindering investigation:** Cybercrimes are conducted **remotely and are Multi-state and Trans-border** in nature, making police investigations costly.
 - Also, the use of a **mule account** makes traceability harder.
- **Other challenges: Procedural Hurdles and delays in cyber crime reporting;** Lack of awareness to individuals; Resources constraint, etc.

Know the term

- **Mule account:** It is when scammers use an innocent civilian's bank account to transfer the stolen money.

Initiatives taken to curb Cyber Threats to Financial Systems

- **Citizen Financial Cyber Frauds Reporting and Management System:** Developed as a part of "National Cybercrime Reporting Portal.
- **Financial Intelligence Unit-India (FIU-IND):** It is responsible for receiving, processing, analyzing, and disseminating information related to suspicious financial transactions.
- **Computer Emergency Response Team - India (CERT-In):** Collects analyse and disseminates information on cyber incidents, and also issues alerts
- **Chakshu:** An initiative to empower citizens to proactively report suspected fraud communication

Way Forward

- **Cyber legislation at the national level** and better cyber-related governance arrangements at firms.
 - This should also have **central bank business continuity contingency plans** covering cyber risk and provision of liquidity in case of crisis.
- **Insurance by firms to protect against financial losses** of cyber incidents
- **Periodical assessment of the cyber-security landscape** and identification of potential systemic risks from interconnectedness and concentrations, including from third-party service providers.
- **Encouraging cyber "maturity" among financial sector firms**, including board-level access to cyber-security expertise leading to better cyber-related governance may reduce cyber risk.
- **Improving cyber hygiene of firm by enhancing** online security and overall system health (such as antimalware and multifactor authentication).
- **Capable cybersecurity workforce**, and domestic and international information-sharing arrangements
- **Prioritization of data reporting and collection of cyber incidents**, and sharing information among financial sector participants to enhance collective preparedness.

Conclusion

Cyber incidents pose a global financial stability threat due to digitalization, technologies, and geopolitical tensions. Financial sector must develop capacity to deliver critical services during times of disruption and develop response and recovery mechanisms for crisis management.

4.6. NEWS IN SHORTS

4.6.1. ARREST UNDER UAPA ACT

- In **Prabir Purkayastha vs. State (NCT of Delhi)** case, the Supreme Court ruled that investigative agencies should **provide written reasons for arrests** in cases related to the Unlawful Activities (Prevention) Act.
- **Supreme Court Judgement**
 - Court's order in the **Pankaj Bansal vs Union of India & Ors case** mandated that arrested persons under the **Prevention of Money Laundering Act (PMLA), 2002** must be provided with written grounds of arrest.

- ✓ **Court extended** this order for Unlawful Activities (Prevention) Act (UAPA) also.
- Obligation to provide **written grounds for arrest or preventive detention**, as mandated by **Articles 22(1)** of the Indian Constitution, is inviolable and cannot be disregarded under any circumstances.
 - ✓ **Article 22(1)**: Provided that **no person who is arrested shall be detained in custody without being informed**, as soon as may be, of the grounds for such arrest.
- Informing an arrested person about the grounds of arrest is crucial, as it's the only effective way for
 - ✓ The arrested person to consult his Advocate;
 - ✓ Oppose the police custody remand
 - ✓ To seek bail.
- **UAPA Act (1967)** aimed at enabling more effective prevention of certain unlawful activities carried out by individuals and associations, [as well as addressing terrorist activities,] and dealing with matters related to such activities.

4.6.2. HERMES-900

- **Indian Army and Navy will receive Hermes-900 from Israel** to boost their surveillance capabilities.

- It is also known as **Drishti-10 drone**,
- **About Hermes-900**
 - It is a next generation multi-role, Medium Altitude Long Endurance (MALE) **unmanned aerial system**.
 - Features **over-the-horizon, persistent multi-mission, multi-payload capabilities** with class leading payload carrying capacity of 350 kgs.
 - Capable of performing missions for area dominance, persistent **Intelligence, Surveillance, Target acquisition, and Reconnaissance (ISTAR)**.
 - Can also perform **ground support and maritime patrol missions**, and offers the capability for integrated multi-platform, multi-sensor operation.

4.6.3. EXERCISES IN NEWS

- **Tarkash**: The seventh edition of the **Indo-U.S. joint counter-terrorism exercise 'Tarkash'** was recently held in Kolkata.
 - It was held between the **India's National Security Guard (NSG) and U.S. Special Operations Forces (SOF)**.
- **Shakti: 7th edition of Exercise 'Shakti'**, a joint military exercise between **India and France**, started in **Meghalaya**.



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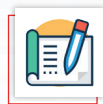
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Answer Writing for **CIVIL SERVICES** **MAINS EXAMINATION**



Answer writing holds paramount importance in the UPSC Mains exam as it serves as the primary means for candidates to demonstrate their knowledge, understanding, analytical ability, and time management skills. Effective answer writing is pivotal in showcasing one's ability to synthesize information, critically evaluate diverse perspectives, and present balanced arguments concisely. Proficient answer writing is instrumental in securing high scores and distinguishing candidates in a competitive environment, ultimately determining their success in the rigorous selection process for the UPSC Mains examination.

COMPONENTS OF AN IMPACTFUL ANSWER



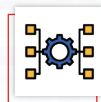
Identification of Context: Understanding the specific theme or topic of the question, and situating the response within its relevant context.



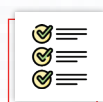
Content Competence: Demonstrating a comprehensive grasp of the subject matter, supported by accurate facts, relevant examples, and insightful analysis.



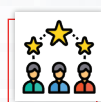
An impactful Introduction: Engagingly setting the stage for the answer, capturing the examiner's attention while providing a brief overview of the discussion to follow.



Structure and Presentation: Organizing the answer coherently with clear headings, subheadings, or bullet points, and presenting information logically and aesthetically for easy comprehension.



Balanced Conclusion: Summarizing key points concisely, offering insights or recommendations if applicable, and providing a satisfying closure to the argument or discussion.



Language: Employing precise, formal language appropriate to the context, avoiding jargon, colloquialisms, or ambiguity, and demonstrating fluency and clarity in expression.

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5. ENVIRONMENT

5.1. TRADITIONAL KNOWLEDGE IN INDIA

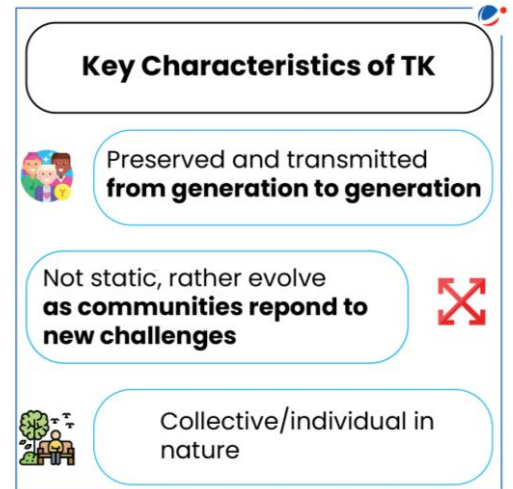
Why in the news?

Recently, the **World Intellectual Property Organization (WIPO)** adopted the **Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge**.

Note: The Treaty is discussed in detail in the subsequent article.

What are Genetic Resources and Associated Traditional Knowledge?

- **Genetic Resources (GRs):** Resources that are contained in medicinal plants, agricultural crops, and animal breeds.
 - While GRs themselves cannot be directly protected as intellectual property, inventions developed using them can be protected through a patent.
- **Traditional knowledge (TK):** Knowledge system held by indigenous communities, often relating to their natural environment like Agriculture, scientific, ecological and medicinal knowledge.
 - **Significance:**
 - ✓ Helps in biodiversity Conservation.
 - ✓ 80% of the world's population depends on traditional medicine for its primary health care (WHO).



Challenges associated with India's TK and GRs

- **Biopiracy:** Exploitation, patenting, and commercialization of TK and GRs by foreign entities without benefit-sharing or recognition of indigenous communities.
- **Impact on Farmers:** Farmers who developed staple food crops through generations have **no effective rights over patented varieties** by multinational companies.
- **Lack of Documentation:** This enhances risk of **loss or erosion in transmission of traditional knowledge** to younger generations in the face of **modernization and cultural change**.
- **Inadequate Global Legal Framework:** To prevent misappropriation, ensure benefit-sharing, and recognize indigenous community rights.
- **Insufficient Conservation of biodiversity:** Increasing environmental degradation and climate change threaten habitats and ecosystems that harbour genetic resources.

Measures by Government to Protect India's TK and GRs

- **Traditional Knowledge Digital Library (TKDL):** Digital repository to prevent bio-piracy and wrongful patents.
- **India's Patent Act, 1970:** Adopted the **PDR mechanism** for the disclosure of involved GRs and TK in the claimed patent.
- **The Protection of Plant Varieties and Farmer's Rights Act, 2001:** Protects **farmers' and breeders' rights to plant varieties**, acknowledging their roles in conservation and improvement.
- **Biological Diversity Act, 2002 (in line with Convention of Biodiversity):** Fair and equitable sharing of the benefits arising out of the use of biological resources and knowledge
- **Forest Rights Act 2006:** Provides for Community rights over forest resources and traditional practices.
- **Geographical Indications Act 1999:** Guarantees Collective rights over traditional knowledge linked to a region.
- **Ministry of AYUSH:** Dedicated ministry for traditional medicine.
- **UNESCO recognition:** Yoga, etc. recognized as Intangible Cultural Heritage.

Way Forward

- **Establishing agricultural research programmes and centres for ex situ and in situ conservation** of plant varieties and plant genetic resources, and **transferring good practices and varieties** throughout the country.
- **Setting up or promoting herbal gardens** of traditional medicinal plants.
- **Ensuring adequate income to the community experts** on traditional knowledge.

- **Incorporating TK as part of the curriculum for schools**, universities and research centres.
- **Enhancing traditional medicine and healing arts in state-run hospitals.**
- Recognizing leaders, experts and innovations in TK in various fields **by providing incentives.**

To know more about India's Traditional Knowledge and Climate Change, refer to Article 5.2 of the December 2023 Monthly Current Affairs Magazine.

5.1.1. TREATY ON INTELLECTUAL PROPERTY, GENETIC RESOURCES AND ASSOCIATED TRADITIONAL KNOWLEDGE

About the treaty

- The treaty was adopted by **consensus** among more than 150 countries (including India).
- Negotiations for the Treaty began at WIPO in **2001**, initiated in 1999 with a **proposal by Colombia.**
- This is the **first WIPO Treaty** to-
 - Address the interface between **intellectual property (IP), genetic resources (GRs) and traditional knowledge (TK).**
 - **Include provisions specifically for Indigenous Peoples** as well as local communities.
- **Members:** Any member states of WIPO may become party to this treaty
- It will come into force **3 months after ratified by 15 parties.**
- With regard to **Genetic Resources and Associated Traditional Knowledge**, the treaty aims to-
 - **Enhance the efficacy, transparency and quality of the patent system.**
 - **Prevent patents from being granted erroneously** for inventions that are not novel.
- Treaty acknowledged **the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)** and its commitments.

About UNDRIP

- Adopted by the **United Nations General Assembly in 2007**, addressing the human rights of indigenous peoples such as right to maintain, control, protect and develop their TK.
- It is **legally non-binding** resolution.
- India supported the resolution.

Key provisions of the Treaty

- **Mandatory Patent Disclosure Requirements (PDRs)**
 - **Patent applicants must disclose the country of origin or source of genetic resources** when the claimed invention is based on these resources.
 - **Applicants must also disclose the Indigenous Peoples or local community** who provided the traditional knowledge if the patent is based on such knowledge.
- **Mandatory legal, administrative, and/or policy Framework at national level:** To remedy failure to provide PDRs.
- **Establishment of information systems:** Such as databases of GRs and associated TK, in consultation with Indigenous Peoples and local communities, and other stakeholders.
- **Assembly:** Made up of one delegate for representation of each Contracting Party.
- **Other provisions:**
 - **Financial assistance for facilitating participation of developing countries** or countries in transition to a market economy.
 - **Not applicable** on patents filed **prior to entry** into force of this treaty.
 - **Administrative tasks** to be performed by **International Bureau of WIPO.**

Significance of the Treaty

- **Increase transparency in the patent system:** The current Intellectual Property (IPR) regimes such as **the TRIPS Agreement** do not adequately protect TK in the public domain.
- **Recognition and Inclusion:** Formal recognition of the connection between local communities and their GRs and TK within the global IP system, will make IP framework more inclusive.
- **Prevention of Misappropriation:** Mandatory disclosure obligations offer **added protection to GRs and associated TK in countries without existing disclosure laws.**

- At present, **only 35 countries have some form of disclosure obligations**, most of which are not mandatory and do not have any sanctions in place for effective implementation.
- **Curbing Biopiracy:** Prevents companies exploiting the biodiverse South by patenting their TK.
 - For Instance, **the US patent on turmeric for wound healing and Neem oil to prevent fungus were revoked** after India proved its long-standing traditional use.
- **Encourage ethical innovation:** By promoting engagement with source communities of GRs and TK, fostering collaboration, and enhancing international cooperation.

To know more about Patents and WIPO, kindly refer to Article 3.13 PATENTS in April 2024 edition of VisionIAS Current Affairs Magazine.

5.2. CLEAN ENERGY TRANSITION

Why in the news?

World Economic Forum released “Fostering Effective Energy Transition 2024” report.

More about the news

- Report is based on the Energy Transition Index (ETI) that evaluates **120 countries** on their **energy system performance and readiness for secure, sustainable, and inclusive energy systems**.
- **ETI 2024 framework offers a comprehensive assessment of countries’ energy systems** with a consistent methodology, allowing decisionmakers to compare and track progress.

Key Findings

- **India’s rank:** 63rd (up from 67 in 2023)
- **Clean energy infrastructure investments:** Reached **\$1.8 trillion in 2023**, with nearly **90% of the growth** since 2021 occurring in **advanced economies and China**.
- **Top 5 performers:** Sweden, Denmark, Finland, Switzerland and France.
 - **Six G20 countries** are among the top 20 performers: **France, Germany, Brazil, China, the UK, and the USA**.
- **8 countries reached net-zero emissions in 2022:** Bhutan, Comoros, Gabon, Guyana, Madagascar, Niue, Panama, and Suriname
- Generative AI can enable energy companies to **save over \$500 billion annually**.

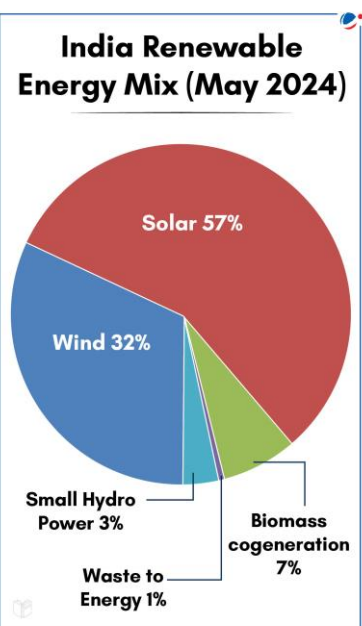
However, the report highlights that **growing uncertainties** like economic volatility, heightened geopolitical tensions, and technological shifts are **impeding energy transition momentum**.

About Energy Transition

- Energy transition means **shifting energy production away from sources that release a lot of greenhouse gases**, such as fossil fuels, to those that release little to no greenhouse gases.
- The energy transition requires **long-term strategies from the global energy sector** to create cleaner, sustainable options via an energy mix that will **reduce carbon emissions** as well as **strategies for decarbonization**.
- **Significance of Energy Transition for India:** Energy security; Job Creation; Achieve climate target like to reach net zero emissions by 2070; etc.

India’s Status of Clean Energy Transition

- India stands **4th globally in Renewable Energy Installed Capacity**, 4th in Wind Power capacity and 5th in Solar Power capacity
- **Installed RE Capacity:** Increased from **76.37 GW in 2014 to 193.58 GW (including hydro)** in May 2024.
- **RE targets in India**
 - India aims reaching a **non-fossil fuel energy capacity of 500 GW by 2030** and
 - Fulfilling at least **half of its energy requirements via RE** by 2030.



Challenges in Energy Transition

- **Technological Barriers:** Clean energy technologies, such as advanced batteries for energy storage or next-generation nuclear reactors, are still in the development or early deployment stages.
- **Investment Disparities:** Investments in developing nations remain insufficient, and challenges persist within and across countries, especially in energy affordability and access.

- Clean energy infrastructure investments reached \$1.8 trillion in 2023, but almost 90% of the growth since 2021 has been in advanced economies and China, highlighting **wide gaps in transition momentum**.
- **Uncertainties in Subsidies and Supply Chains:** This was coupled with high interest rates and significant cost increases which reduced returns for developers, deterring much-needed investments in projects.
- **Geopolitical Tensions and Trade Protectionism:** Growing trade protectionism and geopolitical tensions create headwinds for the energy transition, especially for developing nations.
- **Energy Storage limitations:** Effective and affordable energy storage solutions are crucial for managing the intermittency of renewable energy sources and ensuring a consistent energy supply.
- **Financial and economic barriers:** Clean energy projects can be capital-intensive, and their upfront costs are often higher than traditional fossil fuel-based projects.

Way Forward

- **Bridge the investment gap:** There is need for financial support from advanced nations to facilitate an equitable energy transition in emerging and developing nations while also unlocking more domestic capital in emerging and developing nations.
- **Implement regulations to advance decarbonization:** Strong political commitment is needed to ensure progress and continuity in decarbonization policies.
- **Deliver energy equity for vulnerable households:** Such as social safety nets and compensatory measures, including cash transfers and temporary basic income initiatives to alleviate energy-related costs.
- **Drive R&D and adoption of new technologies:** Including new battery technologies, offshore wind, and green ammonia-based hydrogen for shipping and steel production.
- **Make renewable energy technology a global public good:** Remove roadblocks to knowledge sharing and technological transfer, including intellectual property rights barriers to make renewable energy technology accessible to all.
- **Level the Playing Field for RE Technologies:** While global cooperation and coordination is critical, domestic policy frameworks must urgently be reformed to streamline and fast-track renewable energy projects and catalyze private sector investments.

Initiatives to Facilitate Energy Transition

Global	India
<ul style="list-style-type: none"> ● International Solar Alliance (2015): It is collaborative platform for increased deployment of solar energy technologies as a means for bringing energy access. ● Clean Energy Transitions Programme: The International Energy Agency's flagship programme for taking action to achieve a clean energy transformation worldwide. ● Panel on Critical Energy Transition Minerals: It brings together a diverse group of governments, organisations and UN bodies to develop a set of common and voluntary principles for energy transition. India is its member. ● Just Energy Transition Partnerships: Launched by the International Energy Agency & WEF in 2022 to support developing countries in their transition towards clean energy. ● Carbon Border Adjustment Mechanism (CBAM): It was launched by the EU in 2023. ● Global Renewables and Energy Efficiency Pledge: Signed by 133 countries at COP 28 (UAE), calls for tripling the rate of renewables capacity by 2030. 	<ul style="list-style-type: none"> ● National Solar Mission (2010): Aimed to establish India as a global leader in solar energy by creating policies and initiatives to promote the adoption of solar technology. ● National Electric Mobility Mission Plan (2013): Aims to promote the manufacturing and adoption of electric and hybrid vehicles in India. ● Green Energy Corridor Project: Supported by the World Bank, project aims to establish a nationwide interconnected transmission network to facilitate the integration of renewable energy sources ● National Biofuel Policy (2018): Aims to promote the use of biofuels, such as ethanol and biodiesel, as a substitute for fossil fuels in the transportation sector etc. ● Renewable Purchase Obligation (RPO): Mandate that a certain percentage of electricity purchased by distribution companies must come from renewable sources, driving the demand for clean energy. ● National Green Hydrogen Mission (2023): To make India a global hub for production, usage and export of Green Hydrogen and its derivatives.

Scan the QR code to know more about **Sustainable Energy Systems**.

Weekly Focus #34: Transitioning to a Sustainable Energy Ecosystem



5.3. MANGROVES CONSERVATION

Why in the news?

Recently, the **IUCN Red List of Mangroves Ecosystems** has indicated that about **50% of the ecosystems examined** were classified as vulnerable, endangered, or critically endangered.

More on the news

- **IUCN Red List of Mangroves Ecosystems** assessed 36 regions across 44 countries with experts from organizations like the **Global Mangrove Alliance**.
 - It is one of the **headline indicators for the Kunming-Montreal Global Biodiversity Framework** under the Convention on Biological Diversity (CBD).
- **The mangrove ecosystems of south India, Sri Lanka, the Maldives and Northwest Atlantic** were identified as **critically endangered**.
- It showed that nearly **20%** of the assessed mangroves are at high risk and have been marked as **endangered or critically endangered**, indicating a **severe risk of collapse**.
- Nearly **33 per cent of the mangrove systems** on the planet are **threatened** by the impacts of **climate change**.

About Mangroves and Ecosystem services provided by them

Mangrove ecosystems cover an area of **150,000 sq km**, primarily on **tropical, subtropical, and warm temperate coasts** around the world, covering approximately **15 per cent** of the world's **coastlines**.

- **Carbon sequestration:** Mangrove ecosystems sequester approximately **11 billion tonnes** of carbon, which is almost **three times** the amount **stored by tropical forests** of the same size.
- **Protection from coastal calamities:** Healthy mangroves can **combat sea level rise** while also providing inland **protection from extreme weather events**.
- **Biodiversity conservation:** Mangroves support a **huge variety of plants and animals**.
 - Of the over **1,500 species of fauna that depend on mangroves** for their survival, **15%** are **threatened with extinction**.

Threats to the mangrove ecosystem:

- **Climate change:** Increased **frequency of severe storms and sea-level rise** places mangroves at risk of extinction.
- **Development-related activities:** **Deforestation** for developmental activities like **dam construction and urban development** alters freshwater and sediment fluxes and damage the mangrove ecosystems.
- **Pollution:** **Contaminants** from sewage, runoff, industrial effluent, intertidal zone fishing, marine and coastal tourism, urban runoff, and marine industries impact mangrove ecosystems.
 - Endocrine disruption of fauna, **reduced reproduction rates**, feminization of male fish, and **toxic effects on human populations** consuming marine produce are some of the impacts of pollution on the mangrove ecosystems.
- **Unsustainable fishing:** Lack of sustainable methods of fishing especially, **shrimp farming** impacts the resilience of the mangroves.

Initiatives for Mangrove Conservation:

- **India State of Forest Report (ISFR)2023 by the Forest Survey of India (FSI):** Mangrove cover in India has increased by 17 sq km (0.34%) as compared to the previous assessment.
- **MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes):** It is a government-led initiative under the Ministry of Environment, Forest and Climate Change (MOEF & CC) aimed at increasing the mangrove cover along the coastline and on saltpan lands.
 - It provides **financial assistance to local communities** to undertake **mangrove plantations**.



Data Bank

In the **absence of additional conservation efforts, by 2050,**

- **5%** of the mangroves will be lost globally.
- **16%** mangroves will be submerged due to sea level rise.
- **1.8 billion tonnes** loss of Carbon sink risked.
- **\$13 billion** estimated monetary value of the loss.
- **2.1 million** people are at risk from coastal flooding.

Do you know ?

- **More than 20 percent** of the world's mangrove population in tropical coastal regions has been **lost since the 1980s**.
- The habitats of these salt-tolerant plants are thus **disappearing three to five times faster than tropical rainforests or coral reefs**.

- Conducting **awareness campaigns to educate** people about the importance of mangroves and their role in protecting the environment.
- **Sustainable Aquaculture In Mangrove Ecosystem (SAIME) initiative:** Building **aquaculture farms** that use sustainable **IMA (integrated mangrove aquaculture)** systems.
- **Magical Mangroves campaign:** **WWF India** has enjoined citizens in nine coastal states on mangrove conservation.
- **National Coastal Mission Programme on ‘Conservation and Management of Mangroves and Coral Reefs’:** Preparation of an annual **Management Action Plan (MAP)** for Mangroves conservation & management.

Multilateral Cooperation: Mangrove Breakthrough

- Launched at **UNFCCC COP27 in Sharm el-Sheikh, Egypt**, by the United Nations High Level Climate Champions and the **Global Mangrove Alliance**.
- It provides a framework for all stakeholders to work together towards a **target of securing the future of over 15 million hectares of mangroves globally by 2030, underpinned by \$4bn of sustainable finance**.
- Collective action will focus on:
 - Halting mangrove loss.
 - **Restoring half** of recent losses.
 - **Doubling the protection of mangroves globally**.
 - Ensuring **sustainable long-term finance** for all existing mangroves.

Way Forward

- **Legal and policy measures:** Strengthening of **existing laws** like the Indian Forest Act,1927, **Environmental Impact Assessment (EIA),1986** and **Forest Conservation Act,1980**.
- **Ecological conservation:**
 - **Mangrove restoration** by identifying regions suitable for restoration for planting mangroves.
 - Establishment of **green belts and buffer zones** in and around the **fringes** of mangrove forests to maintain the **ecological integrity of the core area**.
 - **Regulation of wetland soil elevation** by construction of barriers on rivers carrying sediments to conserve the mangrove habitat.
 - **Connecting the mangrove forest with the terrestrial forest** to improve conservation efforts. E.g., **Sundarban mangroves** connected to the Sundarban National Park.
- **Research and development:** **Core research and data collection** about the variety of mangroves at **national, sub-national or other lower scales** for localized custom solutions.
 - Important mangrove patches can be declared as **‘Mangrove Germplasm Preservation Centres’** for their better management and conservation.
- **International cooperation:** In line with the **UN Decade for Ecosystem Restoration 2021-2030**, a global political will, scientific approach, and financial resources need to be streamlined towards marine ecosystems with mangrove ecosystems in focus.

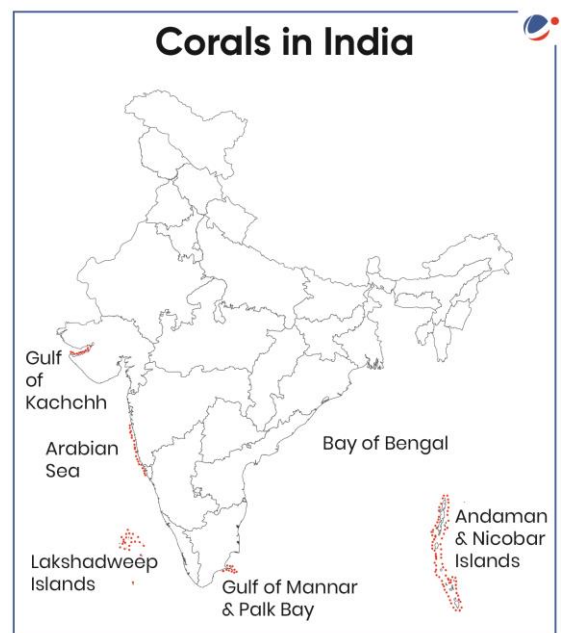
5.4. CORAL BLEACHING

Why in the news?

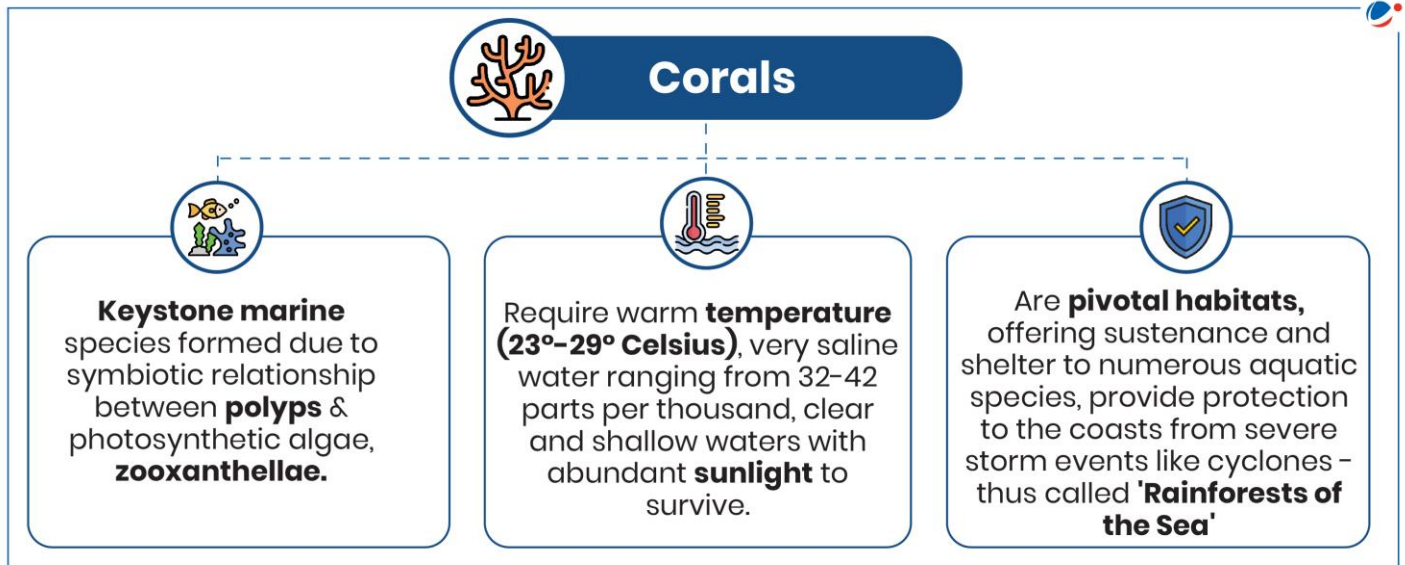
Recently, widespread coral bleaching has been seen along the Indian coast largely affecting Lakshadweep, Gulf of Munnar, Palk Bay and Andaman and Nicobar Islands.

More about the instances of bleaching

- **Lakshadweep Islands:** The Islands are made up of **coral atolls**, which are at significant risk due to coral bleaching.
 - Bleaching is seen across almost all species like **Acropora muricata** and **Porites cylindrica** in the Kavaratti Islands.
 - Species that are often more **stress-tolerant**, such as **Porites lutea** and **Pavona varians** have also begun to bleach in Lakshadweep.



- **Gulf of Mannar:** The coral reefs in the Gulf of Mannar have deteriorated owing to a combination of climatic and anthropogenic factors.
 - The live coral cover in the **Gulf of Mannar** decreased from 37% to 27.3% between 2005 and 2021.
- **Palk Bay:** The average coral cover in **Palk Bay** was at 30.8% in 2007, but it dropped to 18.7% by 2019.
- **Goa:** Coral bleaching has started but is limited to one species, **Goniopora**.

