# Polity & Governance

## 1. Association of Democratic Reforms Data on MPs

**Why In News?**
- Recently, the Association of Democratic Reforms (ADR) scrutinised the affidavits of the sitting MPs, and revealed several sitting MPs with criminal charges.

**Criminalisation of Politics in India**
- It is a phenomenon, where individuals with criminal charges are elected to positions of power, posing a significant threat to the democratic fabric of the nation.
- It refers to the involvement of individuals with criminal charges or backgrounds in Indian politics. It means that persons with criminal backgrounds contest in the election and get selected as a member of parliament or state legislature.

**Major Reasons**
- Unholy *Nexus between Bureaucracy and Politicians; Religion and Caste; Vote Bank Politics; Ineffective Legal Provisions; and Lack of Transparency and Accountability etc.*

**The Extent of the Problem: Key Findings of ADR**
- **Criminal Charges:** Out of the 514 sitting Lok Sabha MPs analysed, 225 (44%) have declared criminal cases against themselves.
  - ADR revealed that among the sitting MPs with criminal charges, 29% face serious criminal cases, including allegations of murder, attempt to murder, promoting communal disharmony, kidnapping, and crimes against women.
  - Out of the sitting MPs with serious criminal cases against them, nine face murder cases.
- **Educational Background, Age, and Gender:** 73% of the MPs have graduate or higher educational qualifications, while only 15% of the sitting MPs are women.

- **State-wise Distribution:** More than 50% of the MPs from Uttar Pradesh, Maharashtra, Bihar, Andhra Pradesh, Telangana, and Himachal Pradesh face criminal charges.
- **Party-wise Distribution:** Among major parties, the BJP and the Congress have the highest number of billionaire MPs.
- **Highest Declared Assets:** 5% of the analysed MPs are billionaires, with assets exceeding ₹100 crore.

**Other Key Reasons Highlighted By ADR Earlier:**
- **Electoral Bonds:** The Supreme Court held that the **Electoral Bonds Scheme** was unconstitutional for violating the right to information of voters.
- **Registered Unrecognised Political Parties:** According to a report by ADR, the number of registered unrecognised political parties has increased two-fold from 2010 to 2019.
- **Election Commissioners Appointment:** ADR argues that the present practice of appointment of Election Commissioners by the Centre is **violative of *Articles 14 and Article 324 (2)*** and the **basic features of the Constitution**.

| The Association for Democratic Reforms (ADR): |
| --- |
| – It is an **apolitical and non-partisan non-profit organisation** in India that was **established in 1999** by a group of professors from the Indian Institute of Management (IIM) Ahmedabad. |
| – It focuses on **corruption and criminalization** in the political process, empowerment of the electorate through greater dissemination of information relating to the candidates and the parties etc. |
| **Objectives:** |
| – To improve governance and strengthen democracy through |

> continuous work in the area of **Electoral and Political Reforms.**
>
> **Significances:**
> – It has published numerous reports on the criminal backgrounds, financial details, and other relevant information of candidates contesting in various elections.
> A. These reports have played a crucial role in promoting transparency and accountability in Indian politics.

## Issues of Criminalization of Politics

- **Question of safety & security:** The main purpose of governance is to provide safety and security to citizens who elect their representatives for this role.
  o But if the elected members themselves have criminal records, would they be interested in a criminal justice system that is prompt and efficient?
- **Low conviction rate:** As per the **National Crime Records Bureau's 2021 report,** only 10,416 cases of murder were disposed of during the year with just a 42.4% conviction rate.
  o The Law minister has admitted to more than 4.7 crore cases pending in various courts.
- **Situation in police stations:** Politicians play a very powerful role at police stations, compromising both integrity and impartiality of field staff.
  o In due course, ordinary criminals graduate to be dreaded ones and form gangs extorting money, grabbing land, threatening witnesses in criminal cases, etc.
- **Impact on Democracy:** The presence of criminals in politics undermines the very essence of democracy. It erodes public trust in the political system and compromises the integrity of our institutions.
- Moreover, it raises serious questions about the kind of representation citizens are receiving and the quality of governance being delivered.

## Measures to Curb Criminalisation

- The **Vohra Committee** set up by the Centre in 1993 sounded a note of warning saying that "some political leaders become the leaders of these groups and, over the years, get themselves elected to local bodies, state assemblies, and the national Parliament.
- **Law Commission's 179th report:** It recommended an **amendment to the Representation of People Act 1951**, and suggested the people with criminal backgrounds should be disqualified for five years or until acquittal.
  o It also recommended that the person who wants to contest the election must furnish details regarding any pending case, with the copy of the FIR/complaint, and also furnish details of all assets.

## The Legal Framework:

- **Representation of the People Act, 1951:** It provides the basis for disqualifying a sitting legislator or a candidate on certain grounds.
  o However, there is no provision regulating appointments to offices within political parties.
- **Right to Information Act, 2005:** Efforts have been made to bring political parties under the Right to Information regime to usher in transparency within political parties.

## Related Supreme Court Judgement

- **In 2002:** Every candidate contesting election **had to declare his criminal and financial records** along with educational qualifications.
- **In 2005:** A sitting MP or MLA will be **disqualified** from contesting the election **if convicted and sentenced to imprisonment for two years or more** by a court of law.
- **In 2014:** The Supreme Court **accepted the Law Commission recommendations** and passed an order directing that trials against sitting MPs and MLAs should be concluded within a year of charges being framed and conducted on a day-to-day basis.
  o As a follow-up to these directives, in 2017, the government started a **scheme to establish 12 special**

**courts** for a year to **fast-track** the trial of criminal cases against MPs and MLAs.
- **In 2021:** The **political parties** need to upload on their websites and social media platforms the **details of pending criminal cases** against their candidates and the reasons for selecting them as also for not giving tickets to those without criminal antecedents.
- **Recently,** the Supreme Court published **some necessary mandates** to avert the criminalisation of politics as many lawsuits have been withdrawn against MPs and MLAs in the past.

**Conclusion and Way Forward**
- The criminalisation of politics in India is a grave issue that needs immediate attention. The involvement of criminals in politics not only undermines the democratic process but also hampers the development of the nation.
- There is a **need to fix the role of Political Parties** that should be more transparent and accountable in their candidate selection process.
- The **Election Commission of India and other respective authorities** need to take transparency measures about the Political Parties and their funding to the People of India so that they can **make informed decisions** while exercising their vote.
- It is high time that stringent measures are taken to curb this menace and restore faith in the democratic system.

# 2. Artificial Intelligence (AI) in Elections

**Why In News?**
- Recently, it was found that the widespread application of Artificial Intelligence (AI) is likely to cause a paradigm shift in almost every aspect of an election.

**About**
- AI has been transforming various sectors globally, and the political landscape is no exception. In India, AI has started to play a pivotal role in elections, reshaping campaign strategies and voter engagement.

**Potential Benefits of AI in Election**
- **Campaign Strategies:** AI can analyse vast amounts of data to identify key issues, predict voter preferences, and develop targeted campaign messages.
  o AI can also help political parties understand voter behaviour, tailor their messages to specific demographics, and optimise their campaign strategies.
- **Monitoring Misinformation:** AI can analyse vast amounts of data to identify patterns and flag potential misinformation.
  o It is particularly useful in monitoring social media platforms for fake news during election periods.

- **Voter Registration and Identification:** AI can help in the voter registration process and in identifying voters, ensuring that each citizen gets their rightful vote.
- **Preventing Election Meddling:** AI companies are taking steps to ensure that their technology does not interfere with elections.
  o For instance, **OpenAI** has made commitments to develop tools for detecting misleading AI-generated content and to take action on such content on their services.
- **Regulatory Measures:** The Union Ministry of IT has issued **advisories to AI companies** to ensure that their services do not generate responses that are illegal under Indian laws or threaten the integrity of the electoral process.
- **Collaboration with Tech Platforms:** There is a call for more coordination between the **Election Commission of India (ECI)** and major tech platforms **to combat misinformation and disinformation**.
- **Addressing AI-Driven Misinformation:** AI companies are working on making it more obvious when images are AI-generated and are planning to put an icon on images to indicate it was AI-generated.

**Election Integrity**
– It refers to the assurance that the processes of an election are conducted in a fair and impartial manner. It is a **fundamental aspect of democratic governance** and involves various elements such as:
  a. *Free and Fair Election; Transparency; Voter's Right to Information; Protection Against Misuse of Technology; Regulatory Framework; and Independence of Election Commission.*
– The **Election Commission of India** is responsible for ensuring the integrity of the electoral process.
– The Supreme Court of India has emphasised that **free and fair elections** are a part of the **basic structure** of the Constitution.

**The Dark Side of AI in Elections**
- **Spread of Disinformation:** However, the use of AI in elections also raises concerns about the spread of disinformation.
  o The rapid growth of **generative AI**, which can create convincing text, images, and videos, has heightened fears that this technology could be used to sway major elections.
  o It includes the creation of deep fakes or realistic-looking images that are fabricated.
- **Lack of Transparency:** Another concern is the inscrutability of AI models. The inner workings of these models are often opaque, making it difficult to understand how they make decisions.
  o It can lead to issues of accountability and fairness.
- **Undermining Democratic Ethos:** The ugly side of AI in elections is its potential to undermine democratic processes.
  o Dishonest actors can use AI to manipulate public opinion, spread fake news, and even influence election outcomes.
- **Privacy and Data Security:** With AI systems collecting and analysing vast amounts of data, there are legitimate concerns about how this data is used and who has access to it.

- **Regulatory Concerns:** The Indian government has issued advisories to generative AI companies. These advisories mandate that AI systems must not generate responses that are illegal under Indian laws or threaten the integrity of the electoral process.
  o Platforms that currently offer 'under-testing/unreliable' AI systems to Indian users must explicitly seek prior permission from the central government.
- **Ethical Considerations:** AI algorithms can potentially perpetuate and amplify existing biases.
  o Regulatory frameworks must prioritise developing and deploying unbiased AI systems to prevent this.
- **Potential for Misuse:** There are concerns about AI being used to influence politics and even convince people not to vote.
  o For instance, a robocall using fake audio of a political figure circulated to voters, urging them to stay home during an election.
- **Accountability:** The accord signed by tech companies to fight AI election interference did not specify a timeline for meeting the commitments or how each company would implement them.
  o It raises questions about accountability and enforcement.

**Regulating AI**
- Recognising the potential misuse of AI in elections, the Indian government has **issued advisories to generative AI companies,** mandating that AI systems must not generate responses that are illegal under Indian laws or threaten the integrity of the electoral process.
  o Furthermore, companies offering 'under-testing/unreliable' AI systems to Indian users must seek prior permission from the government.
- **Global Tech Giants' Efforts:** Major technology companies have signed a pact to voluntarily adopt 'reasonable precautions' to prevent artificial intelligence tools from being used to disrupt democratic elections around the world.
  o It includes commitments to collaborate on developing tools for

detecting misleading AI-generated images, video, and audio, creating public awareness campaigns to educate voters on deceptive content, and taking action on such content on their services.

## Conclusion

- While **AI** holds immense potential in **ensuring election integrity**, and can play a transformative role in ensuring election integrity, it is equally

important to address the **associated challenges such as data privacy, algorithmic bias, and the digital divide**.
  o It is crucial to have a **robust regulatory framework** to guide the use of AI in elections, and need to ensure that the use of AI **does not compromise the democratic values of fairness and transparency.**

# 3. Directorate of Enforcement (ED)

## Why In News?

- **The Supreme Court** endorsed the sweeping powers of the Directorate of Enforcement (ED), saying the Central agency could call **"anybody for any information".**

## About

- The Tamil Nadu government and the Collectors informed the SC that they had written to the ED expressing **their inability to appear in person due to General Elections.**

## About Directorate of Enforcement (ED)

- **Established:** It was established in **1956** with the formation of an **'Enforcement Unit'** under the aegis of the **Department of Economic Affairs** and handles Exchange Control Laws violations under **Foreign Exchange Regulation Act, 1947 (FERA 1947).**
  o A year later, the Enforcement Unit was renamed the Enforcement Directorate.
- It is a **multi-disciplinary organization** mandated with **investigation of the offence of money laundering and violations of foreign exchange laws.**

**The statutory functions of the Directorate** include enforcement of following Acts:

- **The Prevention of Money Laundering Act, 2002 (PMLA):** It is a criminal law enacted to prevent money, ED has been given the responsibility to enforce the provisions of the PMLA.

  o It does so by **conducting investigation** to trace the assets derived from proceeds of crime, to provisionally attach the property and to ensure prosecution of the offenders and confiscation of the property by the Special court.
- **The Foreign Exchange Management Act, 1999 (FEMA):** It is a **civil law** enacted to consolidate and amend the laws relating to facilitate **external trade and payments.**
  o ED has been given the responsibility to conduct investigation into suspected contraventions of foreign exchange laws and regulations, to adjudicate and impose penalties on those adjudged to have contravened the law.
- **The Fugitive Economic Offenders Act, 2018 (FEOA):** This law was enacted to **deter economic offenders from evading the process of Indian law** by remaining outside the jurisdiction of Indian courts.
  o It is a law whereby the Directorate is mandated to attach the properties of the fugitive economic offenders who have escaped from India warranting arrest and provide for the confiscation of their properties to the Central Government.

## What Powers does the ED have?

- The ED has extensive powers to investigate and act against individuals violating enforced laws, including **special powers for confiscating disproportionate assets under the PMLA Act.**

- **Summon an individual** whose attendance is essential, whether to give evidence or to produce any records, during investigation or proceedings.

## Challenges in the Functioning of ED

- **Overburdened and Lengthy Investigations:** Investigations conducted by the ED are relatively long in duration due to the **complexity of financial transactions** involved, legal hurdles, and the **need for coordination with other agencies.**
  - This leads to delays in timely action against economic offenders.
- **Political Interference:** There have been allegations of political interference in the functioning of the ED, particularly in high-profile cases involving influential individuals or organizations.
  - Political pressure undermines the independence and impartiality of the agency.
- **Lack of Coordination:** Coordination between various law enforcement agencies, such as the Central Bureau of Investigation (CBI), Securities and Exchange Board of India (SEBI), and state police forces, is crucial for effective investigation and prosecution of financial crimes.
  - However, there have been instances of inadequate coordination and communication among these agencies, leading to inefficiencies and duplication of efforts.
- **Legal Challenges:** Legal challenges, including delays in court proceedings, interpretation of legal provisions, and limitations in the legal framework, impede the ED's efforts to prosecute economic offenders and recover proceeds of crime.
- **International Cooperation:** Given the global nature of financial crimes, international cooperation and mutual legal assistance are crucial for investigating cross-border transactions and recovering assets held abroad.
  - Challenges such as differences in legal systems, jurisdictional issues, and diplomatic complexities often hinder effective collaboration with foreign law enforcement agencies.

## Way Ahead

- Addressing the challenges requires concerted efforts by the government to strengthen the institutional capacity of the ED, enhance coordination with other agencies, ensure independence and autonomy, and provide adequate resources and training to its personnel.
- Additionally, reforms in the legal framework and international cooperation mechanisms can further enhance the ED's effectiveness in combating financial crimes and promoting financial integrity.

# 4. Indian opting abroad for surrogacy option

## Why In News?

- Restricted by surrogacy laws, **Indians are going abroad to become parents.**

## About

- Surrogacy laws in the US are well defined for both the intending parents and the surrogate.
- Healthy couples can get an embryo created with their eggs and sperm.
- The US allows gender selection. The newborn child could be a US citizen.
- If born in the US, the child will have an American birth certificate and passport and can be brought back as an **Overseas Citizen of India (OCI).**

## Surrogacy (Regulation) Act, 2021

- **What is surrogacy?:** The Act defines surrogacy as a practice where a woman gives birth to a child for an intending couple with the intention to hand it over to them after the birth.
  - It is permitted only for **altruistic purposes** or for couples who suffer proven infertility or disease.
  - Surrogacy is **prohibited for commercial purposes** including for sale, prostitution or any other forms of exploitation.
- **Abortion:** Abortion of such a fetus is allowed **only with the consent of the surrogate mother** and the authorities and must adhere to the provisions of

the Medical Termination of Pregnancy Act.