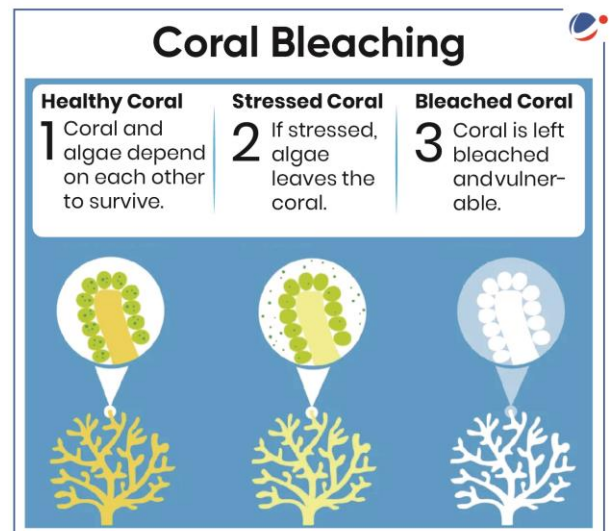


What is coral bleaching?

- Sustained increase in **Sea Surface Temperature (SST)** causes the zooxanthellae, which provide pigmentation and 90 per cent of the corals' nutritional needs, to leave their hosts, resulting in the whitening of corals, known as '**coral bleaching**'.
- Global mass coral bleaching events have been reported in **1998, 2010, 2014-2017**, according to the United States National Oceanic and Atmospheric Administration.
 - Presently, **2023-2024** is being named as the **fourth global mass coral bleaching event**.

Primary reasons for coral bleaching

- **Increasing Sea Surface Temperatures:** Rising **greenhouse gases** trap the radiated heat in the atmosphere, excess of which is absorbed by the oceans, leading to increased SST.
 - In tropical regions, mean sea surface temperatures (SSTs) have risen by almost 1°C over the past 100 years and are currently increasing at a rate of 1-2°C per century.
- **Marine heatwaves:** They lead to exponential rise in SST which leads to expulsion of zooxanthellae, leading to coral bleaching.
 - An underwater survey showed that 85% of the corals in the **Gulf of Mannar** near the Tamil Nadu coast got bleached after the marine heatwave in 2020.
- **El Nino:** Heating of certain areas above the maximum mean temperature due to El Nino causes stress on the corals and leads to bleaching.
- **Shifting ocean currents:** The changes in heating patterns of the land and sea, salinity of ocean water and wind patterns result in shifting ocean currents. This adds to the changes in SST which impacts the survival of corals.
 - **Ocean acidification** also leads to the expulsion of the zooxanthellae, causing coral bleaching.
- **Sedimentation:** Bottom trawling and dumping of waste along the coasts lead to sedimentation which hinders the photosynthesis of the zooxanthellae, thus causing coral bleaching.



Do you know?

It is estimated that **30%** of the world's coral reefs are already **severely damaged**, and about **60% of the remaining reefs may be lost by 2030**.

Other reasons

- **Biological invasion:** Invasive species like **seaweeds** occupy the bleached corals before their recovery from the bleaching event.
 - Outbreaks of **crown-of-thorns starfish** are responsible for extensive loss of reef-building corals on the **Great Barrier Reef**.
 - The invasive exotic alga, **Kappaphycus alvarezii**, has been a threat in **the Gulf of Mannar region**.
- **Xenobiotics:** Zooxanthellae loss occurs during exposure of coral to elevated concentrations of various **chemical contaminants**, such as Copper, herbicides and oil.
- **Epizootics: Pathogen-induced bleaching** is different from other sorts of bleaching. Most coral diseases cause patchy or whole colony death and sloughing of soft tissues, resulting in a white skeleton.

Initiatives taken for coral conservation in India

Acts like the **Coastal Regulation Zone (CRZ) Notification of 1991** issued under the broad **Environment Protection Act, 1986** ensure the overall protection of coral reefs in India.

- **Eco-development activities by the Gulf of Mannar Biosphere Reserve Trust:** These initiatives have empowered the local fishing communities, providing them with additional or alternative sources of income.
 - Such efforts have helped to reduce the pressure on marine resources, particularly on the coral reefs, contributing significantly to their conservation and sustainability.
- **Coral Reef Recovery Project-Mithapur (Gulf of Kachchh and Gujarat's Marine National Park):** Launched in **2008** by **Wildlife Trust of India (WTI)** and Gujarat Forest Department, it envisions the creation of a **model public-private-managed coral ecosystem** of international standards.
 - It aims to use global benchmarks to restore degraded reefs through activities including coral transplantation and natural recruitment.
- **Zoological Survey of India (ZSI) with the Gujarat Forest Department** successfully restored coral reefs in **the Gulf of Kachchh**.
 - Restoration of a branching coral species (**staghorn corals**) that had gone extinct about 10,000 years ago to the Gulf of Kachchh was successful.

Way forward: Countering coral bleaching

- **Multilateral cooperation in policymaking**
 - **International Coral Reef Initiative (ICRI):** It is a global informal partnership between Nations and organizations which strives to preserve coral reefs and related ecosystems around the world.
 - ✓ Founded in **1994** at the First Conference of the Parties of the Convention on Biological Diversity.
 - ✓ **India** is a member of the ICRI.
 - **World Coral Conservatory project:** It creates a bank of corals in aquariums across Europe that could be used to repopulate wild coral reefs if they succumb to the stress of climate change or pollution.
- **Use of biotechnology:**
 - **Biorock technology:** It is an innovative **mineral accretion technology** used to produce natural building materials in the sea which aids in coral restoration. E.g., Used in the Gulf of Kachchh Coral restoration.
 - **Super corals:** Ex-situ breeding of high temperature-resistant corals with the help of the process known as '**human-assisted evolution**'.
- **Long-term structural efforts:**
 - **Incorporating sustainability** by reducing carbon footprint and marine pollution with more effective waste management.
 - **Building resilient coastal communities** through awareness and training. Thus, enabling them to undertake sustainable fishing and other conservation activities.

5.5. INTERNATIONAL ARRANGEMENT ON FORESTS (IAF)

Why in the news?

Recently, the **19th Session of the United Nations Forum on Forests (UNFF) under the International Arrangement on Forests (IAF)** concluded with the adoption of a declaration on forest protection with a focus on People, Science, Technology and Finance.

Key takeaways of the UNFF19 meeting:

- Despite significant progress, the world is **off track** to achieve the **Global Forest Goals by 2030**.
- Members reaffirmed the **UN Strategic Plan for Forests 2017-2030 (UNSPF)** as a global framework for action at all levels to protect and sustainably manage all types of forests and trees outside forests.
- Need to focus on forest-based solutions to tackle the **'triple planetary crises'** (**Climate Change, Biodiversity and Pollution**).
 - Some entities have shown the way with promising initiatives like the **Forest Environment Tax by Japan**, the **Model Forest Act Initiative (MoFAI) by UNEP and ADB** and the **Congo Basin Forest Partnership** among others.
- India tabled its significant **increase in forest cover** in the past 10 years through a **scientific approach to Sustainable Forest Management (SFM)**.
 - **Total forest and tree cover has increased** by 2261 sq km., taking the total to **24.62%** of the total geographic area. (ISFR 2019-2021 assessment)
 - **17 states have more than 33%** of their area under forest cover.



UN Strategic Plan for Forests under UNFF (2017-2030)

The agreement on the **first-ever** UN Strategic Plan for Forests was forged at a special session of the UN Forum on Forests held in **2017** and provides an ambitious vision for **global forests in 2030**.

- It features a set of **six Global Forest Goals** and 26 associated targets to be reached by **2030**, which are **voluntary and universal**.
- It includes a target **to increase forest area by 3% worldwide by 2030**, signifying an increase of 120 million hectares, an area over twice the size of France.
- It builds on the **vision of the 2030 Agenda** and recognizes that real change requires **decisive, collective action, within and beyond the UN System**.

International Arrangement on Forests (IAF)

The IAF was established in **2000** as a **successor to the Intergovernmental Panel on Forests (1995-97) and the Intergovernmental Forum on Forests (1997-2000)**.

Objectives of IAF

- **Promote the management, conservation and sustainable development** of all types of forests and to strengthen long-term political commitment to this end.
- Promoting implementation of **sustainable forest management (SFM)**, in particular the implementation of the **UN Forest Instrument**.
- Enhancing the contribution of forests to the **post-2015 development agenda**.
- Fostering **international cooperation, public-private partnerships and cross-sectoral cooperation**.
- Strengthening **forest governance frameworks** and means of implementation.

5 components of the IAF

- **United Nations Forum on Forests (UNFF)**: Established in 2000 as a functional commission of the UN Economic and Social Council (ECOSOC), it aims to promote the management, conservation, and sustainable development of all types of forests. Its functions include-
 - Facilitating **Sustainable Forest Management (SFM)**.
 - **Continued policy development and dialogue** among governments, and international organizations.
 - **Strengthen political commitment** to the management, conservation, and sustainable development of all types of forests.
- **Collaborative Partnership on Forests (CPF)**: It is an innovative **voluntary interagency partnership** on forests, established in **2001** to help enhance the contribution of all types of forests and trees outside forests to the **2030 Agenda for Sustainable Development** and other internationally agreed development goals.

Do you know?

- > **All state members of the UN** are members of UNFF (including India).
- > **Global Forest Goals Report 2021** is the flagship publication of the UN on progress towards six Global Forest Goals (GFGs).

- It comprises of **16 international organizations** like the IUCN, CITES, FAO etc.
- **The Global Forest Financing Facilitation Network (GFFFN):** It is the forest financing system for the UNFF.
- **UN Trust Fund:** It is a fund that supports the activities of the UNFF and other components of the International Arrangement on Forests (IAF). The contributions are **voluntary** in nature.
- **UNFF Secretariat:** It is responsible for logistic preparations for UNFF-related meetings, timely preparation and dissemination of documents, as well as servicing meetings of the UNFF and its Bureau.
 - The Secretariat also serves as the Secretariat for the CPF and facilitates UNFF inter-sessional activities, such as expert group meetings and country-led initiatives.

Scan the QR code to know more about **Forest Conservation**.

Weekly Focus #45: Conserving the Forests: Save Today, Survive Tomorrow



5.6. HEATWAVE

Why in the News?

Recently, over 37 cities in the northern and central regions experienced temperatures exceeding 45°C, posing severe risks to millions of vulnerable people.

About Heatwaves

- Heatwaves are a period of **unusually high temperatures** as compared to what is normally expected over a region.
- Therefore, the temperatures at which **Heatwaves are declared differ from place to place** based on the temperature, and climatology of that region.
- **Factors contributing to Heatwave:** Meteorological and climatic factors as well as Anthropogenic factors such as Rapid Urbanization and Human-induced Global Warming.

Favourable Conditions for Heatwave

	Anti-Cyclone.
	Absence of Moisture in the upper atmosphere.
	Cloudless Sky.
	Prevalance of hot dry air over a region.

Indian Meteorological Department (IMD) criteria for Heatwaves

Heat wave Scenario	40°C	30°C
Maximum Temperature	Plains	Hills
Heat wave conditions prevail when:	Severe heat wave conditions prevail when:	
Normal maximum temperature	Normal maximum temperature	Deviation from normal
Above 40°C	Above 40°C	6°C or more
At or below 40°C	At or below 40°C	7°C or more
Deviation from normal		Deviation from normal
4-5°C or more		5-6°C or more

When should a heat wave be DECLARED?

Recorded maximum temperature

At or above

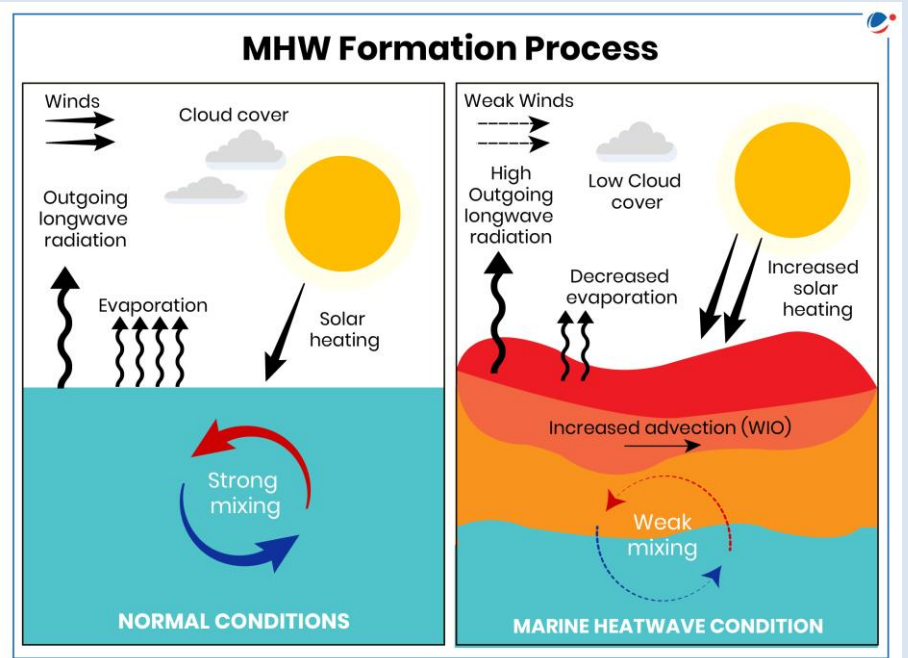
45°C for all locations

At or below

40°C for coastal locations

Other declarations by IMD:

- **Marine Heatwaves (MHW):** It is defined when seawater temperatures exceed a seasonally-varying threshold (usually the 90th percentile) for at least 5 consecutive days.
 - MHWs have increased by up to **four-fold in the tropical Indian Ocean**, aided by rapid warming in the Indian Ocean and strong El Niños.
- **A warm night:** It's declared only when the maximum temperature remains **40°C or more**. It is defined based on departures of actual minimum temperatures as follows:
 - **Warm night:** minimum temperature departure is **4.5°C to 6.4°C**
 - **Very warm night:** minimum temperature departure is **>6.4°C**.
- **Hot and Humid Weather:** When observed maximum temperatures over any station remains 3°C above normal along with the above normal relative humidity, it is termed as Hot & Humid Weather over that station.



Effects of Heat waves








- **On Human Health**
 - **Heat Cramps:** Edema (swelling) and Syncope (Fainting) generally accompanied by fever below 102°F.
 - **Heat Exhaustion and Heat Stroke:** Body temperatures of 104°F or more along with delirium, seizures or coma.
 - ✓ According to the IMD, between **2000 and 2020, over 10 thousand people lost their lives to heat waves.**
- **On Environment**
 - **Increases the energy demand** due to the usage of cooling appliances.
 - **Wildfires and Droughts:** Heat waves trigger and exacerbate droughts and wildfires.
 - **Worsens air quality and pollution:** Heat waves, compounded by wildfires and desert dust, can lead to measurable worsening air quality in a region
 - **Soil Moisture Depletion:** High temperatures cause the soil moisture to evaporate rapidly which also impacts plant growth and overall soil health.
- **On Economy and Society**
 - **Loss in productivity:** As per the **United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)** study, **India is expected to lose around 5.8% of daily working hours** due to rising temperatures by 2030.
 - **Induces migration:** As the effects of heat waves directly affect the vulnerable sections of the society they are forced to migrate from one region to the other.
 - **Affects crop productivity and livestock:** The temperature rise directly affects the yield of the plants and life stocks adding distress to overall food security.

Initiatives taken to mitigate heat waves

- **National Guidelines on Heat Wave Management:** Developed by **NDMA** to guide states and other stake holders on heat wave management.
- **Action taken by IMD-**
 - **Early Warning System and inter agency co-ordination:** IMD Communicate Heatwave alerts/warnings promptly.

COLOUR CODES FOR HEAT WAVE WARNINGS

The IMD issues a colour code impact-based heat wave warning along with the National Disaster Management Authority (NDMA).

 Colour Code	 Alert	 Warning
 Green	Normal day	• Temperatures are near normal
 Yellow	Heat Alert	• Heat wave conditions at isolated pockets persists for 2 days
 Orange	Severe Heat Alert for the day	• Severe heat wave conditions persists for 2 days or • Heat wave persists for 4 days or more
 Red	Extreme Heat Alert for the day	• Severe heat wave persists for more than 2 days. • Total number of heat/severe heat wave days exceeding 6 days

- **Heat Action Plans:** Started by IMD in collaboration with NDMA and local health departments in around 23 states that are prone to heat waves.
- **Rescheduling Working hours:** Centre has issued advisory to states to reschedule the working hours for workers and labourers across sectors to save them from health hazards.

Way forward: Mitigation measures that can be taken

- **Providing cool shelters:** Similar to cyclone and disaster relief centres, public cooling centres can be built where people can go to cool off during extreme heat.
 - The concept has been explored in **Barcelona, Paris and Rotterdam** among others.
- **Improving the built environment:** By making them more heat-resilient through the incorporation of better insulation and ventilation systems in buildings, planting more trees etc.
- **Utilising indigenous knowledge:** Usage of indigenous protective methods against heat waves and strokes must be tapped, documented, and researched.
- **Inclusion of regulative provisions:** For example, making it mandatory for components like passive ventilation and cool roof technologies in the Building bylaws to increase thermal comfort.
- **Capacity building for health care professionals:** at the local level to recognize and respond to heat-related illnesses.

5.7. FIRE SAFETY REGULATIONS IN INDIA

Why in the news?

Recent fire accidents in a gaming zone in Rajkot (Gujarat), a firecracker factory in Harda (Madhya Pradesh) and a private hospital in Delhi have raised concerns over fire safety in India.

More on news

- As per National Crime Records Bureau (NCRB) report 2022, **7,435 people were killed** in over 7,500 fire accidents in India in 2022.
 - **~800 factory fires** were recorded in the last two years in Delhi alone.
- Key reasons for such fires include **violation of fire-safety norms, human negligence, electrical malfunctions, Industrial Accidents, etc.**

Existing Fire Safety Standards and regulations in India



- **Constitutional provisions:** Fire service is a **State subject** and included in the **12th Schedule of the Constitution of India** which specifies the powers, authority and responsibilities of Municipalities.
 - **State governments are responsible for fire prevention** and for implementing safety measures through the State Fire Services Act or building bylaws.

- **National Building Code (NBC):** Published by **Bureau of Indian Standards (BIS)** in 1970 and updated in 2016, it **acts as the central standard for fire safety in India** and provides guidelines regarding the general construction requirements, maintenance, exit routes and fire safety of buildings.
 - It is a **mandatory requirement for State governments to incorporate the NBC recommendations** on minimum fire safety and rescue measures into their local bylaws.
- **Model Building Bye Laws 2016: Ministry of Housing and Urban Affairs** issued it as a guide to the States and UTs to frame their respective building bylaws.
- **Model Bill to Provide for the Maintenance of Fire and Emergency Service for the State, 2019:** It provides a model framework for states for maintenance of fire and emergency service.
- **Fire and Life Safety guidelines:** Circulated by the **Ministry of Health** in 2020, stipulating **third party accreditation for fire safety, creation of Fire Response Plan (FRP), etc.**
- **Scheme for Expansion and Modernization of Fire Services in the States:** Launched by Centre in 2023 for strengthening fire services in the States for the period upto 2025-26.

Challenges in maintaining Fire Safety Standards

- **Absence of uniform safety legislation across states:**
 - Some major states like Rajasthan, Madhya Pradesh and Jharkhand are **yet to enact any legislation on fire safety.**
 - **Majority of states have not updated or amended their existing laws** in line with the **Model Fire Act, 2019.**
 - **NBC provisions, including 'Fire and Life Safety' audits, are recommendatory in nature and** are not being implemented uniformly across India.
- **Suboptimal government oversight:** Fire safety guidelines are not enforced properly due to failure of local bodies to conduct regular checks, poor quality of inspections, rare follow up actions, corruption etc.
- **Shortage of staff and proper firefighting equipment:** Resource constraints among local bodies affect the performance of the state fire safety department.
 - In 2019, there was a **shortage of 5,191 fire stations and 5,03,365 personnel** than required.
- **Other Shortcomings:** Lenient punishments and penalties for violation of fire safety standards; Lack of proper organisational structure of fire safety Departments; Inadequate training and career progression of personnel; **Lack of Infrastructural facilities** etc.
- **Challenges related to Urbanisation:**
 - **High population density:** It increases the **risk of casualties and complicates evacuation during fire incidents.** E.g., the **1997 Uphar Cinema fire in Delhi**, where overcrowding led to a deadly stampede.
 - **Poor Urban Planning:** Congested urban layout with **narrow lanes** delay arrival of fire engines, affect rescue operations. E.g., **Kamala mills fire in Mumbai 2017.**
- **Non-compliance:** Several major fire incidents resulted from violations of fire safety standards by builders, private entities, etc.

Reasons behind Major fire incidents in India

 Major Fire Incidents	 Non-compliance of Fire safety standards and protocols
Coaching centres in Mukherjee Nagar and Kalu Sarai (Delhi)	Narrow staircases, Lack of emergency exits, Lack of sprinkler system
Kumbakonam School fire (Tamil Nadu, 2004)	Usage of highly flammable materials (thatched roof) in building, lack of safe fire exits
AMRI Hospital fire in Kolkata (2011)	Inactive fire alarms and sprinklers , Lack of adequate training, Unsafe storage of flammable material

Way forward

- **Mandatory Fire Safety Audits** to be conducted annually by third-party nationwide for buildings with large footfalls.
- **Hazard Identification & Risk Assessment (HIRA)** with focus on identifying potential hazards to address and mitigate inherent fire hazards.
- **Implement 13th Finance Commission Recommendations:**
 - Municipal Corporations with populations over one million must develop fire hazard response and mitigation plans and revamp fire services and support State Fire Services Departments.
- **Greater awareness through regular Fire Safety Drills** in residential colonies, schools, and other institutions.
- **Stricter enforcement of fire safety standards** and severe punishment for violations.
- **Strengthening capacity of local bodies** by enhancing allocation of funds for fire departments, adequate training for fire personnels etc.
- **Implementing National Disaster Management Authority (NDMA) Guidelines** on Scaling, Type of Equipment and Training of Fire Services

NDMA Guidelines

- **Enactment of a Fire Act** at state level with legal regime for mandatory clearance from the fire department for certain buildings and premises.
- Preparation of a **comprehensive plan for revamping of Fire Service** in the state.
- **Creating basic infrastructure**, fire stations, water reserves, training centers etc.
- **Improve the outreach of the Fire Services:** Fire stations should be established up to the sub-divisional level in the beginning and ultimately to the block and the Gram Panchayat level.
- **Ensure community preparedness** and awareness.
- **Professional Head of fire services at the state level and district level** (chief fire officer) for effective superintendence and control of the fire services
- **Research & Development of indigenous**, less water-consuming fire extinguishing technologies.
- **Setting up of a modern training center** at state level with adequate infrastructure, faculty and facilities with modern training aids like simulators,

5.8. NOR 'WESTERS

Why in the news?

India is working to develop its **first research testbed to study Nor 'westers**.

More about the testbed

- **Aim:** To study **thunderstorms** from the formation stage, growth, and propagation over eastern parts of the country covering a large area adjoining **West Bengal, Odisha, and Jharkhand**.
- **Control centre:** It will be at **Chandbali** in Odisha's Bhadrak district (near Bhubaneswar).
- **Agencies involved:** India Meteorological Department (**IMD**), Indian Institute of Tropical Meteorology (**IITM**), **Pune**, and the National Centre for Medium-Range Weather Forecasting (**NCMRWF**), **Delhi**, will jointly develop and use this facility.
- **Features:**
 - Use of **drones, mobile vans and high-end meteorological instruments** to systematically track nor 'westers.
 - It includes the **tallest (100-metre) meteorological flux tower**. It measures the exchange of carbon dioxide, water vapour, and energy between the biosphere and atmosphere.
- **Significance:**
 - **Prediction:** Data generated will aid in timely **thunderstorm predictions**, and issue **nowcast warnings** (an **event in less than three hours**).
 - **Disaster preparedness:** It will aid the **administration** and give the locals additional time to **prepare and equip** themselves better.

What are Nor 'westers?

- They are local winds that affect the **east and northeast** regions of India **every summer**. They cause **thunderstorms** in the region.

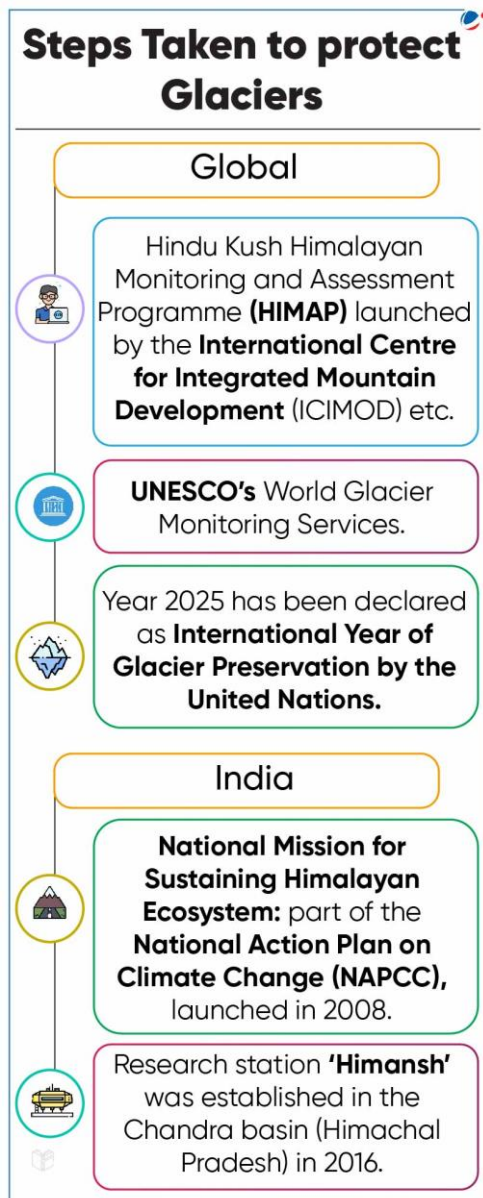
- In **Bengal**, it is locally known as “**Kalbaishaki**” meaning, **calamity** in the month of Baisakh (the first month in the Bengal calendar). Whereas, in **Assam**, they are known as “**Bardoli Chheerha**”.
- **Influence of Nor ‘westers on the region:**
 - **Negative influence:** They are **notorious** in nature and lead to **destructive tornadoes**, causing uprooting of trees and loss of property.
 - **Positive influence:** However, they are **extremely helpful for pre-kharif crops like jute, paddy**, and a large number of **vegetables and fruits**. Also, a sudden drop in temperature gives **relief after unbearable mid-day heat**.

Other Local winds and their socio-economic influence		
Name	Description	Influence
Loo	They are hot, dry winds blowing throughout the daytime in north and western India during the month of May and June . They are developed due to formation of the Monsoon Low Pressure Trough in northern India.	<ul style="list-style-type: none"> • Negative influence: These winds cause loss of life due to dehydration. • Positive influence: It facilitates the process of separating the chaff from the grain. There is also decline in number of insect-borne disease like malaria due to decrease in mosquito population.
Aandhi	Also known as ‘ Kali Aandhi ’, they are strong dust storms observed over north-western and Central India before monsoon .	They can cause destruction of life and property as well as add to the pollution of cities like Delhi .
Mango showers	They are pre-monsoon local rain-carrying winds which cause early showers along coastal Karnataka and Kerala .	They aid in early ripening of Mangoes , thus locally called Mango showers.
Blossom showers	They are pre-monsoon showers in late-summer in Kerala and adjacent areas.	They aid in blossoming of coffee flowers , having high commercial importance for the state.
Elephanta	They are strong southerly and south westerly winds blowing along the Malabar coast of India post-monsoon in the months of September and October .	They mark the end of southwest monsoon .

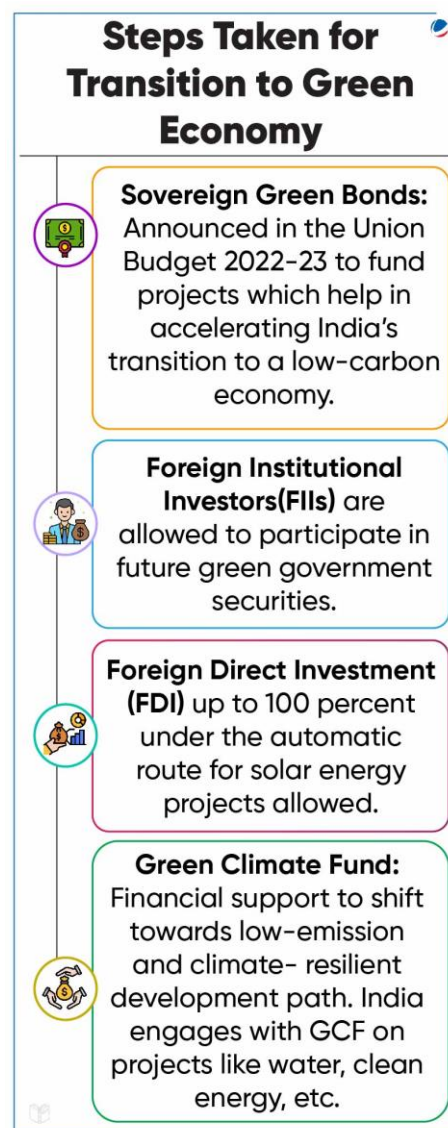
5.9. NEWS IN SHORTS

5.9.1. VENEZUELA MAY BE THE FIRST NATION TO LOSE ALL ITS GLACIERS

- According to the **International Cryosphere Climate Initiative (ICCI)**, the **Humboldt (or La Corona)** - Venezuela’s last standing glacier in the Andes, has shrunk to a size that **no longer qualifies it as a glacier**.
 - **ICCI** is a network of experts and researchers collaborating with governments and organizations to preserve the Earth’s **cryosphere**.
 - **Cryosphere** includes snow and ice on land, ice caps, glaciers, permafrost, and sea ice.
- **A glacier** is an accumulation of ice and snow that slowly flows over land.
 - **Glaciers** are **melting** at a fast rate mainly due to global warming, warming of ocean water etc.
 - Both **Alpine** (e.g. Hindu Kush Himalaya) and **Ice sheets** (e.g. Antarctica) have been impacted.
- **Impacts of Glacier Melting**
 - **Sea Level Rise:** As per NASA, if all glaciers and ice sheets melted, global sea level would rise by more than 60 meters.
 - ✓ It will increase **coastal erosion** and elevate **storm surge**.
 - **Biodiversity Loss:** **Walrus** are losing their home and **polar bears** are spending more time on land, causing higher rates of **conflict between people and bears**.
 - **Disasters:** Frequency of **Glacial lake outbursts (GLOFs)** in regions like Himalayas will increase.
 - **Other:** Reduction in water availability in rivers like Ganges, economic activities like fishing and navigation will be impacted etc.



- ✓ It is one element which helps to define the monetary policy stance (accommodative, neutral or restrictive).
- Impact the financial health of **banks and other financial institutions**, the value of assets, and the economic expectations of individuals and businesses.
- **Way forward**
 - **Adopting green taxonomy**, which is a framework to assess the sustainability credentials and possible ranking of economic activity.
 - Need to incorporate **climate risk into their modeling frameworks** used for monetary framework.



5.9.2. CLIMATE CHANGE CAN WEAKEN MONETARY POLICY TRANSMISSION: RBI

- Monetary policy is an **adjustment of the supply of money in the economy** by the Reserve Bank of India (RBI) to achieve a **combination of inflation and output stabilization**.
- **Climate change effects on monetary policy**
 - **Directly impacts inflation through adverse weather events** affecting agricultural production and global supply chains.
 - **Impact the Natural Rate of Interest (NRI)** due to increasing temperatures and occurrence of Extreme weather events undermining productivity and lowering potential output.
 - ✓ NRI is a real **short-term interest rate consistent** with output at its potential and a stable rate of inflation.

5.9.3. NEW COLLECTIVE QUANTIFIED GOAL ON CLIMATE FINANCE (NCQG)

- Parties to the UNFCCC have made new **submissions for the NCQG under Paris Agreement**.

- New Collective Quantified Goal on Climate Finance (NCQG) was proposed in COP21 for setting **post-2025 climate finance goal (new goal)**.
 - In 2009 parties to UNFCCC had decided to mobilise **\$100 billion annually** by 2020 which was **subsequently extended to 2025**.
 - However, this target is **yet to be achieved reflecting significant shortfalls in it**.
- NCQG is proposed to **raise the floor on climate finance** above the **current \$100 billion annual target** while also **addressing key shortcomings in the current climate financing mechanism by**:
 - **setting both qualified and quantified targets** in line with needs;
 - **agreeing suitable modalities** for financing mitigation, adaptation and loss and damage; and
 - **building deeper levels of accountability and transparency** into the goal.
- **Issues associated with the target of mobilising \$100 billion annually**
 - **Distributional imbalance**: Between 2011 and 2020, 80% of global climate finance was focused in OECD countries and the East Asia Pacific region, revealing a significant geographical concentration of funds.
 - **Overemphasis on financing of mitigation**: Adaptation made up only about 8% of the total climate financing in 2019-2020)
 - **Nature of Climate Finance**: Nearly 94% of existing climate investment is either through either debt or equity (return seeking).

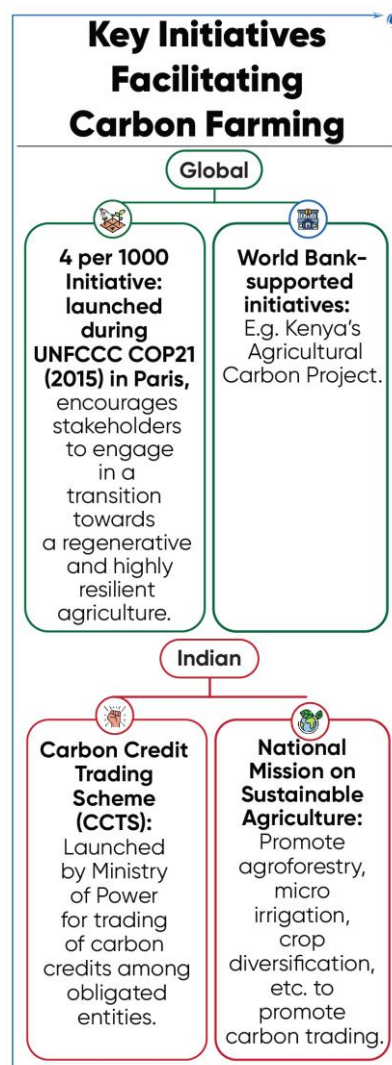
Paris Agreement (2015) on Climate Financing

- Article 9 of the Paris Agreement stipulates that **developed country Parties** shall provide **financial resources to assist developing country Parties** with respect to both mitigation and adaptation in continuation of their existing obligations under the Convention.

5.9.4. CARBON REMOVALS AND CARBON FARMING (CRCF) REGULATION IN EUROPEAN UNION (EU)

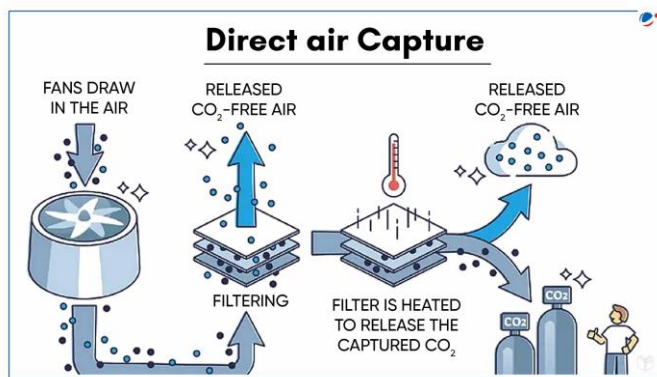
- European Parliament and the European Council recently reached a **provisional agreement** on a regulation to establish the first **EU-level Carbon Removal Certification Framework**.
 - This certification framework will boost innovative **carbon removal technologies** and **carbon farming**.
 - It establishes **quality criteria standards** and **outlines monitoring and reporting processes** to prevent **greenwashing**.
 - ✓ **Greenwashing** is a term used where a company makes false or misleading statements that their products/services are more sustainable than they are in reality.

- **About Carbon Farming**:
 - It uses **regenerative practices** to improve agriculture, restore ecosystems, and combat climate change by storing carbon and reducing emissions.
 - **Common Methods**: Agroforestry, conservation farming (minimising soil disturbance), integrated nutrient management, Renewable Energy Production Grasslands Conservation, etc.
- **Potential Benefits**:
 - **Carbon Sequestration**: Studies have shown agricultural soils can absorb 3-8 billion tonnes of CO₂-equivalent every year.
 - ✓ This capacity can bridge the gap between feasible emissions reductions and the indispensable stabilisation of the climate.
 - **Promoting Farmers Income**: Carbon credit systems can incentivise farmers by providing additional income through environmental services.
- **Challenges**: Inadequate policy support, lack of resources to invest in sustainable land management practices by small land holding farmers etc.



5.9.5. DIRECT AIR CAPTURE AND STORAGE (DAC+S) PLANT

- **World's largest DAC+S plant, Mammoth, started operation in Iceland.**
- It is **second commercial DAC+S facility of Swiss Company Climeworks** and is much larger than its predecessor **Orca**.
- **DAC+S Technology:**
 - A **Carbon Dioxide Removal (CDR)** technology which **capture CO₂ directly from atmosphere at any location**.
 - ✓ It is **distinct from carbon capture** which is generally carried out **at point of emissions**.
 - CO₂ can be **permanently stored in deep geological formations (DAC+S)** or **used** for various applications.



- **About CDR:**
 - CDR refers to **anthropogenic activities that remove CO₂ from atmosphere and store it durably** in geological, terrestrial, or ocean reservoirs.
 - According to IPCC Sixth Assessment Report, **CDR is necessary element to achieve net-zero CO₂ and GHG emissions**.
- **Other CDR technologies:**
 - **Afforestation/Reforestation and Soil Carbon Sequestration:** Fixing atmospheric carbon in biomass and soils.
 - **Enhanced Weathering:** Mining of rocks containing minerals that **naturally absorb CO₂**.
 - **Ocean-based CDR:** Ocean fertilisation (adding nutrients to upper layers), ocean alkalinity enhancement (transformation of CO₂ as bicarbonate/carbonate), coastal blue carbon management etc.
 - **Bioenergy with Carbon Capture and Storage (BECCS):** Using biomass as energy for CDR and storing biogenic carbon geologically.
- **Challenges in CDR:** Higher energy needs and costs, Air Pollution (through Mining), Significant land and water demand, ocean acidification etc.

5.9.6. KEELING CURVE

- Global average concentration of carbon dioxide (CO₂) was 4.7 parts per million (ppm) in March 2024 (higher than March 2023), signifying **large spike in Keeling Curve**.
 - It is the **largest ever recorded leap in CO₂ concentration** at 425.22 ppm.
- **About Keeling Curve**
 - It is the **record of atmospheric CO₂ from Mauna Loa Observatory (MLO)**, since 1958.
 - ✓ MLO is a station that **measures the elements in atmosphere that contribute to climate change**.
 - ✓ It is **located in Hawaii on the side of Mauna Loa**, the world's largest active volcano.
 - It is **named after Dr. Charles David Keeling**.

5.9.7. BIOCOVER

- A recent study has proposed a **sustainable approach of microbial methane oxidation system** (called as **biocover**) to control fugitive methane emissions from old dumpsites.
- **About Biocover**
 - Biocovers are **porous material layer laid directly on top of a landfill** which is then covered by an **oxidizing layer of mature compost**.
 - It provides optimal conditions for **methanotrophic (methane utilizing) bacteria** to thrive and act as biofilters, hence **control methane emissions by converting methane to CO₂**.
 - **Potential applications:** Road construction, land reclamation, etc.
- **Concerns:** As they are found in old and deep dumpsites, they may be contaminated with heavy metals and microplastics.

5.9.8. WORLD BANK RELEASED REPORT TITLED 'WATER FOR SHARED PROSPERITY'

- Report was released at **10th World Water Forum in Bali, Indonesia**.
- World Bank defines **Shared prosperity** as boosting prosperity, particularly for poorest, to achieve more equitable societies.
- **Key findings**
 - **Defines Four interconnected building blocks of prosperity:** Health and Education (human capital), Jobs and Income, Peace and Social cohesion (social capital), and Environment (natural capital).
 - **Population growth, urbanization, and climate change** are causing **disparity in global water access**.

- In 2022, 197 million people lacked safe drinking water, and 211 million lacked basic sanitation.
- Globally, about 450 million **people live in high-poverty and low-water-access hotspots**.
- In **low-income countries**, access to **water services is available in less than half of schools**.
- Inadequate and unsafe water **affects early childhood development**.
- Climate change leads to extreme weather events like floods, droughts, further disrupting children's learning leading to school dropouts, damaging crops, increasing conflicts etc.
- **Recommendations for inclusive water security**
 - **Improve resilience to extreme hydro-climatic risks** by setting up early warning systems.
 - **Improve water resources development and allocation** by integrating nature-based solutions and adopt water accounting method.
 - **Safely managed water supply and sanitation** by reforming water information systems to target pro-poor.

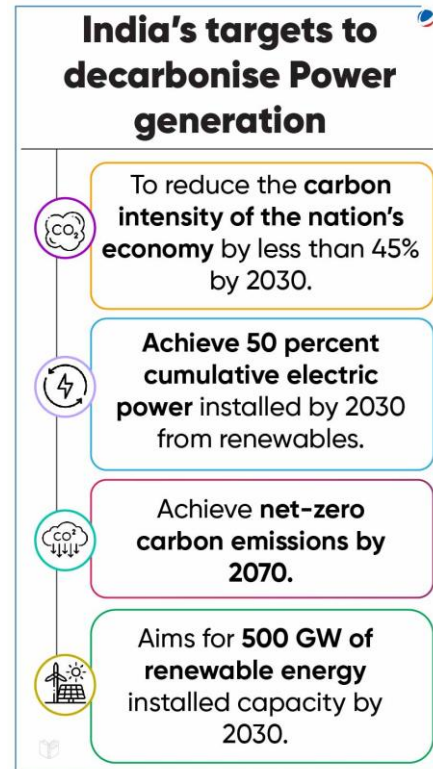
World Water Forum

- It is **held every three years**, and **Co-hosted by World Water Council** and a **host country**.
- **Objectives:** Raise importance of water on political agenda; Support discussions towards resolution of international water issues; etc.

5.9.9. INDIA BECAME THIRD LARGEST SOLAR POWER GENERATOR

- This is highlighted as per **Global Electricity Review (GER) 2024 report**, released by global energy think tank Ember.
 - **Key finding of the report**
 - Renewables provided **30% of global electricity** for the first time.
 - **Solar was the main supplier** of electricity growth in 2023.
 - India saw the world's fourth-largest surge in solar generation in 2023 behind China, the US and Brazil.
 - India overtook Japan to become the **third-largest solar power generator in 2023**, providing **5.9% of global growth** in solar.
 - India produced the **second highest amount of electricity from coal**.
 - ✓ India's per capita emissions from the power sector are the **fourth lowest in the G20**, despite high coal reliance.
 - **India's per capita emissions from the power sector** are just over half the global average and even further below the average in Asia.
- **Challenges in power sector:**
 - Drought conditions globally resulted in a **record fall in hydropower generation**.

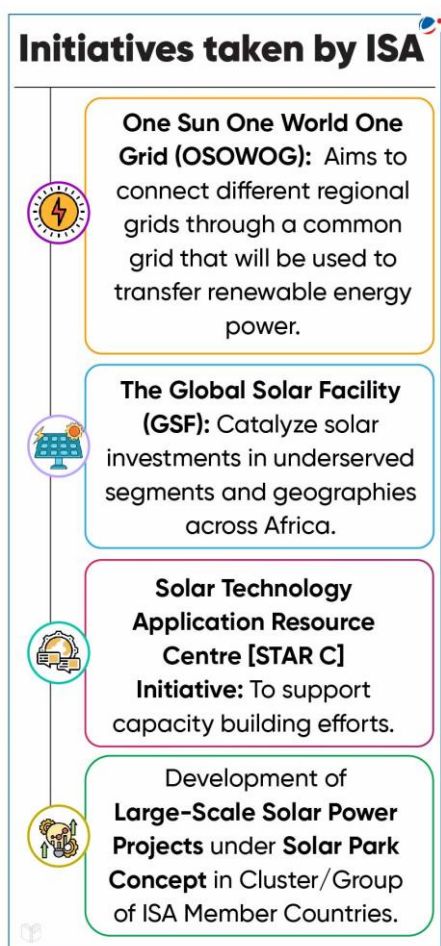
- India's electricity generation is **more carbon-intensive** than the global average.
- India also saw the **second-highest increase in coal generation** globally, behind China.
- Despite progress, wind, solar and other low-carbon sources are **not yet growing fast enough to meet India's rapidly growing electricity demand**.



5.9.10. SPAIN BECOMES 99TH MEMBER OF INTERNATIONAL SOLAR ALLIANCE (ISA)

- **About ISA**
 - **Objective:** A treaty-based **intergovernmental organization** that is an action-oriented, member-driven, collaborative platform for increased deployment of **solar energy technologies**.
 - **Genesis:** Jointly launched by India and France in 2015 on the sidelines of COP-21 of the **United Nations Framework Convention on Climate Change (UNFCCC)** in Paris.
 - ✓ It was officially established in 2017, with the entry into force of the **ISA Framework Agreement**.
 - ✓ With the amendment of the **Framework Agreement** in 2020, all member states of the United Nations are eligible to join the ISA.
 - **Key Strategy:** Guided by the **'Towards 100' strategy**. Under it, ISA aims to
 - ✓ Mobilise **USD 1,000 billion** of investments in solar energy solutions by 2030

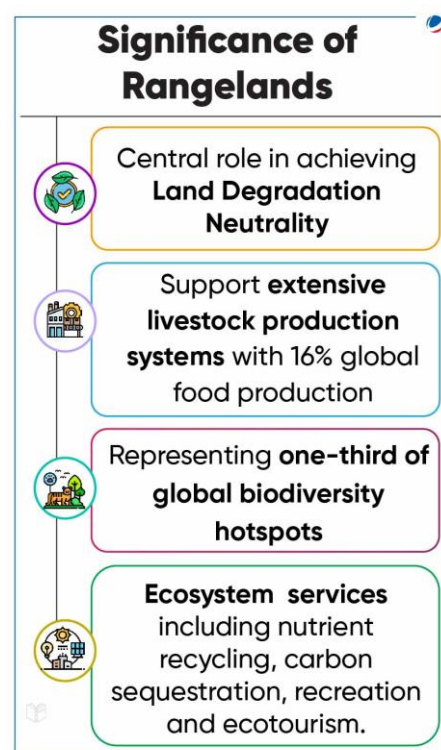
- ✓ Delivering energy access to 1,000 million people
- ✓ Installation of 1,000 GW of solar energy capacity.
- **Observer Status of UN:** In 2021, the UN General Assembly conferred Observer Status to the ISA.
- **HQ:** Gurugram, India
- **Significance of ISA**
 - **Ensuring Just energy transition** through solar by facilitating **technology transfer, mobilising finance**, etc.
 - ISA along with initiatives like **Global Biofuels Alliance** and **Coalition for Disaster Resilient Infrastructure** are mechanisms for India to assert its soft power.



5.9.11. GLOBAL LAND OUTLOOK REPORT ON RANGELANDS AND PASTORALISTS

- Global Land Outlook Thematic Report on Rangelands and Pastoralists released
- This report by **UN Convention to Combat Desertification (UNCCD)** focuses on relationship between rangelands and their human communities, **especially pastoralists**, to identify approaches for rangeland protection.

- Rangelands are **natural or semi-natural ecosystems grazed by livestock and/or wild animals**.
- They often comprise a **mosaic of ecosystems** such as grasslands, savannahs, shrublands, drylands, deserts, steppes, mountains, open forests, and agroforestry systems.
- **Key highlights of report**
 - Rangelands cover over **54% of terrestrial surface**, with around 78% occurring in drylands.
 - **Up to 50% rangelands are estimated to be degraded** showing signs of diminished soil fertility and nutrients, erosion, salinization, alkalization, and soil compaction inhibiting plant growth.
 - **Drivers of degradation** include land use changes due to population growth and urban expansion, rapidly rising food, fibre and fuel demands, excessive grazing, abandonment, and policies that incentivise overexploitation.
- **Rangeland status in India:**
 - Indian rangelands occupy about **121 million hectares**, and around 100 million hectares is considered **underutilized**.
 - Pastoralists have been widely marginalized in Indian public policies, resulting in **insecure tenure rights and access to their pool of common resources**.
 - ✓ In many states, pastoralists have been **banned from forests and protected areas**.
 - ✓ **Mining and energy projects** also prevent their access to critical rangeland resources.



Key Recommendations

- **Integrated climate change mitigation and adaptation strategies** boosting resilience of pastoralist communities.
- **Reduce rangeland conversion** and other land use changes that diminish the diversity and multifunctionality of rangelands
- **Adopt and support pastoralism-based strategies** and practices that help mitigate harms to rangeland health.

5.9.12. WORLD WILDLIFE CRIME REPORT 2024

- **United Nations Office on Drugs and Crime (UNODC)** released World Wildlife Crime Report 2024
- **Key findings**
 - During 2015-2021, **rhinoceroses** and **cedars** were **most impacted animal and plant species** respectively.
 - **Largest numbers of seizures** reported during 2015-2021 involved **corals, followed by crocodilians and elephants**.
 - For seizures of animal species, there is **gradual increase from 2015–2019** and then **decline in 2020 and 2021**.
 - For seizures of plant species, there is **sharp increase in 2020 and 2021**.
- **Wildlife crime**
 - It can be defined as taking, possession, trade or movement, consumption of wild animals and plants or their derivatives in contravention of any international, regional, or national legislation(s).
- **Factors driving wildlife crime**
 - **Demand for medicine**, pets, bushmeat, ornamental plants etc.
 - **Huge profits earned** by illegal traders by selling exotic animals, plants, and their parts. Eg. Rhinoceros horn, etc.
 - **Corruption undermines government restrictions** on wildlife harvest, trade and use, thus enabling wildlife crime.
- **Impact of Wildlife Crime**
 - **Environmental:** Overexploitation and reduced populations of wildlife species; Increasing invasive alien species etc.
 - ✓ Out of all seized fauna, **40% were either threatened or near-threatened on red list**.
 - **Economical:** Money-laundering and illegal cross-border financial flows.
 - **Social:** **Risks of disease transmission** to people from live animals, plants, wildlife meat; **Degradation of services** like food, medicines, energy, etc.

- **Governance Harms:** Undermining the role of governments; Loss of government revenues; Enforcement costs etc.



5.9.13. SEA ANEMONE

- Scientists have found mass sea anemone bleaching off Agatti island, Lakshadweep.
- **About Sea anemone:**
 - They are **ocean-dwelling members of the phylum Cnidaria**.
 - ✓ Sea anemones are **predatory animals** and most species are found in **coastal tropical waters**.
 - Like corals, sea anemones establish **symbiotic relationships with green algae**.

- **Sea surface temperature rise** disrupts this relationship, resulting in **bleaching**.
- They also have a **symbiotic relation** with **clownfish**.
 - ✓ Clownfish are protected by the **stinging tentacles** of **anemone** and anemone gets food from Clownfish's meals.
- They play key **biogeochemical roles in benthic ecosystems**.



Sea anemone

5.9.14. BASEFLOW

- A recent study highlighted that **Baseflows have a stronger triggering effect on river floods in Peninsular India** as compared to rainfall and soil moisture.
 - Six rivers studied include **Narmada, Tapi, Mahanadi, Godavari, Krishna and Cauvery**.
- **Baseflow:**
 - Baseflows are **streamflows** which results from precipitation that **infiltrates into the soil** and eventually **moves through soil to the stream channel**.
 - This is often called **groundwater flow or dry-weather flow**.

5.9.15. BLUE HOLE

- Researchers found evidence that Taam Ja' Blue Hole is the deepest in the world.
 - It is located in **Mexico's Chetumal Bay**, on the eastern side of the **Yucatán Peninsula**.
- **About Blue hole**
 - These are water-filled **caverns** that form **below the seafloor**. These are often found in coastal areas where the bedrock is prone to erosion.
 - They develop as ocean water seeps through **cracks, dissolving minerals** as they go, leading to sinkholes. Over time, they can grow quite large.

- **Other Prominent Blue Holes:** Dragon Hole in the South China Sea, Great Blue Hole near Belize and the Dahab Blue Hole (Egypt).



Blue Hole

5.9.16. CATATUMBO LIGHTNING

- **Catatumbo lightning** is a natural phenomenon that occurs at the mouth of the Catatumbo River, where it meets **Lake Maracaibo**.
 - The lightning strikes almost continuously up to 300 days a year.
 - The area is called the **lightning capital of the world**.
- **Factor responsible for high frequency of lightning:**
 - The convergence of cool air from the **Andes** and moist air from the **Caribbean** generates a constant cycle of convection.
 - As the warm air rises, it cools and condenses, leading to the formation of Cumulonimbus clouds which in turn, create an environment for electrical activity.
- Lake Maracaibo in Venezuela is the largest lake in Latin America.

5.9.17. BATAGAY CRATER



- Newly captured aerial footage of Batagay Crater has revealed that it is growing every year as the frozen ground melts.
- **About Batagay (also spelled Batagaika) crater**
 - It is also known as "Gateway to Underworld" or "Doorway to Hell" and is the world's biggest permafrost crater.
 - **Located in Siberia, Russia**, it is a **massive, expanding depression in Earth's surface**, formed due to permafrost thaw.
 - Since 1960s, its **growth accelerated due to deforestation and climate change**.
 - From 1991 to 2018, **the crater area increased by almost three times**.

5.9.18. ERRATA

- In April 2024 Monthly Current Affairs Magazine, **Article 5.4. E-waste**, due to a typographical error, it

was incorrectly mentioned that **4,100 billion kg e-waste was generated in India.**

- The **correct information is that 4,100 million kg e-waste was generated in India.**

 <p>SMART QUIZ</p>	<p>You can scan this QR code to practice the Smart Quiz of Environment at our open test online platform for testing your understanding and recalling of the concepts.</p>	
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PRELIMS & MAINS INTEGRATED MENTORING PROGRAM 2025

Lakshya Prelims & Mains Integrated Mentoring Program 2025

(A 15 Months Strategic Revision, Practice, and Mentoring Program for UPSC Prelims and Mains Examination 2025)

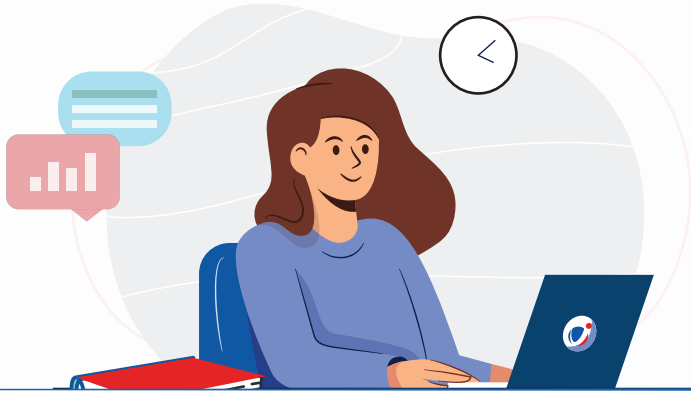
VisionIAS introduces the Lakshya Prelims & Mains Integrated Mentoring Programme 2025, offering unified guidance for UPSC aspirants across both stages, ensuring comprehensive support and strategic preparation for success

Highlights of the Program

- Coverage of the entire UPSC Prelims and Mains Syllabus
- Highly experienced and qualified team of senior mentors
- Emphasis on themes for Prelims & Mains with High-Scoring Potential
- Focus on Current Affairs & CSAT preparation through rigorous practice
- Access to Lakshya Prelims Practice Tests (LPPT) and Lakshya Mains Practice Test (LMPT)
- Sandhan Personalised Test Series with an extensive collection of 15000+ questions
- Development of Advanced answer writing skills
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- Special emphasis to Essay & Ethics
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Date	Duration	Medium	Mode
2 nd July	15 Months	English & Hindi	Offline & Online

For more information & assistance:
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enquiry@visionias.in



Mastering CSAT:

A Strategic Roadmap for

UPSC Prelims Examination


The UPSC Prelims is the initial, highly competitive stage of the Civil Services Examination, consisting of two objective-type papers: General Studies and the Civil Services Aptitude Test (CSAT). These papers assess a candidate's knowledge, understanding, and aptitude.


With the CSAT's growing complexity, achieving the 33% qualifying score is challenging. Aspirants must navigate time management, adapting to changing difficulty levels, maintaining balance with General Studies, and finding quality practice materials. This underscores the importance of a well-planned strategy.





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Strategic Framework for CSAT Preparation

 **Initial Self-Assessment:** Begin with a self-evaluation using the previous year's CSAT papers to identify strengths and areas for improvement.


 **Study Plan:** Develop a structured study plan, focusing on high yielding areas and selecting reliable study sources.

 **Regular Practice and Post-Test Analysis:** Solving and analyzing previous year papers and mock tests to familiarize with the exam format and question types, ensuring a strategic approach to covering the comprehensive syllabus effectively.


 **Seeking Personalized Mentorship:** Engage with mentors to receive customized strategies for improvement. Alongside essential stress management guidance, ensuring a focused and balanced preparation journey.

 **Reasoning:** Sharpen your logical and analytical reasoning by practicing diverse question types from Clocks, Calendars, Series & Progression, Direction, Blood Relation, Coding-Decoding, Syllogism, and so on.

Focus on understanding patterns and building a step-by-step approach to solving problems.

 **Maths and Basic Numeracy:** Strengthen foundational mathematics by revisiting basic concepts and practicing regularly.

Utilize shortcuts and mental math techniques for quicker calculations.

 **Comprehension:** Improve your reading speed and comprehension by regularly reading newspapers.

Practice summarizing paragraphs and infer the main ideas to enhance understanding.



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6. SOCIAL ISSUES

6.1. WOMEN ENTREPRENEURS IN INDIA

Why in the News?

Recently Reserve Bank of India's Innovation Hub (RBIH) released a white paper titled 'At the Helm: Women Entrepreneurs Transforming Middle India.'

More about News

- This study is aimed at understanding complex socioeconomic dynamics affecting women's entrepreneurship in Middle India.
- In Middle India (i.e. Tier II and Tier III cities), women entrepreneurs are poised to play a transformative role.
- Despite notable progress in education and legislative measures improving workplace conditions, women's participation in entrepreneurship remains limited, particularly in Tier II and Tier III cities.
- This underrepresentation is a gap that demands immediate attention and dedicated action.

Significance of Women Entrepreneurs in Middle India

- **Economic Significance:**
 - **Sustainable economic development & Employment Generation:** By accelerating women's entrepreneurship, India could create more than 30 million women-owned enterprises, potentially creating 150 to 170 million jobs (NITI Aayog).
 - **Poverty Alleviation:** India could increase GDP growth by 1.5 percentage points by including 50% of women in the workforce (World Bank). This also leads to sustainably augmenting family income.
- **Social Significance:**
 - **Gender equality:** Women entrepreneurs help in bridging the gender gap in the business world, promoting gender equality.
 - ✓ Only 19.2% of Indian women participate in the workforce, in stark contrast to 70.1% of men, highlighting a significant employability gap of 50.9% (ILO).
 - **Fuller Utilization of human capital:** Female labor force participation rate is merely 41% compared to 60% LFPR of men according to PLFS for the calendar year 2023.
- **Developing local markets:** Women entrepreneurs also tap into the global market using digital and social platforms.
 - *Example:* The Splendor of Kashmir: Started by Varuna Anand from Jammu to promote Kashmiri shawl artistry through online sales and exhibitions across India. Her online sales venture helped her connect to a wider audience.
- **Role Models and Agents of Social Change:** Women entrepreneurs inspire other women to embark on their entrepreneurial journeys.
 - *Example:* Maa Bimaleshwari Janhit Karya Samiti: A Self Help Group started by Phool Basan Yadav, empowering 200,000 poor women.
- **Women Empowerment:** By providing women with financial independence and decision-making authority.
 - *Example:* Usha Jha: Affectionately known as 'Usha auntie' in Patna, supported women with entrepreneurial aspirations.

Challenges faced by women entrepreneurs in Middle India

- **Capital Gap:** Merely 3% of the women surveyed had accessed external funding, such as bank loans or equity investments, to start or expand their businesses.

Data Bank

- **13.76%** of entrepreneurs are women (NITI Aayog).
- **57th** place of India among 65 countries in MasterCard Index of Women Entrepreneurs (MIWE, 2021).
- **17%** Contribution to GDP by Women in India, well below global average of 37%.