- **Eligibility and Conditions for Couples:** A couple should procure **certificates of eligibility and essentiality** in order to have a child via surrogacy.
  - o The couple is deemed 'eligible' if they have been **married for five years,** the wife is aged between **23-50 years** and the husband is between **26-55 years.**
  - o The couple must not have **any living child** (biological, adopted or surrogate.)
  - o A child with **mental or physical disabilities,** or one suffering from a **life-threatening disorder** has been exempted from the above criterion.
  - o The couple can get an 'essential' certificate if suffering from **proven infertility** of either partner certified by a District Medical Board.
  - o They must also have **insurance coverage for 16 months for the surrogate mother,** covering any postpartum complications .
- **Eligibilty to be a surrogate**: A surrogate mother has to be a **close relative** of the couple, a married woman with a child of her own, aged between **25-35 years,** who has been a surrogate **only once** in her life.
  - o She must also possess a certificate of **medical and psychological fitness** for surrogacy.
- **Regulation:** The Centre and State governments will constitute a **National Surrogacy Board (NSB)** and **State Surrogacy Boards (SSB)** respectively.
  - o This body is tasked with enforcing standards for surrogacy clinics, investigating breaches and recommending modifications.
- **Offences:** Offences under the Act include commercial surrogacy, selling of embryos, exploiting, abandoning a surrogate child etc.
  - o These may invite up to **10 years of imprisonment** and a fine of up to **Rs. 10 lakh.**
- **Significance:** The Act promotes **reproductive autonomy,** protects the rights and well-being of all parties involved, and facilitates access to assisted reproduction for individuals and couples seeking to start or expand their families.
- **Challenges:** The act is **discriminatory and violative** of reproductive autonomy and choice by denying access to ARTs to single persons and people in live-in and same-sex relationships.
  - o Some people choose to engage in commercial surrogacy because other livelihood options such as domestic or garment factory work were more exploitative, and surrogacy provided them with enough remuneration to positively benefit their families
- **Conclusion** : There is a need to assess the Act through the framework of reproductive rights and justice while keeping in mind the concerns of stakeholders.

## 5. How are Symbols Allotted to Political Parties?

**Why In News?**
- Recently, a political party raised questions about the allotment of symbols to 'registered unrecognised parties'.

**About the Election Symbols in India**
- Election symbols play a crucial role in the electoral process in India, especially considering the sizable population that is still illiterate.
- These symbols serve as a visual representation of political parties and independent candidates, making it easier for voters to identify their preferred candidates on the ballot.

**Allotment of Symbols**
- The **Election Commission of India (ECI)** allots symbols to political parties and contesting candidates as per the provisions of the **Election Symbols (Reservation and Allotment) Order, 1968.**
- A recognized political party has a reserved symbol that is not allotted to any other candidate in any constituency.

**Key Criteria**

- **Recognition of Parties:** A party is recognized as a 'national' or 'state' party under the provisions of the Symbols Order by the ECI.
  - The criteria for recognition at the State level consists of winning a certain number of Lok Sabha or Legislative Assembly seats or securing a certain percentage of votes polled in a general election.
- **Allotment of Symbols:** Symbols are allotted to political parties and contesting candidates as per the provisions of the Symbols Order by the ECI.
  - A recognized political party has a reserved symbol that is not allotted to any other candidate in any constituency.
- **For Registered but Unrecognised Parties:** One of the free symbols is allotted as a common symbol during an election if that party contests in two Lok Sabha constituencies or in 5% of seats to the Assembly of a State as the case may be.
- **Rule 10B of the Symbols Order:** It provides that the concession of a common free symbol shall be available to a **'registered unrecognised party'** for two general elections.
  - Furthermore, a party shall be eligible for a common symbol in any subsequent general election if it had secured at least 1% of votes polled in the State on the previous occasion when the party availed of this facility.
- **Application for Symbol:** Such an unrecognised party should however apply for a symbol every time in the prescribed format.
  - It can be made any time during the period commencing six months prior to the expiry of the term of the Lok Sabha or State Assembly as the case may be.
- **First-Come-First-Served Basis:** The symbols are thereafter allotted on a 'first-come-first-served' basis.
- **Free Symbols:** An independent candidate or someone contesting on behalf of an unrecognised political party has to approach the Commission and get a symbol allotted from the list of 'free' symbols available.
  - A candidate will have to provide three symbols from the free list at the time of submission of nomination papers, one of which will be allocated to him/her.

**Significances of Election Symbols**

- **Aid for Illiterate Voters:** The main purpose of giving symbols to parties is to help illiterate voters, who cannot read the candidates' names, to find their candidate on the ballot paper and facilitate their voting by looking at the symbol.
- **Political Identity:** Symbols today represent a far greater role in India's electoral politics, with each denoting allegiance to a particular ideology and the associated followership of a national leader.
- **Distinguishing Parties:** Symbols allow political parties to distinguish themselves from others.
  - They are particularly crucial in a country like India where there are numerous political parties.
- **Symbol Reservation:** In the case of a recognised political party, the Commission allows it to 'reserve' a symbol.
  - For example, if a political party recognised in a particular State wishes to contest in elections in another State, it can 'reserve' the symbol being used by it.
  - The Commission will oblige, provided the symbol is not being used by anyone else.

**Conclusion**

- Election symbols are an integral part of India's democratic process, serving as a visual aid for voters and a representation of political parties and candidates.
- The process of allotment and reservation of these symbols by the ECI ensures a fair and equitable system that upholds the principles of democracy.

## 6. Registration of Births and Deaths (Amendment) Act, 2023

**Why In News?**
- According to Model Rules drafted by the Union Ministry of Home Affairs, while registering the birth of a child, parents will need to separately record the religion of both the child's father and mother.

**About**
- The new rules are a departure from the existing 'religion of the family' declaration in birth registers.
- The proposed "**Form No.1-Birth Report**" will expand the column requiring a tick mark selection for religion of the child, to now also state the **"religion of father"** and **"religion of mother".**
  - o Similar changes have been made for parents of an adopted child.

**The Registration of Births and Deaths (Amendment) Act, 2023**
- The act was amended to the **Registration of Birth and Death Act 1969.**
- **Database of births and deaths:** The Registrar General, India (who may issue general directions for registration of births and deaths) will maintain a national database of registered births and deaths.
  - o The Chief Registrars (appointed by states) and Registrars (appointed by states for local area jurisdiction) will be obligated to share data of registered births and deaths to the national database.
- **Connecting database:** The national database may be made available to other authorities preparing or maintaining other databases. Such databases include: **National Population Register (NPR)**, electoral rolls, ration card, and any other national databases as notified.
- **Use of birth certificate:** The digital birth certificates issued under this system will become a single document

to prove the date of birth for various services,
  - o admission to an educational institution,
  - o preparation of voter lists,
  - o appointment to a government post, and
  - o any other purpose determined by the central government.
- **Digital records:** All reported births and deaths in the country are to be digitally registered.

| **National Population Register (NPR)** |
| --- |
| – NPR is the first step to the creation of the National Register of Citizens (NRC), as per the Citizenship Act.
– NPR, first collected in 2010 and updated in 2015 through door-to-door enumeration, already has a database of 119 crore residents. |

## National database

All reported births and deaths are to be digitally registered through the Centre's portal for the Civil Registration System

- The database may be made available to other authorities preparing or maintaining other databases such as electoral rolls or ration cards

- Information from digital certificate can be used for purposes such as admission to an educational institution or appointment to government posts

- Data is used by the govt. for socio-economic planning and to evaluate the effectiveness of social sector programmes

**Statistical and legal information**
- Any birth register includes two parts: **legal information and statistical information.**
- The information on the parents' religion is to be maintained for statistical information.
- **The birth register form** pertaining to legal information has been expanded to record the Aadhaar number, and the mobile and e-mail IDs of both the parents, "if available".

## 7. SC Expanded Scope of Articles 14 and 21

**Why In News?**

- The Supreme Court has expanded the scope of **Articles 14 and 21** to include

the **"right against the adverse effects of climate change".**

## Key Highlights
- The Supreme Court was hearing a plea to protect the **Great Indian Bustard (GIB)** from losing its habitat due to power transmission lines.
- The court also highlighted the **interconnection** between **climate change** and **various human rights**, including the right to health, indigenous rights, gender equality, and the right to development.
- The SC has expanded the fundamental rights chapter from time to time to include various facets of a dignified existence.
  - However, this is the **first time** that it has included the "**right against the adverse effects of climate change".**
- The court highlighted that "**States** owe a duty of care to citizens to prevent harm and to ensure overall well-being":
  - "The right to a healthy and clean environment is undoubtedly a part of this **duty of care.**

## Rationale
- Despite a plethora of decisions on the right to a clean environment, some decisions which recognise climate change as a serious threat, and national policies which seek to combat climate change, it is yet to be articulated that the people have a right against the adverse effects of climate change.
- As the havoc caused by climate change increases year by year, it becomes necessary to articulate this as a distinct right.
  - It is **recognised by Articles 14 and 21** which are important sources of the right to a clean environment and the right against the adverse effects of climate change.

## About the Articles 14 and 21
- **Article 14 of the Constitution of India** reads as under: The State shall not deny to any person e**quality before the** law or **the equal protection of the law**s within the territory of India."

- o E**quality before law** prohibits **discrimination**. It is a **negative concept.**
  - The concept of **'equal protection of the laws'requires** the State to give special treatment to persons in different situations in order to establish equality amongst all.
    - It is positive in character.
  - Therefore, the necessary corollary to this would be that equals would be treated equally, whilst un-equals would have to be treated unequally
- **Article 21** recognises the right to life and personal liberty**:** It lays down that, no person shall be deprived of his life or personal liberty except according to procedure established by law.
  - It guarantees that life or personal liberty shall not be taken away without the sanction of law. It ensures that no person can be punished or imprisoned merely at the whims of some authority. He/she may be punished only for the violation of the law.
  - By the **86th Amendment Act** of the Constitution a new article 21-A has been added after Article 21.
    - By this Amendment Act, Right to Education has been made a Fundamental Right

## Essence
- Fundamental Rights are enumerated in **Part III from Article 14 to 32** in the Constitution of India .
- **They** provide standards of conduct, citizenship, justice and fair play. They serve as a check on the government.
- Various social, religious, economic and political problems in India make Fundamental Rights important.
- These rights are justiciable which means that if these rights are violated by the government or anyone else, the individual has the right to approach the Supreme Court or High Courts for the protection of his/her Fundamental Rights.

**Do you know?**
- **Article 48A of the Constitution** provides that the State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of

the country.
- **Clause (g) of Article 51A stipulates** that it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures.
  a. These are not justiciable provisions of the Constitution but **the importance of the environment, as indicated by these provisions, becomes a right in other parts of the Constitution.**

# 8. Curative Petition

**Why In News?**
- Recently, the Supreme Court of India has provided significant relief to the Delhi Metro Rail Corporation (DMRC) by setting aside its 2021 judgement.

**About the Curative Petition**
- It is a concept that originated in India and is used as a last resort to seek justice from the Supreme Court.
- It is a rare legal remedy for those who believe they have been wronged by the court's decision.

**Origin:**
- A curative writ jurisdiction as a layer of appeal against a Supreme Court decision is **not prescribed in the Constitution.**
- It is a judicial innovation, designed for correcting 'grave injustices' in a ruling of the country's top court.

- The concept of a curative petition was first introduced by the Supreme Court of India in the case of *Rupa Ashok Hurra vs Ashok Hurra and Anr (2002).*

**Procedure for Filing:**
- A curative jurisdiction **can only be filed after a review plea** has already been dismissed by the Supreme Court.
- It must be first circulated to a Bench of three senior-most judges, and the judges who passed the concerned judgement, if available.
- If the majority of the judges on this Bench agree that the matter needs hearing, then it would be sent to the same Bench (as far as possible) which passed the judgement affecting the petition.

# 9. Declaration of Moveable Asset

**Why In News?**
- The Supreme Court of India has recently passed a significant judgement that provides clarity on the declaration of movable assets by election candidates.

**The Supreme Court Judgement:**
- The apex court noted that *'it is not necessary* that a candidate declare every item of movable property that he or his dependent family members own, such as, clothing, shoes,

crockery, stationery and furniture, etc., **unless the same is of such value as to constitute a sizable asset in itself** or reflect upon his candidature, in terms of his lifestyle, and require to be disclosed'.
- It also said that the **voters do not have an absolute right** to know all details of a candidate's private life.

**What are 'Corrupt Practices' under the RPA 1951?**

- Under **Section 123**, 'corrupt practices' include *bribery, undue influence, false information*, and promotion or attempted promotion of *'feelings of enmity or hatred between different classes of the citizens of India on grounds of religion, race, caste, community, or language'* by a candidate for the furtherance of his prospects in the election.

- **Section 123(2)** deals with **'undue influence'**: 'any direct or indirect interference or attempt to interfere on the part of the candidate or his agent, or of any other person, with the consent of the candidate or his election agent, with the free exercise of any electoral right'.

  o It could include threats of injury, social ostracism, and expulsion from any caste or community.

- **Under Section 100(1)(b)**, an election can be declared void if *'any corrupt practice has been committed by a returned candidate or his election agent or by any other person with the consent of a returned candidate or his election agent'*.

- **Under Sections 100(1)(d)(i) and (iv)**, an HC can rule that election results have been **'materially affected'** if there is **'improper acceptance'** of a nomination or non-compliance of the **provisions of the Constitution, the RPA 1951, or any Rules or orders made under the Act.**

## 10. Voter Verified Paper Audit Trail (VVPAT) based Audit of EVMs

**Why In News?**
- **The Election Commission of India (ECI)** has attracted criticism for reducing the **Voter Verified Paper Audit Trail (VVPAT)** based **audit of Electronic Voting Machines (EVMs).**

**What are Electronic Voting Machines (EVMs)?**
- It is a device used to **electronically record and count votes** cast in elections.
- They have gained popularity in many countries due to their perceived efficiency and accuracy compared to traditional paper-based voting systems.
- **Advantages:**
  o **Speed:** EVMs can facilitate quicker counting of votes compared to manual counting.
  o **Accuracy**: They are designed to minimize errors in vote counting and reduce instances of invalid or spoiled ballots.
  o **Cost-effectiveness:** Over time, EVMs save money compared to traditional paper-based voting systems by reducing the need for printing and storing paper ballots.

**Voter Verified Paper Audit Trail (VVPAT)**
- When a vote is cast, the VVPAT machine, which is attached to the **ballot unit (BU)** of the **EVM,prints**

**out a slip of paper** with the **voter's choice indicated** on it.
  o Though it remains behind glass, the printed slip is visible for **seven seconds** so the voter can see that the vote has been recorded correctly, before it falls into a box underneath.
- The idea of the VVPAT machine **first emerged in 2010,** when the EC held a meeting with political parties to discuss the **EVM and ways to make the polling process more transparent.**
  o **The Conduct of Elections Rules, 1961** were amended in **2013** to allow for a printer with a drop box to be attached to the EVM.
- The VVPAT was used for the first time in the **Noksen Assembly constituency of Nagaland in 2013,** after which the EC decided to introduce VVPATs in a phased manner.
  o From 2017, 100% of VVPATs began to be used in polls, and the **2019 Lok Sabha elections became the first general election to have 100% of EVMs being attached to VVPATs.**

**What percentage of VVPAT slips are counted as of now?**
- The EC asked the **Indian Statistical Institute (ISI) in 2018** to come up with a "mathematically sound, statistically robust and practically cogent sample size for the **internal audit of the**

VVPAT slips with electronic result of EVMs.
- In 2018, the EC mandated the counting of VVPAT slips of **one randomly selected polling station per Assembly constituency.**
  o This was **increased to five polling stations** per Assembly seat, following a Supreme Court judgment in 2019.

**Criticism of VVPAT**
- **Limited Impact on Election Integrity:** Some critics argue that the VVPAT system may not significantly enhance the integrity of elections in India.
  o They contend that the paper trail serves primarily as a backup mechanism rather than a foolproof solution to address concerns about electronic voting machine tampering or fraud.
- **Technical Glitches:** Despite efforts to ensure the reliability of VVPAT machines, instances of technical glitches and malfunctions have been reported during elections in India.
  o These issues can disrupt the voting process, delay results, and raise doubts about the accuracy of the electoral outcome.
- **Higher Cost:** Critics argue that the cost of deploying VVPATs is high, especially in a country with vast electoral machinery and limited financial resources.
- **Logistical Challenges:** India is one of the largest democracies in the world, with a massive electorate spread across diverse geographic regions.
  o Managing the logistics of deploying VVPAT machines to every polling station, ensuring their proper functioning, poses significant challenges.
- **Time-Consuming Process:** The use of VVPATs adds to the time required for voters to cast their ballots, as it involves verifying their choices on the paper trail before finalizing their electronic vote.

  o This lead to longer queues at polling stations, especially during peak voting hours, and deter some voters from participating.

**Suggestions**
- **100% Counting:** Instead of the VVPAT slip falling in the box, it can be handed over to the voter who shall then place it in a separate ballot box after having verified his or her choice.
  o 100% counting of VVPAT slips should then be done. This will restore full confidence of the people in free and fair elections.
- **Training and Capacity Building:** Providing thorough training to election officials, poll workers, and volunteers on the proper use and maintenance of VVPAT machines can help minimize technical glitches and operational challenges during elections.
- **Improved Technology and Reliability:** Continuously investing in research and development to improve the technology and reliability of VVPAT machines is crucial.
- **Cost-Effectiveness and Sustainability:** Exploring ways to reduce the cost and environmental impact of VVPAT implementation without compromising on integrity is essential.
  o This may involve negotiating bulk procurement deals, leveraging technology for efficient deployment and maintenance, and exploring alternative materials or recycling options for paper trails.

**Conclusion**
- Overall, while the VVPAT system in India represents a significant step towards **enhancing transparency and accountability in elections,** it continues to face criticism and scrutiny regarding its **effectiveness, cost, and implementation challenges.**
- Addressing these concerns requires ongoing efforts to improve the reliability, accessibility, and public acceptance of the VVPAT system.

# 11. Preventive Detention

**Why In News?**

- The **Jammu and Kashmir High Court** ordered the **release of Jaffar Ahmad Parray,** who was detained under the **state's Public Safety Act, 1978 (PSA).**

## What is Preventive Detention?

- **Preventive detention** means to detain a person so that to **prevent that person** from committing any possible crime.
- It is an action taken by the administration **on the grounds of the suspicion** that some wrong actions may be done by the person concerned which will be prejudicial to the state.
- The grounds for Preventive detention are:
  o Security of state, maintenance of public order,
  o Maintenance of supplies and essential services and defense,
  o Foreign affairs or security of India.

> **Punitive Detention**
> – It is to punish a person for an offence committed by him/her after trial and conviction in a court.

## Safeguards Provided By The Constitution

- To prevent reckless use of Preventive Detention, certain safeguards are provided in the constitution **under Article 22**:
  o A person can be taken to preventive custody **only for 3 months at the first instance**. If the period of detention is extended beyond 3 months, the case must be **referred to an Advisory Board.**
  o The detainee is **entitled to know the grounds of his detention**. The state, however, may refuse to divulge the grounds of detention if it is in the **public interest to do so.**
  o The detaining authorities must give the **detainee earliest opportunities** for making representation against the detention.

## Arguments in Favour of Preventive Detention

- **National Security:** India faces various internal and external security threats, including terrorism, insurgency, and organized crime.

  o Preventive detention is a necessary tool to address these threats by allowing law enforcement agencies to detain individuals suspected of involvement in activities that pose a risk to national security.
- **Maintaining Public Order:** In situations of civil unrest, communal tensions, or public disturbances, preventive detention is used to prevent further escalation of violence and maintain public order.
- **Preserving Integrity and Sovereignty:** Individuals involved in activities such as sedition, espionage, or conspiracy against the state are detained to prevent their actions from causing harm to the integrity and sovereignty of the nation.
- **Deterrence:** The existence of preventive detention laws and their occasional use serve as a deterrent to individuals or groups considering engaging in unlawful activities.
  o The knowledge that authorities have the power to detain individuals suspected of posing a threat to public safety dissuade potential offenders from carrying out their plans.

## Arguments Against Preventive Detention

- **Colonial Law:** Preventive detention was introduced to India during the colonial period and was largely used to target freedom fighters. It would therefore seem surprising that the Constitution allows both the union and state to enact preventive detention laws.
- **Misuse of the Law:** The state may refuse to divulge the grounds of detention if it is in the public interest to do so. This power conferred on the state leaves scope for arbitrary action on the part of the authorities.
- **Against the Fundamental Rights:** Part III of the Constitution, which deals with fundamental rights, also gives the the power to suspend these rights for preventive detention.
  o Article 22 which provides Protection Against Arrest and Detention in Certain Cases expressly excludes preventive detention cases from **direct judicial scrutiny and**

instead creates an administrative review framework.
- **Detention on the Basis of Suspicion:** The law authorizes the executive to arrest any person from whom reasonable suspicion arises that he can commit any cognizable offense and the police can arrest that person without warrant which is arbitrary in nature.
- **Nature of Application of Law:** In countries such as Britain, United States and Canada, preventive detention is a **wartime measure**. India is one of the few countries in the world whose Constitution allows for **preventive detention during peacetime.**

**Way Ahead**
- For preventive detention, there are very narrow grounds of judicial review because the Constitution emphasises the state's "subjective satisfaction" when ordering a detention.
  o More safeguards can be provided to the detainee so that **there is a narrow scope of misuse.**
- Judges can ensure that the government has followed every procedure of law while using the preventive detention powers against individuals.

## 12. FSSAI to Initiate Action Against Nestle

**Why In News?**
- The Union Consumer Affairs Ministry asked the **Food Safety and Standards Authority of India (FSSAI)** to initiate **"appropriate action"** against the **Nestle group** for allegedly **selling baby products with high sugar content in India.**

**About**
- The Department has initiated this action following a report that the **Nestle Company has allegedly added 2.7 grams of sugar** per serving to their Cerelac baby cereals sold in India.
- The same company **refrain from this practice in countries** such as Germany, Switzerland, France, and the United Kingdom.
- **Concerns:** High sugar content in baby products raises serious concerns about the **potential implications for the health and safety of children in the country.**
  o Eliminating added sugars from food products for young children would be an important **way to implement early prevention of obesity.**
  o The WHO has warned that obesity is dramatically on the rise, **particularly in low- and middle-income ountries,** where it has now reached **"epidemic proportions",** and is fuelling an increase of noncommunicable diseases such as **cardiovascular disease, cancer, and diabetes.**
    o Increased consumption of highly processed foods, often dense in sugar content, is singled out as one of the **main causes of this epidemic.**

**Ethical Duty of Food Companies Towards Consumers**
- **Safety and Health:** Food companies have an ethical obligation to prioritize the safety and health of consumers by producing and distributing food products that meet high standards of safety and hygiene.
- **Transparency and Truthfulness:** Food companies should provide accurate and reliable information about their products and ingredients.
  o Honest labeling and marketing help consumers make informed choices and build trust in the brand.
- **Nutritional Responsibility:** Food companies should prioritize the nutritional quality of their products and encourage healthy eating habits among consumers.
- **Consumer Engagement and Feedback:** Food companies should actively engage with consumers, listen to their feedback and concerns, and take appropriate actions to address them.
- **Ethical Marketing and Advertising:** Food companies should adhere to ethical standards in their marketing and advertising practices, avoiding misleading or deceptive tactics

that may manipulate consumer behavior or misrepresent the qualities of their products.

- **Corporate Accountability and Governance:** Ethical food companies uphold principles of corporate accountability and governance, maintaining transparency in their business operations, financial practices, and decision-making processes.

**Food Safety Laws in India**
- The primary legislation concerning food safety in India is the **Food Safety and Standards Act, 2006 (FSS Act),** which was enacted to consolidate various food laws in the country.
- **Food Safety and Standards Authority of India (FSSAI):** FSSAI is the apex body responsible for formulating and enforcing food safety standards in India.
  - It regulates and monitors the manufacture, processing, distribution, sale, and import of food products to ensure they meet safety standards.
- **Food Safety and Standards Regulations (FSSR):** The regulations provide detailed guidelines and standards for various aspects of food safety, including manufacturing practices, labeling, packaging, hygiene, contaminants, additives, and residues.
- **Licensing and Registration:** The FSS Act mandates that food businesses obtain licenses or registrations from FSSAI, depending on their scale and nature of operations.

- **Food Labeling and Packaging:** FSSAI regulations prescribe requirements for labeling and packaging of food products to provide accurate information to consumers regarding ingredients, nutritional content, shelf life, and other essential details.
- **Food Import Regulations:** Imported food products must comply with Indian food safety standards and regulations.
- **Food Testing and Certification:** FSSAI accredits laboratories for testing food products to ensure compliance with safety standards.
  - Food products require certification from authorized laboratories before they can be marketed or sold.
- **Food Recall and Traceability:** FSSAI has provisions for food recall in case of safety concerns or contamination incidents.
  - It also emphasizes traceability measures to track the flow of food products throughout the supply chain.

**Conclusion**
- The World Health Organisation (WHO) has for several years now warned against the presence of high sugar content in baby food products.
- Businesses operate for profit but the government must ensure the safety of its citizens.
- Any laxity in the laws will ensure that the health of the citizens and in this case vulnerable infants gets compromised.

## 13. National Curriculum for Early Childhood Care and Education 2024

**Why In News?**
- The Ministry of Women and Child Development (MWCD) has released the **National Curriculum for Early Childhood Care and Education 2024** titled **'Aadharshila,'** on the lines of the **National Education Policy 2020** and the **National Curriculum Framework.**

**About**
- For the first time ever, **the Union Government** has **released a curriculum advisable** to be taught

to **children aged three to six-years-old.**
- It has given an impetus to **pre-school learning in 14 lakh anganwadis** across the country.
- The early childhood education curriculum is expected to **bridge foundational literacy and numeracy gaps** which may arise in later school years.
- **As 85% of brain development** occurs before the age of six years, the Ministry recognizes the pivotal role of early years in development and **seeks to strengthen India's Early Childhood**

Care and Education (ECCE) landscape.

## National Curriculum for ECCE 2024

- **It covers all domains of development** including physical/motor, cognitive, language and literacy, socioemotional, cultural/aesthetic as well as positive habits.
- The Curriculum is structured to provide a **weekly calendar** comprising 36 weeks of active learning, 8 weeks of reinforcement and 4 weeks of initiation, together with 5+1 days of play-based learning in one week, and three blocks of activities in one day.
- It provides for a **combination of activities,** including in-centre and at-home, indoor and outdoor, child-led and educator-led etc.
- **Robust assessment tools** are provided for tracking progress, tailoring learning, and celebrating each child's unique journey.
- **Special focus** has been given for the screening, inclusion and referrals of **Divyang children** in every activity.

## National Framework for Early Childhood Stimulation 2024

- **It is for the children from birth to three years** and is designed to provide the Anganwadi Worker with a **basic understanding of how children grow and develop,** the importance of brain development and the need for nurturing care.
- It fills **conceptual and practical gaps in the understanding of care and stimulation**, based on the Nurturing Care Framework.
- **36 month-wise age-based activities** are provided that can be conducted both within the household as well as at the Anganwadi Centre or Creche, through all.
- The documents have been prepared by the **National Institute for Public Cooperation and Child Development (NIPCCD)**.
- **NIPCCD** will lead the training of Anganwadi functionaries on the new Curriculum and Framework.

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**National Education Policy 2020**

- The NEP 2020 is the first education policy of the 21st century and replaces the thirty-four-year-old **National Policy on Education (NPE), 1986.**
- The NEP 2020 is founded on the five guiding pillars of **Access, Equity, Quality, Affordability and Accountability.**
- This policy envisages that the **extant 10+2 structure** in school education will be modified with a new pedagogical and curricular restructuring of **5+3+3+4 covering ages 3-18.**
- **It seeks to:**
    a. Increase public investment in education,
    b. Strengthen the use of technology and
    c. Increase focus on vocational and adult education, among others.



- **Curricular Reforms:** The NEP emphasizes reducing the curriculum content to essential core concepts, skills, and competencies, allowing for a more holistic and integrated approach to learning. It encourages the integration of vocational education, arts, and sports into the mainstream curriculum.
- **Multilingualism and Mother Tongue-based Education:** The policy promotes multilingualism and encourages the use of the mother tongue or regional language as the medium of instruction up to at least Grade 5, while also ensuring proficiency in the official languages of India and English.

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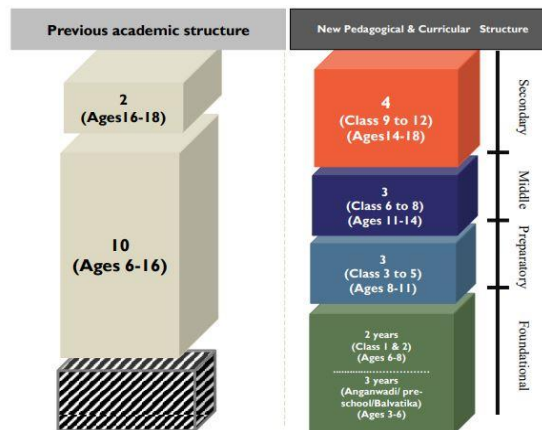
# 14. Law for Nomination

**Why In News?**

- The BJP's candidate from the Surat Lok Sabha constituency in Gujarat has been **declared elected unopposed**.
  - This follows the **rejection of the nomination paper** of the candidate set up by the Congress party and the withdrawal of nominations by other candidates.

**What is the law for nomination?**

- **Section 33** of the **Representation of the People Act, 1951 (RP Act)** contains the requirements for a valid nomination.
- As per the RP Act, an **elector above 25 years of age** can **contest Lok Sabha** election from any constituency in India.
- The proposer(s) of the candidate should however be elector(s) from that respective constituency where the nomination is being filed.
- In case of a **recognised party (national or State)**, the candidate needs to have one proposer.
- Candidates set up by **unrecognised parties** and independents need to be subscribed by **ten proposers.**
- A **candidate can file up to four nomination papers** with different sets of proposers.
  - This is to enable the acceptance of nomination of a candidate even if one set of nomination papers is in order.
- **Section 36 of the RP Act** sets out the law with respect to the scrutiny of nomination papers by the Returning Officer (RO).
  - It provides that the RO shall not reject any nomination for a defect that is not of a substantial character.
  - However, it specifies that the **signature of the candidate or proposer** found not genuine is grounds for rejection.
- The election rules allow for a substitute candidate to be fielded by a political party.
  - The nomination of this substitute candidate would be accepted if the nomination of the original candidate is rejected
- **Legal recourse:** Article 329(b) of the Constitution read with RP Act provides that no election shall be called into question except by an election petition before the concerned **High Court**.
  - One of the grounds on which such an election petition can be filed is **improper rejection of nomination paper**s.
  - Hence, the legal recourse available is to file an election petition in the Gujarat High Court.
  - The RP Act provides that High Courts shall endeavour to conclude such trials within six months, which has mostly not been followed in the past.
  - Speedy disposal of election petitions would be a step in the right direction.