- **Data Gap:** Lack of gender disaggregated data hampers the ability to present compelling business cases to investors or lenders.
- **Visibility Gap:** Women entrepreneurs frequently confront societal undervaluation of their work, often stereotyped by their roles within the family or judged by their age or level of ambition.
- **Safety Gap:** Cities deemed safer for women usually have more entrepreneurs. Enhancing women's safety can directly contribute to fostering a more vibrant entrepreneurial ecosystem.
- **Network Gap:** Women face challenge of rebuilding their social networks after migration due to marriage. This disruption often leads to slower career progression, as rebuilding networks takes time and effort.
 - **Marriage** is primary factor behind **women's migration** with 87% women's migration being due to marriage.
- **Care Gap:** Women entrepreneurs are more likely to experience pauses in their careers due to caregiving responsibilities, including maternity leave and other family care needs.

Way forward and policy recommended by white paper

- **Gender-disaggregated data:** It is needed at a granular level to counter stereotypes, create interest in this segment and make effective policy interventions based on data.
- **Use of Local role models** who have crossed these milestones play an important role in developing an enabling environment. New urban infrastructure in tier 2 India, such as airports or convention centers can be used to showcase success stories of local entrepreneurs.
- **Access to capital:** Provide grants to women entrepreneurs and female focused Venture Capital funds to break the vicious cycle of women owned businesses not scaling because of lack of funding.
- **Fiscal incentives to female owned businesses** for childcare leave and expenses are a potential solution.
- **Providing co-working and co-building space:** Many women are not able to expand their enterprises because they operate from home and often limit their operations for as long as possible.
- **More responsive financial system:** Going beyond PSL targets and setting KPIs for more inclusive investing and credit can be an effective policy approach.

Initiatives Taken:

- **Mudra Yojana for Women/ Mahila Udhayami Yojana:** By Ministry of Finance, Loans up to Rs 10 lakh are provided to women entrepreneurs, without any collateral, and with low interest with flexible repayment tenure.
- **Pradhan Mantri Virasat Ka Samvardhan (PM Vikas) Scheme:** By Ministry of Minority Affairs, focuses on to improve livelihoods of the minorities with a focus on women, youth and disabled.
- **Mahila Samridhi Yojana:** By Ministry of Social Justice and Empowerment, It is a Micro Finance scheme for women with a rebate in interest. Financial Assistance up to the cost of Rs. 1,40,000/- is provided.
- **Women Entrepreneurship Platform (WEP):** By Niti Aayog, As an aggregator platform,WEP hosts information and services relevant to women entrepreneurs. It enables key partnerships to bring crucial content, workshops, campaigns, and other avenues of learning and growth to its users from trailblazers in the industry.
- **Trade Related Entrepreneurship Assistance and Development (TREAD):** Lending institutions/ banks would finance loan assistance for women through NGO for undertaking non-farm activities.
- **Support to Training and Employment Programme for Women (STEP):** By Ministry of Women and Child Development, scheme aims to provide competencies and skills that enable women to become self-employed/entrepreneurs.
- **Stand-Up India:** For financing SC/ST and/or Women Entrepreneurs.

6.2. LOCALIZING THE SDGS: WOMEN IN LOCAL GOVERNANCE IN INDIA

Why in the News?

Recently, Elected Women Representatives (EWR) of Panchayati Raj Institutions (PRI) participated in an Event: "Localizing the SDGs: Women in Local Governance in India Lead the Way" In United Nations Headquarters.

About Localization of SDGs in India

- Localizing SDGs means **enabling local governments and communities to be the catalysts of change** to support the achievement of the global goals.
- **Elected Women Representatives (EWRs) have been instrumental in driving positive change**, emphasizing their significant contributions in achieving sustainable development at the grassroots level.

- Women leaders are a **critical link between local governance, sustainable development, and gender equality**.
 - **The 73rd Constitutional Amendment Act** provides for **reservation of 1/3 seats in the local bodies** and has elevated women's participation in rural governance.

Status of EWRs

- According to **Global Gender Gap report (2023)**, which added the inclusion of women in local governance as a new indicator:
 - **Globally**, only 18 of the 146 countries surveyed have achieved representation of women of over 40 percent in local governance.
 - **India is among the countries with the highest participation of EWR in local governance** (above 44%).

Impact created by EWRs in Localisation of SDGs in India

- **Enhanced policy outcomes: For instance, EWR's from Rajasthan**, with their initiatives have been promoting environmental sustainability, including the Swachh Bharat Abhiyan and efforts to curb plastic usage building a cleaner and greener future.
- **Inclusive decision making: For instance, EWRs in Tripura constructed separate restrooms in government offices** and assisted in **growth of Self-Help Groups (SHGs)** from 600 to almost 6,000.
- **Address Gender Based Violence: For instance, A 2021 survey in Bihar found that EWRs play a key role in providing redressal support on issues of domestic violence and child marriage;**
 - 61 % of EWRs reported that they intervened to stop abuse reported by women in their constituencies, and
 - 46% had intervened to stop child marriage.
- **Challenging regressive norms: For instance, In Haryana, which is known for its low sex ratio, EWRs have made attempts to reduce the prevalence of the purdah system**, encourage school education for girls, reduce open defecation.

Challenges faced by EWRs

- **Balancing responsibilities: Prevailing gender norms** make it difficult for EWRs to manage public duties and household responsibilities, which include a **disproportionate share of domestic and care work**.
- **Lack of experience: Many EWRs, particularly those new to public life, face initial challenges such as lack of experience, leadership skills and confidence** create hinderance in the decision making and governance.
- **Gender based perception: Most women representatives report facing gender-based discrimination and feeling ignored in the panchayat** owing to their gender as roles, like that of panchayat secretary and other posts, are dominated by men.
- **Digital divide: The gender-related digital divide** among EWRs hampers their capacity to fulfil their roles effectively in an era of increasing digitisation in governance and public service delivery
- **Proxy Participation: A critical challenge to women's representation is the placement of 'rubber stamp candidates' in reserved seats**, i.e female representatives reported proxy participation by their husbands (Panchayat Pati).
- **Financial Constraints: Women representatives typically belong to lower economic groups compared to men, the financial constraints both as contestants and as representatives results in loss of autonomy and independence.**

Way Forward

- **Promoting awareness: Targeted training and public campaigns** aimed at promoting positive masculinity can help create an environment **that tackles gender biases within governance and households**.
- **Capacity building: Quality capacity-building programmes** can substantially boost their skills and confidence, enabling them to function independently as leaders. To introduce leadership development programmes at district and panchayat levels.
- **Institutional Reforms: Panchayats have a vital role in combating challenges posed by patriarchal society by promoting women's access to education, skilling, and safe work opportunities.**
- **State funding: Provisions for state funding or support from political parties** will allow more women to contest panchayat elections. Greater financial remuneration for EWRs could also incentivise them to participate despite multiple societal hindrances.
- **Other steps: Tailored solutions, such as customised digital literacy, inclusive design and accessibility and a safe digital environment**, should be prioritised and strengthened.



Snapshot of gender equality across the Sustainable Development Goals



Globally, over **380 million**

WOMEN AND GIRLS

are in extreme poverty, living on less than \$1.90 a day. If current trends continue, in sub-Saharan Africa,

more women and girls

will live in extreme poverty by 2030 than do today.



Globally, nearly **1 in 3**

WOMEN

experienced moderate or severe food insecurity in 2021. Rising food prices are likely to exacerbate hunger around the world.



Today, over **1.2 billion** WOMEN AND GIRLS

of reproductive age live in countries and areas with some restrictions on access to safe abortion.



54% of GIRLS who are not in formal education worldwide live in crisis-affected countries.



At the current rate of progress, it may take another

286 years to remove discriminatory laws and close prevailing gaps in legal protections for women and girls.

School and day-care closures in 2020 led to an estimated **512 billion** additional hours of unpaid childcare globally for women

The glass ceiling remains intact Close to **1 in every 3 MANAGERS/SUPERVISORS** is a woman. At the current pace of change, parity will not be achieved for another 140 years.



The lack of clean water claims the lives of more than **800,000** WOMEN AND GIRLS every year.

6.3. SOCIAL INFRASTRUCTURE

Why in the News?

Recently, the **Ministry of Labour and Employment** has joined the **PM Gati Shakti portal** to identify and bridge gaps in social security coverage which is in line with PM Gati Shakti's plan to cover social infrastructure.

More on News

- The data available at the **portal will be leveraged to cover workers engaged in industrial clusters and special economic zones (SEZs)** so as to improve the social infrastructure in India.

What is meant by Social Infrastructure?

- Social infrastructure includes **assets which provides for social services** such as **education, health, washing and sanitation facilities, housing, etc.**
- It is different from economic Infrastructure which helps in improving the productive capacity of the nation. E.g. energy, transportation and communication etc.

Significance of Social Infrastructure in India

- **Promotes inclusive growth** by reducing incidents of poverty and cases of inequality.
- **Enhances human resource productivity** by improving education and skill levels, thereby maximizing the chances of utilizing India's demographic dividend.
 - Social security and labour welfare improves mobility, productivity and efficiency of labour.
- **Encourages upward social mobility and enhances social well-being.**
 - Social mobility refers to change in a person's socio-economic situation, either in relation to their parents (inter-generational mobility) or throughout their lifetime (intra-generational mobility). **(OECD)**
- **Improves quality of life of individuals** by increasing their incomes and employment opportunities.
 - Access to clean water and sanitation has direct benefits in **reducing mortality and morbidity** that increases the productive capacity of the poor.
- **Helps in achievement of Sustainable Development Goals** by adoption of eco-friendly practices such as reducing carbon footprints, promoting resilience to climate change.
- **Reduces sense of alienation among citizens** by creation of liveable and inclusive settlements where social and economic benefits also accrue to the marginalised groups such as poor, women, children, persons with disability etc.



Data Bank



- **134** (2022) rank of India in **Human development Index** (improvement from 135 (2021))
- **<5%** of workforce (of age 19-24) receives formal vocational education (**NEP, 2020**)
 - Much below **USA (52%)** and **South Korea (96%)**.
- **3.2%** **Life insurance penetration** in India (2021)
 - **Almost twice more** than emerging markets and slightly above global average.

Constitutional Provisions for Social Infrastructure in India

- Under **Directive Principles of State Policy (DPSP)**, the Constitution of India makes it the duty of the state to work for citizen's welfare-
 - **Article 42:** Provision for securing **just and humane conditions of work** and **for maternity relief**.
 - **Article 47:** Duty of the State to raise the level of nutrition and the standard of living and to improve public health.
 - **Article 42:** Provision for free and compulsory education for children.
 - **Article 39(b):** Encourages **distribution of material resources** to subserve the common good.
 - **Article 39(c):** Emphasises that economic system should not result in the concentration of wealth.
- Under **Seventh schedule**, Public health and sanitation is placed in State List whereas education, welfare of labour including conditions of work are in Concurrent List.



Development of Social infrastructure by Indian Government

 Education	 Health	 Housing
<ul style="list-style-type: none"> • The National Education Policy 2020 • Samagra Shiksha Scheme • Rashtriya Uchchatar Shiksha Abhiyan 	<ul style="list-style-type: none"> • Ayushman Bharat Pradhan Mantri - Jan Arogya Yojana • Pradhan Mantri Ujjwala Yojana (PMUY) • National Health Mission 	<ul style="list-style-type: none"> • Pradhan Mantri Awas Yojana (Urban) • Pradhan Mantri Awas Yojana (Rural)

Challenges related to developing Social Infrastructure in India

- **Inadequate public funding** on key social sectors such as education and health leading to low learning outcomes.
 - Low **private sector** participation due to low return on investments further complicates the problem.
- **Lack of Human Resources:** Such as absence of trained teachers, lack of high skilled health professionals, planning etc.
- **Inequality in access:** Due to affordability issues in marginalized communities, especially in lower-income groups.
- **Low awareness among citizens about the importance of social infrastructure:** E.g., the perception of the high costs of having a household toilet and the perceived convenience of open defecation keep the sanitation status low.
- **Uneven distribution and regional disparities:** E.g., the rural-urban disparity in the distribution of higher educational institutions and hospitals.

Way Forward

- **Supplement public resources with Public-private partnerships (PPPs)** to address financial gaps in social infrastructure by leveraging private sector technical expertise, experience **and efficiency**.
- **Use of innovative initiatives such as Development Impact Bonds to finance development programs by attracting private investors.**
- **Securing the unsecured** by ensuring universal coverage of life, accident, and pension insurance, will help in increased social security coverage.
- **Increase public expenditure on healthcare and education to 2.5% and 6% of GDP** in line with **National Health Policy 2017** and **National Education Policy 2020** respectively.
- **Direct Benefit Transfer** can be used as a tool to achieve desired outcomes related to the standard of living.

6.4. NEWS IN SHORTS

6.4.1. SUPREME COURT JUDGEMENT ON JUVENILE JUSTICE ACT

- Supreme Court passed judgement to strengthen Juvenile Justice Act, 2015
- Supreme Court's judgement in "**Child in Conflict with Law (CCL) through his mother v. State of Karnataka**" case dealt with act's provision for **preliminary assessment of CCL** in heinous offences.
- **About Juvenile Justice (Care and Protection of Children) Act (JJ Act) 2015**
 - **Scope:** It consolidates and amend the law relating to CCL and Child in need of Care and Protection (CCP).

- ✓ CCL means **child below 18 years of age who is alleged/found to have committed an offense.**
- **Board:** It mandates setting up **Juvenile Justice Boards (JJBs) in every district** to deal with cases of CCL.
- **Preliminary Assessment:** In case of **heinous offences** alleged to have been committed by a **child above 16 years of age**, JJB shall conduct a **preliminary assessment** to assess capacity of the child.
- ✓ After preliminary assessment, the **Children's Court** may decide that **whether the child can be tried as adult.**

- **Key Highlights of Judgement**
 - An **appeal** against the **preliminary assessment order of the Juvenile Justice Board (JJB)** would be **filed before the Children’s Court** (not Sessions Court) wherever available.
 - ✓ Also, court has prescribed **30 days’ time limit** for preferring such appeals.
 - The time period of **3 months** prescribed for completion of **preliminary assessment is not mandatory** but merely directory in nature.

6.4.2. SIGNIFICANT INCREASE IN SCREEN TIME AMONG CHILDREN


- In several studies, it has been found that screen time among children is more than 2 hours a day.
- **Reasons for Rise in Screen time among children:**
 - **Role Modelling:** Children usually imitate their parents/other family members and peer group.
 - **Educational or recreational purposes:** With the advent of **COVID-19 pandemic**, **use of Mobile** has witnessed **rapid** and **widespread acceptance**.
 - **Working parents:** They usually provide mobile phones to children’s for different purposes such as safety.
 - **Increased Accessibility:** Proliferation of smartphones, tablets, computers, and other digital devices in recent times.
- **Concerns:**
 - **Mental and Physical Health Issues:** High exposure may lead to anxiety, depression, and sleep disturbances.
 - ✓ **Sedentary lifestyle** may lead to physical health issues like obesity.
 - **Cognitive ability and social skills:** High screen time can hinder the development of important Cognitive, social and emotional skills, such as **empathy**.
 - **Cyber Bullying and Child Abuse:** Incidents of bullying and abuses are rising. Young girls are more prone to them.
- **Way Ahead:** Emphasis on physical activities, limiting screen time by creating awareness etc.



6.4.3. WORLD MIGRATION REPORT 2024


- **International Organization for Migration (IOM)** released World Migration Report 2024.
- **Key Findings at Global level**
 - **Factors driving global displacement: Conflict and climate change** remain the most significant.
 - **Total international migrants:** about **281 million** worldwide, of which **117 million** are displaced, marking the highest level recorded.
- **India related findings**
 - In India, strong influence of **climate impacts on internal migration from Rajasthan, Uttar Pradesh and Madhya Pradesh**.

- India hosts the **world's largest number of international migrants** (18 million), residing notably in **UAE, USA, and Saudi Arabia**.
- In **2022, India remains the top remittance recipient country**, receiving more than **USD 111 bn**, the **first country to reach and even surpass the USD 100 bn mark**.
- **Issues faced by Migrants**
 - **Reduced migration pathways** for individuals from less developed countries is driving more people to resort to **irregular migration pathways**.
 - Migrants are subjected to **racism, xenophobia, criminalization, gender based violence** and other human rights violations.




IOM
UN MIGRATION

About IOM





Geneva,
Switzerland


 **Genesis:** Established in 1951, part of the UN System.


 **Members:** 175 member states.

Is India a member

 **Objectives:** **Saving lives and protecting people on the move**, driving solutions to displacement and Facilitating pathways for regular migration.


 **Initiatives :** Global Compact For Migration.


 **Reports:** World Migration Report.



SMART QUIZ

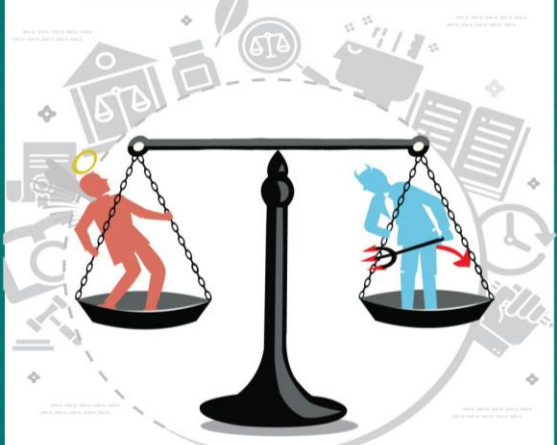
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Smart and Effective Notes Making for UPSC CSE Principles and Strategies



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Principles of Notes Making

-  **Personalize Notes:** Understand your learning style for effective customization which should be prepared in an integrated manner for both Prelims and Mains examination.
-  **Format Choice:** Opt for digital, handwritten, or a hybrid approach based on learning ease.
-  **Summarization and Organization:** Condense passages, use bullet points for clear organization.
-  **Current Affairs Integration:** Enhance note relevance by integrating current affairs with static topics.
-  **Language Precision:** Emphasize keywords, concepts, and examples; avoid complete sentences.



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Smart Strategies for Effective Notes Making

-  **Reliable Sources**
Choose reputable sources that meet the demands of the examination.
-  **Summarize and Organize**
Highlight or underline important points while reading, then summarize these in your own words.
-  **Link to the UPSC Syllabus**
To ensure easy referencing of subject, topic, and subtopic for efficient exam preparation.
-  **Integrate Visual Aids**
Use diagrams, flowcharts, and mind maps to visualize complex relationships between topics.
-  **Current Affairs**
Create a dedicated section and link it to corresponding static topics for a comprehensive understanding.
-  **Regular Revision**
Frequently revisit your notes to reinforce your memory and improve your retention.

 **Use bullet points, headings, and subheadings to structure your notes clearly.**

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7. SCIENCE AND TECHNOLOGY

7.1. SPACE SITUATIONAL AWARENESS

Why in the news?

Indian Space Research Organization (ISRO) released the **Indian Space Situational Assessment Report (ISSAR) for 2023** compiled by ISRO System for Safe and Sustainable Space Operations Management (IS4OM).

About Space Situational Awareness (SSA)

- **Definition:** Space situational awareness (SSA) is the knowledge, characterization, and practice of **tracking space objects and their operational environment** (mainly orbits).
 - Space assets operating in outer space are **vulnerable to various environmental hazards**- natural objects like asteroids, comets, and meteoroids, energy and particle flux, and artificial space objects.
 - In order to **enable Collision Avoidance Maneuvers (CAM)**, space operators can use **SSA data to forecast object conjunctions** and **warn them** against any potentially hazardous near approaches.

Do you know?

> ISRO was previously the Indian National Committee for Space Research (INCOSPAR), set up by the **Government of India in 1962**, as envisioned by **Dr. Vikram A Sarabhai**.

Key Highlights of Indian Space Situational Assessment Report (ISSAR) 2023

- **Satellites:** Since beginning of Indian space era, **127 Indian satellites**, including those from private operators/academic institutions, have been launched till December 2023.
 - Number of operational satellites owned by Government of India is 22 in LEO (Low Earth Orbit) and 29 in GEO (Geo-synchronous Earth Orbit).
- **Space Debris:** There were **five major on-orbit break-up events** in 2023, resulting in a net addition of 69 fragmented objects to space debris population by the end of 2023.
- **Space Object Proximity Analysis (SOPA):** ISRO regularly carries out analyses through IS4OM/ ISTRAC (ISRO Telemetry Tracking and Command Network) to predict close approaches by other space objects to Indian space assets and to undertake Collision Avoidance Manoeuvres (CAMs).
 - An **increasing trend in CAMs** per year is observed, which can be correlated with the growing congestion in outer space.

About Space Debris

- **Definition:** Space debris is defined as all **non-functional, artificial objects**, including fragments and elements thereof, **in Earth orbit** or re-entering into Earth's atmosphere.
- **Debris concentration:** **Maximum debris concentrations** can be noted **at altitudes of 800-1000 km**, and near 1400 km (mainly in Lower Earth Orbits (LEO)).
- **Origins:** Majority of debris objects originate from **on-orbit break-ups** as well as on-orbit collisions.
 - Space debris also originates from **defunct satellites, missing equipments, spent rocket stages**, and use of space-based weapons.
- **Kessler syndrome:** It is a phenomenon in which the density of objects in the Low Earth Orbit grows leads to collision, triggering a chain reaction that generates more space debris and further collisions.

Concerns/Risks associated with Space Debris

- **Operational risks:** Space debris objects can cause harm to operational spacecrafts and satellites.
 - Impacts by debris larger than 10 cm are assumed to cause **catastrophic break-ups**, which completely destroy the spacecraft, thus ending its operation, and generating thousands of debris fragments.
 - India had to carry out **23 CAMs to protect Indian space assets**.
- **Threat to astronauts' lives:** Due to rate of speed and volume of debris in Low Earth Orbit, current and future space-based explorations and operations pose a safety risk to astronauts.
- **Risk to ground population:** Large space debris objects that reenter the atmosphere in an uncontrolled way can survive reentry to reach Earth's surface, creating risk to the population on ground.

- **Limited natural resource:** Orbits are a limited natural resource and space debris threatens the economically vital orbits, potentially making them unusable in future.

Initiatives for mitigating Space Debris

- **Global initiatives and international partnerships**
 - **Inter-Agency Debris Coordination Committee (IADC):** Established in 1993, it is an international governmental forum for the worldwide coordination of activities related to man-made and natural debris in space.
 - **UN Space Debris Mitigation Guidelines:** Prepared by UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS) and endorsed by UN General Assembly in 2007.
 - **Zero Debris Charter:** Signed by **12 countries** - Austria, Belgium, Cyprus, Estonia, Germany, Lithuania, Poland, Portugal, Romania, Slovakia, Sweden and United Kingdom.
 - ✓ It contains high-level guiding principles and ambitious, jointly defined targets to become **debris neutral by 2030**.
- **Indian initiatives**
 - **Debris Free Space Missions (DFSM) 2030:** This initiative aims to achieve debris-free space missions by all Indian space actors, governmental and non-governmental by 2030.
 - **ISRO System for Safe and Sustainable Operations Management (IS4OM):** Operational since 2022 to safeguard ISRO's space assets and to improve compliance with internationally recognized guidelines on the Long-Term Sustainability (LTS) of outer space activities.
 - **Space Situational Awareness Control Centre (SSACC):** Established in Bengaluru, it assimilates the tracking data of inactive satellites, generates useful information and enable research activities pertaining to active debris removal, space debris modelling and mitigation.
 - **Project Network for Space Object Tracking and Analysis (NETRA):** Under it, ISRO has taken up the establishment of Space Surveillance and Tracking network with radars and optical telescopes.

Way Forward

- **Minimize generation:** Avoid debris generation during operational life of satellites and launch vehicles through regulatory action or international agreements.
- **Guarantee successful disposal:** Ensure the safe disposal of space objects through atmospheric reentry or re-orbiting to a safe altitude.
- **Avoid internal break-ups:** Satellite health monitoring must be improved, and robust passivation techniques implemented to prevent satellites breaking up from within.
- **Active Debris Removal (ADR):** Harpoons, magnets, lasers, and slingshots are being explored as possible ways to capture space junk and bring it down to LEO.

Related News

Norms, Guidelines and Procedures (NGP) for Implementation of Indian Space Policy-2023 in respect of Authorization of Space Activities

- Formulated by **Indian National Space Promotion and Authorization Centre (IN-SPACe)**, NGP includes the list of space activities which need authorization from IN-SPACe, criteria for granting authorization and necessary conditions to be adhered to.
 - IN-SPACe is an **autonomous single window nodal agency within Department of Space** with a mandate to authorize all space activities undertaken by Government and Non-Government Entities in the country.
- **Key highlights:**
 - Any entity carrying out space activities to or from Indian territory or within the jurisdiction of India including the area to the limit of its exclusive economic zone **needs authorization** from IN-SPACe.
 - Any space activity including launch, operation, guidance and re-entry of any space object need authorization from IN-SPACe.
 - **Only an Indian Entity** can apply to IN-SPACe seeking Authorization.
 - **Non-Indian Entities** desiring to conduct Space Activity in India can apply to IN-SPACe for Authorization **through an Indian Entity which could be its Indian subsidiary, joint venture or any other collaboration arrangement** recognised by the Government of India.

7.2. SOLAR STORM (GEOMAGNETIC STORM)

Why in the news?

Recently, Earth witnessed G5 level of solar storm, the strongest in two decades and possibly one of the strongest displays of auroras in past 500 years.

What are Solar Storms?

- **Solar storms** are like massive bursts of energy from the Sun.
 - They happen when a large eruption on the Sun's surface, often accompanied by solar flares and coronal mass ejections (CMEs), accelerates charged particles to incredibly high speeds.
 - Depending on the intensity, they are classified from G1 (Minor) to G5 (extreme).
 - **High speed solar winds bring geomagnetic storms.**
 - These are a result of Sun entering a **period of peak activity** called **Solar Maximum**.
- **Solar Flare** is an intense burst of radiation, while CMEs are huge cloud of plasma (hot, ionized gas) and magnetic fields ejected from the Sun near Sunspots.
 - These ejected particles can travel over a million miles per hour, and when they reach Earth, they interact with our planet's magnetic field, causing disturbances.

Know the term

- **High-speed solar wind:** Solar wind is a continuous stream of **particles** – mainly protons and electrons in a state known as a **plasma**—flowing outward from the Sun.

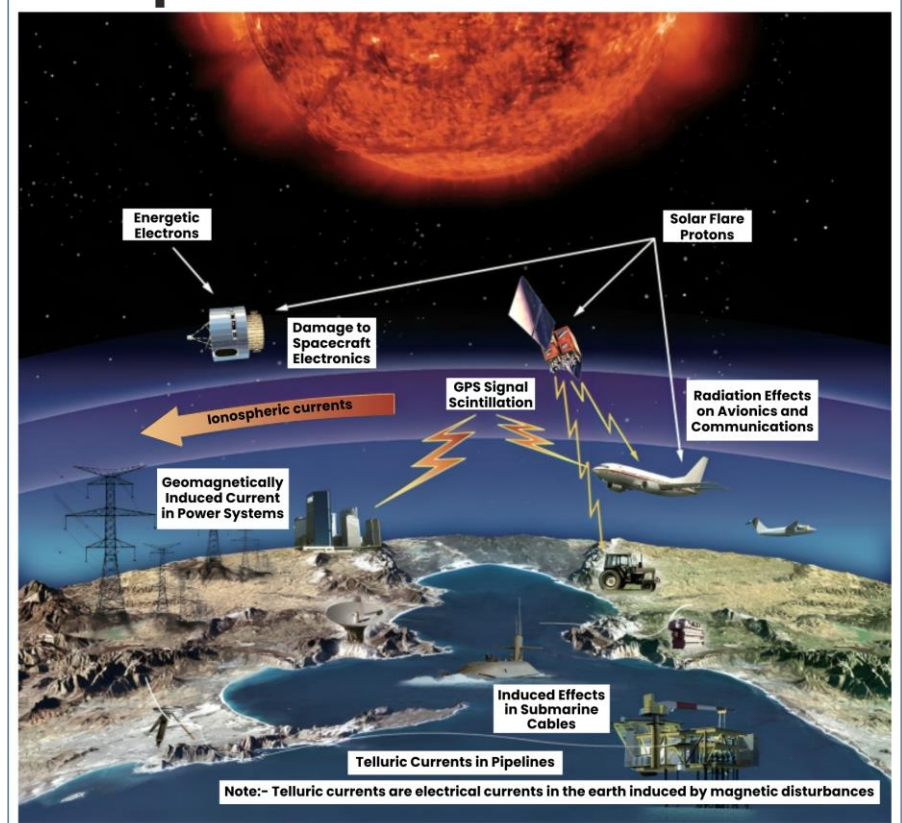
The Sun's Activity Cycle

- The Sun goes through cycles of activity, **with periods of high and low activity.**
- **These cycles last about 11 years**, and during the peak of the cycle, called the **solar maximum**, there are frequent solar storms and increased instances of sunspots (cooler regions on the Sun's surface)
 - This is because the Sun's magnetic fields are more complex and twisted during this phase, leading to more eruptions and ejections of charged particles.

Implications of solar storms

- **Damage to space infrastructure:** Highly energetic particles can penetrate the materials of spacecraft and potentially damage them.
- **Damage to ground assets:** such as power grids and can also interfere in radio communications.
- **Dangers to satellites:** Intense space weather causes changes in Earth's atmosphere and making it difficult for satellite to stay on track.
- **Affects ionosphere:** by disrupting the use of high frequency radios used for search and rescue, the Global Positioning System (GPS), and even ground/air communications within the aviation industry.
- **Negative impact on Astronauts:** it is caused due to **Increased radiation affecting** astronauts on International Space Station having harmful effects on health.
- **Auroras:** An aurora (northern or southern light) is caused when charged particles from the Sun, mainly electrons and protons, interact with the upper atmosphere.

Implications of solar storms



Missions to study solar activity

- **Aditya L-1 (India):** Launched in 2023, this is India's first space mission dedicated to observing the Sun.
- **Parker Solar Probe (NASA):** Launched in 2021, this spacecraft became the first to fly through the Sun's outer atmosphere, the corona.
- **Solar Orbiter (NASA/ESA):** Launched in 2020, this mission aims to take the closest-ever images of the Sun and study the solar wind.
- **Interface Region Imaging Spectrograph (NASA):** This mission aims to understand how the Sun's atmosphere is energized, leading to solar eruptions.
- **Solar and Heliospheric Observatory (NASA/ESA/JAXA):** Launched in 1995, this observatory monitors the effects of space weather on Earth.

7.3. 3D PRINTING

Why in the News?