# 15. Article 244 (A) of the Constitution

**Why In News?**

- In Assam's tribal-majority **Diphu Lok Sabha constituency,** candidates of all parties have promised the **implementation of Article 244(A)** of the Constitution.

**About**

- **Diphu is reserved for Scheduled Tribes (STs),** and covers six legislative Assembly segments in **three tribal-majority hill districts of Assam:** Karbi Anglong, West Karbi Anglong, and Dima Hasao.
  - These three districts are administered under the **provisions of the Sixth Schedule of the Constitution,** which describes the **"Provisions as to the Administration of Tribal Areas in the States of Assam, Meghalaya, Tripura and Mizoram".**
- Article 244(A) was inserted by **The Constitution (Twenty-second Amendment) Act, 1969,** which

enabled Parliament to pass an Act **to "form within the State of Assam an autonomous State** comprising (whether wholly or in part) all or any of certain specified tribal areas", including Karbi Anglong.

- o This autonomous state would have its **own Legislature or Council** of **Ministers or both.**
- o **The autonomous councils under the Sixth Schedule have elected representatives** for more decentralised governance of these tribal areas, but they have **limited legislative powers, do not have control over law and order, and have only limited financial powers.**

- **The demand for autonomy** is as old as the movement in the hill areas of undivided Assam, which began in the 1950s, seeking a separate hill state.
  - o This movement resulted in the creation of the **full-fledged state of Meghalaya in 1972** — however, because of the promise extended through Article 244(A), the **leaders of the Karbi Anglong region opted to remain with Assam.**

# International relations & issues

## 1. Expansion of AUKUS

**Why In News?**

- The **AUKUS security Pact** is set to begin talks on bringing new members and plans to include **Japan** into the group.

**What is AUKUS?**

- AUKUS is a **trilateral defence and security partnership** between **Australia, the United Kingdom and the United States.**
- It was established in **2021** to bolster their allied deterrence and defense capabilities in the **Indo-Pacific.**
- The trilateral partnership has two pillars.
  - **Pillar I** revolves around the acquisition and development of conventionally armed nuclear-powered submarines for the Royal Australian Navy;
  - **Pillar 2** focuses on cooperation in eight advanced military capability areas: artificial intelligence (AI), quantum technologies, innovation, information sharing, and cyber, undersea, hypersonic and counter-hypersonic and electronic warfare domains.

**Why was AUKUS formed?**

- **Increasing Presence of China:** The Indo-Pacific region has witnessed increasing geopolitical tensions, including territorial disputes, military build-up, and assertive behavior by China.
  - The participating countries share concerns about maintaining peace, stability, and freedom of navigation in the region.

- **Technological Cooperation:** AUKUS aims to enhance technological cooperation, particularly in the field of defense and security.
- **Alliance Strengthening:** AUKUS represents a deepening of security ties between Australia, the United Kingdom, and the United States.
- **Response to Regional Dynamics:** The formation of AUKUS is seen as a response to shifting regional dynamics and evolving security challenges in the Indo-Pacific.
  - It reflects a broader trend of countries in the region seeking to forge closer security partnerships and alliances to address common concerns and counterbalance China's influence.

**Way Ahead**

- Lasting success for AUKUS in deterring regional threats and reinforcing regional stability hinges on participating states overcoming barriers to **progress in technology and information sharing,** and meeting benchmarks for both Pillars.
- Achieving the core objectives will take years, with Pillar I likely requiring decades, even with all states moving forward at full speed.
- Regardless, AUKUS still holds immediate promise for participating countries.
- Critically, it will help catalyze technological innovation and enhance research and development for emerging capabilities necessary to maintain a competitive edge, strengthen defense ties, and deepen the three countries' presence in the Indo-Pacific.

## 2. Eurasian Economic Union

**Why In News?**

- Recently, India, Eurasian Economic Union (EAEU) bloc officials held talks to formally start negotiation for the Free Trade Agreement (FTA).

**About (EAEU):**

- It is an **Economic Union**, established in 2015, that integrates several post-Soviet states.

- It includes **Armenia, Belarus, Kazakhstan, Kyrgyzstan, and the Russian Federation (Russia).**

**Objectives:**
- It aims to ease cross-border trade and labour migration, and eliminate non-

tariff trade barriers among member states.
- It has a **Common External Tariff (CET)** and a **common customs code**.
- It boasts a combined GDP of more than $1.5 trillion and represents a market of 180 million consumers.

# 3. 75 Years of Establishment of NATO

**Why In News?**
- NATO has completed its **75 years of establishment in 2024.**

**About NATO**
- NATO, or the North Atlantic Treaty Organization, is a **military alliance of countries.**
- **Establishment:** It was founded in **1949** with the signing of the North Atlantic Treaty, more popularly known as the **Washington Treaty**.
- **Aim:** To ensure the **security and defense of its member countries** through collective defense.
- **Founding Members:** The original members of NATO were Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom, and the United States.
- **Collective Defense:** The cornerstone of NATO is Article 5 of the North Atlantic Treaty, which states that an armed attack against one or more of its members is considered an attack against all members.
- **Decision-Making:** Decisions within NATO are made on the basis of **consensus among member countries.**
  o **The North Atlantic Council,** which includes the ambassadors of all member countries, is the **principal political decision-making body.**
- **Members:** It has **32 member countries,**
  **Finland** and **Sweden** became the 31st and 32nd members respectively.
  o On signing the Treaty, countries voluntarily commit themselves to participating in the political consultations and military activities of the Organization.

**Expansion of NATO**
- NATO now has **32 members** across **Europe and North America,** including the **UK, US, Canada, France, Germany, Italy, Spain and Turkey.**
- **After the Soviet Union's collapse in 1991, many Eastern European countries joined:** Albania, Bulgaria, Hungary, Poland, the Czech Republic, Slovakia, Romania, Lithuania, Latvia and Estonia.
- **Sweden and Finland** applied to join in 2022, following Russia's invasion of Ukraine. **They had been neutral for decades.**
- **Finland –** which has a 1,340km (832 mile) **land border with Russia** – joined in 2023. **Sweden** became a member in March 2024**.**
- With Sweden and Finland joining Nato, it is seeing its **biggest expansion since the 1990s.** They will add nearly 300,000 active and reserve troops to the alliance's ranks.
- Ukraine, Bosnia and Herzegovina, and Georgia also hope to join Nato.



Nato's European expansion since 1949

- Founder members 1949
- Joined Nato 1950-1996
- Joined Nato 1997-2022
- Joined 2023
- Joined 2024
- Applying to join

*Russia annexed Crimea in 2014
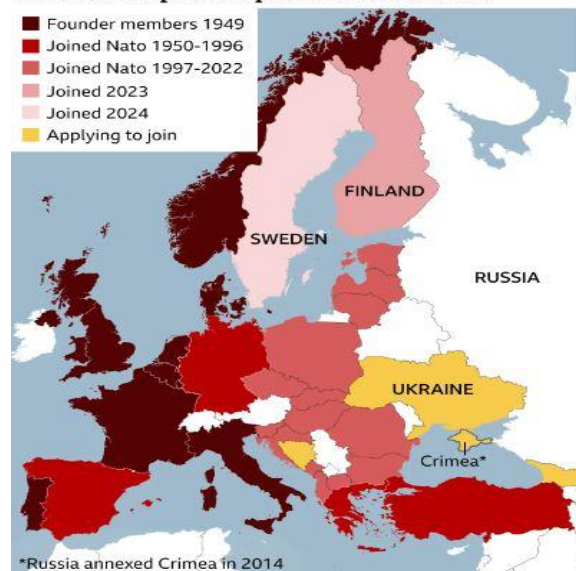
**Concerns of NATO Expansion**

- **Geopolitical Tensions:** Expanding NATO's borders potentially provokes tensions with neighboring countries, especially those with close ties to Russia.
  - The immediate reason for the Russian – Ukraine war can be associated with the fact the Russia wanted to prevent Ukraine from joining NATO.
- **Security Dilemma:** NATO expansion can trigger a security dilemma wherein one country's effort to enhance its security is seen as a threat by another, leading to an **arms race or increased military tensions.**
- **Strategic Interests:** Expanding NATO's membership raises questions about the strategic interests of the alliance and its commitment to collective defense.
  - Some argue that NATO should focus on consolidating its existing members rather than taking on new ones.
- **European Security Architecture:** NATO expansion could undermine efforts to develop a broader European security architecture, including initiatives such as the Organization for Security and Co-operation in Europe (OSCE).
- **Promoting such new alliances:** Countries who sees NATO as a security threat can come up with a counter alliance such as the Warsaw Treaty Organization by the Russia. These alliances can further accelerate the geopolitical tensions.
- **Potential for Conflict:** NATO expansion raises the risk of conflict, particularly if it involves regions with existing territorial disputes or unresolved conflicts.
  - This could escalate tensions and increase the likelihood of military confrontation.

**Way Ahead**

- Overall, while NATO expansion can enhance the security of new member states and contribute to the stability of the Euro-Atlantic region, it also poses various challenges and concerns that need to be carefully considered by all parties involved.
- Diplomacy, dialogue, and a nuanced understanding of each other's security concerns are essential for addressing these concerns and maintaining peace and stability in the region.

## 4. Gulf Cooperation Council's Vision for Regional Security

**Why In News?**

- Recently, for the first time since its inception, **the Gulf Cooperation Council (GCC)** announced its **'Vision for Regional Security' in Riyadh.**

**About GCC**

- It is a **political and economic alliance** of **six Middle Eastern countries**—Saudi Arabia, Kuwait, the United Arab Emirates, Qatar, Bahrain, and Oman.
- It was established in **1981.**
- It aims to achieve unity among its members based on their common objectives and their similar political and cultural identities, which are rooted in Arab and Islamic cultures.
- Presidency of the council rotates **annually**.

## Vision for Regional Security of GCC

- **Security of the Region:** It is based on the principles of shared destiny and indivisible security of the member states, and any threat to one is a threat to all the member States.
  - o It aims to preserve regional security and stability, tackle the challenges facing them and settle the disputes through peaceful means.
- **Counter Terrorism:** It urges the member states to combat terrorism and extremism, stopping the flow of money to the hands of the terrorists and combat money laundering.
- **Maritime Security:** It calls for regional and international coordination to ensure maritime security and ensure trade and energy supply routes.
  - o As all the GCC countries are key suppliers of energy, any disruption in the sea lines of communication will directly affect their national economies.
- **Peaceful use of Nuclear Energy:** As the threat of a nuclear arms race in the region looms large with Iran and Israel having nuclear programmes, the GCC has urged to make the region a Weapons of Mass Destruction Free Zone (WMDFZ).
- **Comment on Israel-Hamas War:** The document has come at a time when the West Asian region is engulfed in a turmoil since the beginning of the Israel–Hamas War in 2023.
  - o The vision document makes explicit reference to the Israel–Palestine issue and calls for activating the Arab Peace Initiative.

## India's Relations with GCC

- **Strategic Partnership:** GCC is a major trade and investment partner for India. While India has close economic and political ties with all countries, the strategic partnership exists with only Saudi Arabia, UAE, and Oman.
- **Energy Security:** GCC contributes to **35% of India's oil imports** and **70%**

of gas imports. India is executing the **second phase of its Strategic Petroleum Reserve (SPR).** Several GCC countries have expressed their interest in the same.
- **Trade and Investment:** GCC countries contribute to about **one-sixth of India's total trade.** However, trade and Foreign Direct Investment from GCC is dominated by UAE and Saudi Arabia.
  - o India also has a significant trade deficit with the GCC which is driven by India's dependence on GCC countries for oil and gas imports.
  - o Free trade negotiations between the two parties have also been delayed.
- **Defence Relations:** India's defense engagements with these countries are gaining significant momentum.
  - o From mere training of security personnel in various military institutes, they have extended ties to other areas, including intelligence sharing, counterterrorism, artificial intelligence, electronic warfare, and cybersecurity.

## Way Ahead

- Realpolitik and strategic interests have been instrumental in bringing India closer to the Gulf countries, with both sides willing to overlook some of their ideological differences lately.
- In the long run, defense industrial cooperation and technology transfers will likely come to form a pivotal component of their strategic cooperation.
- The possibility for such an outcome remains high as Gulf states, like India, are also embarking on rapid military industrialization programs and in search of alternative arms vendors.
- The convergences of interests – political, economic, technological and military-security – therefore, could pave the way for the furtherance of India's military diplomacy with the Gulf states.

# 5. BIMSTEC Charter

**Why In News?**

- Recently, a majority in the Lower House of Nepal supported the proposal seeking endorsement of the BIMSTEC Charter.

**BIMSTEC**

The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is a regional organisation **comprising seven Member States** *(five from South Asia, including Bangladesh, Bhutan, India, Nepal, and Sri Lanka, and two from Southeast Asia, including Myanmar and Thailand)* lying in the littoral and adjacent areas of the Bay of Bengal.

a. The region hosts **22% of the world population** (more than 1.68 billion people); and the member states have a combined GDP of more than US$3.697 trillion/per year.

– It was **initially founded as BIST-EC** in 1997, with the adoption of the **Bangkok Declaration**, with *Bangladesh, India, Sri Lanka, and Thailand* as members. a. It became BIMST-EC with the entry of Myanmar in late 1997, and eventually, it was named in its current form when Nepal and Bhutan became members in 2004.

– Unlike many other regional groupings, BIMSTEC is a **sector-driven cooperative organisation**. Six areas of focus under BIMSTEC are — *trade, technology, energy, transport, climate change (added in 2008), tourism and fisheries.*

**About the BIMSTEC Charter**

- It was signed and adopted during the **Fifth BIMSTEC Summit** held in Colombo, Sri Lanka in 2022.
- It provides a **legal and institutional framework** for BIMSTEC, aiming to create an enabling environment for **rapid economic development** through the identification and implementation of specific cooperation projects in the agreed areas of cooperation and other areas that may be agreed upon by the Member States.
- It reaffirms the commitment to the principles and purposes of BIMSTEC as enshrined in the **Bangkok Declaration of 1997**.

**Significance of the BIMSTEC Charter**

- The adoption of the BIMSTEC Charter formalises the grouping into an organisation made up of member states that are littoral to, and dependent upon, the Bay of Bengal.
- The Charter allows BIMSTEC to engage in external relations with non-member States, developmental partners, and regional as well as the UN and International Organisations.
- It stresses the need for a fair, just, equitable, and transparent international order and reaffirms faith in multilateralism with the United Nations at the centre and the rule-based international trading system.

**BIMSTEC and India**

- **Alignment with Foreign Policy:** BIMSTEC aligns with India's 'Neighbourhood First' and 'Act East' policies.
  o It provides a natural platform for India to foster greater regional cooperation in South and Southeast Asia.
- **Economic Integration:** BIMSTEC is an important element in India's strategy for economic cooperation with South East Asian countries.
  o The **BIMSTEC Free Trade Area Framework Agreement**, signed in 2004, aims to increase trade and economic integration among member countries.
- **Security Cooperation:** India plays a significant role in BIMSTEC's security cooperation. Under the new changes adopted in the summit, India has become the 'security pillar' of BIMSTEC.
  o It includes cooperation in areas such as counter-terrorism and transnational crime.

- **Connectivity and Infrastructure Development:** The **BIMSTEC Master Plan for Transport Connectivity** seeks to connect several major transport projects in India, Bangladesh, Myanmar, and Thailand and establish a shipping network across the Bay of Bengal.
  - It aims to benefit the littoral states as well as the Bay of Bengal dependent states like Nepal and Bhutan.