IIT Madras-incubated space startup Agnikul Cosmos has successfully launched **world's first single-piece 3D printed rocket engine of Rocket Agnibaan SORTeD.**

More about the News

- Also, recently, Indian Space Research Organisation (ISRO) successfully conducted **hot testing of liquid rocket engine** which is manufactured through **Additive manufacturing (AM) or 3D Printing Technology.**
 - The engine used is the PS4 (fourth stage) engine of **Polar Satellite Launch Vehicle (PSLV).**
 - It is developed by the Liquid Propulsion Systems Centre (LPSC), ISRO.
 - **Laser Powder Bed Fusion (LPBF)** technique has been employed in t.

About Agnibaan SORTeD

- **Rocket Agnibaan SORTeD (SubOrbital Technological Demonstrator)** is India's first **semi-cryogenic engine-powered rocket launch flight.**
 - A **suborbital flight** is a flight up to a very high altitude which does not involve sending the vehicle into orbit.
 - Its engine has been developed with the help of AM or 3D Printing technology.
- **Launched from: India's first privately developed launchpad** called 'Dhanush' established by Agnikul at Sriharikota in Andhra Pradesh.
 - Launch was supported by the **ISRO** and the **Indian National Space Promotion and Authorisation Centre (IN-SPACe).**
- **Stages and Carrying Capacity:** Two-stage rocket with a capacity to carry payloads upto 100 kg to a height of 700 km (in a Low Earth Orbit (LEO)). Also, there is optional 3rd stage of Agnibaan which is known as baby stage.
 - It can access both **low-** and **high-inclination orbits.**
- It takes about **75 hours to build one rocket engine**, which is much faster than the standard 10 to 12 weeks required to build a similar-sized rocket engine using conventional processes.

Know the term

- **Laser Powder Bed Fusion (LPBF):** 3D printing method that joins powdered material point by point using energy source, typically a laser beam or an electron beam.
- **Inclination Orbits:** An orbital inclination of 0° is directly above the equator; 90° crosses right above the pole, and 180° orbits above the equator in the opposite direction of Earth's spin.

About Semi-Cryogenic Engine (SCE)

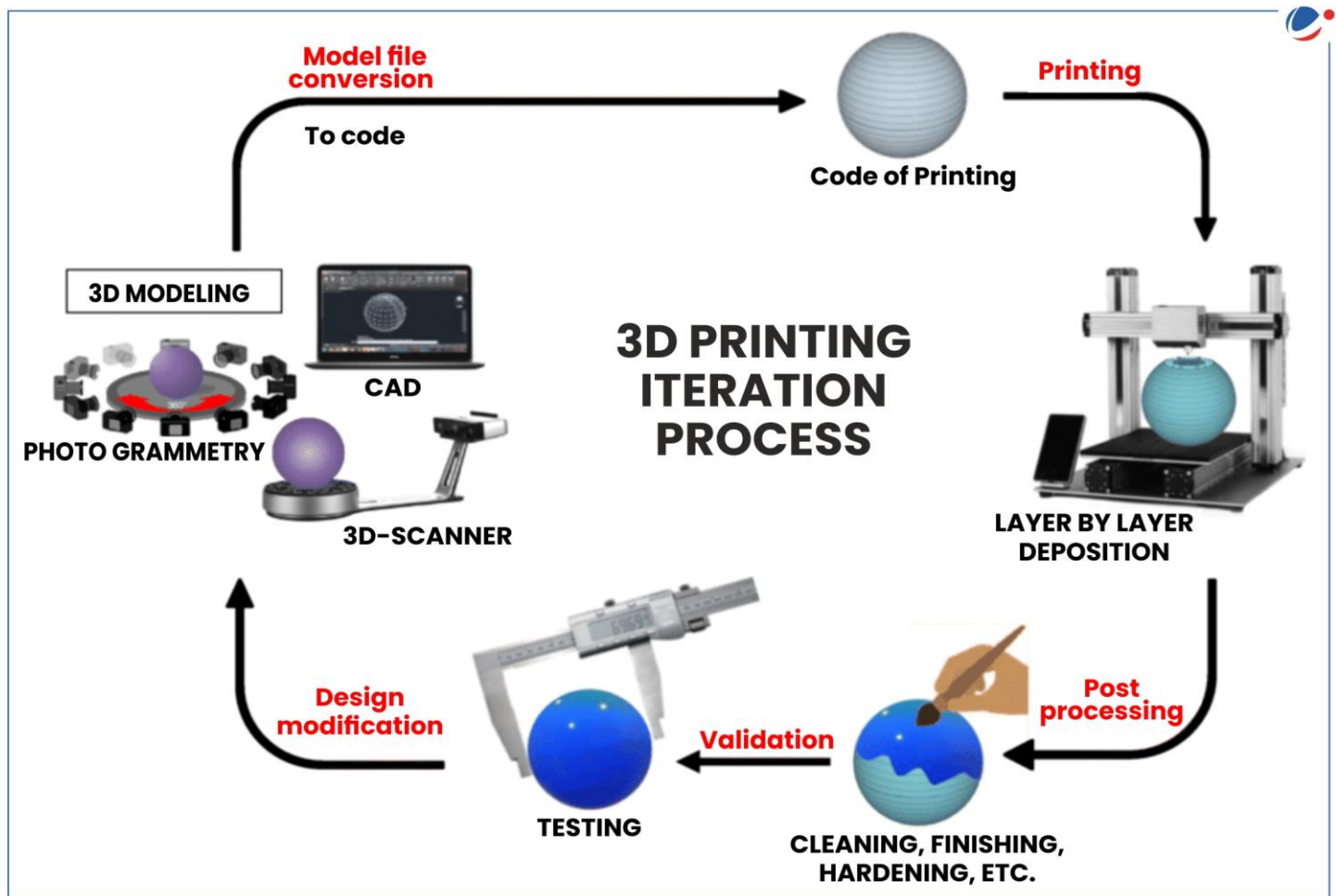
- **Agnilet** (engine of Agnibaan rocket) utilizes a propellant **combination of Liquid Oxygen (LOX) and Kerosene.**
- SCE **uses a fuel** that is **storable at higher temperatures compared to cryogenic engines**, which makes handling and storage simpler while offering high performance.
 - **Cryogenic engines** use liquid hydrogen as fuel and liquid oxygen as oxidizer at extremely low temperatures.
- ISRO is developing semi-cryogenic propulsion systems for enhancing payload capability of Launch Vehicle Mark-3 and for future launch vehicles.

About AM / 3D Printing

- It is the technology that constructs a **three-dimensional object** from a digital 3D model by **adding material layer by layer**.
- It is the **opposite of subtractive (traditional) manufacturing**, in which an object is created by cutting away at a solid block of material.
- **AM materials** include thermoplastics, metal and metal alloys, ceramics and biomaterials such as bioinks.

Process involved in AM / 3D Printing

- Additive Manufacturing technologies are essentially classified into **virtual** and **physical models**.
- The **virtual model** represents computational models and applications for simulation and optimization.
 - 3D model is prepared of the required object on **computer-aid design (CAD) software**.
- The **physical model** represents three-dimensional virtual design models that are then speedily fabricated into a physical object. This process is known as **rapid prototyping**.
 - Then, 3D printers are used for the creation of structure.
 - ✓ **3D printers** are physical machines that translate digital design files into actual objects or parts.
- It involved different **methods** such as- Material Jetting, Directed Energy Deposition, Sheet Lamination etc.



Key Applications	
Aerospace & Defence: Landing gears, Thrust reverser doors, Small surveillance drones, high-value components etc.	Automotive: Engine components, gear boxes, air inlet, etc.
Electronics: Wearable devices, soft robots, Data processing technologies, RFID (Radio Frequency Identification) devices, etc.	Healthcare: Surgical Models (Organs), Surgical Instruments (medical) etc.
Consumer Goods: Jewellery, shoes, clothing, cosmetics products, toys, figurines, furniture, office accessories, musical instruments, bicycles, and food products (E.g. confectionery items).	

Advantages of 3D Printing

- **Rapid Prototyping:** 3D Printing has considerably expedited prototyping, serving as a **catalyst** in the **product development cycle**. It will facilitate swift transition of ideas from concept to tangible form.
- **Design Flexibility:** **Intricate** designs, which would have been nearly impossible or prohibitively expensive with conventional manufacturing methods, are now feasible.
 - For instance, aerospace and automotive industries can create components with complex structure without compromising strength.
- **Sustainability:** It significantly reduces material waste by **only consuming what's necessary for the print** and the support structures.
 - Also it uses sustainable materials. E.g. **Polylactic Acid (PLA)** is a popular 3D printing material derived from renewable resources like corn starch or sugarcane.
- **On-demand Production:** Companies can move from mass production to mass customization, allowing for the swift manufacturing of parts based on specific demand.
- **Quality Assurance:** With **digital design validation**, potential errors in the design process are identified and corrected even before the printing begins.
 - The layer-by-layer technique of 3D printers ensures consistency across the board.
- **Supply Chain Enhancement:** Eliminates the dependence on large warehouses to store bulk items and components.

Key Challenges of 3D Printing



Expensive: Initial investment in equipment is substantial.



Limited Materials: Selection of plastics and metals is not exhaustive.



Restricted Build Size: Print chambers have small sizes, larger parts need to be joined after printing.



Part Structure: Layers can delaminate under stress due to the layer-by-layer production process.

Key Initiatives Taken to Promote 3D Printing

- **Ministry of Electronics and Information Technology (MeitY)** released “**National Strategy for Additive Manufacturing**” in 2022.
 - The Strategy aspires to achieve 5% of Global AM market share and thereto add nearly US\$ 1Bn to the GDP by 2025.
- **National Institute of Electronics & Information Technology**, Aurangabad, has established a **3D printing lab**.
- In 2023, **National Centre for Additive Manufacturing** was set up by MeitY in collaboration with the **Government of Telangana**.

Recent Developments in India

- India's first 3D-printed post office was created in Bengaluru.
- Telangana unveiled world's first 3D-printed temple at Burugupally, Siddipet district.

Conclusion

3D Printing has revolutionised the manufacturing process. In India, it is in a nascent stage. Implementation of National Strategy for Additive Manufacturing in letter and spirit will decide its future. Private sector needs to shift towards it as it has multiple benefits over traditional methods.

To know more about Space Tech Start-Ups in India, refer Article 7.1 of the December Monthly Current Affairs 2023.

Scan the QR code to know more about **SpaceTech Industry.**

Weekly Focus #112: SpaceTech Industry: From Curiosity to Reality



7.4. AGRITECH

Why in the News?

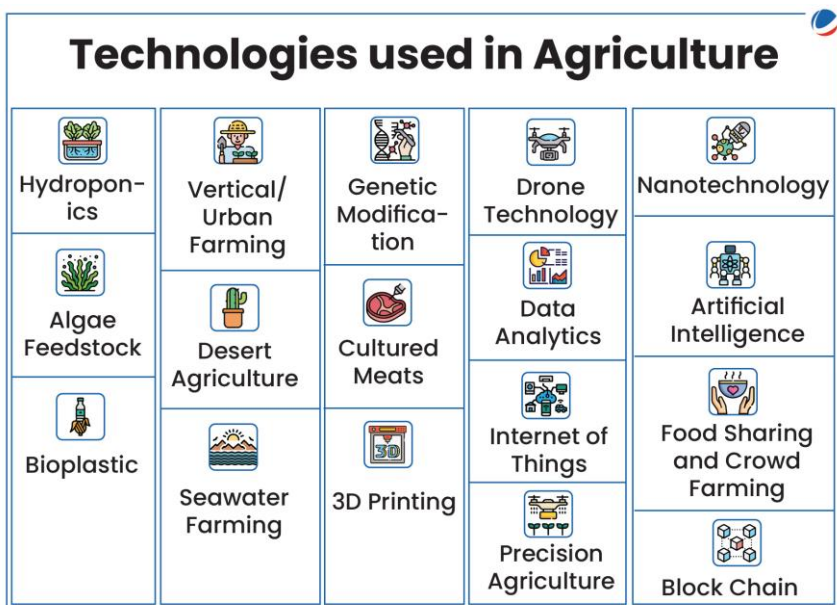
World Economic Forum (WEF) in partnership with PwC India released a report titled “Agritech: Shaping Agriculture in Emerging Economies, Today and Tomorrow”

What is Agri-Tech?

- Agritech or **agriculture technology** is the term referring to the use of technological innovations in agriculture to increase its **yield, efficiency, and profitability.**
- It employs **advanced technologies**, such as artificial intelligence (AI), IoT (Internet of Things), biotechnology etc.

Role of Agri-Tech in Agriculture Ecosystem

- **Intelligent crop planning:** It involves the use of emerging technologies such as **Gene Editing, AI-based soil-testing solutions advice etc.** to create a detailed, market-oriented and sustainable crop plan.
- **Smart farming:** Also known as precision farming, it is the use of technologies to improve **efficiency in farm operations.** E.g., AI and Augmented Reality (AR) for crop planning, hyperlocal weather predictions etc.
- **Farmgate-to-fork:** To address underlying issues such as a lack of **quality standards, crop loss between farm and market,** access to storage facilities etc. E.g., **Traceability using blockchain, Internet of Things (IoT) enabled warehousing, smart logistics** and more.
- **Data governance:** Ease of access to high-quality, usable data can generate social-economic value for both farmers and industry alike.
 - For instance, **Digital public infrastructure (DPI)** in agriculture is a critical enabler of agritech services in emerging economies.



Potential impact of AgriTech impact on Environment

Positive

- **Precision farming** which optimises crop production using sensors and data analytics, is enabling increased yields, lowered waste, and lowered **greenhouse gas emissions.**
- **Precision feeding,** genetic selection, and manure management can **reduce emissions** due to **livestock farming.**
- **Biotechnology** can be used to develop crop varieties that are more resistant to pests and diseases.

Negative

- **Genetically modified crops** can pose risks like reduced genetic diversity and adverse impact on health of humans and pollinators.
- Agri-tech systems often **enable intensive monoculture practices** which lead to reduced diversity, overuse of water resources etc.

Initiatives taken by India in AgriTech

- **Promotion of Agri-Startups:** They provide innovative solutions like farm management software, online marketplaces for agricultural produce, and farm advisory services etc.
 - Around **2800** AgriTech startups (like BigHaat, Fasal, MeraKisan etc.) are recognised by Startup India.
 - **Innovation and Agri-Entrepreneurship Development programme:** under **Rashtriya Krishi Vikas Yojana (RKVY)** from 2018-19 to provide financial and technical support for nurturing the startup ecosystem.
 - ✓ 5 Knowledge Partners (KPs) and 24 RKVY **Agribusiness Incubators (R-ABIs)** have been appointed for **training & incubation** of agri-startups and implementation of this programme.
 - **Agriculture Accelerator Fund:** Govt. has approved a fund of **Rs. 500 crore** for five years commencing from 2023-24 to encourage **young entrepreneurs** to set up agri-startups in rural areas.
- **Agri Stack:** Designed to facilitate the delivery of **agritech and other digital services** to farmers by the government, agritech start-ups, the private sector or other institutions.
- **Agricultural Data Exchange (ADeX):** It is an open-source, **open-standard** and **inter-operable** public good that allows data sharing between data providers and data consumers, mainly the private sector, including start-ups, to build customized services for farmers.
- **Digital Agriculture Mission (DAM):** This initiative was launched in **2021** to help agri-tech start-ups by leveraging advances in **cloud computing, earth observation, remote sensing, data, and AI/ML models.**
- **Agricultural Technology Management Agency (ATMA) Scheme:** It supports the State Government's efforts to make available the latest agricultural technologies through different extension activities like **Farmer's Training, Demonstrations, Kisan Mela etc.**

Challenges in Agritech adoption

- **Limited Digital Literacy:** India's farmers lack the **technical expertise** and **hands-on experience** required to effectively operate machinery and software, hindering their ability to utilize advanced agricultural technology.
- **Infrastructural Barriers:** Rural areas often face inadequate network coverage and slow internet speeds, hindering the adoption and effectiveness of **agri-tech solutions.**
- **Resource Constraints:** A substantial number of farmers in rural **India operate on small landholdings** and have limited financial resources. Adopting agritech solutions can be expensive, especially when it comes to buying **software and equipment.**
- **Resistance to Change:** Traditional farming methods have been ingrained in rural Indian communities for generations. **Convincing farmers** to embrace technological interventions can be **challenging.**
- **Job loss:** With farming being a major source of employment across the country, **automation in the agriculture sector** could have a significant impact on the local economy leading to large-scale job loss.

Way forward

- **Linking digital and physical channels:** for instance, using an existing channel of farmer **collectives, cooperatives or organized channels,** such as e-governance agents – will be crucial in **driving the adoption** and active use of agritech services.
- **Diversification of Income Streams:** Adoption of agritech makes it possible to diversify revenue sources outside of traditional farming. Agritech solutions can be developed and marketed by **rural entrepreneurs,** boosting local economies and generating **job possibilities.**
- **Building awareness among farmers:** The government and civil society must work together to educate Indian farmers in the use of **cutting-edge digital and digital technology.**
- **Creating the digital infrastructure for rural information:** Data related to geo-referenced land/soil details, crop production, market transaction information, etc., should be kept in the public domain.
 - So that startups **need not spend time** and resources on collecting already available information.
- **Harness the power of public-private collaboration:** Incentives (financial and non-financial) that will encourage the private sector to **invest in scaling agritech** in value chains or geographical regions.

7.4.1. NANOTECHNOLOGY IN AGRICULTURE

Why in the news?

Indian Farmers Fertiliser Cooperative Limited (IFFCO) got the Fertiliser (Control) Order, 1985 (FCO) approval for Nano Zinc and Nano Copper liquids.

More about the news

- These Nanofertilisers would help to address effectively the deficiency of micronutrients zinc and copper in agriculture.
 - Nano fertilisers are nutrients that are **encapsulated within a nanomaterial** in order to enable **controlled release**, and its subsequent **slow diffusion into the soil**.
- Significance of Zinc and copper micronutrients in agriculture:
 - Zinc: Enzyme functioning in plants, plant growth and development etc.
 - Copper: Enzymatic activities in plants and chlorophyll and seed production
- Earlier, IFFCO's nano-liquid urea and nano-liquid Di-Ammonia Phosphate (DAP) were also approved under FCO.
 - **FCO is administered by Dept. of Agriculture Cooperation** under the **Essential Commodities Act, 1955**.
 - It lays down as to what substances qualify for use as fertilizers in the soil, procedure for obtaining license, etc.
- The approval of these nano fertilizers highlights the increasing use of nanotechnology in agriculture.

About Nanotechnology

- Nanotechnology involves working with materials and devices at the nanoscale, typically ranging from **1 to 100 nm in size**.
- **Need of Nanotechnology in Indian Agriculture**
 - **Indian agriculture fatigued after the Green Revolution:** Nutrient use efficiency has declined, and crops are not responding to added nutrients such as fertilisers.
 - **Environmental Damage:** The **unbalanced and non-judicious application of fertilizers** has caused **damage to croplands and natural water bodies**.
 - ✓ E.g., excessive use of subsidized urea disrupts groundwater, causes eutrophication, and deteriorates soil health.
 - **Food and Nutritional Security Challenges:** Achieving food security amidst climate change is challenging, with multi-nutrient deficiencies in Indian soils, requiring an **efficient input delivery and management system**.
 - **Overcoming other issues in Indian agriculture:** Such as pests and diseases causing substantial crop losses, shortage of water and post-harvest due to spoilage.

Applications of Nanotechnology in Agriculture

- **Nanofertilizers:** They can enhance nutrient uptake by plants with **90-100% utilization efficiency**, improving crop yields.
- **Nanopesticides:** They can deliver active ingredients to pests in a targeted manner, reducing the amount of chemicals needed and minimizing collateral damage to non-target organisms.
 - E.g., **Nano Silver** is known to have strong bactericidal and broad spectrum antimicrobial activities.
- **Nanobiosensors:** They can monitor soil conditions, crop health, and environmental factors with high precision and **provide real-time data to farmers** for informed decision making with respect to a irrigation, nutrient application, and pest control.
- **Nanomaterials for Soil Improvement:**
 - **Nanoparticles of clay:** To improve soil structure, water retention, and nutrient-holding capacity.
 - **Nanomagnets:** For removal of soil contaminants.
 - **Remediation:** Nanoparticles can help in pollution sensing and remediation of contaminated agricultural lands.
 - ✓ E.g., **Photocatalysis** uses UV-activated nanoparticles to degrade pollutants efficiently.
- **Crop Protection:** Applying **silica nanoparticles** to leaves shield plants from high temperatures and intense UV radiation.
- **Nanotechnology in Crop Breeding:** It can aid in the development of genetically modified crops **by enabling precise manipulation of plant genes at the nanoscale**.

- **Nano-fibre arrays:** Can deliver genetic material to cells quickly and efficiently.
- **Single walled carbon nanotubes (SWNTs):** Can serve as effective nanotransporters to deliver DNA and small dye molecules into plant cells, thus can be used as **small treatment delivery systems in plants.**
- **Nanotechnology in Food Processing:**
 - **Food Packaging and Preservation:** Nanomaterials such as **nanocomposites** can be used to create antimicrobial and oxygen-barrier coatings to reduce spoilage and food waste.
 - **Food safety:** Scientists have successfully used **single bacterial cells to make tiny bio-electronic circuits**, which could in the future be used to detect bacteria, toxins and proteins.

Potential harmful impacts of Nanoparticles



Nanophytotoxicity

Accumulation of NPs at toxic levels produces negative impacts on growth and development of plant.



Hazardous to humans

Accumulation of NPs in vital organs by consuming nano based food



High oxidative stress

Caused by a few NPs can interrupt with cell metabolism in plants



Deleterious to soil microbiota

Exposure of non target soil microflora to NPs causes disturbances in their metabolism and stability



Effect on underground waters

NPs accumulated in soil interacts with groundwaters making them unusable



Toxicity in beehives

Caused due to continuous exposure of hive with NPs uptaken by bees from plants

Conclusion

Nanotechnology offers promising applications in agriculture, potentially revolutionizing crop production and management. However, challenges remain, including potential environmental and health risks associated with nanoparticles. Thus, we need to develop regulatory frameworks to ensure the safe and responsible development and use of nanomaterials in agriculture. Proper Risk Assessment can be conducted as suggested in the guidelines by the Department of Biotechnology (DBT), and FCO order 2021.

Government Initiatives on Nanotechnology in Agriculture

- **Mission on Nano Science and Technology (Nano Mission):** Launched in 2007, under the Department of Science & Technology (DST), with funding spanned multiple areas like basic research in nanotechnology including Agriculture.
- **Guidelines for evaluating nano-agri inputs and products:** Developed by the Department of Biotechnology to ensure the safe and effective use of nanomaterials in agriculture and address the regulatory framework for commercialization.

- **National Agricultural Innovation Project (NAIP):** Several projects have been initiated to explore the applications of nanotechnology in agriculture.
- **Skill development training programme on nanotechnology:** By Indian Council for Agriculture Research (ICAR), in line with the Government of India's Skill Development Initiative, to impart hands-on training on the synthesis & characterization of nanomaterials
- **Nano Fertilizer Plant (NFP):** Established by IFFCO at Phulpur, Prayagraj.

Scan the QR code to know more about **Agricultural Technology**.

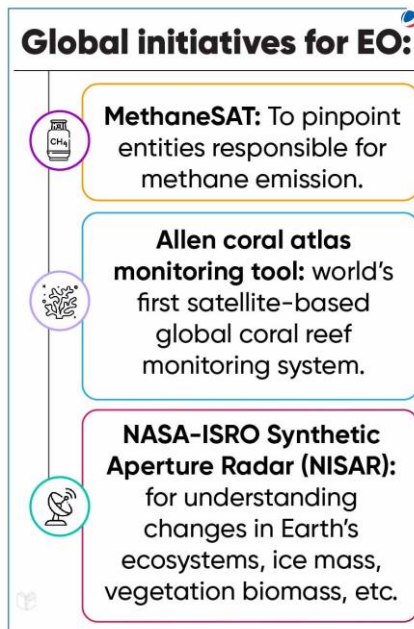
Weekly Focus #100: Agricultural Technology in India: Innovating for a Greener Tomorrow



7.5. NEWS IN SHORTS

7.5.1. AMPLIFYING THE GLOBAL VALUE OF EARTH OBSERVATION REPORT

- The report released by the **World Economic Forum** delves into the economic potential of **Earth Observation (EO)** technologies across various sectors.
- EO refers to **collecting information about activities and characteristics on Earth**, both natural and artificial, including physical, chemical, biological and human systems. EO includes:
 - **Remotely-sensed data** which is collected from satellites, piloted aircraft, etc.
 - **In-situ data** is gathered from GPS-enabled devices, Internet-of- things sensors, etc.
- **Economic opportunities of EO:** It would contribute **\$3.8 trillion to global gross domestic product** between 2023-2030. **Industries** that would **gain most** from EO–
 - **Agriculture:** facilitates practice of **precision agriculture**.
 - **Electricity and utilities:** to **forecast** the energy potential and operations management for **new solar, wind and hydropower sites**.
 - **Mining:** to **search for rare Earth minerals** in old mines and **enhance lithium exploration**.
- **Climate opportunities of EO:** EO applications have the potential to reduce over **2 billion tonnes of CO2 annually by 2030**. Some applications:
 - **Early warning:** better characterize wildfire risk and to spot wildfires faster.
 - **Environmental impact monitoring:** Satellites and aircraft-borne EO sensors can monitor Greenhouse gases.
- **Challenges:** limited awareness of EO applications, shortage of specialized talent, fragmented standards and difficulty navigating the complex EO marketplace, etc.

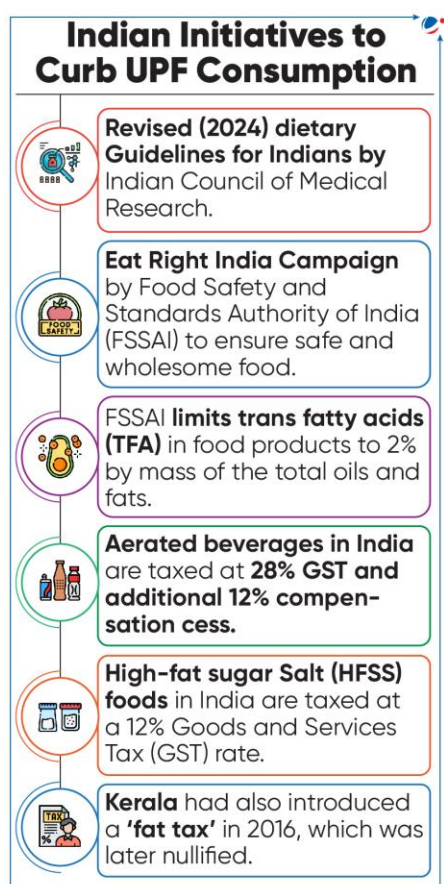


7.5.2. ULTRA-PROCESSED FOOD (UPF)

- **A 30-year-long U.S. study** found that **consuming Ultra-processed food (UPF)** is associated with a **higher risk of early death**.
- The risk was **especially** associated with products like **ready-to-eat meats, sugary drinks, dairy desserts, and processed breakfast foods**.
- However, researchers also clarified that **not all UPF should be universally restricted**, but findings support limiting certain types for long-term health.
- Researchers used the **Alternative Healthy Eating Index-2010 (AHEI) score** to assess overall dietary quality.
 - **AHEI**, developed by Harvard School of Public Health, **assigns ratings to foods and nutrients predictive of chronic disease**.
- **About UPF**
 - UPFs are a **category of food products** that have **undergone extensive processing** and contain

significant amounts of additives (like preservatives, artificial flavours, emulsifiers).

- They are often **High in fat, Sugar and Salt (HFSS)** and low in Vitamins, protein, and fibre. For example, snacks, sodas, etc.
- Their increased consumptions may lead to various health issues including **hypertension, renal failure, obesity, fatty liver disease, metabolic syndrome, cardiovascular diseases, etc.**
- UPF food sector in India witnessed a compounded annual growth rate of **13.4% between 2011 and 2021 and is expected to grow further (WHO).**
- **Challenges in curbing UPF consumption in India**
 - **Changing lifestyle** and dietary pattern.
 - **Absence of a clear definition** and coverage of HFSS food.
 - **Lack of comprehensive advertisement** and marketing regulations.

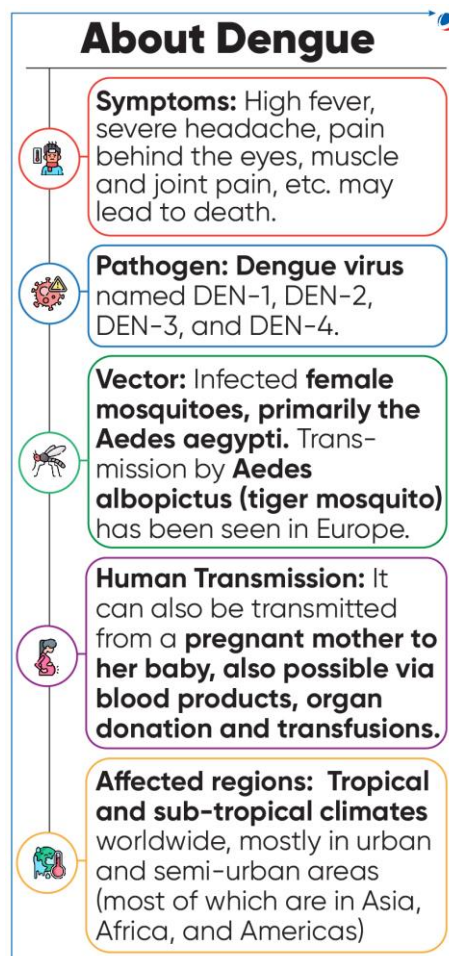


To know more about Ultra Processed Food, refer to Article 7.6 of the November 2023 Monthly Current Affairs Magazine.

7.5.3. WHO PREQUALIFIES NEW DENGUE VACCINE TAK-003

- Developed by Japan's pharma company Takeda, TAK-003 is a **live-attenuated vaccine** containing **weakened versions of the four serotypes** of the virus that cause dengue.