## Challenges Associated with BIMSTEC for India

- **Uneven Progress:** Despite being in existence for over 25 years, the pace of cooperation within BIMSTEC has been somewhat uneven.
  - The progress across different sectors has been inconsistent, which has affected the overall effectiveness of the organisation.
- **Regional Conflicts among member states:** It can hamper the smooth functioning of BIMSTEC.
  - For instance, the Rohingya refugee crisis created tensions between Myanmar and Bangladesh, which affected the working of BIMSTEC.
- **Legal and Institutional Challenges:** Finalising legal instruments for various initiatives, such as coastal shipping and road transport, can be time-consuming and complex.
  - These can slow down the progress towards stronger trade relations among the member countries.
- **Security Concerns:** Terrorism remains a significant threat to peace and stability in the region.
  - While BIMSTEC has been working towards strengthening cooperation against terrorism, it continues to be a major challenge.

## Conclusion

- The BIMSTEC Charter represents a significant step forward in regional cooperation. It provides a robust framework for the organisation to work towards a peaceful, prosperous, and sustainable Bay of Bengal Region.
- As BIMSTEC enters a new era with the adoption of its Charter, it is poised to play a crucial role in fostering regional cooperation and integration.

## 6. Financing for Sustainable Development Report 2024: United Nations

### Why In News?

- Recently, the United Nations (UN) has recently released the **'Financing for Sustainable Development Report 2024'** highlighting the urgent need for increased investment in sustainable development to achieve the SDGs.

### About Sustainable Development Goals (SDGs):

- These are a set of 17 goals established by the UN as a shared blueprint for peace and prosperity for people and the planet.
- These goals, adopted by all UN Member States in 2015, are an urgent call for action by all countries – developed and developing – in a global partnership.

### The Journey of SDGs:

- More than 178 countries adopted **Agenda 21**, a comprehensive plan of action to build a global partnership for sustainable development at the **Earth Summit in Rio de Janeiro, Brazil in 1992.**
- It continued through the **Millennium Summit** in 2000, the **World Summit on Sustainable Development in South Africa in 2002**, and the United Nations Conference on Sustainable Development **(Rio+20) in Rio de Janeiro**, Brazil, in June 2012.

**The 17 Goals:**

- These SDGs recognise that **ending poverty** and other deprivations must go hand-in-hand with strategies that **improve health and education**, **reduce inequality, and spur economic growth** – all while **tackling climate change** and working to **preserve our oceans and forests.**

**Key Issues Highlighted in Report:**
- **Sustainable Development Crisis:** The report identified that the world is facing a sustainable development crisis. It identified **financing challenges as the heart of this crisis**, which threatens the achievement of the SDGs and climate action.
  o Rising geopolitical tensions, climate disasters, and a global cost-of-living crisis have hit billions of people, battering progress on healthcare, education, and other development targets.
  o **If current trends continue**, the UN estimates that almost 600 million people will continue to live in extreme poverty in 2030 and beyond, more than half of them women.
- **The Finance Divide:** Developing countries are paying around twice as much on average in interest on their total sovereign debt stock as developed countries.
  o Staggering debt burdens and sky-high borrowing costs are preventing developing countries from responding to the confluence of crises they face.
  o Many of these countries lack access to affordable finance or are in debt distress.
- **The Financing Gap:** The report estimated that the development financing gap has grown to USD 4.2 trillion annually, up from USD 2.5 trillion before the COVID-19 pandemic.
  o It represents a more than 50% increase over the pre-pandemic estimates.
- **Weak Enabling Environments:** Average global growth has declined, while policy and regulatory frameworks still do not set appropriate incentives.

  o Public budgets and spending are not fully aligned with SDGs. Private investors are not incentivised to invest enough in SDGs and climate action.
- **Closing Window:** The window to rescue the SDGs and prevent a climate catastrophe is still open but closing rapidly.

**Suggestions Made in Report:**
- **Urgent Actions Needed:** This is the last chance to correct course if we want to achieve the SDGs by the 2030 deadline.
  o Only an urgent, large-scale and sustainable investment push can help us achieve our global goals.
- **Four Actions:**
  o Close financing gaps for SDG/climate investments (both public and private) at scale and with urgency;
  o Close policy and architecture gaps, and reform international institutions;
  o Close credibility gaps and trust deficits both international and domestically; and
  o Formulate and finance new development pathways.
- **Reforms in existing systems:** The report concludes that the international financial system, which was set up at the 1944 Bretton Woods Conference, is no longer fit for purpose.
  o It proposes a new coherent system that is better equipped to respond to crises, scales up investment in the SDGs especially through stronger multilateral development banks, and improves the global safety net for all countries.

**Conclusion:**
- The 'Financing for Sustainable Development Report 2024' serves as a stark reminder of the urgent need for increased investment in sustainable development.
- As the world stands at a crossroads, this report underscores the importance of closing financing gaps, reforming international institutions, and formulating and financing new development pathways.

# 7. India and Mauritius Relations

**Why In News?**

- A **revised tax treaty** between **India and Mauritius** will come into effect only once the **two countries sign the agreement** and will not be applied retrospectively.

**About**

- The new provisions in the treaty include a principal purpose test, which will be used to judge **whether tax benefits under the treaty will apply to investments or not.**
- As per the amended treaty, tax benefits for investments will not be granted if it is ascertained that **availing tax benefits was one of the reasons for the transaction.**

**Overview of India and Mauritius Relations**

- India has close, long standing relations with Mauritius, an **island nation in the Western Indian Ocean.**
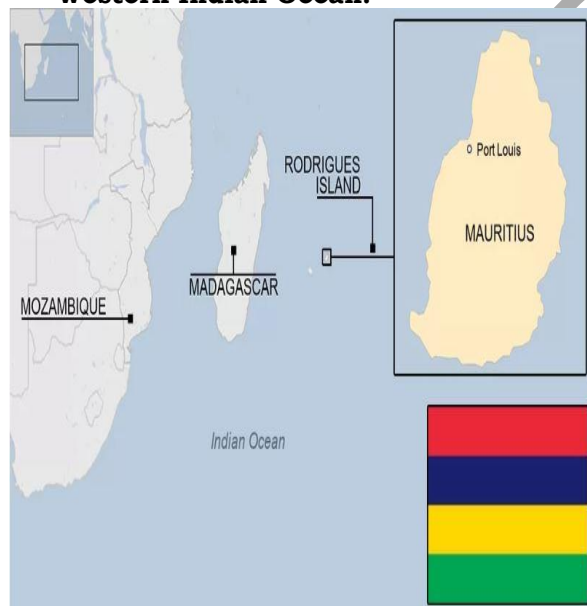


- **Diplomatic Relations:** India and Mauritius established diplomatic relations in **1948** and have become key trading partners in the Asian continent.
  - o As a tribute to **Gandhiji and the Indian freedom struggle,** the **National Day of Mauritius** is celebrated yearly on **March 12** (the date of launch of Dandi Salt March).
  - o Indian origin people comprise nearly **70% of the island's population of 1.2 million** (28% Creole, 3% Sino-Mauritian, 1% Franco-Mauritian).
- **Commercial Relations:** Since **2005**, India has been among the largest trading partners of Mauritius.
  - o For the FY 2022-2023, Indian exports to Mauritius was USD 462.69 mn, Mauritian exports to India was USD 91.50 mn and Total trade was USD 554.19 mn.
  - o **Cumulative FDI** worth USD 161 billion came from Mauritius to India in the two decades from 2000 – 2022 (26% of total FDI inflows into India), largely due to the **Double Taxation Avoidance Convention (DTAC).**
  - o India and Mauritius entered into the Double Taxation Avoidance Agreement in **1982** so non-residents investors can avoid paying double taxes.
  - o Mauritius and India signed the **Comprehensive Economic Cooperation and Partnership Agreement (CECPA)** in **2021,** and is the first trade agreement signed by India with an African country.
- **Defence Relations:** India is the preferred defence partner of Mauritius for acquiring platforms/equipment, capacity building, joint patrolling, hydrological services, etc.
  - o The first agreement relates to the transfer of a Dornier aircraft and an Advanced Light Helicopter, Dhruv, on lease to Mauritius.
  - o The second agreement relates to a **$100 million Line of Credit (LoC)**, to enable the procurement of defence equipment by Mauritius.
- **SAGAR:** The term SAGAR – – 'Security and Growth for All in the Region' was coined by PM in **2015** during his Mauritius visit with a focus on the blue economy.
  - o It is a maritime initiative that gives priority to the Indian Ocean region for ensuring peace, stability and prosperity of India in the Indian Ocean region.

## Areas of Concern

- **Tax Treaty Misuse:** The Double Taxation Avoidance Agreement (DTAA) between India and Mauritius had been a point of concern due to its potential misuse for **illicit activities** like money laundering and round-tripping of funds.
- **Security Concerns:** With Mauritius emerging as an important maritime entity in the Indo-Pacific region, security concerns are paramount.
  - India and Mauritius have a strong defence partnership, but maintaining and enhancing this partnership in the face of evolving regional dynamics can be challenging
- **Economic Challenges:** Despite being major economic partners, there are concerns regarding trade imbalances and the need to diversify the trade basket.
  - Both countries may need to explore new avenues for trade cooperation and address any barriers that hinder the flow of goods and services.

- **Presence of China:** In recent years, several external powers, including China, have made increasing inroads in Africa and through Indian Ocean.
  - In 2021, China's Free Trade Agreement (FTA) with Mauritius came into effect.
  - This agreement will help China expand the Belt and Road strategy in Africa.
  - China's increasing presence in the region will pose concerns for India.

## Way Ahead

- The relationship between India and Mauritius is multifaceted and has grown stronger over the years. The two nations continue to work together in various fields, including infrastructure, FinTech, culture, and more.
- While India and Mauritius share cultural contiguity dating back to the colonial times and a special partnership in recent years, India cannot take its influence in Mauritius for granted and should continue to enhance its engagement with the important island country.

# 8. India's Stand on Iran- Israel Conflict

## Why In News?

- Iran launched drones and cruise missiles against Israel under **Operation True Promise** (Also called "Operation Honest Promise").

## About

- India issued a statement expressing **India's "serious concern"** at the escalation of hostilities, and called for **"immediate de-escalation".**
- The Iranian attack was in response to the suspected Israeli strike on an Iranian consular building in Syria's Damascus that killed 12 people.



**IRAN AND ISRAEL: A LONG HISTORY OF SHADOW WARS**

**1979:** Iran's pro-Israel leader Mohammed Reza Shah swept from power in Islamic Revolution, new regime considers Israel an enemy.
**1982:** Israel invades Lebanon, Iran's Revolutionary Guards set up Hezbollah.
**1983:** Hezbollah uses suicide bombings to expel Western, Israeli forces. Israel later withdraws from much of Lebanon.
**2002:** Israel urges tough action against Tehran after revelation that Iran has secret uranium enrichment programme.
**2006:** Israel fights Hezbollah in a month-long war in Lebanon, unable to crush them.
**2009:** Iran Supreme Leader Ayatollah Ali Khamenei calls Israel 'a dangerous and fatal cancer'.
**2018:** Benjamin Netanyahu hails US President Donald Trump's withdrawal from Iran's nuclear deal.
**2020:** Israel welcomes US assassination of General Qassem Soleimani.
**2022:** US President Joe

(Above) The Iron Dome system in action in central Israel; (and) celebrations in Tehran after Iran's airstrike. *AP, Reuters*

Biden and Israeli Prime Minister Yair Lapid sign a joint pledge to deny Iran nuclear arms.
**2024:** Suspected Israeli air strike on Iranian embassy in Damascus kills two IRGC commanders.

**Significance of the Region for India**



- **Threat to Indian Community:** There are about 18,000 Indians in Israel and about 5,000-10,000 Indians in Iran, about 90 lakh people are living and working in the Gulf and West Asia region.
  - o Any conflict that expands will end up posing a **risk to the Indian community that is based in the region.**
- **Energy Security:** The West Asia region contributes to India's **80 percent of oil supplies,** which a potential conflict will impact.
  - o India has been able to minimise the impact of oil prices due to the Russia-Ukraine war by buying Russian oil at discounted prices, but this **conflict will have an adverse impact on energy prices.**
- **Investment and Strategic Importance:** India has invested in a strategic relationship with major Arab countries, Iran, and Israel.
  - o India sees the region as its extended neighbourhood, and it has been pushing for the **India-Middle-East-Europe Economic corridor,** which has **strategic as well as economic benefits.**
  - o **Chabahar in Iran** is another strategic economic project, which acts as a gateway to Afghanistan and Central Asia — since Pakistan denies land transit to Indian goods.
- **Defence Relations with Israel:** India has a very deep strategic relationship with Israel, especially in the Why In News? of **defence and security partnership**.

**India's Neutral Stand**

- **Maintaining a Balanced Stand:** India's stakes in the bilateral relationships with both Israel and Iran are huge, India will hope that Israel will avoid new military actions that will trigger a dangerous and wider war in the region.
  - o Earlier India was seen as taking "Israel's side", but today its position urging restraint will be viewed as **"balanced" and in favour of regional peace.**
- **Based on the Complex Regional Politics:** Inter-state and intra-state conflicts in the Middle East are deep and pervasive, and India will have to forever balance its engagement with key regional actors — Egypt, Iran, Israel, Qatar, Turkey, Saudi Arabia, and the United Arab Emirates — whose orientation and interests are different and often in conflict.
  - o India's call for de-escalation between Israel and Iran is about **recognising the complexity of the region's politics.**
- **Non- Ideological Engagement:** The non-ideological engagement with the region is a necessary complement to India's expanding interests in the Middle East.
  - o India's interests in the region are no longer limited to oil imports and labour exports.
  - o The Gulf Arab states — especially Saudi Arabia and the United Arab Emirates — have emerged as major economic and political partners for India.

**Way Ahead**

- India has strategic ties with both Iran and Israel — and for decades, it has been able to balance between the two sides. But if the conflict widens, it would be difficult for it to maintain an ambivalent position.
  - o In the Why In News? of such deep ties with both Israel and Iran, India has difficulty in choosing sides.
- India's position that there should be "immediate de-escalation" and "step back from violence" and "return to the path of diplomacy" is, therefore, **crucial to its national interest.**

## 9. U.K. Passes Rwanda Deportation Bill

**Why In News?**
- The Safety of Rwanda (Asylum and Immigration) Bill 2023, is passed by the government of the United Kingdom.

**Background**
- The deportation scheme, for asylum seekers deemed to have entered the UK "illegally", was first proposed in 2022 as a way of tackling "small boats" crossings of the Channel from northern France.
- Under the Safety of Rwanda Bill, anyone who arrived "illegally" in Britain after **January 1, 2022** will be sent to the Rwandan capital of Kigali, where they will either be granted asylum and resettled in Rwanda or be sent to a third country.

**Ethical issues with the Bill**
- Human rights groups have criticized the **plan as inhumane and unworkable.**
- In 2023, the supreme court declared the scheme unlawful, pointing out that Rwanda was not a "safe" country and the plan went against the **European Convention on Human Rights (ECHR).**
- Highlighting the dangers of transferring refugees and asylum seekers to third countries without sufficient safeguards, the **United Nations Refugee Agency** said they must not be traded like commodities and transferred abroad for processing.
- **Rwanda has a known track record** of extrajudicial killings, suspicious deaths in custody, unlawful or arbitrary detention, torture, and abusive prosecutions, particularly targeting critics and dissidents.

**1951 Refugee Convention**
- The 1951 Refugee Convention and its 1967 Protocol are the key legal documents that form the basis of United Nations High Commissioner for Refugees (UNHCR's) work.
  - The Convention is both a **status and rights-based instrument** and is underpinned by a number of fundamental principles.

- The core principle of the Convention is non-refoulement, which asserts that a refugee should not be returned to a country where they face serious threats to their life or freedom.
- The document outlines the basic minimum standards for the treatment of refugees, including the right to housing, work and education while displaced so they can lead a dignified and independent life.
- It also defines a refugee's obligations to host countries and specifies certain categories of people, such as war criminals, who do not qualify for refugee status.
- It details the legal obligations of the States that are party to one or both of these instruments.

**India's stand on refugee convention**
- India is not a signatory to the **1951 UN Convention** relating to the **Status of Refugees and the 1967 Protocol.**
- All foreign undocumented nationals are governed as per the provisions of The Foreigners Act, 1946, The Registration of Foreigners Act, 1939, The Passport (Entry into India) Act, 1920 and The Citizenship Act, 1955.
- As per the MHA foreign nationals who enter into the country **without valid travel documents are treated as illegal immigrants.**
- The constitution of India protects the refugees' right to life with dignity that includes right against solitary confinement and custodial violence, right to medical assistance and shelter.

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**Overview of migration terms**
- **Asylum seeker:** A person who is seeking international protection. Prior to being granted legal status in the destination country, refugees are termed asylum seekers. Not all asylum seekers will be granted refugee status.
- **Internally displaced person:** Someone who has been forced to flee from their home to avoid conflict, violence and disasters and has moved within an internationally recognized state border.
- **Migrant:** A migrant is an "umbrella

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term, not defined under international law, reflecting the common lay understanding of a person who moves away from his or her place of usual residence, whether within a country or across a border, temporarily or permanently, and for a variety of reasons".

– **Refugee:** According to the 1951 United Nations Convention, refugees are individuals living outside their countries of origin who are in need of international protection because of feared persecution, or a serious threat to their life, physical integrity or freedom in their country of origin. a. Refugees have legal permission to remain in the host country and may have access to health care, education and welfare benefits.

## 10. SCO Defence Ministers' Meeting

**Why In News?**
- Recently, India participated in the Shanghai Cooperation Organisation (SCO) Defence Ministers' meeting which was held in Astana, Kazakhstan,

**Key Outcomes of Meeting**
- The SCO Defence Ministers agreed to develop the idea of '**One Earth, One Family, One Future**', rooted in the ancient **Indian philosophy of 'Vasudhaiva Kutumbakam'.**
- **India** reiterated its steadfast commitment toward maintaining peace, stability, and security in the SCO region.
- India emphasised the need to a**dopt a zero-tolerance approach toward terrorism** in all its forms for the prosperity and development of the SCO Member States.
  - o India highlighted its long-standing proposal for a **Comprehensive Convention on International Terrorism** at the United Nations.
- India also underscored the concept of '**Security and Growth for All in the Region (SAGAR)'**, proposed by India for the Indo-Pacific.

**About Shanghai Cooperation Organization (SCO)**

- It is a permanent intergovernmental international organization established on June 15, 2001 in Shanghai (PRC) by the **Republic of Kazakhstan**, the **People's Republic of China, the Kyrgyz Republic,** t**he Russian Federation, the Republic of Tajikistan** and **the Republic of Uzbekistan**.
  - o Its predecessor was the mechanism of the Shanghai Five.
- **Composition:** Currently, the SCO countries includes: 9 Member States — the Republic of **India**, the Islamic Republic of Iran, the Republic of Kazakhstan, the People's Republic of China, the Kyrgyz Republic, the Islamic Republic of Pakistan, the Russian Federation, the Republic of Tajikistan, the Republic of Uzbekistan.
- The official languages of the SCO are **Russian and Chinese.**
- The Organization has 2 standing bodies — **the Secretariat in Beijing** and the Executive Committee of the **Regional Anti-Terrorist Structure (RATS) in Tashkent.**
- **The goals of the SCO are:**
  - o To strengthen mutual trust, friendship and good-neighbourliness between the Member States;
  - o To encourage the effective cooperation between the Member

States in such spheres as politics, trade, economy, science and technology, culture, education, energy, transport, tourism, environmental protection, etc;
o To jointly ensure and maintain peace, security and stability in the region; and
o To promote a new democratic, fair and rational international political and economic international order.

- **International Collaborations:** The SCO has established partnerships with the Commonwealth of Independent States (CIS), the Association of Southeast Asian Nations (ASEAN), the Collective Security Treaty Organization (CSTO), the Economic Cooperation Organization (ECO), the UN Economic and Social Commission for Asia and the Pacific (ESCAP), the UN Office on Drugs and Crime (UNODC), UNESCO, the Food and Agriculture Organization, the World Tourism Organization (WTO),

## India and SCO

- India has been actively participating in SCO and providing substantial support to various mechanisms in the forum.
  o Since its accession as a **full – fledged Member State in 2017**, India has maintained an active engagement with the organisation.
- India is focusing on initiating proposals for mutual benefit of SCO Member States, Observers and Dialogue Partners.
- The SCO offers India the chance to safeguard, advance, and showcase its geostrategic and geoeconomic pursuits in the Central Asian and South Asian regions.
  o India used the SCO as a platform to secure its northern border from Pakistan's state-sponsored terrorism.
- **During the 2023 presidency**, India took a strong stance to promote new

areas of development, including startups and innovation, traditional medicine, digital inclusion, youth empowerment, and the shared Buddhist heritage among most of the SCO member states.
  o India established two new mechanisms—the Special Working Group on Startups and Innovation and the Expert Working Group on Traditional Medicine—significantly demonstrating New Delhi's dedication to contributing to regional economic and social transformations.
  o The Summit adopted the **'SECURE' SCO theme**, where S stands for security of citizens; E for economic development for all; C for connecting the region; U for uniting the people; R for respect for sovereignty and integrity; and E for environmental protection.
- India's demand for "an Afghan-led, Afghan-owned and Afghan-controlled" peace process received support from all SCO Central Asian members and Russia.
  o The agreements on counterterrorism, security cooperation, and defence between India and the Central Asian Republics further demonstrated the significant progress made by New Delhi through the SCO.
- The **Chinese BRI projects** have created a debt crisis and violated the sovereignty and integrity of SCO countries.
- To overcome the China-Pakistan axis, New Delhi invested in Chabahar Port and the 7,200-km long International North-South Transport Corridor (INSTC).
  o These connectivity initiatives led by New Delhi are consultive, transparent, economical, and reliable.

## 11. India a Top Tier Security Partner for Australia

**Why In News?**

- The **new National Defence Strategy (NDS) 2024** released by Australia mentioned **India as a top-tier security partner.**

**About**

- In deepening defense partnerships, the strategy identifies key partners

across **multiple regions in the Indo-Pacific, including Japan and India.**

- **The 2024 Integrated Investment Programme (IIP)** was also released which sets out the **specific defence capabilities Australia** will invest in to give effect to the NDS.
- The national defence strategy **aims to bolster the Australian Defence Force (ADF)'s deterrence and warfighting capabilities** in the Indo-Pacific, including by **building stronger partnerships with key countries.**
  - o The document mentioned that **Australia will support India's role** in the region and seek to drive practical bilateral and multilateral cooperation, defence industry opportunities and information sharing.

**India-Australia Defence Relations**

- India and Australia upgraded their bilateral relationship from a **'strategic partnership' in 2009 to a 'Comprehensive Strategic Partnership' in 2020.**
- Over the past few years, **several institutional mechanisms** have been implemented to promote bilateral cooperation.
  - o Bilateral mechanisms include high-level visits, Annual Meetings of Prime Ministers, Foreign Ministers' Framework Dialogue, 2+2 Defence and Foreign Ministers' Dialogue, Joint Trade & Commerce Ministerial Commission, Defence Policy Talks, Australia-India Education Council, Defence Services Staff Talks, Energy Dialogue, JWGs on different issues etc.
- The two countries have expanded their strategic partnership, **focusing on maritime security, counter-terrorism, and regional stability in the Indo-Pacific region.**



- **QUAD:** It is known as the **'Quadrilateral Security Dialogue' (QSD)** and is an **informal strategic forum** comprising four nations, namely — **United States of America (USA), India, Australia and Japan.**
  - o One of the primary objectives of the Quad is to work for a free, open, prosperous and inclusive Indo-Pacific region.
- **Initiation of Strategic Dialogue**: **In 2020,** Australia and India elevated their Secretaries 2+2 dialogue (Defence and Foreign Affairs) to the Ministerial level. Now the minister**s meet once every two years** to discuss the progress made under the Comprehensive Strategic Partnership.
- Two Navies had signed the **'Joint Guidance for the India – Australia Navy to Navy Relationship' document in 2021.**
- **Malabar Exercise:** In 2020, Australia participated in the MALABAR naval exercise and thus **joined India, the U S and Japan**.
  - o The exercise **united four regional defence partners and democracies,** signifying a collective resolve to support an open and prosperous Indo-Pacific.
- **AUSINDEX**: It is a naval exercise between the Royal Australian Navy and the Indian Navy
- **The Pitch Black exercise**: A significant beginning of defence rendezvous was traversed when, for the first time, the Indian Air Force joined Exercise Pitch Black in Darwin in 2018.

- o Australia's multifaceted exercise encompasses air forces from **several Australian allies and partner countries.**
- **Mutual Logistic Support Arrangement and Defence Science & Technology Implementing Arrangement**: India and Australia clinched the Mutual Logistic Support Arrangement in **2020**.
  - o The pact enables more scholarly operational cooperation, enabling increasingly complex military engagement and excellent collective receptiveness to regional benevolent disasters.
- **The shared military platforms:** Indian and Australian militaries have become increasingly **interoperable** through the increasing number of shared media, thereby growing opportunities for shared training.
  - o These include **C-17 strategic transport aircraft, C-130 tactical transport aircraft, P-8 maritime reconnaissance aircraft, and Chinook heavy-lift helicopters.**
- **The exchanges of military officials for training:** India shapes its relations with its defence forces through regular personnel and training exchanges, such as short specialist courses and longer-term positions.
  - o Every year, India and Australia send officers to attend each other's premiere military educational institutions.

**Conclusion**

- **Defence and strategic cooperation** between India and Australia has been **transformative in recent years** with a series of exchanges, high-level visits and exercises, both bilateral and multilateral.
- The document emphasises that Australia will continue to support India's key role in the region by increasing the depth and complexity of defence cooperation.
- Despite a certain amount of traditional wariness among Australian analysts about the prospects of the relationship, and vice versa, there has been rapid growth in the bilateral partnership, primarily driven by the growing threat that both sides perceive from China.

# Economy

## 1. India Planning to Opt Living Wage Instead of Minimum Wage

**Why In News?**
- India plans to **replace the minimum wage with living wages** by next year with the assistance of the International Labour Organisation (ILO).

**About the Living Wage**
- A living wage tends to be more than the minimum wage as it is the necessary level to afford a decent standard of living.
- **According to the ILO**, the living wage is defined as *'the wage level necessary to afford a decent standard of living for workers and their families, taking into account the country's circumstances and calculated for the work performed during normal hours'*.
- It tends to be **more than the minimum wage**, which is the lowest amount of remuneration required by law to be paid by employers to employees for work performed during a given period.

**Global Trends**
- Several countries have increased their minimum wages to protect the workforce against inflation.
  - The UK has increased its national living wage by 9.8%.
  - Canada's federal minimum wages have increased 3.9%.
  - Belgium increased minimum wage surpassing Rs 2,000 per month.

**India and Living Wage**
- While many earn *a daily minimum wage of ₹176 or more*, the **national wage floor**, stagnant since 2017, lacks enforceability across states and leads to wage payment discrepancies.
- Its lack of upward movement in wages has led to disparities in wage payments across different states.
- However, the exact amount of the living wage in India varies depending on the cost of living in different regions.
- As of 2018, the living wage for an individual in India was reported to be ₹10,300 per month.

**Impacts of Living Wage on Contractual Staff**
- Data sourced from Prime Database regarding more than 1,000 top listed companies show that it is the non-permanent workers that are least likely to get paid anything above the minimum wages right now.
- In FY23, these 1,062 companies together employed nearly three million non-permanent workers and employees.
- Only 208, or 20%, companies paid all their non-permanent workers more than the minimum wages.

**Impacts of Living Wage on Indian Economy**
- **Increased Consumption:** If the minimum wage accounts for decent living, then the wages will go up, consumption will increase, and demand for goods will surge.
  - It could potentially stimulate economic growth.
- **Wage-Push Inflation:** On the flip side, it could result in wage-push inflation, resulting in a cascading effect on the overall prices going up.
  - It could lead to increased cost of living, particularly for those not covered by the living wage.
- **Income Inequality:** The transition to a living wage could help address income inequality, which has been a growing concern in India.
  - By ensuring that workers earn a wage that can support a decent standard of living, the gap between the rich and the poor could potentially be narrowed.
- **Financial Strain on Businesses:** Some businesses, particularly small and medium enterprises, may face financial strain due to increased labour costs.
  - It could potentially impact their profitability and sustainability.
- **Economic Slowdown:** The recent reports indicate a significant increase in

inequality in India since the early 2000s.
- o To address this inequity, India requires a more thoughtfully planned pay system.
- young people in the labour market.

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**International Labour Organisation (ILO)**
- It is a specialised agency of the United Nations.
- It was established in 1919 by the **Treaty of Versailles** as an affiliated agency of the **League of Nations**, and became the first affiliated specialised agency of the **United Nations in 1946**.
- **Headquarter:** Geneva, Switzerland.
- **India is a founder member of the ILO.**
- **Aim:** To promote rights at work, encourage decent employment opportunities, enhance social protection and strengthen dialogue on work-related issues.
  a. It is the only tripartite UN Agency that brings together governments, employers and workers of 187 member States, to set labour standards, develop policies and devise programmes promoting decent work for all women and men.

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- **Recognition:**
  a. **Nobel Peace Prize (1969):** For improving peace among classes, pursuing decent work and justice for workers, and for providing technical assistance to other developing nations.
- **Flagship Reports of ILO:**
  a. Global Wage Report;
  b. World Employment and Social Outlook (WESO);
  c. World Social Protection Report;
  d. World of Work Report;

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**Conclusion**
- The transition to a living wage represents a significant step towards improving the lives of Indian workers, particularly those on contractual terms.
- It aimed at accelerating efforts to lift millions out of poverty and ensure their well-being.
- India's commitment to developing a well-defined and operational system, with technical assistance from the ILO, is crucial for the successful implementation of this policy.

# 2. Will new solar power rules boost production?

**Why In News?**
- The Ministry of New and Renewable Energy (MNRE) has brought into effect the Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirements for Compulsory Registration) Order, 2019.

**Background**
- The order was first issued by the MNRE in **2019** and requires makers of solar modules to voluntarily submit to an inspection of their manufacturing facilities by the **National Institute of Solar Energy.**
- Being on the list as an 'approved' manufacturing facility certifies a company as a legitimate manufacturer of solar panels and not a mere importer or assembler.

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**What are solar modules?**
- Solar Modules are multiple solar panels joined together and **Solar panels** are an assembly of solar cells.
- The solar cells absorb sunlight as a source of energy to generate electricity. An array of modules are used to supply power to buildings.
- They are manufactured from semiconductor materials like **crystalline silicon.**

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**Significance of being in the list**
- The major advantage of being on the list is eligibility to compete for tenders issued by the government for its flagship solar energy programmes.
- The manufacturers, certified as part of the Approved Models and Manufacturers (AMM) list, would be

eligible for various government schemes like,

- o **PM Surya Ghar Muft Bijli Yojana,** subsidizing rooftop solar installations for nearly one crore households in the country involving an estimated subsidy of ₹75,000 crore.
- o **PM KUSUM (Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan),** that aims to provide solar pumpsets and rural electrification.
- o **Production Linked Incentive Scheme,** targeted at incentivising domestic manufacture of solar panels and their components.