- It is the **second dengue vaccine** to receive **WHO prequalification**, following the **CYD-TDV vaccine**.
- WHO recommends the use of TAK-003 in **children aged 6–16 years** in settings with **high dengue burden** and transmission intensity.
- **About WHO Vaccine prequalification**
 - It was created in **1987** to **assure the quality of vaccines distributed by UN purchasing agencies**.
 - Vaccines showing positive outcomes after evaluation of **relevant data, testing of samples and WHO inspection of relevant manufacturing sites are included in the list**.
 - However, inclusion in the list **does not imply approval** of vaccines and manufacturing sites **by the WHO**.
 - ✓ Such approval is a **prerogative of the National Regulatory Authorities**.
 - Yet, pre-qualification is an important step in the **expansion of global access to vaccines** as it enables **procurement by UN agencies including UNICEF and PAHO (Pan American Health Organization)**.
 - **Other vector-borne disease** for which vaccines are included in this list include **malaria, yellow fever, Japanese encephalitis, Rabies, etc.**



7.5.4. WORLD ORGANISATION FOR ANIMAL HEALTH (WOAH)

- WOA released Annual Report on **Antimicrobial Agents Intended for Use in Animals**.
- **About WOA**
 - **Genesis:** founded in 1924 as the **Office International des Epizooties** and in 2003 adopted the common name WOA.
 - **About:** An **intergovernmental organization** focused on transparently disseminating information on animal diseases and improving animal health globally.
 - **Members:** It works with 183 Members (including India).
 - **Headquarter:** Paris

7.5.5. THROMBOSIS WITH THROMBOCYTOPENIA SYNDROME (TTS)

- AstraZeneca for the first time admitted that its COVID-19 vaccine (Covishield) had rare side effects including TTS.
- **About TTS**
 - Also referred to as **Vaccine-induced Immune Thrombotic Thrombocytopenia (VITT)**.
 - It occurs when a person has **blood clots (thrombosis)** together with a **low platelet count (thrombocytopenia)**.
 - It is a **rare condition** in which blood clots form in unusual places in the body.
 - It can affect a person's brain, abdomen, lungs, arteries, etc.
 - **Symptoms** include difficulty in breathing, chest pain, abdominal pain, swelling in leg, etc.

7.5.6. NAEGLERIA FOWLERI

- A girl from Malappuram in Kerala has recently died of infection from Naegleria Fowleri.
- **About Naegleria Fowleri**
 - It is an **amoeba (a type of unicellular organism)** that thrives in **soil, warm freshwater lakes, rivers, and hot springs**.
 - If amoeba reaches the nose and brain, it can result in infection called **Primary Amoebic Meningoencephalitis (PAM)**.
 - It is often called the "**brain-eating amoeba**" because it **can infect the brain and destroy brain tissue**.
 - ✓ **Brain infections** caused by Naegleria Fowleri are **rare but nearly always fatal**.

7.5.7. ETA AQUARID METEOR SHOWER

- Eta Aquarid meteor shower **peaks during early May** each year.
 - **Meteors** are space rocks that enter Earth's atmosphere burning and causing streak of light.
 - Meteors come from **leftover comet particles** and bits from broken asteroids.
- **About Eta Aquarid meteor shower**
 - It occurs when the Earth passes through orbital plane of Halley's Comet, which takes about **76 years** to orbit the Sun.
 - Eta Aquarid meteors are **known for their speed**.
 - **Southern Hemisphere is preferable** for viewing Eta Aquarids as its radiant – **Aquarius Constellation** – is higher up in Sky in Southern Hemisphere.

7.5.8. LUNAR POLAR EXPLORATION MISSION (LUPEX)

- India-Japan joint moon mission Lunar Polar Exploration Mission (LUPEX) is likely to take flight in few years.
- **About LUPEX**
 - Aimed at **exploring the Moon for water and other resources** and gaining expertise in exploring the surface of the Moon.
 - **Japanese Space Agency (JAXA)** will be responsible for the **lunar rover** and the **Indian Space Research Organisation (ISRO)** will handle the **lander**.
 - ✓ **Observation instruments from NASA and the European Space Agency (ESA)** will also be mounted on the rover.

7.5.9. HIGH ENERGY PHOTON SOURCE (HEPS)

- China is planning to construct a High Energy Photon Source (HEPS).
- This will put China among the few countries that have **fourth-generation synchrotron light sources**.
- Currently around 70 synchrotrons are scattered across the world. But only a few countries have fourth-generation synchrotrons such as Sweden, Brazil, France etc.
- **About HEPS**
 - First Brightest Synchrotron X-Rays in Asia.
 - ✓ **Synchrotrons** (a type of circular particle accelerator) use electricity to produce **intense beams of light** more than a million times brighter than the sun.
 - **Benefits:** Will help researchers' to understand matter in the dimensions of space, time, and energy, as well as at the level of molecules, atoms, electrons, and spin.

- **Indus-1** was India's first synchrotron.
 - India is also an **associate member** of the **European Synchrotron Radiation Facility (ESRF)** based in Grenoble, France.

7.5.10. BHISHM PORTABLE CUBES

- Indian Air Force tested **BHISHM portable cubes, a state-of-the-art indigenous mobile hospital**, at Agra for airdrops.
- **About BHISHM Portable Cubes**
 - These are a **part of initiative named Project BHISHM (Bharat Health Initiative for Sahyog, Hita and Maitri)**, designed to **treat up to 200 casualties**.
 - Consists of **72 small cubes** equipped with advanced medical equipment which are **Radio Frequency Identification (RFID)-tagged**.
 - **Integrates Artificial Intelligence and data analytics** to facilitate effective coordination, real-time monitoring of medical services in field.
 - These cubes are **robust, waterproof, and light**, designed for various configurations, making them **ideal for diverse emergency scenarios**.

7.5.11. SOIL NAILING

- Tamil Nadu is using Soil Nailing to ensure the stabilization of slopes around the Nilgiris' major roads
- **Soil Nailing**
 - It is a **geotechnical engineering technique** that involves the **insertion of reinforcing elements into the soil** in a specified area to strengthen it.
 - This is **followed by 'hydroseeding'** – a process of applying a mixture of seeds, fertilizer, organic materials and water onto the soil.
 - ✓ It facilitates the **growth of grass and plant life**, that will help hold the topsoil together and prevent erosion.

7.5.12. GOLDENE

- Scientists have developed a sheet of Gold, called Goldene, which is just one-atom thick.
- **About Goldene**
 - Created by **sandwiching silicon between titanium carbide layers**, depositing gold, allowing gold atoms to replace silicon, forming monolayer.
 - They are roughly **100 nanometres thick**, approx. 400 times thinner than the thinnest commercially available gold leaf.
 - **Potential applications:** Catalyst in the electronics industry, carbon dioxide conversion, hydrogen generation, water purification, etc.

7.5.13. AI AGENTS

- 'AI agents' like GPT-4o by OpenAI and Project Astra by Google are believed to be **far superior to conventional voice assistants** such as Alexa, Siri, and Google Assistant.
- **AI agents**
 - Unlike conventional language models, which solely work on text-based inputs and outputs, AI agents can engage in **real-time, multi-modal** (text, image, or voice) **interactions with humans**.
 - They **perceive their environment via sensors**, then process the information using **algorithms or AI models**, and subsequently, take actions.
 - They can **understand and learn from the context of interactions**, allowing them to provide more relevant and personalised responses.

7.5.14. ENDOSYMBIOTIC THEORY

- Recent research papers related to nitrogen fixation and nitroplast generated interest in the endosymbiotic theory.
- **About Endosymbiotic theory**
 - It posits that **some eukaryotic cell organelles**, such as mitochondria and plastids, **evolved from free-living prokaryotes**.
 - ✓ **Eukaryotic cells have a membrane-bound nucleus** which stores the genetic information.
 - ✓ **In prokaryotes, DNA is bundled together in the nucleoid region**, but it is not stored within a membrane-bound nucleus.
 - Some of these organisms **ingested prokaryotic cells** that then survived within the organism and developed a **symbiotic relationship**.

7.5.15. DOPPLER EFFECT

- **The Consumer Affairs Ministry** seeks public feedback on draft regulations for **Doppler radar equipment used for measuring vehicle speeds**.
 - Doppler radar uses the **Doppler effect to gather velocity data**.
- **About Doppler effect**
 - It refers to the **change in wave frequency** during the relative motion between a wave source and its observer.
 - First proposed by **Johann Christian Doppler** in 1842.
 - The phenomenon is observed in **sound waves and electromagnetic waves**.
 - **Application:** Astrophysics, police to check overspeeding of vehicles, etc.

7.5.16. GRAPHITE

- India has initiated discussions with Sri Lanka to acquire graphite mines.
- It is among **30 critical minerals** declared by India.
- **Graphite**
 - Also known as **plumbago** or **black lead**.
 - Stable form of naturally occurring **Carbon**.
 - **Properties:**
 - ✓ Grey to black metallic lustre.
 - ✓ **Extremely soft** and cleaves (splits into layers) with very light pressure.
 - ✓ **Good conductor** of heat and electricity.
 - ✓ **Resistant** to attack by ordinary chemical agents.
 - **Applications:** EV battery-making components, lubricants, pencils, foundry facings, paints crucibles etc.

7.5.17. NEPHROTIC SYNDROME

- Recently, Kerala researchers reported multiple cases linking regular fairness cream usage to **Nephrotic syndrome**.

- **Nephrotic syndrome** is a group of symptoms that indicate kidneys are not working properly. These symptoms include
 - too much protein in urine, called **proteinuria**
 - low levels of a protein called albumin in blood, called **hypoalbuminemia**
 - swelling in parts of body, called **edema**
 - high levels of cholesterol and other lipids (fats) in blood, called **hyperlipidemia**
- Study found a link between the increasing use of fairness creams with high levels of mercury (**beyond the safe limit of 1 ppm**) and the development of **membranous nephropathy**.
 - Membranous nephropathy is an organ-specific **autoimmune disease** and a **leading cause of nephrotic syndrome in adults**.
 - ✓ Autoimmune disease is a condition in which the **body's immune system** mistakes its own **healthy tissues** as foreign and attacks them.



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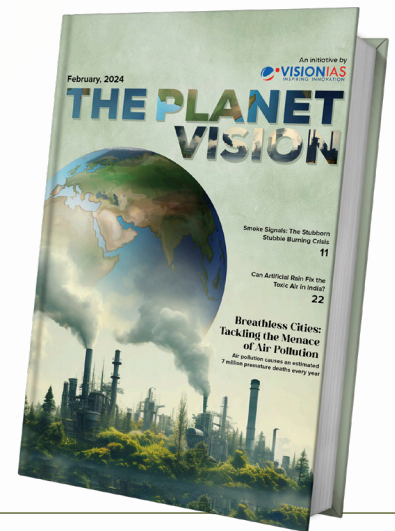
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THE PLANET VISION

In a world facing unprecedented environmental challenges, staying informed and empowered is more crucial than ever. VisionIAS brings you 'The Planet Vision', a simplified, informative, and interactive magazine to delve into the complexities of the environment.

With the belief, that individual efforts and awareness are the key to a sustainable future, the magazine seeks to inspire and educate people to develop a deeper understanding and appreciation for the environment, nature & planet.



Objectives of 'The Planet Vision'



Sensitize the young generation: Highlighting pressing environmental issues and their multifaceted impacts.



Inspire Action and Promote Sustainable Lifestyle: Inspiring stories and case studies to motivate readers to make environmentally conscious choices.



Bridge Environmental Science and Public Understanding: Presenting complex scientific concepts in a simple and interactive manner.



Showcase Solutions: Spotlight innovative technologies, projects, and initiatives that offer solutions to environmental challenges.



Highlight Local Efforts: Showcase local conservation efforts, community initiatives, and grassroots projects that make a positive impact on the environment.

Who is the magazine for?

The Magazine is designed for students, eco-conscious individuals, educators, environmentalists, and anyone who cares about the health of our planet.

Key elements of the 'The Planet Vision'



Cover Stories: Thought-provoking articles about a critical ongoing environmental issue, along with the mitigation strategies adopted at the national and international levels.



Briefing and Developments: Stay informed about the latest environmental news, trends, and solutions.



Protect and Preserve: Inspirational stories of local conservation efforts.



Environment and You: Illustrating ways to make environmentally conscious choices in everyday life.



Green Tech: New and emerging technologies in the field of environment.



Interactive elements:

✓ **Snapshot:** Telling a story through capturing images.

✓ **Quizzes and crosswords:** To test your understanding and knowledge as a reader.

“

Look deep into nature, and then you will understand everything better. ”

—Albert Einstein



Scan the QR code, to download and read the Magazine:

8. CULTURE

8.1. WEAVING IN INDIA

Why in the News?

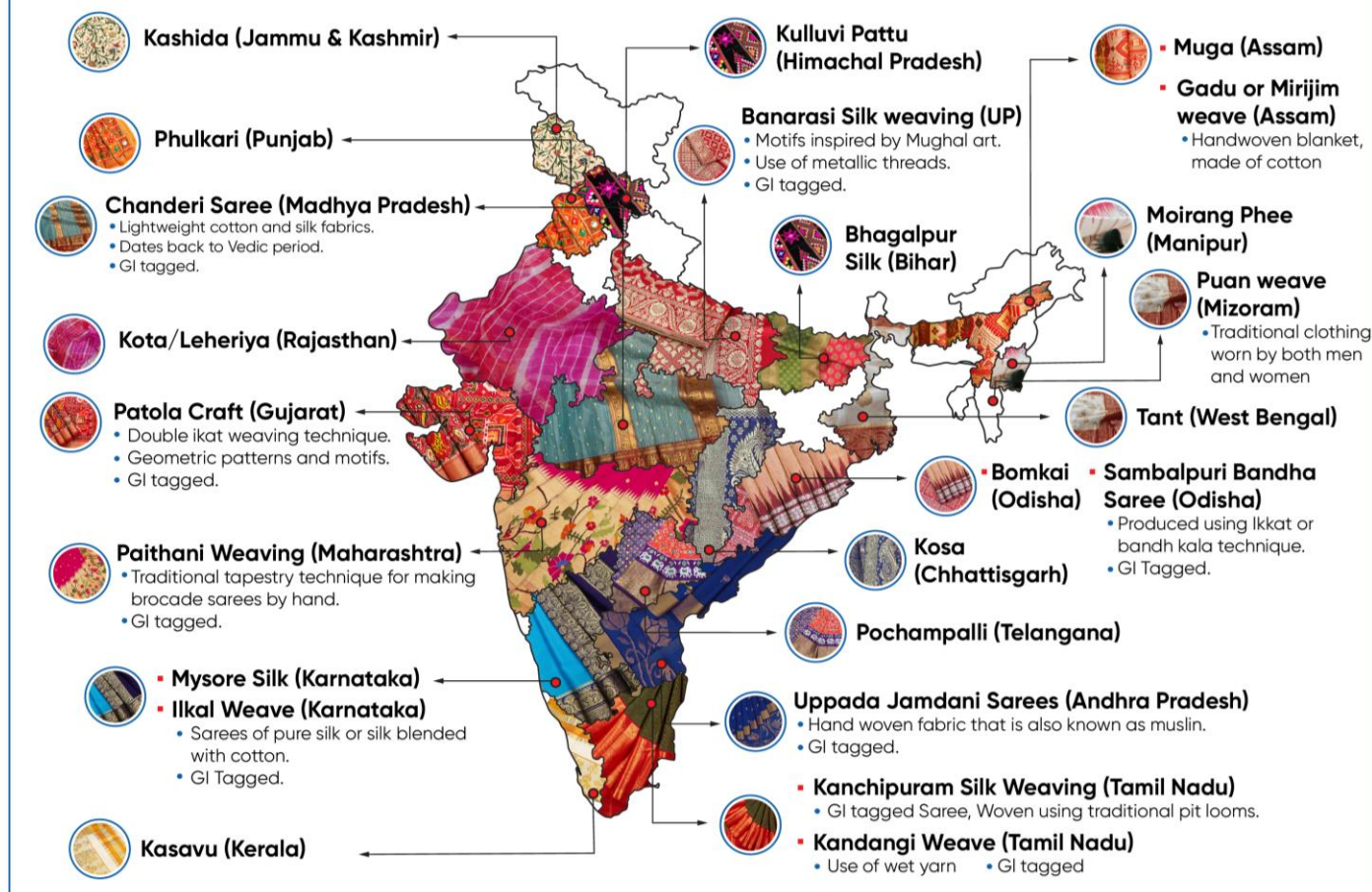
Recently on National Textile Day, tribute was paid to Indian weavers.

Weaving in India

- The history of Indian textiles and weavers in India dates back to ancient times. The origins of textiles in India **can be traced back to 3000 BC, during the Indus Valley Civilization.**

Ancient India	Medieval India	Modern India & European Influence
<ul style="list-style-type: none"> • Indus Valley Civilization (3300 – 1300 BCE): <ul style="list-style-type: none"> ○ Evidence of cotton cultivation and textile production has been found in IVC. Also, terracotta figurines of IVC are usually draped in woven garments. ○ Excavations at site of Mohenjo-Daro (C.2500 to 1500 BCE) revealed presence of dye with woven cotton fragments wrapped round a silver pot. • Vedic Period: Rigveda (1500 – 500 BCE) also contains references to weaving having religious and cultural significance. <ul style="list-style-type: none"> ○ A weaver in the Rigveda is described as vasovaya. ○ The male weaver was called vaya whereas a female weaver was called vayitri. • Post Vedic period: Epics like Mahabharat and Ramayana mention silk fabric and woolen clothing. <ul style="list-style-type: none"> ○ Buddhist literature refers to different types of textile fabrics like linen (Khoman), cotton (kappasikam), silk (kosseyam), etc. ○ Other related words found in the text are weavers (tantuvaya), place of weaving (tantavitatathanam), weaving appliances (tantabhanda) and loom (tantaka). ○ The Arthashastra refers to the superintendent of yarns (sutradyaksa) responsible for regulating yarn spinning. ○ In later periods, Achaemenid Empire in north-western India introduced Persian motifs and weaving techniques in India. 	<ul style="list-style-type: none"> • Mughal Empire (1526- 1857): Mughal emperors as patron of arts help opened Karkhanas or workshops where textile production was carried out. <ul style="list-style-type: none"> ○ In that era development of luxurious textiles like brocades, muslin, Malmal Khas (A muslin worn by Mughals) velvets happened. • In western India, silk was mostly mixed with cotton. <ul style="list-style-type: none"> ○ One example of this was alacha fabric which was made in Cambay, Gujarat. • Tarikh-i-Rashidi, a medieval text by Mirza Dughlat Baig mentions practice of sericulture in Kashmir. • Textile Industry grew substantially during medieval period and became largest industry under Mughals with a huge European market. 	<ul style="list-style-type: none"> • Emergence of Industrial Revolution in England made it difficult for Indian textiles to compete with the machine made products. <ul style="list-style-type: none"> ○ When English clothes entered India, condition of merchants of Indian textiles and weavers in India became worse because British cloth were cheaper. • India lost its rich textile market and became only a supplier of raw cotton for England. This period is represented by drain of wealth from India to England.

Weaving Styles of India



Steps taken to Improve Condition of Weavers/Handloom sector:

- **National Handloom Development Programme (NHDP):** This scheme by Ministry of Textile is being implemented from financial year 2021-22 to 2025-26.
 - It follows **need-based approach for integrated and holistic development of handlooms** and welfare of handloom weavers.
 - Main Components of scheme are as follows: **Cluster Development Programme, Handloom Marketing Assistance, Weavers' Welfare and Mega Handloom Cluster.**
- **Comprehensive Handloom Cluster Development Scheme (CHCDS):** For development of Mega Handloom Clusters in clearly identifiable geographical locations covering atleast 15000 handlooms.
- **Handloom Weavers' Comprehensive Welfare Scheme (HWCWS):** It is providing life, accidental and disability insurance coverage under the components Pradhan Mantri Jivan Jyoti Bima Yojana (PMJJBY), PradhanMantri Suraksha Bima Yojana (PMSBY) and Converged Mahatma Gandhi Bunkar Bima Yojana (MGBBY).
- **Raw Material Supply Scheme (RMSS):** This scheme by Ministry of Textile is being implemented throughout country to make available all types of yarn to Handloom weavers.
- **The Handloom Mark Scheme:** to provide assurance to the consumers about authenticity of handloom products.

Scan the QR code to know more about **Textile Sector.**

Weekly Focus #122: Threads of Transformation: India's Textile Industry Weaving a Modern Future



8.2. APARTHEID SYSTEM

Why in the News?

South Africa recently celebrated 30 years of end of Apartheid, a system of racial discrimination.

Know the term

➤ **Indentured labour:** A bonded labourer under contract to work for an employer for a specific amount of time, to pay off his passage to a new country or home

About Apartheid System

- **About:** It was a **legal system of racial discrimination unique to South Africa** which was imposed by White Europeans on **Non-whites (Black Africans, Coloured and Indians)** by treating them as Inferior.
- Apartheid was institutionalized in 1948, but previous governments had passed many pass laws (precursors of apartheid) during 19th and first half of 20th century.
 - Pass laws **restricted movements of blacks** into areas **occupied by whites and colored**.
- **Statutory Basis of Apartheid System:**
 - **Population Registration Act of 1950** provided basic framework for apartheid by classifying all South Africans by race, including Bantu (Black Africans), Colored (mixed race), white and Asian (meaning Indian and Pakistani).
 - Through **Group Areas Act of 1950**, each race was allotted its own area, which was used in later years as a basis of forced removal.
 - Other apartheid laws include **Prohibition of Mixed Marriages Act 1949, Bantu Education Act 1953 (segregation of education)** etc.

Indians in South Africa were divided into three groups:

- **Indentured Indian labourers**, from Uttar Pradesh, Bihar and South India, who had migrated to South Africa after 1890 to work on sugar plantations;
- **Merchants**—mostly Meman Muslims who had followed the labourers; and
- **Ex-indentured labourers** who had settled down with their children in South Africa after their contracts expired.

Anti-Apartheid Movement (AAM)

- It was **first successful transnational social movement** in 20th century.
- **Objectives of AAM** included **internal campaign to destabilize racist apartheid regime** in South Africa, and **external campaign** for political, economic, and cultural sanctions on Apartheid Regime.
- **AAM consisted of three phases**
 - **First Phase: It included use of nonviolent direct-action tactics** under leadership of organizations such as African National Congress (ANC), South African Communist Party (SACP) etc.
 - **Second Phase (After 1960s):** It was **characterized by the internationalization of struggle**, with support from African Union, United Nations and Including India.
 - ✓ **UN: Adopted International Convention on Suppression and Punishment of Crime of Apartheid.**
 - **Third Phase: Massive resistance (After 1980s):** Making country ungovernable through strikes, boycotts, demonstrations, and acts of sabotage.
- **Impact of Anti-Apartheid Movement:** By 1990, government lifted ban on political parties and repealed 1913 and 1936 Land Acts, Population Registration Act, and Separate Amenities Act.
 - Nelson Mandela was released in 1991, from prison. Four years later, on May 10, 1994, Mandela became President of South Africa.

Contribution of India in South African Anti- Apartheid Struggle

- **Mahatma Gandhi:**
 - **Seeds of AAM in South Africa** were sown by **Mahatma Gandhi** upon witnessing humiliation and contempt shown to Asians by White Europeans.
 - He established first **anticolonial and anti-racial discrimination movement** there and founded **Natal Indian Congress (1894)** and newspaper **Indian Opinion (1903)**.
 - In 1906 thousands of Satyagrahis under Gandhi's leadership **boycotted 1906 legislation** requiring **Indians to carry registration certificates with their fingerprints all times**.
 - When Gandhi left South Africa in 1915, he had left behind his legacy of **Phoenix Settlement** (Ashram-like settlement established, near Durban).

Natal Indian Congress (NIC)

- It was dominant **political organization among Indians in South Africa** throughout 20th century.
- In 1894, **NIC formed an alliance with African National Congress (ANC)**, breaking mould of racially exclusive mobilizations.
- **In 1945, Dr G M Naicker** was elected to organization's leadership and led NIC in **1946 Indian Passive Resistance Campaign in Durban**.
- Several NIC leaders were imprisoned by 1950s and 1960s **due to militant approach**.
- NIC in 1980s launched the most visible campaign i.e. **anti-South African Indian Council campaign of 1981**.

• Yusuf Mohamed Dadoo:

- He was prominent **from Indian community in South African struggle**.
- He was a founder and leader of **Non-European United Front and of Communist Party when it was revived** as a secret organisation.
- And since going into exile in 1960, he played a **key role in promoting underground and armed struggle** in South Africa and a world-wide anti-apartheid movement.

• Role of Indian Government:

- India was the **first country to sever trade relations with apartheid Government (1946)** and subsequently imposed a complete embargo on South Africa.
- India was first country to bring **issue of South African apartheid to United Nations in 1946** which **helped internationalize issue of racism**.
- **ANC maintained a representative office in New Delhi** from 1960s onwards. India actively worked for AFRICA Fund to sustain AAM.

Role of UN in South African Anti-Apartheid Struggle:

- Request to UN came after South Africa passed **Asiatic Landownership Act in 1946**, which **restricted Indian land ownership and segregated Indians**.
- **Some of the key actions taken by the UN include:**
 - **Condemnation and sanctions:** UN imposed diplomatic and economic sanctions on South Africa. In 1971 resolution apartheid was declared as a “crime against humanity”.
 - ✓ **In 1977**, the UN Security **Council made arms embargo mandatory**, and in General Assembly also imposed a **voluntary oil embargo**.
 - **Legitimizing resistance:**
 - ✓ UN established **Special Committee against Apartheid in 1963** and **Centre against Apartheid in 1976**.
 - ✓ In 1973, **International Convention on Suppression and Punishment of Crime of Apartheid** was approved by UN General Assembly.
 - **Suspension from the UN:** UN General Assembly **suspended South Africa in 1974** and only readmitted it in 1994 after the democratic transition.

Nelson Mandela (1918 -2013)

- **Early Life:**
 - Born in 1918 in **Eastern Cape of South Africa**.
 - He was **son of a Thembu Chief (traditional leader)**.
- **Political Career & Struggle:**
 - Mandela was a **symbol of AAM** and South Africa's first democratically elected President in 1994.
 - He joined ANC in 1944 and helped form ANC Youth League. Mandela **led ANC's nonviolent protest against the apartheid legislation**.
 - He **was sentenced to life imprisonment** in 1964 (Rivonia Trial) and was released in 1990 after 27 years.
- **Philosophy of Mandela:**
 - Also known as '**Gandhi of South Africa**', He was a **strong follower of Gandhi's teachings**. He believed in Peace, compassion and Social Justice.
 - Both Mandela and Gandhi are remembered for their strong belief in truth and fairness.
- **Awards & Legacy:**
 - He was **awarded the Nobel Peace Prize in 1993**.
 - In fact, after his release from prison, India conferred him with Bharat Ratna and subsequently with **International Gandhi Peace Price in 2001** for his peacemaking efforts.
 - UN celebrates **Nelson Mandela International Day on 18 July** every year.

8.2.1. UNESCO'S MOW ASIA-PACIFIC REGIONAL REGISTER

- UNESCO's MOW Asia-Pacific Regional Register includes **Indian literary Works**
- Manuscript of three Indian literary works namely **Ramcharitmanas, Panchatantra and Sahṛdayāloka-Locana** have been included in **Memory of the World (MOW) Asia-Pacific Regional Register** along with 17 other works from region.
 - The decision was taken at the 10th meeting of the **Memory of the World Committee for Asia and the Pacific (MOWCAP)**, held at Ulaanbaatar, Mongolia.
- **About Literary Works**
 - **Ramcharitmanas**
 - ✓ Written in the **16th Century** by **Goswami Tulsidas**.
 - ✓ An epic poem written in **Awadhi language** and consists of **Seven Kāndas**.
 - ✓ **Poetic retelling** of the events of **Ramayana**.
 - **Panchatantra**
 - ✓ Written by Pt. Vishnu Sharma in Sanskrit.
 - ✓ One of the **oldest collection of surviving Indian Fables**
 - ✓ **Consists of five parts** and its most distinguishing feature is the '**Story within story**' structure.
 - **Sahṛdayāloka-Locana**
 - ✓ Written by **Acharya Anandvardhan** in Sanskrit and is a text of Indian Poetics.
 - ✓ Philosopher **Abinava Gupta** has written a **commentary** on it.



8.2.2. SAHITYA AKADEMI

- **Ruskin Bond** was awarded the **Sahitya Akademi Fellowship**.
- Fellowship is the **highest honour** conferred by Akademi on a writer.
- It is reserved for '**the immortals of literature**'.
- **Major literary of Ruskin Bond:** Vagrants in the Valley, Once Upon a Monsoon Time, Angry River, Strangers in the Night, All Roads Lead to Ganga, etc.

About Sahitya Akademi
New Delhi

- Genesis:** Formally inaugurated in **1954** and Registered under the **Societies Registration Act, 1860**.
- Ministry:** An autonomous body under **Ministry of Culture**.
- Role:** Undertakes **literary activities in 24 languages** (22 scheduled languages and **English and Rajasthani**).
- Its major awards:** Sahitya Akademi Award, Bhasha Samman.

8.2.3. DEDA METHOD

- Muria tribes practice the **deda, traditional method of preserving seeds**.
- **About Deda Method**
 - Seeds are wrapped in leaves, packed tightly to look like boulders, and woven with Siali leaves.
 - **Benefits: Protection of seed from pests and worms**, which can be stored and used upto 5 years.
- **About Murias**
 - Sub-group of Gond tribe, belonging to **Chhattisgarh**.
 - Associated with **Muria Rebellion of Bastar (1876)** against Gopinath Kapardas, diwan of Bastar.
 - **Customs: Dead pillars (Gudi)**, where dead are buried with a stone placed 6 to 7 feet high and **Ghotul** where young boys and girls chose their own life partner.

8.2.4. LUSHAI TRIBE

- A rare hemi-parasitic terrestrial plant (**Phtheirospermum lushaiorum**) has been found in Phawngpui National Park of Mizoram.
- **Lushaiorum** is named after "**Lushai**" tribe of Mizoram.
- **About Lushai tribe**
 - Tribe under **Kuki-Chin group of tribes**.
 - Commonly known as **Mizos** and racially they are known to be under **Mongoloid origin**.

- Main occupations are **Jhum and orange Cultivation**.
- Lusai are known as **Head Hunter community**.
- Popular Dance is **Bamboo Dance (Cheraw-dance)**.
- Basic unit of Lushai (Mizo) society is a **patrilocal joint family with patrilineal descent and inheritance rules**.
- Lushai (Mizo) society is **patrilocal joint family with patrilineal descent and inheritance rules**.

- They followed strict **patrilineal descent** (father's line)
- They were **hired by the Byzantine Empire** to subdue other tribes
- They **avoided inbreeding** and **practised limited intermarriage** with non-Avar neighbours.
- They are renowned among archaeologists for their **distinctive belt garnitures**.

8.2.5. AVARS

- DNA analysis of ancient graves has revealed insights on the social life of Avars
- **About Avars**
 - They are **nomadic people** who survived in eastern **central Asia** between 6th-9th century.
 - **Considered as successors of the Huns** by their way of life and warfare.