**Solar module production in India**

- **The installed capacity of solar PV module** manufacturing capacity in the country is around **50 GW.**
- **The installed capacity of solar cell** manufacturing in the country is around **6 GW.**
- **Import:** Around 11,171 Million USD of solar cells and modules have been imported into the country in the last five years, which is around 0.4% of total India's merchandise imports during the same period.
- **Export:** Solar panels worth 1.03 billion USD exported from India in 2022-23.

**Why is India reliant on imports?**

- India has **limited capacity** to make the raw material of a cell — ingots, wafers — and is dependent on imported cells.
- **Lack of Skilled labor** which is essential for manufacturing high-quality solar components.
- **Lack of an integrated set-up and the economies of scale** (despite 100 per cent FDI in the renewable energy sector) translates into higher cost of domestic production.

**Targets set by India**

- India has ambitious plans of sourcing about 500 GW, nearly half its requirement of electricity, from non-fossil fuel sources by 2030.
- This would mean at least 280 GW from solar power by that year or at least 40 GW of solar capacity being annually added until 2030.
- The difficulty is that meeting the targets requires many more solar panels and component cells than India's domestic industry can supply.

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**Approved list of Models and Manufacturers (ALMM)**

- – The ALMM Order states that ALMM shall consist of;
  - a. **LIST-I,** specifying models and manufacturers of Solar PV Modules and
  - b. **LIST-II,** specifying models and manufacturers of Solar PV Cells.
- – Only the models and manufacturers included in **ALMM List-I (of solar PV modules) are eligible for use in Government Projects**/ Government assisted Projects/ Open Access / Net-Metering Projects, installed in the country.
- – **The word "Government" includes** Central Government, State Governments, Central Public Sector Enterprises, State Public Sector Enterprises, and Central and State Organizations / Autonomous bodies.

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**Way Ahead**

- The country has achieved self-sufficiency in the production of solar modules / panels but the country is yet to achieve substantial capacity in production of solar cells.
- The creation of such a list will help to restrict imports from China, which controls nearly 80% of the global supply.

## 3. Household Consumption Expenditure Survey (HCES) 2022-23

**Why In News?**

- **The National Sample Survey (NSS)** Office released the **key results** of the **Household Consumption Expenditure Survey (HCES) 2022-23.**

**About**

- **The National Sample Survey Office (NSSO) under Ministry of Statistics and Programme Implementation** has been conducting household surveys on **consumption/consumer expenditure** at regular intervals as part

of its rounds, normally of **one-year duration**.

- **Since 1972**, NSSO has been conducting the Consumer Expenditure Survey.
- It is designed to collect i**nformation on consumption of goods and services** by the households.
- The survey aims at generating estimates of household **Monthly Per Capita Consumption Expenditure (MPCE)** and its distribution separately for the rural and urban sectors of the country, for States and Union Territories, and for different socio-economic groups.

**Methodology Used**
- In the present survey, three **3 questionnaires** were used, covering:
- Food items;
- Consumables and services items, and;
- Durable goods used.
- The survey had a separate **provision for collection of information** on the quantity of consumption of the number of items received and consumed by the households **free of cost through various social welfare programmes.**

**Changes in the Methodology**
- First, there is **change in item coverage** with inclusion of new items and merging some of the obsolete items. Overall, the **number of items covered has increased from 347 to 405 items.**
- Secondly, there have been changes in the **questionnaire of the survey.**
  o Instead of a single questionnaire as used in earlier surveys, HCES 2022-23 uses **four separate questionnaires** for food, consumables and services items, and durable goods, apart from a separate questionnaire for canvassing household characteristics to be used in three separate monthly visits in a quarter.
  o Thus, there have been **multiple visits for data collection** instead of the usual practice of a single visit in the earlier surveys.

**Major Findings**
- **Rise in Income:** The income levels of both the Urban and Rural households have risen since the last survey, with Rural households showing a sharper growth in spending.
- **Rise in MPCE:** The average Monthly per capita consumption expenditure of both Urban and Rural households has doubled in the 11-year period with both spending less on food items.
  o Of the total expenditure, 46% was spent on food items in Rural households and 39% in Urban homes in 2022-23.

## Food spending

Share of cereals and food in average monthly per capita consumption expenditure decreased in both rural and urban areas

| Period | RURAL | | URBAN | |
|---|---|---|---|---|
| | % share of cereals | % share of food | % share of cereals | % share of food |
| 1999-00 | 22.23 | 59.4 | 12.39 | 48.06 |
| 2004-05 | 17.45 | 53.11 | 9.63 | 40.51 |
| 2009-10 | 13.77 | 56.98 | 8.16 | 44.39 |
| 2011-12 | 10.75 | 52.9 | 6.66 | 42.62 |
| 2022-23 | 4.91 | 46.38 | 3.64 | 39.17 |

- **Spending increased in Rural Households:** Household spending increased 2.6 times in Rural areas and 2.5 times in Urban areas since the last survey in 2011-12.
  o The gap between Urban and Rural household consumption has narrowed, and Indian households have been spending more on non-food items.
- **Gap Between Rich and Poor:** The top 5% of India's Rural population has 7 times the MPCE of the bottom 5 % rural population.
  o The top 5 % of India's urban population has 10 times the MPCE of the bottom 5 % Urban population.
- **Among the States,** the MPCE is the highest in Sikkim for both rural (₹7,731) and urban areas (₹12,105).
  o It is the lowest in Chhattisgarh, where it was ₹2,466 for rural households and ₹4,483 for urban household members.

**It can be inferred from the data presented in the survey that:**

- The difference between Rural and Urban MPCE has **narrowed substantially** over the years, implying the success of government policies in improving Rural incomes.
- While the difference is more pronounced at the lower levels, the gap is bigger at the top, reflecting an **increase in inequality at higher income levels.**
- The poorest Rural households have been able to spend at a much closer level to their Urban Counterparts, implying that government's policy initiatives for enhancing Rural incomes have worked to an extent.

# 4. Real Estate (Regulation and Development) Act, 2016

**Why In News?**
- **The Union Ministry of Housing and Urban Affairs** is in the process of **reviewing the functioning of the Real Estate (Regulation and Development) Act, 2016.**

**About**
- In order to **protect the interest of homebuyers and to ensure transparency and accountability** in the Real Estate Sector, Parliament enacted the RERA Act.
- **The key objectives of the Act are:**
  - Ensuring Transparency in the real estate sector concerning the sale of flats, apartments, plots, buildings, or any kind of real estate project.
  - Establishing an adjudicating mechanism for speedy dispute redressal.
  - Protecting the interest of buyers/allottees in the real estate sector.
  - Establishing a bridge of trust between buyers and the promoters, using authority as a medium.
- The **Real Estate Regulatory Authorities** established under the Act are required to **publish and maintain a web portal,** containing relevant details of all real estate projects for which registration has been given, for public viewing.
- **Reasons For Introducing RERA:** Since 2012 Indian real estate sector has been facing collapse due to factors like: Unemployment, Recession, Low rental yield, Inventory pile-up, Unclear taxes and arbitration.
- **Projects Under RERA**
  - Commercial and residential projects including plotted development.
  - Projects measuring more than 500 sq. meters or 8 units.
  - Projects without Completion Certificate, before the commencement of the Act.

**Advantages Of RERA**
- RERA has brought **uniformity in the real estate sector** related to carpet area, common areas which will prevent malpractices like changes in layout, area, agreement, specifications, details about the broker, architect, and contractor, etc.
- Developers need to make **timely delivery of the booked office spaces or homes.** If not strict compensation and imprisonment can be taken against the developer.
- **Completion of clearance from the government** departments is compulsory before selling any house or office space.
- A **separate bank account** should be opened for each of the projects promoted by a developer.
- The buyer can approach the developer for any defect in the building within a year of the handover and get it **rectified free of charge.**

**Disadvantages Of RERA**
- The rules and regulations **do not apply to the ongoing projects** or projects that are held up due to some clearance issues.
- **Government agency delay in approval and clearance** may hinder the timely delivery of products.
- **Small developers** with projects less than 500 sq. m. do not come under the purview of this act and registration with the regulator is not mandatory for these.

- Without clearance, projects cannot be launched and so the **launching of new projects may get delayed.**

**Conclusion**
- The RERA is committed to the successful and effective implementation of the real estate law of the country and has taken relevant and consistent measures for the **progressive development of the sector in the country.**
- To encourage sustainable development of the RERA, along with a customer-friendly environment, various policy measures incorporated under the RERA would certainly bring remarkable changes in the economic and social transformation.

# 5. 90 Years of the Reserve Bank of India (RBI)

**Why In News?**
- Recently, the Prime Minister and RBI Governor attended a ceremony **marking 90 years of the RBI** in Mumbai.

**About the Reserve Bank of India (RBI):**
- It is the central bank of India, established on April 1, 1935, in accordance with the provisions of the **Reserve Bank of India Act, 1934.**
- Over the years, the RBI has played a pivotal role in the development of India's economy.
  - o It has witnessed both the pre and post-Independence eras and has created an identity around the world based on its professionalism and commitment.

**Role and Functions:**
- **Monetary Policy and Inflation Control:** One of the primary roles of the RBI is to control inflation and stabilise the country's financial system.
  - o It does this by setting the overnight interbank lending rate, known as the **Mumbai Interbank Offer Rate (MIBOR).**
  - o It serves as a benchmark for interest rate-related financial instruments in the Indian market.
- **Regulation and Supervision:** The RBI is responsible for the regulation and supervision of the country's financial sector.
  - o It includes commercial banks, non-banking financial companies, and other financial institutions. The RBI's regulatory oversight ensures the stability and integrity of the financial system.

- **Management of Foreign Exchange:** The RBI manages the country's foreign exchange reserves.
  - o It involves regulating the foreign exchange market, controlling capital flows, and maintaining the stability of the exchange rate.
- **Financial Inclusion and Innovation (Digital Economy):** The RBI has been instrumental in promoting financial inclusion and fostering innovation in the financial sector.
  - o For instance, the introduction of the **Unified Payments Interface (UPI)** has revolutionised the payments ecosystem across the country.
- **Digital Currency:** RBI launched the **digital rupee, or the e-rupee,** that can be used for both person-to-person and person-to-merchant transactions.
  - o It is a central bank digital currency issued by the RBI.

**Challenges**
- **Managing Inflation and Interest Rates:** The RBI has to strike a balance between controlling inflation and promoting economic growth.
  - o It involves adjusting the policy repo rate, which can have wide-ranging effects on the economy.
- **Regulating the Banking Sector:** The RBI faces the challenge of regulating the banking sector, particularly in dealing with the **issue of non-performing assets or bad loans**.
  - o The RBI has been working towards resolving this issue, but it remains a significant challenge.
- **Dealing with Global Economic Uncertainties:** The global economy is facing increased uncertainty due to

banking fragility in certain countries and geopolitical tensions.

o The RBI has to navigate these uncertainties while managing India's foreign exchange reserves.

- **Digital Currency:** Managing this new form of currency and ensuring its smooth integration into the Indian economy is a new challenge for the RBI.
- **'Impossible Trinity' or 'Trilemma':** The RBI faces the challenge of managing the 'impossible trinity' or 'trilemma', which refers to the *difficulty of having a stable foreign exchange rate, free capital movement (absence of capital controls), and an independent monetary policy* all at the same time.
- Other challenges include the **impact of new technologies** on the financial sector, and navigating the economic disruptions caused by events such as the *global financial crisis*, *the taper tantrum of 2013, demonetisation, and the* **COVID-19 pandemic**-induced disruptions to economic activities.

## Key Initiatives of RBI

- **Liquidity Boosting Measures:** The RBI has announced a series of measures to enhance liquidity and cushion the economy.
  o It includes cutting the reverse repo rate by 25 basis points to 3.75% to discourage banks from parking excess liquidity under the Liquidity Adjustment Facility (LAF) window.
  o The RBI is also providing a ₹50,000-crore special refinance facility for financial institutions.
- **Enabling the Market Economy:** The RBI has transitioned from being primarily concerned with the allocation of scarce resources to an enabler for the market economy.
  o It has implemented several reforms, including the **Insolvency and Bankruptcy Code (IBC)** and the adoption of flexible inflation targeting, which have bolstered the

banking system and helped rein in consumer price pressures.

- **Initiatives in the Budget:** It includes *privatisation, asset monetisation, new initiatives on long-term financing of infrastructure, and clean-up of the non-performing assets* in the banking system.
  o The **IBC Framework** ushered in by the government provided a more **effective mechanism for resolving bad loans**. As a consequence, *bad loans fell from 11.25% in 2018 to below 3% by September 2023*, and credit growth has been healthy.
- **Stabilising the Rupee:** The RBI has taken several steps to stabilise the rupee. It includes imposing a number of export restrictions, lowering taxes on petrol and diesel, raising subsidy support for farmers, while the RBI has raised policy rates by 90 basis points (bps) and raised its inflation target by 100 basis points.

## Conclusion and Road Ahead:

- The RBI's role in the Indian economy is multifaceted and critical. It has a significant influence on the country's economic trajectory.
- As the RBI continues to evolve and adapt to the changing economic landscape, it remains committed to ensuring stability and growth for the Indian economy.
- As the RBI enters its 90th year, it must learn from its past, adjust and adapt, and plan for the challenges it could encounter on its journey towards its centenary.
- From dealing with changes in payment mechanisms, and the central bank digital currency, to new sources of risk and ensuring effective regulation and supervision, the central bank must be ready for unforeseen events.

# 6. SCORES 2.0

**Why In News?**

- Securities and Exchange Board of India (Sebi) unveiled an upgraded **2.0 version of SCORES.**

**About**

- SEBI Complaint Redressal System (SCORES) is an **online system where investors in the securities marke**t can lodge their complaints through web URL and an app. It was launched in June 2011.
- The **SCORE 2.0** makes the platform more efficient through auto-routing, auto-escalation, monitoring by the designated bodies and reduction of timelines.
- The new version provides **two levels of review**– first review by the **'Designated Body'**, if the investor is dissatisfied with the resolution provided by the concerned regulated entity, and second review by Sebi if the investor is still dissatisfied after the first review.

**Know about Securities and Exchange Board of India**

- It is a **statutory bod**y established on April 12, 1992 in accordance with the provisions of the **Securities and Exchange Board of India Act, 1992**.
- Before SEBI came into existence, Controller of Capital Issues was the regulatory authority; it derived authority from the Capital Issues (Control) Act, 1947.
- It is a **quasi-legislative and quasi-judicial body** which can draft regulations, conduct inquiries, pass rulings and impose penalties.
- SEBI protects the interests of Indian investors in the securities market.
- By **Securities Laws (Amendment) Act, 2014**, SEBI is now able to regulate any money pooling scheme worth Rs. 100 cr. or more and attach assets in cases of non-compliance.

## 7. Horticulture Cluster Development Programme (CDP)

**Why In News?**

- The government has come up with a new platform to disburse subsidies to **horticulture farmers** under the **Cluster Development Programme (CDP)** known as **CDP-SURAKSHA.**

**CDP-SURAKSHA**

- The CDP-SURAKSHA is essentially a digital platform. SURAKSHA stands for **"System for Unified Resource Allocation, Knowledge, and Secure Horticulture Assistance."**
- The platform will allow an **instant disbursal of subsidies to farmers** in their bank account by utilising the **e-RUPI voucher** from the **National Payments Corporation of India (NPCI).**
  - o The voucher is a **one-time payment mechanism** that can be redeemed without a card, digital payments app or internet banking access, at the merchants accepting e-RUPI.
  - o e-RUPI can be shared with the beneficiaries for a specific purpose or activity by organisations or government via SMS or QR code.
- **Significance:** The CDP-SURAKSHA platform will provide subsidies to

farmers upfront, at the time of purchasing the planting material.
  - o Vendors, who will supply planting materials to farmers, will receive their payment only after farmers verify the delivery of their orders.
  - o The move seeks to push the growth of India's horticulture sector.