8.2.6. ERRATA

- In In April 2024 Monthly Current Affairs Magazine, in Article 8.5.1. **“World Craft City (WCC)”**, it was incorrectly mentioned that ‘World Crafts Council International (WCCI) is a Kuwait-Based Organisation.’
 - The correct information is ‘The current headquarters for the term (2021-2024) of WCCI is located in Kuwait. However, the **Headquarters of WCCI changes according to different terms.**’



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9. ETHICS

9.1. COMPASSIONATE CAPITALISM


Introduction

Recently, Narayana Murthy raised concerns about the large gap in income between top executives and lower-level employees in Indian companies and called for practicing compassionate capitalism to solve this issues. A report by Wealth inequality lab found that in India, the top 1% of income earners received 22.6% of the national income in 2022-23. There was also a report that Amazon warehouse workers were denied bathroom breaks or water until they met certain quotas for the day. These examples highlight the need to re-examine conventional capitalism.

About Compassionate Capitalism


- **Capitalism** is an economic system where **private actors own and control property in accordance with their interests**, and demand and supply freely determine the prices in markets in a way that can serve the best interests of society.
 - **Adam Smith's** "The Wealth of Nations" laid the **foundations of capitalist thinking**.
 - According to him, both **parties to a voluntary exchange transaction have their own interest** in the outcome, but neither can obtain what he or she wants without addressing what the other wants.
 - It is this rational **self-interest that can lead to economic prosperity**.
- **Compassionate capitalism** aims to **blend capitalist opportunity with principles of equitable wealth distribution** from socialist thought.
 - Compassionate capitalism **merges Adam Smith's economic individualism** with the **socialist paradigms of Karl Marx**.
 - It **combines** the concepts of communism's **equitable wealth distribution with the principles of work, opportunity, and fair economic compensation**.
- Thus, Compassionate Capitalism can be defined as **"equal access for all to unlimited economic growth opportunities"** and that also helps others within the same process to achieve personal and collective rewards.

“It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest.”



— Adam Smith

“From each according to his ability, to each according to his needs”.



— Karl Marx

Comparison between the underlying principles of Capitalism and Compassionate Capitalism

Principles	Capitalism	Compassionate Capitalism
Wealth	Concentration of Wealth (perpetuates in equality)	Redistribution of Wealth
Profit	Profit to the Business	Profit to all Stakeholders
Resource	Exploitation of Resources	Sustainable use of Resources
Social Responsibility	No accountability towards society	Accountability to society for their decisions and actions.

Contribution of Moral Thinkers to the idea of Compassionate Capitalism

Various moral philosophers have laid foundations that underpin the principles of compassionate capitalism. The diverse philosophies emphasize **human dignity, societal welfare, environmental sustainability** - values aligning with compassionate capitalism's goal to balance **financial success with ethical responsibility to stakeholders**.

- **Buddhism's Pratityasamutpada:** Based on the concept of **dependent origination (Pratityasamutpada)**, this view holds that **people are interdependent** with each other and the Earth.

- It promotes shared prosperity in a **sustainable world with minimal suffering**.
- **Immanuel Kant's Categorical Imperative:** Kant emphasized treating every person as an end in themselves, not merely as means. His moral law dictates acting out of duty to ethical rules, not mere self-interest.
- **Gandhian Thought:** Gandhi ji's truth, **non-violence, and socio-economic ideals** included simple living, uplifting all (sarvodaya), and trusteeship.
- **Amartya Sen's Capability Approach:** Sen's framework evaluates individual well-being and social policies based on people's capabilities and freedoms, not just monetary metrics.
 - This provides an alternative to pure profit-driven approaches.

Practices that make Capitalism Compassionate towards various stakeholders

Stakeholders	Practices
Workers	<ul style="list-style-type: none"> ● Open and Flexible work cultures: Work culture that values collaboration, innovation, and creativity and also investing in skill development of workers to enhance their capability. ● Equal opportunity to growth: For example, Infosys' Employee Stock Ownership Plan (ESOP) democratizes wealth by granting company stock to employees. ● Financial security and fair redistribution of wealth: For example, Tata Steel has committed to pay the families of employees who died from Covid their last drawn salary until the deceased would have turned 60. ● Fostering compassionate leadership: By imbibing values like empathy; openness and communication; physical and mental well-being; inclusiveness; integrity; etc.
Environment	<ul style="list-style-type: none"> ● Environmental accounting: Accounting environmental and ecological damages within the cost of doing business. <ul style="list-style-type: none"> ○ Example In 2012, SEBI issued guidance note on Environment, Social and Governance (ESG) disclosures for companies listed on Indian Stock Exchanges to disclose ESG performance in annual reports. ● Reducing pollution: For example, the carbon action initiative focuses on companies determined by the industry sector to be at a high level of greenhouse gas emissions. ● Adopting circular economic model: ITC has adopted this model to reduce its environmental footprint while also achieving greater efficiency and cost savings. ● Minimising consumerism: According to the 'Limits to Growth principle (proposed by Club of Rome)', humans can live indefinitely on earth if they impose limits on themselves and their production of material goods.
Society	<ul style="list-style-type: none"> ● Corporate Social Responsibility (CSR): CSR is a commitment by businesses to integrate social and environmental concerns in their business. <ul style="list-style-type: none"> ○ In India, CSR is also a statutory obligation under Section 135 of Companies Act, 2013 and Companies (CSR Policy) Rules, 2014. ● Redistribution of wealth generated from Development: For example, Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY) that ensures development benefits also reaches to the people and areas affected due to mining. ● Fulfilling societal needs: For example, 'Goodfellows' initiative started to help the elderly in India is critical for India's aging population.

Ethical dilemma associated with compassionate capitalism

- **Employee Welfare vs. Profit Maximization:** Ensuring fair wages, reasonable working hours, and good working conditions may increase operational costs, potentially reducing profits.
- **Consumer Interests vs. Profit-Driven Products:** Producing higher-quality, safer products may result in higher costs, impacting profit margins.
- **Environmental Responsibility vs. Cost Efficiency:** Businesses might struggle to balance eco-friendly initiatives with maintaining competitive pricing and profitability.
- **Attracting talent in higher echelons vs. Income Equality:** Competitive compensation packages are argued to attract top talent even though they can create a significant income gap between the highest and lowest earners.
- **Community Engagement vs. Shareholder Returns:** Investing in community projects and social causes can enhance a company's social responsibility image but might not provide immediate financial returns to shareholders.

Way Forward

Business is the most pervasive and influential force on the planet today. Its activities transcend national and international borders. Its activities are not unduly constrained by financial, political, cultural, ethnic, or religious concerns. The net of this is that business, as a prevalent and important force, has a moral responsibility to guide, enhance, value, and nourish the existence of all that it encounters.

The true purpose of business is to uplift the experience of existing. As tradition Capitalism does not appear to be helpful in meeting this cherished objective there is need for moving towards Compassionate Capitalism. The idea has been in renewed focus but its seeds exist in our Constitution as well-Article 38 and Article 39 (C). These articles guide State to minimize the inequality of Income and concentration of wealth.

Check your Ethical Aptitude

You have recently joined as a Supply Chain Manager in a leading multinational company that deals with paper production. Your company is making huge profits and receiving significant investments from government and private investors. However, after a scrutiny of the company's operations, you found out that much of your raw material is illegally sourced from the forests of poor African countries. Further investigation brought you to the conclusion that the sourcing of raw materials is done post severe deforestation along with the displacement of the traditional tribal communities that reside and depend on them. Upon discussing these findings with your colleagues, you realized that reporting or voicing against the companies' practices would be retaliated by way of providing harsh work conditions ultimately leading to lay-off and tarnishing your image in the corporate fraternity to restrict further employment opportunities. You are the sole bread winner of your family and personal circumstances do not allow you to your job.

On the basis of the case study answer the following questions:

- As a supply chain manager, what is your ethical responsibility towards different stakeholders involved? Should you prioritize your personal circumstances and job security over reporting unethical practices?
- How can the company be held accountable for its unethical practices? What role can regulatory bodies, investors, consumers, and civil society organizations play in ensuring corporate accountability and ethical business practices?
- What course of action you should follow to foster a culture of ethical decision-making and corporate social responsibility in your company? What steps can be taken to ensure that such unethical practices are not repeated in the organisation?

9.2. ETHICS OF PUNISHMENT

Introduction

Recently, a devastating accident took place in Pune where a luxury car being driven by a teenager, who **belongs to an influential family**, claimed the lives of two individuals. The Juvenile Justice Board in this case **granted bail** to the teenager and impose a relatively lenient penalty. This raises the **ethical concerns** associated with disparity in punishments.

Different Stakeholders involved in Punishment and ethical concerns

Stakeholders	Role/Interests
Victim	Expects fairness in trial, seeks justice, reassure security, and want harsh punishment for offender.
Offender	Concerned with fair treatment, expect proportionality of punishment, reform his/her conduct, and rehabilitate in the mainstream society,
Society	Reduction in crime, public safety, upholding social moral values, and dignified living.
Government	Exemplify punishments for deterring crime, maintaining law and order, ensuring fairness in legal procedures and punishment.
Judiciary	Delivering fair and impartial punishment, ensuring proportionality to the crime committed, restoring balance in the society and promote moral good.

Different Philosophies of Punishment and Associated Ethical Dilemmas

- **Deterrence:** Deterrence theory suggests that the threat of punishment discourages crime. General deterrence targets the public, while specific deterrence focuses on preventing reoffending by those already punished.
 - **Associated Dilemma:** The emphasis on deterrence can lead to **harsh punishments**, potentially overshadowing rehabilitation, and restorative justice.

- **Incapacitation:** It focuses on **removing and restricting the offender** from the society to prevent commission of future crimes.
 - **Modern prison** has become the means by which offenders are isolated from the society so that they can no longer harm members of public or commit crimes. The **most extreme and severe form** of incapacitation is **capital punishment**.
 - **Associated Dilemma:** This approach raises concerns about **human rights, potential for abuse**, and the **efficacy** of long-term incarceration **in preventing reoffending**.
- **Retribution:** It says that aim of punishment is to right the wrong rather than to control or prevent crime and **nature of punishment is based on the severity of the offence** such as in Indian Penal Code.
 - **Associated Dilemma:** As an effective punishment, retribution has been criticized as being **overly rigid, disproportionate and limited in its capacity** to change societal behaviour.
- **Restoration:** Restorative Justice holds that punishment should aim to **restore the harm caused to the victim and the community** by the offender.
 - **Associated Dilemma:** While promoting healing and reconciliation, restorative justice may not be suitable for all crimes or offenders, and it can often be seen in **conflict with victim's perception of justice**.
- **Rehabilitation:** Rehabilitation is the ideology of helping individuals who have committed crimes change their behavior through interventions, treatment, therapy, education, and training in order to help them reenter society.
 - **Associate dilemma:** National fiscal restraints, public demand for harsher sentences, and a crime-control ideology focused on suppression over prevention, oppose treatment and rehabilitation concepts.

“If he who breaks the law is not punished, he who obeys it is cheated. This, and this alone, is why lawbreakers ought to be punished: to authenticate as good, and to encourage as useful, law-abiding behavior. The aim of criminal law cannot be correction or deterrence; it can only be the maintenance of the legal order.”



– Thomas Szasz

Ethical issues in Indian Punishment System

- **Bias:** One concern raised with present legal system is that it is biased against poor and marginalized, who are often unable to afford legal representation.
 - **NCRB data on Prison Statistics India 2022** reveals that the total number of undertrial prisoners from SC and ST communities is relatively higher.
- **Corruption:** This results in situation where justice is often delayed or denied.
- **Non-accountability:** India's culture of reconciliation can sometimes lead to a **reluctance to punish offenders**, where offenders are not held accountable and can contribute to a breakdown in social order.
- **Disparity in sentencing:** A clear policy or legislation for sentencing is absent in Indian legal system and sentencing has become judge-centric, resulting in disparities in sentencing for same crime.
- **Capital punishment:** Ethical dilemmas associated with capital punishment revolve around right to life, empathy, conscience, moral values etc.
- **Custodial torture:** Many cases of custodial torture **undermine the principle of “innocent until proven guilty”** and **violates accused's right to dignity and a fair trial**.
- **Arbitrary punishments:** For example, the offence of **assault or using criminal force** carries a **punishment of three months**, while **‘flying a kite dangerously’** can lead to a prison term of **two years**.

Way Forward

- **Clear Sentencing Policy:** There is a need for a clear sentencing policy to address disparities in sentencing.
 - Supreme Court has noted that a judge can **never have unrestrictive and unbridled discretion**, based upon his conscience formed through his understanding of the society, without there being any guidelines in awarding a sentence.

Punishment is the last and least effective instrument in the hands of the legislature for the prevention of crime



– John Ruskin

- **Justified punishment:** It requires showing that a crime makes the offender eligible for coercive treatment and that the benefits of such punishment outweigh its costs.
- **Rationalize punishments:** Revision of laws presents an opportunity to rationalize punishments, ensuring they are proportionate and align with the object of criminalization.
- **Impact assessments:** Legislative process should incorporate pre-legislative tests and impact assessments to ensure enforceability, proportionality, and reformation.
- **Rehabilitation:** A rehabilitation approach can be useful in restoring the balance between retribution and restoration of offenders.

Check your ethical aptitude

A car accident occurred in the city of Delhi in India in which two employees of a local grocery store died. In this case, the luxury car involved in the accident was being driven by teenager son of an influential real estate businessman. Also, the person driving the car was under the influence of alcohol.

On hearing the case, the court immediately granted bail to the accused person with a warning while the family of the teenage driver tried to pin the blame on family driver, offering him money. Later, during investigation, it was found that doctors who conducted DNA testing replaced the teenage driver's sample with another person's DNA samples. This demonstrated the influence of the family and tampering of the evidence.

On the basis of the case study answer the following questions:

- Who are the different stakeholders associated with this case and what are the ethical dilemmas they face?
- What can be possible ethical dilemmas the family of the accused must be facing and what would you do if you were the brother of the accused?

9.3. ETHICAL USE OF SOCIAL MEDIA PLATFORMS

Introduction

Recently, The ECI has taken cognizance of the violations of the Model Code of Conduct and other legal provisions concerning the use of social media in election campaigning by political parties. This raises questions about the lack of well-defined social media ethics in the context of the fast-evolving nature of social media.

Different Stakeholders involved in the use of social media

Stakeholders	Role/Interests
Users/Customers/Citizens	<ul style="list-style-type: none"> • Virtual social connectivity • Access to quality digital services
Social Media Intermediaries/Platforms	<ul style="list-style-type: none"> • Quality Service Delivery • Increasing customer base- Reach • Profitability and financial growth
Political Parties	<ul style="list-style-type: none"> • Increasing the reach towards the target voter base • Social media as a tool for electioneering • Align with the demands of the voters
Government/Regulatory ecosystem	<ul style="list-style-type: none"> • Ensuring a level-playing field for fair competition • Protecting the rights of its citizens
International Organizations	<ul style="list-style-type: none"> • Global consensus on ethical use of social media platforms • Ensuring the platforms are not misused

Ethical debates concerning Social Media

- **Individuals v/s Social media platforms:**
 - **Privacy:** While data collection and usage by the platforms **aims at improving user experience, the lack of informed consent** for usage, storage and sharing of personal data has led to the ethical issue of **breach of confidentiality**.
 - ✓ E.g., **Targeted advertising** based on search history and **doxxing** of journalists.

- ✓ There is a **thin line between public and private domain** of information and a lack of clarity regarding the same can create **ethical dilemmas**. E.g., the Role of **media** and the difficulty faced by **celebrities** in separating public and private life on social media.
- **Discrimination**: Although the nature of these platforms lowers the **barriers to participation by the vulnerable** sections, they lack the institutional structures to ensure **equitable and fair access** to the minoritized voices.
 - ✓ E.g. Social media campaigns based on **anti-immigration sentiment in Western countries**.
- **Fake news**: There is a **lack of proper verification** process and **accountability** due to the feature of **anonymity**. This leads to increased spread of **misinformation**, both, intentional and unintentional, which hinders effective **decision-making**.
 - ✓ E.g. **Misinformation about the COVID-19 pandemic** greatly impeded public perception and effectiveness of government actions like **vaccine hesitancy** etc.
- **Society v/s social media platforms**
 - **Polarization**: Fragmentation of the public sphere by encouraging the formation of **'echo chambers' and 'filter bubbles'** creates **informational silos** for like-minded individuals who deliberately **shield** themselves from exposure to **alternative views**.
 - ✓ E.g. the Use of **Facebook** to drive **violence against the Rohingya minority in Myanmar** and political polarization on the basis of race, religion and caste.
 - **Blurring of Public and Private sphere**: Social media platforms have encouraged the **intrusion of the virtual sphere into the real social sphere**.
 - ✓ E.g. the Use of **mobile phones during family dinners**, the **isolation of children** from family.
- **Regulatory ecosystem v/s Social media platforms**:
 - **National Interest v/s individual freedom**: The regulatory ecosystem like Governments have favoured content moderation for **protecting national security and dignity**, whereas the platforms have **disagreed** with such action as it is against the **freedom of speech** of the users.
 - ✓ Do platforms have an **ethical duty** to find a morally permissible solution, even if it **endangers their business model**?
 - **Transparency and accountability**: It is **difficult to fix or trace accountability** for the content on the platforms, the limited scope of **censorship** and the **complexity** of tracing the source backwards. This results in **limited transparency**, hampering the **trust** in the system.
 - ✓ E.g., **Whatsapp's** end-to-end encryption makes tracing criminal activity on it difficult.

Know the term

- **Doxxing**: It refers to the collection of a user's private information, across multiple platforms (**including social media**) by an unauthorized individual, who then publishes the information in an attempt to **shame or embarrass** the user.

"I think there should be regulations on social media to the degree that it negatively affects the public good. We can't have like willy-nilly proliferation of fake news, that's crazy."



- Elon Musk

What are the principles for an ethical social media?

- **Due diligence**: Information must be **thoroughly investigated and verified by all stakeholders** on social media to ensure **validity and objectivity**. This helps avoid the negative consequences of fake news, post-truth and manipulation.
 - E.g. **Fact-checking mechanisms** like the **PIB fact-check**.
- **Confidentiality**: The users **share sensitive personal data** with platforms with the assumption of upholding the confidentiality of the data. An **informed consent** is desirable for the usage or sharing of such data.
- **Empathy and tolerance**: Being **considerate** about **varied views and opinions** other than one's own aids in a **diverse and empathetic discourse** on social media, **reducing the polarization and echo-chamber effect** of a dominant view.
- **Responsibility**: **Self-accountability** to uphold values like **fairness, equity, justice and non-neutrality** ensures responsible behaviour on social media. E.g., standing up for a just cause despite popular opposition.

- **Critical thinking:** Every individual should **apply his/her critical mind** during the usage of social media platforms. It aids in negating the **‘Spiral of Silence’ phenomenon** that results in the passive **suppression of divergent views** on matters of important political or civic concern.
 - **‘Spiral of Silence’ phenomenon** suggests that people’s willingness to express their opinions on controversial public issues is affected by their largely unconscious perception of those opinions as being either popular or unpopular. Thus, **popular opinions are expressed more widely, irrespective of the correctness of the same.**

Way forward: Ideal conduct of stakeholders

- **Legal/ Regulatory ecosystem:** There is a need for a **facilitative methodology** for upholding social media ethics **without overt regulation** of the platforms, which can create friction between the stakeholders.
 - The **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021-**
 - ✓ **Features:** Office of a Grievance Officer, **Grievance Redressal Mechanism**, Chief Compliance Officer, **Code of Ethics, Self-regulation mechanism** and **Oversight Mechanism** by the government.
 - ✓ They **ensure social media access with reasonable expectations of due diligence, privacy and transparency** as well as **respect** for the **rights** accorded to the citizens under the **Constitution**, including in **Articles 14, 19 and 21.**
- **Social media platforms:**
 - There is a need to balance **the need to protect users and maintain community standards (public interest) while respecting users' freedom of speech and expression** to preserve their trust and loyalty.
 - Following **government guidelines for data storage and sharing** in aspects like sovereignty and integrity of India, security of the State, public order, decency or morality etc.
 - The Internet and Mobile Association of India along with social media platforms agreed on a **Voluntary Code of Ethics for elections in India.**
 - ✓ For example, the creation of a **high-priority dedicated grievance redressal channel** for taking action on the cases reported by the EC.
- **Political Parties:** Need to **follow the guidelines and laws** concerning the use of social media during elections **diligently.** Every political party should have an **internal Code of Ethics** and a **self-regulating mechanism** to ensure responsible conduct.
- **Society:** It is the **collective responsibility** to hold social media platforms **accountable** in line with ethical principles.
- **Individuals:** It is the **responsibility** of individuals to **use social media responsibly** and be **aware of the risks and ethical considerations** involved.

“Many of the dangers we face indeed arise from science and technology—but, more fundamentally, because we have become powerful without becoming commensurately wise.”



- Carl Sagan

Conclusion

Organizations like Apple with its **iOS 14.5** have initiated giving more power to the users in terms of **opt-in for ad tracking.** **X’s (Twitter) Civic Integrity Policy** is also a step in the right direction. By using social media thoughtfully and responsibly, we can all help to create a safer and more positive online environment.

Check your Ethical Aptitude:

You are a professor in a reputed institution in the United States. You have been on the panel for recruiting new Professors for your department. Accordingly, you have offered a tenured job to Mr. X based on merit. However, the higher authorities of the University have decided to withdraw the job offer based on Mr. X’s tweets criticizing Israel. But considering a candidate’s personal opinions is not one of the criteria for job allocation.

Based on the above case, answer the following questions:

1. What are the ethical issues associated with the above case?
2. As the member of the selection committee, what will be your response?

9.4. ETHICS AND ENTREPRENEURSHIP

Introduction

Recently, a jury met to recognise the most brilliant young leaders of corporate India for the 10th edition of 40 Under Forty for a publication. A member of jury highlighted that certain young entrepreneurs not only demonstrated professional and business acumen but also believed in giving back to society.

Stakeholder and their Interests

Stakeholder	Interests
Entrepreneurs	<ul style="list-style-type: none"> Establish a successful business model. Expects cooperation from employees, regulatory bodies etc.
Customer	<ul style="list-style-type: none"> Product and services should be available at reasonable cost. These should be eco-friendly. Expects ethical practices from entrepreneurs.
Government/Regulatory Authorities	<ul style="list-style-type: none"> Creating positive environment for the entrepreneurs so that they can transform into successful business model. Entrepreneurs should comply with law of the land.
Employees	<ul style="list-style-type: none"> Expects respect and honour at their work space. Also, there should be good work culture without much office politics.
Business Partners/Dealers	<ul style="list-style-type: none"> The deals or agreement signed by the entrepreneurs, needs to be implemented by them in letter and spirit. Transparency and accountability in day to day work of the company.
Investors	<ul style="list-style-type: none"> Expects high return from their investments. They promote entrepreneurs who are honest and accountable for their act. Expects that entrepreneurs will establish a successful business model.
Community/ Non-Governmental Organization (NGO)	<ul style="list-style-type: none"> Entrepreneurs should give priority to their social and environment responsibility along with profitability.

Ethical Issues faced by Entrepreneurs

- **Conflict of Interest:** Entrepreneurs often face conflict between maintaining profitability of company and social impact. E.g. **Decline of Byju's** due to poor financial decisions
- **Environment Responsibility:** In entrepreneurship, environment responsibility is still not a considered as a key priority. E.g. In 2019, **Reliance Industries** was fined for ecological loss.
- **Adopting Wrong means:** Sometimes entrepreneurs take wrong means to achieve end, for instance, manipulating financial statement of the business to attract investment. E.g. **Satyam Scam 2009** (accounting fraud)
 - Entrepreneurs sometimes violate regulations related with Intellectual Property Rights (IPR) such copyright, patent etc.
- **Work Culture/Fair treatment with Employees:** In order to complete task on time, many times, management pushes employees to work extra, this creates dissatisfaction among employees.

“If ethics is poor at the top, that behavior is copied down throughout the organization.”

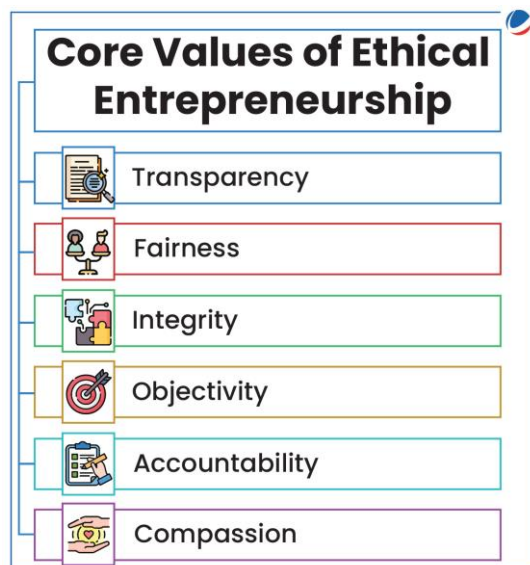
— Robert Noyce



Adopting Ethical Entrepreneurship: Navigating Ethical Issues in Entrepreneurship

- **Ethical Entrepreneurship** is based on certain **core values** and **principles** (refers to infographics). It gives adequate priority to **social responsibility** and **environmental sustainability** along with Profitability.
- It follows the principles of **corporate governance**.

- **Corporate governance** ensures that businesses have appropriate **decision-making processes** and **controls** in place so that the interests of all stakeholders (shareholders, employees, suppliers, customers and the community) are balanced.
- **Need/Benefits of Ethical Entrepreneurship:** Building Trust and reputation of brands, Sustainable Growth of the companies, etc.



Key Guiding Principles for Ethical Entrepreneurship	
Utilitarianism Ethics	Advocates actions that foster happiness or pleasure and oppose actions that cause unhappiness or harm.
Deontology Ethics	Immanuel Kant's Deontology ethics says that rational humans must scrupulously uphold their moral obligations , regardless of the result.
Virtue Ethics	Emphasises that practicing qualities like honesty, courage, justice, charity, etc., one grows into an acceptable and righteous life.
Stakeholder Theory	Theory argues that a firm should create value for all stakeholders, not just shareholders.

Ways to Integrate Ethical Principles into Entrepreneurship

- **Balancing Profit and purpose: Social entrepreneurship** is good example of this approach. It seeks to solve a social need while earning a reasonable financial return. **E.g. eHealthPoint venture**, provides primary health consultations to rural or remote communities.
- **Stakeholder Engagement/Foster Open Communication:** Entrepreneurs should encourage employees, customers, etc. to speak up about any **ethical concerns** or **violations** they observe. **E.g. TATA Steel** has developed a robust stakeholder engagement process.
 - An independent whistle-blower programme (to report the misconduct, fraud, or indiscipline to senior officers) can be established.
- **Ethical sourcing of raw materials:** It will help in curtailing exploitative and unfair trade practices at the input stage. **E.g. Ben & Jerry's**, renowned ice-cream manufacturer, has a long-standing commitment to ethically source ingredients.
- **Lead by Example:** Entrepreneurs need to set example for ethical practices and responsible conduct. Their commitment to ethical leadership will inspire your employees to follow suit.
 - **E.g.** In 2020, Wipro Ltd, along with associate firms, committed Rs 1125 crore for the COVID-19 pandemic outbreak.
- **Transparency and Accountability:** Entrepreneurs should foster a culture of transparency and accountability by openly disclosing their business practices, impact metrics, and progress towards sustainability goals. This builds trust with stakeholders and enables informed decision-making.
- **Formulating Code of Ethics/Conduct:** An ethical code outlines a set of principles and standards that guide ethical behaviour within an organization. **E.g.** Raymond has adopted Code of Conduct and Ethics.



Conclusion

In the recent time, the trend of entrepreneurship has gained momentum in India. By this approach, they will be able to maintain balance between their profitability and social impact. In the initial phase, it will increase cost of compliance, e-alignment of business processes etc. but in the long time it will ensure sustainable development.

Check your Ethical Aptitude

Vivek has recently graduated from a reputed Engineering College. He completed his education with the help of an education loan. Along with his few friends, he started a start-up that used to manufacture medical equipment. To sustain the business, a start-up needs big orders. Tarun's (one of the partners of the start-up) relative is currently posted as a secretary in the Health Ministry of a State. The Secretary is ready to help the start-up in getting contracts by providing confidential information on the on-going bidding process of Contracts for procuring medical equipment. Tarun and a few other members are in favour of using the opportunity while Vivek thinks that it is against ethical entrepreneurship.

Based on the given case study, answer the questions given below.

- (a) Identify the ethical dilemma faced by Vivek and his partners.
- (b) What approach should be followed by Vivek to deal with the situation?



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10. SCHEMES IN NEWS

10.1. PRADHAN MANTRI KISAN SAMMAN NIDHI SCHEME (PM-KISAN)

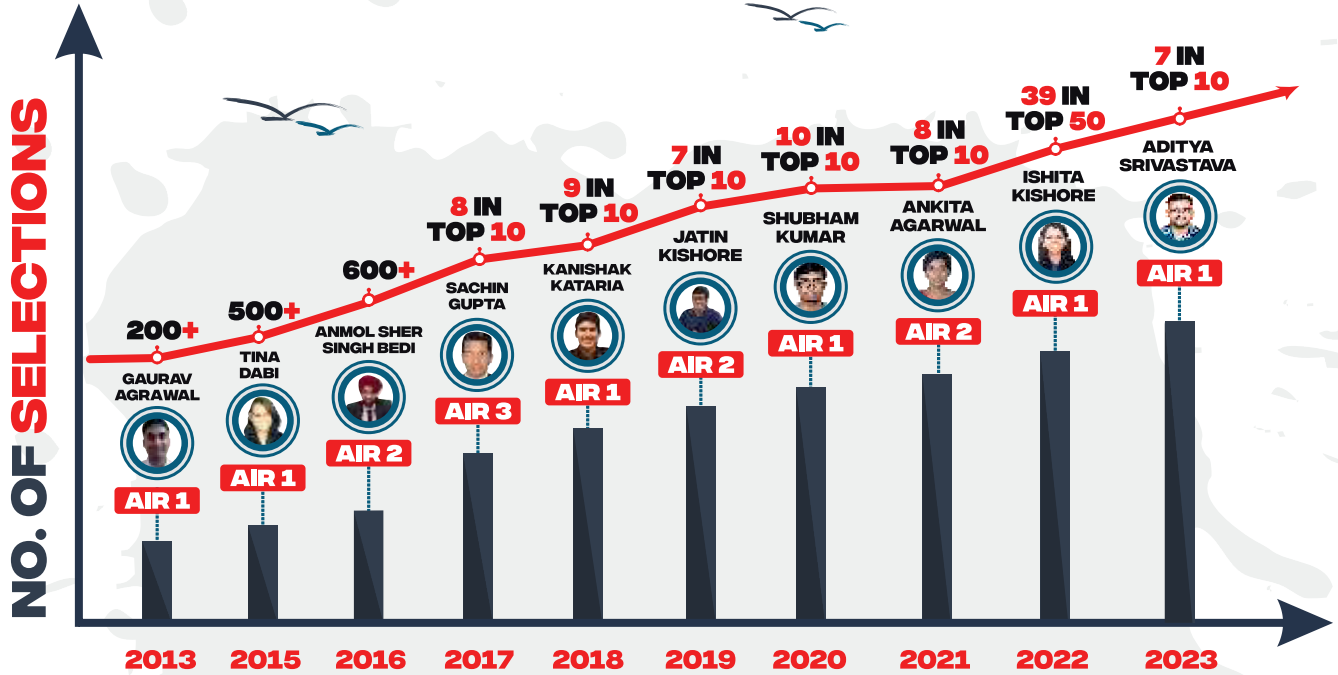
Why in the News?

Around 1.16 lakh farmers have voluntarily given up the benefits of the Pradhan Mantri Kisan Samman Nidhi Scheme (PM-KISAN).

Objectives	Salient features
<p>To supplement the financial needs of all eligible landholding farmers' families in procuring various inputs to ensure proper crop health and appropriate yields, commensurate with the anticipated farm income as well as for domestic needs.</p>	<ul style="list-style-type: none"> • Ministry: Ministry of Agriculture & Farmers Welfare. • Type: Central Sector Schemes • Benefits: An amount of Rs.6000/- per year is released by the Central Government in three equal instalments of ₹ 2,000 each, every four months to the eligible farmers families. • Beneficiaries: All the landholding farmers' families i.e., husband, wife and minor children) subject to certain exclusions. • Exclusion: Beneficiaries of higher economic status shall not be eligible (refer to the infographic). • Land records mandatory: However, exceptions for forest dwellers, North-eastern states and Jharkhand which have separate provisions for land records. • Identification of beneficiary: It is the responsibility of state/UT government. • Facility of Kisan Credit Cards (KCC): KCC is to be given to All PM-KISAN beneficiaries to provide them with short-term loans for crop and animal/fish rearing at a maximum interest of 4% on timely repayment. • Project Management Unit (PMU): Established at the Central level, PMU is responsible for the overall monitoring of the scheme. <ul style="list-style-type: none"> ○ State Governments may also consider setting up a dedicated PMU. • Grievance redressal: Any grievances received by the Grievance Redressal Committee should be preferably disposed of within two weeks. • Prevention of diversion of funds: To ensure only eligible farmers' families are covered under the scheme, the Ministry in 2019 directed the State Governments to verify around 5% of beneficiaries each year mandatorily physically. <ul style="list-style-type: none"> ○ There is also provisions for Aadhar authentication and Income Tax payee verification to ensure no ineligible farmer could utilise the benefit.



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HYDERABAD: 10 MAY

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JODHPUR: 20 MAY

LUCKNOW: 17 MAY

PUNE: 5 MAY

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DELHI: 14 मई, 9 AM | 11 जून, 9 AM

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11. PLACES IN NEWS




India


- Ladakh**
 - India protests Chinese road construction at Shaksgam Valley in Pakistan-occupied Kashmir.
- Himachal Pradesh**
 - Wildlife authorities have started a survey to estimate the population of the Himalayan ibex along with blue sheep.
- Rajasthan**
 - Scientist have found the green lynx spider in Tal Chhapar Wildlife Sanctuary in Churu District.
- Rajasthan**
 - Disappearance of Semal trees from Southern Rajasthan is creating adverse effects on the forests and people.
- Karnataka**
 - A portion of Hampi's Virupaksha Temple collapsed.
- Lakshadweep**
 - Scientists have found mass sea anemone bleaching off Agatti island.
- Kerala**
 - Kerala banned the use of oleander flowers in temple offerings after death of two women due to accidental poisoning from the flower.
 - Mass fish deaths were reported in the Periyar River.
- Bihar**
 - Kanwar Lake (also known as Kabartal Wetland or Jheel) is deteriorating.
- Meghalaya**
 - Despite a ban from National Green Tribunal in 2014, none of 26,000 abandoned rat-hole coal mines in East Jaintia Hills district have been shut down.
- Arunachal Pradesh**
 - A Red panda was recently sighted in Eaglenest Wildlife Sanctuary.
- Assam**
 - National Green Tribunal has taken notice of construction activities in Sonai Rupai Wildlife Sanctuary (Assam).
- Mizoram**
 - A rare hemi-parasitic terrestrial plant, *Phtheirospermum lushaiorum* (named after "Lushai" tribe of Mizoram) was found in Phawngpui National Park of Mizoram.
- Andhra Pradesh**
 - Sri Lankan golden backed frog has been rediscovered after 200 years in India at Koundinya Wildlife Sanctuary.
- Tamil Nadu**
 - A new species of marine tardigrade named *Batillipes chandrayaanii* after Chandrayaan-3 moon mission is discovered from the southeast coast.

World

- Netherlands**
 - 26th World Energy Congress, co-hosted by the World Energy Council (WEC), concluded in Rotterdam.
 - Self-bred corals from the World Coral Conservatory project nested among Europe's largest coral reefs at the Burgers' Zoo in the Netherlands
- Croatia**
 - Incumbent Croatian Prime Minister has secured office for third consecutive time.
- Russia**
 - Newly captured aerial footage of Batagay Crater has revealed that it is growing every year as the frozen ground melts.
- Iran**
 - Iran President Dies in Helicopter Crash.
- Second Thomas Shoal**
 - Philippines denied China's claim on agreement over disputed South China Sea's Second Thomas Shoal.
- Cambodia**
 - Cambodia formally accepted the Agreement on Fisheries Subsidies.
- Papua New Guinea**
 - Papua New Guinea is hit by a massive landslide.
- New Caledonia**
 - France declares a state of emergency in New Caledonia.
- South Africa**
 - South Africa is celebrating 30 years of the end of Apartheid, a system of racial discrimination.
 - SKAMPI, a prototype telescope of SKA Observatory (SKAO) constructed in South Africa achieved first light, demonstrating its potential.
- Venezuela**
 - According to reports, Humboldt (or La Corona) - Venezuela's last standing glacier in the Andes, has shrunk to a size that no longer qualifies it as a glacier.
- Spain**
 - Spain becomes 99th member of International Solar Alliance (ISA)
- Ghana**
 - India-Ghana agreed to strengthen trade ties at 4th joint trade committee meeting in Accra.
- Burkina Faso**
 - Burkina Faso suspended BBC and Voice of America after covering report on mass killings.
- Slovakia**
 - Slovakian Prime Minister was shot multiple times after a cabinet meeting in Handlova town.

12. PERSONALITIES IN NEWS

Personality	About	Ethical Values exhibited by the Personality
 <p>Vallabhacharya (1479 -1531)</p>	<ul style="list-style-type: none"> • Recently, 545th birth anniversary of renowned scholar and saint Vallabhacharya was celebrated. • About Vallabhacharya <ul style="list-style-type: none"> ▶ Was a Uttaradhi Tailang Brahmin born in Champaranya in Raipur Central Province. ▶ He was one of pioneers of Bhakti movement and contemporary of Sri Chaitanya Mahaprabhu. • Key Contributions <ul style="list-style-type: none"> ▶ Established Pushti Marg (the path towards the grace) tradition with Brahmasutra, Srimad Bhagwat, and Geeta as its literature. ▶ Established Shhudhadvaita (pure non-dualism) school of thought based on Vedanta. ▶ Important literary works: Anubhashya on Brahma Sutra, Subhodhini Vyakhya of Bhagavat, Siddhanta-Rahsya, Bhagavat Leela Rahasya, Ekanta-Rahsya, Vishnupada, etc. 	<p>Devotion to Truth and Compassion</p> <ul style="list-style-type: none"> • His teachings emphasized the importance of seeking and adhering to the ultimate truth through spiritual practices. • He advocated for kindness towards all living beings as a fundamental aspect of his Bhakti movement.
 <p>Fakir Lalon Shah (1774-1890)</p>	<ul style="list-style-type: none"> • An Indo-Bangla Baul music festival is organized in Dhaka to celebrate the 250th birth anniversary of Fakir Lalon Shah. • About Fakir Lalon Shah <ul style="list-style-type: none"> ▶ Horishpur in Jhenaidah district of modern Bangladesh. ▶ He was a contemporary of Ramakrishna Paramahansa and Swami Vivekananda. • Key Contributions <ul style="list-style-type: none"> ▶ Founded the 'Lalon Akhrah' which had around 10,000 followers across all religions. ▶ He is considered as Father of Baul Music. <ul style="list-style-type: none"> ✓ In 2008, Baul songs are listed under UNESCO's Intangible Cultural Heritage of Humanity. ▶ He also influenced personalities like Rabindranath Tagore and Nazrul Islam. 	<p>Universal Brotherhood and Non-discrimination</p> <ul style="list-style-type: none"> • He promoted the idea of unity and brotherhood among people of all religions and backgrounds. • He preached against social and religious discrimination, emphasizing equality and human dignity.
 <p>Raja Ravi Varma (29th April 1848-2nd October 1906)</p>	<ul style="list-style-type: none"> • First true copy of the painting Indulekha by Raja Ravi Varma was unveiled at Kilimanoor Palace (Kerala) on his birth anniversary. • Contribution: <ul style="list-style-type: none"> ▶ Best known for uniting Hindu mythological subject matter with European realist historicist painting style. 	<p>Artistic integrity and Cultural Respect</p> <ul style="list-style-type: none"> • He maintained high standards of honesty and authenticity in his artistic expressions.

	<ul style="list-style-type: none"> ▶ First Indian artist to use oil paints (brought to India by the Britishers). ▶ A pioneer in using art as a means of social reform. ▶ Famous paintings: 'Lady in the Moonlight', 'Stolen Interview', 'Shakuntala' ◦ Awards: <ul style="list-style-type: none"> ▶ His painting 'Hamsa Damayanti', which depicts the story of King Nala and Damayanti from Mahabharata won the first prize at Vienna Exhibition in 1873. ▶ British government awarded him with Kaiser-i-Hind Gold Medal in 1904. 	<ul style="list-style-type: none"> ◦ He respected and celebrated Indian culture and mythology through his artworks, bridging traditional and modern styles.
 <p>Lala Hansraj (1864-1938)</p>	<ul style="list-style-type: none"> ◦ Recently, birth anniversary of Lala Hansraj was celebrated. ◦ Early life <ul style="list-style-type: none"> ▶ Birth place: Hoshiarpur district, Punjab ▶ Parent: Lala Chunnial and mother Hardevi ▶ Influenced by: Swami Dayanand Saraswati's ideologies. ▶ Popularly known as Mahatma Hansraj. ◦ Contributions: <ul style="list-style-type: none"> ▶ One of the greatest educationists who chose English-oriented Science-based education with a blend of Vedic ideals ▶ Co-established the first Dayanand Anglo-Vedic Schools System (DAV) in Lahore in 1886 with Guru Datta Vidyarthi and served as its first Headmaster. ▶ Proposed the inclusion of the Ashok Dharma Chakra at the Centre of the National Flag. 	<p>Educational Equity and Dedication to Service</p> <ul style="list-style-type: none"> ◦ He believed in providing equal educational opportunities to all, regardless of social status. ◦ He dedicated his life to social service and the betterment of society, especially through education.
 <p>Asaf Ali (1888-1953)</p>	<ul style="list-style-type: none"> ◦ The birth anniversary of Asaf Ali celebrated. ◦ About Asaf Ali ◦ Lawyer, freedom fighter, first Ambassador of independent India to the United States etc. ◦ Key Contributions <ul style="list-style-type: none"> ▶ One of the founding members of Home Rule League at Delhi. ▶ Actively participated in the Non-Cooperation Movement, Civil Disobedience Movement, Individual Satyagraha and Quit India Movement etc. ▶ Defended Shaheed Bhagat Singh and Batukeshwar Dutt in central assembly bomb case 1929. ▶ Elected to Central Legislative Assembly in 1935 as a member of Muslim National Party. 	<p>Justice and Resilience</p> <ul style="list-style-type: none"> ◦ His legal career was marked by his pursuit of justice, defending individuals like Bhagat Singh in pivotal cases. ◦ He showed resilience in his continuous efforts to fight for civil rights and participate in India's freedom movements despite numerous challenges.



Freedom fighter and renowned writer Arun Chandra Guha was remembered on his birth anniversary.



Revolutionary Spirit and Intellectual Legacy

- His involvement in the Swadeshi movement and revolutionary activities reflected his relentless spirit for freedom.
- His writings and publications contributed to the intellectual and cultural discourse of his time.



Arun Chandra Guha
(1892-1983)

About Arun Chandra Guha

- Born in **Barisal (East Bengal)**.
- He was a **member of the Constituent Assembly** and, since 1946 a **Member of Parliament** till the third Lok Sabha (1963).

Key Contributions

- Started taking interest in politics during the **Swadeshi movement of 1905**.
- After 1910, he took an active part as a **member of the Jugantar Party**, a secret revolutionary society.
- Published Bengali and English journals, **Mandira and Forward**, respectively.
- Subscribed to Jatindranath Mukhopadhyay, alias **Bagha Jatin's Zimmermann plan**.
- Literary works:** Shristi Sabhyata, First Spark of Revolution, etc.



Birth anniversary of Kartar Singh Sarabha is observed on 24th May.



Sacrifice and Revolutionary Zeal

- His willingness to sacrifice his life for India's independence epitomized his dedication to the cause.
- His active participation in the Ghadar Party and efforts to incite rebellion showcased his fervent revolutionary spirit.





Kartar Singh Sarabha
(1896 – 1915)

About Kartar Singh Sarabha

- He was an **Indian revolutionary** born in the village of Sarabha (Punjab).

Key Contributions

- He became a **member of Ghadar Party** (founded in Oregon in 1913 to overthrow British rule) and was one of its most active members.
 - He put together the **Punjabi issue of the Ghadar newspaper**.
- On returning to India, he focused on mobilising Indian soldiers to revolt and simultaneously setup a small scale arms manufacturing unit in Ludhiana.
- He was charged with sedition in **Lahore Conspiracy Case** and was **executed in 1915** along with his compatriot Vishnu Ganesh Pingle.

 <p>Sukhdev Thapar (1907-1931)</p>	<ul style="list-style-type: none"> ◦ Freedom fighter Sukhdev Thapar was remembered on his birth anniversary (15 May). ◦ About Sukhdev Thapar <ul style="list-style-type: none"> ▶ Born in Ludhiana (Punjab) ▶ He educated the youth at the National College in Lahore. ◦ Key Contributions <ul style="list-style-type: none"> ▶ He was a member of the Hindustan Socialist Republican Association. ▶ He along with other revolutionaries started the 'Naujawan Bharat Sabha' at Lahore in 1926. ▶ He along with Bhagat Singh and Rajguru were arrested for their involvement in Lahore Conspiracy Case <ul style="list-style-type: none"> ✓ The day the three were hanged to death is observed as Shaheed Diwas (23rd March). 	<p>Patriotism and Youth Leadership</p> <ul style="list-style-type: none"> ◦ His commitment to India's freedom was evident in his revolutionary activities and ultimate sacrifice. ◦ He inspired many young Indians to join the freedom struggle and fight for their rights.
 <p>Tuleswari Koch (1930 -1942)</p>	<ul style="list-style-type: none"> ◦ Recently she was remembered on her death anniversary. ◦ Early Life: <ul style="list-style-type: none"> ▶ Father: Bhabakanta Barua ▶ Birthplace: Nij-Borgaon village on the outskirts of Dhekiajuli (Sonitpur district) Assam. ◦ Contributions: <ul style="list-style-type: none"> ▶ She was shot by the British on September 20, 1942, during the Quit India Movement while attempting to hoist the Tricolour at a police station in Dhekiajuli, along with other freedom fighters. ▶ This incident is sometimes called as Dhekiajuli martyr and the procession of freedom fighter to hoist flag is known as mrityu vahini (suicide squad) which was led by Monbor Nath. ◦ Honour <ul style="list-style-type: none"> ▶ Dhekiajuli town marks September 20 as Martyrs' Day in her honour. 	<p>Bravery and Patriotism</p> <ul style="list-style-type: none"> ◦ She demonstrated remarkable bravery at a young age, participating in the Quit India Movement and facing British bullets. ◦ Her actions during the movement reflected her deep love for the country and commitment to its independence.

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TOPIC	DESCRIPTION	READ MORE
 <p>Beyond Metros- The Ascent of India's Tier 2 and Tier 3 Cities</p>	<p>As India transitions from being a largely rural to an urban society, the focus needs to be on harnessing the economic potential of all cities, large and small. Fostering growth and development in Tier 2 and 3 cities is vital for India's journey toward becoming a developed country. By focusing on infrastructure, industries, education, and sustainability, these cities can play a pivotal role in driving economic growth, creating jobs, and improving living standards for millions of people.</p>	
 <p>Redefining Governance: India's Path to Administrative Reforms</p>	<p>Administrative reforms in India have come a long way in enhancing governance and service delivery. However, there is still much to be done particularly in addressing the persistent challenges faced in the administrative system. With emerging technologies and a growing emphasis on transparency and citizen participation, there is ample opportunity to build upon past successes and enhance the effectiveness of the administrative system.</p>	
 <p>Threads of Transformation: India's Textile Industry Weaving a Modern Future</p>	<p>The Indian textile manufacturing industry is diverse, encompassing a wide range of textiles, including apparel, home textiles, technical textiles, and traditional handloom textiles. However, it is marred by its traditional outlook, lacking in technology adoption and inefficient waste management. By embracing technological advancements, adopting sustainable practices, and fostering collaboration across the value chain, India can weave a brighter future for its textile sector.</p>	

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UPSC TOPPERS PREPARATION APPROACH & STRATEGIES

Insights from Toppers' Talk and Answer Scripts



Ishita Kishore
Rank 1, 2022

Ishita Kishore, the UPSC topper of 2022, serves as a remarkable inspiration for her unwavering determination and relentless efforts making her as a beacon of motivation for aspiring candidates. Through her methodical preparation approach, she emerged triumphant in the esteemed Civil Services Examination securing top rank. Ishita extensively relied on VisionIAS Mains test series to refine her answer writing abilities. To gain further insights into Ishita's answer writing approaches, kindly scan the QR code provided.

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UPSC CSE TOPPERS 2022



**Waseem
Ahmad Bhat**



Waseem Ahmad Bhat, an exceptional achiever who secured an All India Rank 7 in his third attempt in the UPSC Civil Services Examination 2022. He also achieved All India Rank 225 in his first attempt in 2020 and currently, he is training as an Assistant Commissioner Income Tax.

Waseem was a student of the **VisionIAS Foundation Course**, Batch in 2019.

Hailing from Doru Shahabad, Anantnag, Jammu & Kashmir, he completed his schooling in Anantnag and holds a degree in Civil Engineering from NIT Srinagar.

Waseem opted for **Anthropology** as his optional subject. His topper's talk covers vital topics such as preparing for the **changing pattern of Prelims**, essay writing and strategy, writing **quote-based essays**, utilizing topper's answer scripts for preparation, and **effective revision strategies**.

TOPPERS' TALK



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**Aniruddh
Yadav**



Aniruddh Yadav, a remarkable achiever who secured an All India Rank 8 in his fourth attempt in the UPSC Civil Services Examination of 2022.

Aniruddh opted for **Anthropology** as his optional subject. He completed his dual degree course in Biochemical Engineering & Biotechnology from IIT Delhi.

His topper's talk covers crucial aspects such as **creating a schedule** and **subject-wise timetable**, honing answer writing skills through topic-based **practice**, **mastering the structure** and format of answers (Introduction, Body, Conclusion), **managing time effectively** during answer writing practice, and preparing **topic-wise notes** with the help of syllabus analysis and previous year questions.

TOPPERS' TALK



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**Siddharth
Shukla**



Siddharth Shukla, belongs to Uttar Pradesh. He completed his BA in History (H) from Delhi University, which was also his optional subject.

He displayed exemplary resilience by appearing in the exam for the fourth attempt and secured AIR 18 in 2022.

The preparation strategy reflected in his talk and answer scripts include the strategy for Essay, **efficient use of PYQs**, **notes making**, among others.

Additionally, he has also focused upon **non-academic aspects** such as **stress management**, **habit formation**, and **role of meditation** which are critical for this examination.

TOPPERS' TALK



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**Anoushka
Sharma**



Anoushka Sharma hailing from Madhya Pradesh completed her graduation from City University, New York with a bachelor's degree in Economics. She gained job experience through a three-month internship with the United Nations prior to taking the civil service examination.

She passed her CSE with AIR 20 in 2022 on her third attempt. **Economics** is her optional subject.

She has a very good command over ethics paper and she has shared her **insights on time management and strategy for attempting questions** in CSE Mains.

TOPPERS' TALK



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UPSC CSE TOPPERS 2021



Gamini Singla



Gamini Singla, hailing from Punjab, completed her graduation in Computer Science Engineering from Punjab Engineering College Chandigarh. Thereafter, she honed her skills through a five-month internship as a finance analyst at JP Morgan.

She secured a remarkable All India Rank of 3 in the UPSC CSE 2021 in her second attempt with **Sociology** as her optional subject.

With her strategic **approach to GS Paper IV (Ethics) and Essay**, Gamini demonstrated her ability to **critically analyze ethical issues** and effectively express her thoughts in a coherent manner.

Her expertise in answer writing provided her with a competitive edge, allowing her to convey her knowledge and insights concisely.

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Aishwarya Verma



Aishwarya Verma hails from Madhya Pradesh. After graduating in Electrical Engineering, he opted for Civil Services as a career of choice.

He chose **Geography** as his optional subject and achieved an All-India Rank 4 in UPSC CSE 2021 in his fourth attempt.

Apart from the hard work, determination and resilience shown by Aishwarya, his success can also be attributed to his **short and enriched self-made notes, advanced answer writing skills**, and smart preparation strategy, including S&T.

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Utkarsh Dwivedi



Utkarsh Dwivedi, hailing from historic town of Ayodhya, Uttar Pradesh, a graduate in Mechanical Engineering from VIT Vellore, displayed resilience by attempting the exam for the third time and succeeding with remarkable achievement with the optional subject, **Political Science and International Relations**.

He displayed **exemplary command over Ethics Paper**, specially Case Studies and **quotation-based questions**. With his deep understanding of the demand of the UPSC Examination and excellent time management skills, he not only optimized his efforts, but also maximized his performance at all stages of the UPSC CSE.

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Yaksh Chaudhary



Yaksh Chaudhary, a resident of Amroha, Uttar Pradesh, through unwavering determination secured an All India Rank 6 in the prestigious exam on his third attempt in 2021. With his passion for Sociology, Yaksh opted for it as his optional subject and devised a winning strategy for his preparation.

Yaksh's **exceptional expertise in answer writing** and adeptness in attempting question papers during the mains exam provided him an edge. Moreover, his skill in crafting **well-structured diagrams** for General Studies, Ethics, and Sociology further enriched the quality and visual appeal of his responses. Yaksh's achievements serve as an inspiration to aspiring candidates nationwide, exemplifying the significance of perseverance, dedication, and strategic planning.

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UPSC CSE TOPPERS 2020



**Shubham
Kumar**

1
RANK
2020

Shubham Kumar, hailing from Katihar District in Bihar, completed his graduation in Civil Engineering from IIT Bombay. He achieved the remarkable feat of securing All India Rank 1 in the UPSC examination of 2020 in his third attempt.

His success can be attributed to his **unique approach and meticulous preparation**. Shubham emphasized the importance of **regular mock tests** for prelims and carefully analyzing previous years' UPSC prelims questions.

Shubham was a student of the **VisionIAS Foundation Course**.

He also **utilized topper's copies to enhance his skills in ethics answer writing** and emphasized the **use of diagrams and graphs** in GS papers.

TOPPERS' TALK



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**Praveen
Kumar**

7
RANK
2020

Praveen Kumar, achieved an impressive All India Rank 07 in the UPSC Civil Services Examination 2020. Hailing from Jammui, Bihar, Praveen holds a degree in Civil Engineering from IIT Kanpur.

His remarkable journey includes clearing the GATE examination with an AIR 5 and securing AIR 3 in the Indian Engineering Services (IES) exam, all while working for the Indian Railway Service.

Praveen's toppers talk provides invaluable insights, covering motivations for pursuing the IAS, **effective booklists and sources for exam preparation, strategies for newspaper reading and content extraction, note-making techniques** for mains, and **utilizing flow charts and diagrams** in answers.

TOPPERS' TALK



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**Jagrati
Awasthi**

2
RANK
2020

Jagrati Awasthi, from Bhopal, Madhya Pradesh, completed her graduation in Electrical Engineering from NIT Bhopal. She gained two years of valuable work experience at BHEL.

With **Sociology** as her optional subject, she achieved an outstanding All India Rank of 2 in the UPSC examination of 2020.

She has emphasized the **importance of a well-structured daily routine** and shared a **detailed booklist** and recommended sources. Jagrati stressed the significance of thorough reading and utilizing previous years' questions to grasp the exam's demands.

Along with refined **note-making techniques**, she has provided insights on determining the optimal number of questions to attempt in the prelims and leveraging previous year's question papers for **Ethics case studies'** preparation.

TOPPERS' TALK



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**Satyam
Gandhi**

10
RANK
2020

Satyam Gandhi, an exceptional achiever, secured an All India Rank 10 in the UPSC Civil Services Examination 2020. Hailing from Bihar, Satyam graduated in Political Sciences (H) from Dayal Singh College, University of Delhi.

With **Political Science and International Relations** as his optional subject, he cleared the exam on his first attempt, displaying remarkable determination.

In addition, Satyam achieved an impressive AIR 242 in the NDA Exam. His toppers talk offers invaluable insights into **time management strategies** for a first attempt success, the **significance of flowcharts and diagrams** in mains answers, **effective essay structuring**, and his experience in obtaining a remarkable 201 marks in the interview.

TOPPERS' TALK

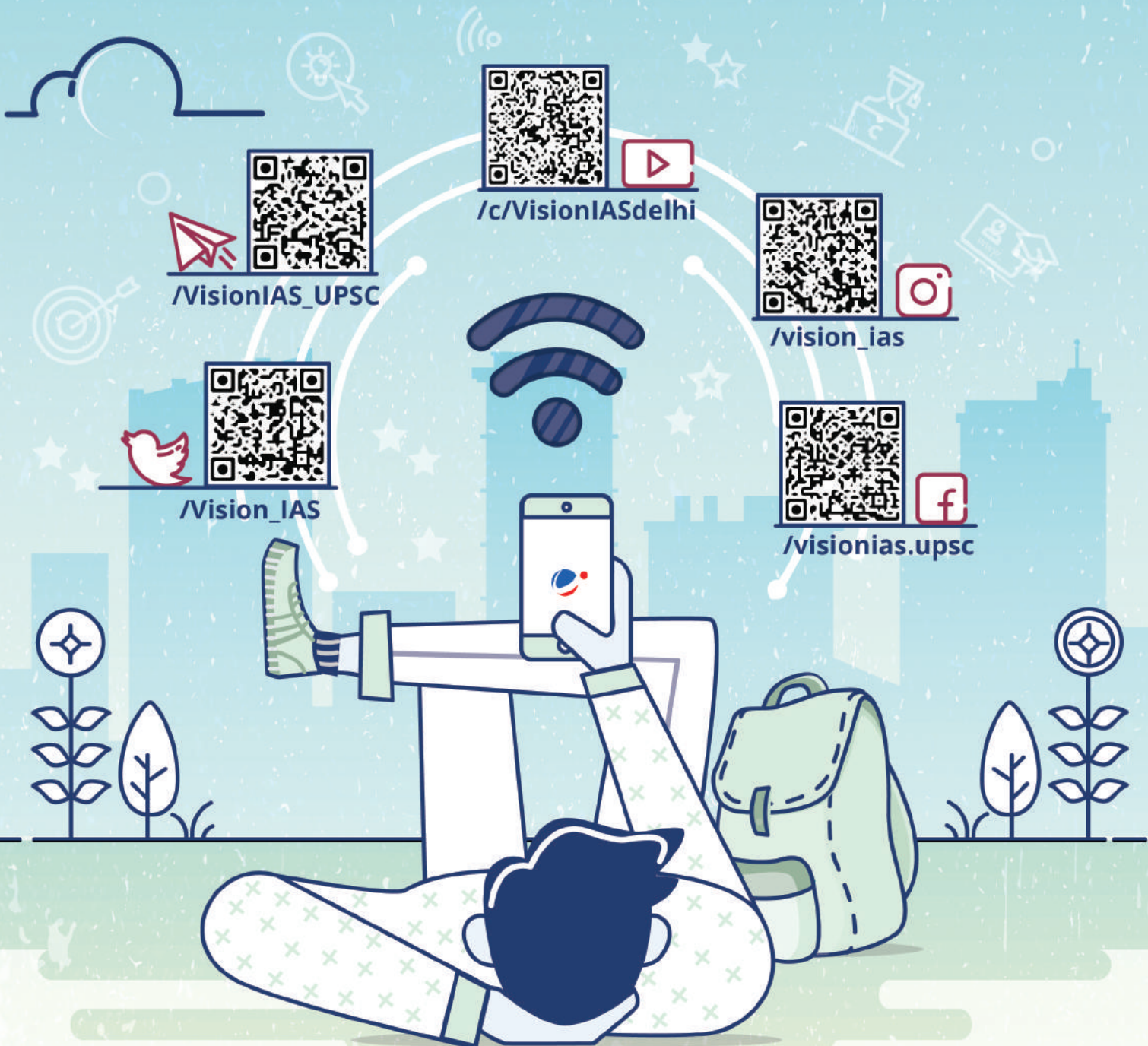


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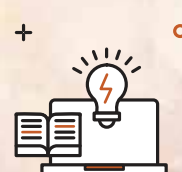
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1
AIR

Aditya Srivastava

79

in **TOP 100** Selections in **CSE 2023**

from various programs of **Vision IAS**



2
AIR

**Animesh
Pradhan**



5
AIR

Ruhani



6
AIR

**Srishti
Dabas**



7
AIR

**Anmol
Rathore**



9
AIR

Nausheen



10
AIR

**Aishwaryam
Prajapati**

39
Selections

in **TOP 50**

in **CSE 2022**



1
AIR

**Ishita
Kishore**



2
AIR

**Garima
Lohia**



3
AIR

**Uma
Harathi N**

1
AIR



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