**Horticulture Sector in India**

- Horticulture is the science and art of **cultivating fruits, vegetables, flowers, and ornamental plants.**
  - o It encompasses a wide range of activities including **plant propagation, production, management, and marketing.**
- The Indian horticulture sector contributes about **33% to the agriculture Gross Value Added (GVA)** making a very significant contribution to the Indian economy.
- India is currently producing about **320.48 million tons of horticulture produce** which has surpassed the food grain production, that too from much less area.
  - o Productivity of horticulture crops is much higher compared to productivity of food grains.

- At present, India is the **second largest producer** of vegetables and fruits in the world.
  - India ranks first in the production of a number of crops like Banana, Lime & Lemon, Papaya, Okra.
- India's advantage lies in being a **low-cost producer of fruits and vegetables** because of a **combination of factors such as** favourable agro-climatic conditions, availability of labour, and low input costs.
  - As a result, fruits and vegetables account for almost 90% of the total horticulture production in the country.

**Challenges Faced by the Sector**
- **Lack of Infrastructure:** Insufficient infrastructure for post-harvest handling, storage, and transportation leads to significant losses of perishable horticultural produce.
- **Water Management:** Horticulture is water-intensive, and water scarcity or inefficient water management practices affect crop yields and quality.
- **Pest and Disease Management:** Pests and diseases cause significant damage to horticultural crops, and the misuse of pesticides lead to environmental pollution and health hazards.
- **Market Linkages:** Limited market linkages and price fluctuations affect farmers' income and discourage investment in horticultural production.
- **Climate Change:** Erratic weather patterns, including unpredictable rainfall and temperature fluctuations, pose challenges to horticultural production and require adaptation strategies.
- **Quality Standards and Certification:** Meeting quality standards and obtaining certification for export markets can be challenging for small-scale horticultural producers.

**Government of India Initiatives for the Promotion of Horticulture Sector**

- **National Horticulture Mission (NHM):** Launched in **2005-06**, NHM aims to promote holistic growth of the horticulture sector by enhancing production, productivity, and quality of horticulture crops.
  - It focuses on creating infrastructure, providing technical assistance, and promoting market linkages.
- **National Horticulture Board (NHB):** NHB provides financial assistance, technical guidance, and market intelligence to horticulture growers, processors, and exporters to promote production, processing, and marketing of horticultural crops.
- **Cluster Development Program (CDP):** The CDP is a component of the central sector scheme of NHB.
  - It is aimed at leveraging the geographical specialisation of horticulture clusters and promoting integrated and market-led development of pre-production, production, post-harvest, logistics, branding, and marketing activities.
  - So far, 55 horticulture clusters have been identified, out of which 12 have been selected for the pilot.
- **Mission for Integrated Development of Horticulture (MIDH):** MIDH, launched in **2014,** integrates various horticulture development schemes under one umbrella to provide holistic support for the entire value chain, from pre-production to post-harvest management and marketing.
- **Rashtriya Krishi Vikas Yojana (RKVY):** RKVY supports states in planning, implementing, and monitoring their horticulture development strategies by providing financial assistance for infrastructure development, capacity building, and other interventions.
- **Sub-Mission on Agriculture Mechanization (SMAM):** SMAM supports the adoption of mechanization in horticulture for activities like land preparation, planting, harvesting, and post-harvest management to improve efficiency and reduce labor dependency.

## 10. IRDAI marks 25th anniversary

**Why In News?**

- The Insurance Regulatory and Development Authority of India (IRDAI) celebrated its Silver Jubilee on April 19.

**Insurance Regulatory and Development Authority of India (IRDAI)**

- IRDA was constituted in **1999** as an autonomous body after the recommendations of the **Malhotra Committee report** to regulate and develop the insurance industry.
  - o It was incorporated as a statutory body on April 19, **2000.**
- The Authority has the power to frame regulations under **Section 114A of the Insurance Act, 1938.**
- **Objective:** The main objective of the IRDA is to protect the interests of the policyholder and regulate the insurance industry.
- IRDAI is under the jurisdiction of the **Ministry of Finance,** Government of India.
- It has framed regulations ranging from registration of companies for carrying on insurance business to protection of policyholders' interests.

**Recent Initiatives by IRDAI**

- IRDAI has lifted the age cap on purchasing health insurance policies, effective from April 1, 2024. Previously, individuals were restricted to buying new insurance policies only until the age of 65.
- **Bima Sugam initiative:** It aims to empower all insurance stakeholders by

connecting them all through a single platform.
  - o The platform uses advanced technology to simplify processes for insurance companies, policy holders', intermediaries, insurance repositories and external data sources etc.
- It has replaced 34 regulations with six regulations to enhance clarity and coherence in the regulatory landscape.
- **Mandatory e-insurance:** IRDAI mandated the digitisation of insurance policies across all categories to streamline processes, enhance efficiency, and improve accessibility for policyholders.
- IRDAI has decreased the health insurance waiting period from 48 months to 36 months.
  - o The waiting period refers to the duration during which policyholders are not eligible to claim benefits for any pre-existing health conditions they might have during the purchase of the insurance policy.

**Concluding Remarks**

- Over the past two decades, IRDAI has played a pivotal role in fostering innovation, safeguarding consumer interests, and propelling industry advancement.
- It has revolutionized the sector by actively engaging with policyholders and prioritizing their well-being with its unwavering commitment to excellence and regulatory standards.

## 12. Draft Norms of RBI for the Regulation of Payment Aggregators

**Why In News?**

- **The Reserve Bank of India (RBI)** has floated **two consultation papers** seeking **enhanced regulation of payment aggregators** carrying out face-to-face transactions.

**About**

- The first deals with **activities of offline PAs,** while the second proposes to **strengthen the ecosystem's safety** by expanding instructions for Know Your Customer (KYC), due diligence of onboarded merchants and operations in Escrow accounts.

- The RBI has invited comments/feedback by May 31.

**Payment Agrregators**

- A payment aggregator is a **third-party service provider** that enables customers to make and businesses to accept payments online.
  - o They enable their clients to accept and disburse various payment methods such **as debit cards, credit cards, cardless EMIs, UPI, bank transfers, e-wallets, and e-mandates.**

- The existing guidelines cover their **activities in e-commerce sites and other online avenues.**
- **Functioning:**
  - **Integration:** Merchants integrate the payment aggregator's system into their website or mobile app using APIs (Application Programming Interfaces) or plugins.
  - **Payment Processing:** When a customer makes a purchase, the payment aggregator securely processes the transaction using the selected payment method.
  - **Funds Settlement:** After deducting fees, the payment aggregator transfers the funds from the customer's account to the merchant's account.
  - **Reporting and Analytics:** Payment aggregators often provide merchants with tools for tracking transactions, generating reports, and analyzing payment data.
- **Significance:**
  - **Convenience:** Merchants can accept multiple payment methods through a single integration, simplifying their checkout process.
  - **Security:** Payment aggregators typically employ robust security measures to protect sensitive payment information.
  - **Scalability:** Merchants can easily scale their payment processing capabilities as their business grows, without the need for extensive development work.

**Norms by RBI**

- **Banks providing physical PA services** as part of their normal banking relationship would **not require** any separate authorisation from the RBI.
  - They are only expected to comply with the revised instructions within three months after they are issued.
- **Non-banking entities providing PA services** at the point of sale (PoS), that is, offline, would have to inform RBI within 60 days about their intent to seek authorisation.
  - The entities would, however, be allowed to continue their operations

while their applications are being reviewed.
- **Non-banking entities providing PA services online** – both those authorised and whose applications are pending, would require to seek approval, about their existing offline PA activity, from the Department of Payment and Settlement Systems (DPSS) and the regulator within 60 days of the directions being mandated.
- **Eligibility for Application:** The non-banking entities providing proximity/face to face transaction services have a minimum net worth of ₹15 crore, this would be **extended to ₹25 crore by March 31, 2028.**
- **Categorisation of Merchants:** Small merchants would constitute physical merchants with an **annual business turnover of less than ₹5 lakh** who are not registered under the Goods and Services Tax (GST) regime.
  - **Medium merchants,** defined as physical or online merchants with annual **business turnover of less than ₹40 lakhs** who are not registered under GST, would also have to undergo contact point verification.
  - The PAs must collect information physically **to establish the existence of the firm.**
  - They must also **verify the bank accounts** in which their funds are settled.
- **Data Security: No entity,** other than the card issuer and/or card network, can store data for proximity/face to face payments from August 1, 2025, and direct them to purge data stored previously.
  - To track transactions and to reconcile them, entities would be allowed to **store limited data**, that is, the last four digits of the card number and the issuer's name.
  - The onus for compliance in this domain would also be on card networks.

**Significance of the Guidelines**

- The purpose of the proposed regulations is to ensure that onboarded merchants do not collect and settle funds for services not offered on their platforms.

- While KYC is already mandatory, the regulations seek to **extend the scope and make the provisions more nuanced.**
- It aspires to **bring in synergy in regulation** covering activities and operations of PAs apart from convergence on standards of data collection and storage.
- With expansion of the utility and scope of operations of PAs, RBI appears to be **strengthening the ecosystem against any opacity.**

## 13. Marrakesh Agreement

**Why In News?**
- The World Trade Organization (WTO) marks the 30th anniversary of the Marrakesh Agreement, a significant milestone in global trade cooperation.

**Marrakesh Agreement**
- It was signed on April 15, 1994, during the Uruguay Round of multilateral trade negotiations held in Marrakesh, Morocco.
- The agreement marked a significant milestone in global trade cooperation and set the framework for international trade relations among participating countries.
- The Marrakesh Agreement formally created the World Trade Organization, replacing the **General Agreement on Tariffs and Trade (GATT)** as the primary international body governing global trade.
- The WTO officially came into existence on **January 1, 1995.**

## 14. India's Chinese Import Bill Rise

**Why In News?**
- According to a report by the Global Trade Research Initiative (GTRI), Goods imports from China have risen 2.3 times faster than India's total imports over 15 years.
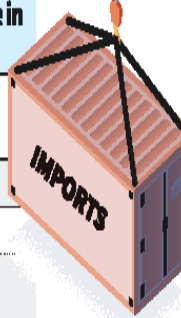
**Key Findings**
- India's imports from China crossed **$101 billion in 2023-24** from about **$70 billion in 2018-19,** and the country's share of India's industrial goods imports has risen from 21% to 30% over 15 years.
- India's total merchandise imports stood at **$677.2 billion in 2023-24,** of which **15%** or $101.8 billion worth goods were sourced from China.
- **China** is the top supplier in eight major industrial sectors, including machinery, chemicals, pharmaceuticals, textiles etc.
- **Trade deficit concern:** Between **2018-19 and 2023-24,** India's exports to China have stagnated around **$16 billion** annually while imports have surged, resulting in a cumulative trade deficit exceeding **$387 billion** over six years.

## Lion's share

The table lists commodities imported by India, **where China accounts for the largest share in total imports**

| | Commodity | China's share in imports |
|---|---|---|
| 1 | Electronics/telecom/electrical products | 43.9% |
| 2 | Machinery | 39.7% |
| 3 | Textile and clothing | 38.2% |
| 4 | Chemicals and pharmaceuticals | 26.8% |
| 5 | Automobiles | 26% |

Source: GTRI
Data as of 2022

**Concerns of India- China Trade Relations**
- **Trade Imbalance:** India imports far more goods from China than it exports, leading to a large trade deficit.
  o This trade imbalance has been a persistent issue and has raised concerns about the impact on India's domestic industries and employment.

- **Quality and Safety of Chinese Goods:** There have been concerns in India about the quality and safety of some Chinese goods, particularly in sectors such as electronics and consumer products.
  - o Incidents of substandard or counterfeit products entering the Indian market have raised regulatory and consumer protection concerns.
- **Dumping Practices:** India has accused China of engaging in dumping practices, whereby Chinese companies allegedly flood the Indian market with cheap goods at prices below production costs.
  - o This harms domestic industries in India by undercutting their competitiveness and market share.
- **Market Access and Non-Tariff Barriers:** Issues such as restrictions on foreign investment, complex approval processes, and intellectual property rights protection have hindered Indian businesses' efforts to expand into China.
- **Strategic Competition:** India and China are also engaged in strategic

competition, both regionally and globally.
  - o Their growing influence in South Asia and the Indian Ocean region has led to geopolitical rivalries, which can affect trade relations.
- **Security concerns** related to Chinese investments in critical infrastructure projects in India have also raised alarms.
  - o India has been cautious about allowing Chinese companies to participate in sensitive sectors such as telecommunications and infrastructure, citing national security concerns.

**Concluding Remarks**
- The strategic implications of the dependency on China are profound and affect not only economic but national security dimensions.
- There is a need for reassessment of India's import strategies. This is imperative not only to mitigate economic risks but also to bolster domestic industries and reduce dependency on single-country imports.

# 15. REER vs NEER

**Why In News?**
- The Real Effective Exchange Rate (REER) and Nominal Effective Exchange Rate (NEER) was in the news due to the depreciation of the rupee by 27.6% against the US dollar.

**Nominal Effective Exchange Rate (NEER)**
- NEER is an **unadjusted weighted average rate** at which one country's currency exchanges for a basket of multiple foreign currencies.
- It is the amount of domestic currency needed to purchase foreign currency and an indicator of a **country's international competitiveness** in terms of the foreign exchange (forex) market.
- The Reserve Bank of India has constructed NEER indices of the rupee against a **basket of six and also of 40 currencies.**

  - o The former comprises the **US dollar, the euro, the Chinese yuan, the British pound, the Japanese yen and the Hong Kong dollar**.
  - o The latter index covers a bigger basket of 40 currencies of countries that account for about 88% of India's annual trade flows.
- The NEER indices are with reference to a base year value of **100 for 2015-16.**
  - o The increases indicate the rupee's effective appreciation against these currencies and decreases point to overall exchange rate depreciation.

**Real Effective Exchange Rate (REER)**
- The real effective exchange rate (REER) is the **weighted average of a country's currency** in relation to an index or basket of other major currencies.
- The REER is basically the NEER that is adjusted for the inflation differentials between the home country and its trading partners.

# 15. Corporate Governance Charter for Startups

**Why In News?**
- **Confederation of Indian Industry (CII)** launched a **corporate governance charter for startups,** including a **self-evaluative scorecard.**

**About**
- It will provide **suggestions on corporate governance tailored for startups** and offer guidelines suitable for **different stages of a startup** which is aiming to **enhance governance practices.**
  - It comes at a time when startups such as Byju's, BharatPe, and Zilingo have raised concern over governance standards in the past 12-18 months.
- **Corporate governance in India** is a set of rules, practices and processes by which a company is guided and controlled.
- **Self-Evaluative Governance:** The charter includes an online self-evaluative governance scorecard that startups can use to evaluate their current governance status and its improvement over time.
  - The tool allows startups to measure their governance progress, with score changes indicating improvements in governance practices as assessed against the scorecard from time to time.
- **Startups will be structured across four key stages:** inception, progression, growth and going public.
  - **At the Inception stage,** the startups must focus on board formation, setting the tone at the top, compliance monitoring, accounting, finance, external audit, policies for related-party transactions, and conflict resolution mechanisms.
  - **In the Progression stage,** a startup may additionally focus on the expansion of board oversight, monitoring key business metrics, maintaining internal controls, defining a hierarchy of decision-making, and setting up an audit committee.
  - **For the Growth stage,** the startups must also focus on building stakeholder awareness towards the vision, mission, code of conduct, culture, and ethics of an organisation, form board committees, ensure diversity and inclusion on the board and fulfill statutory requirements, according to the Companies Act 2013 and other applicable laws and regulations.
  - **At the Going Public stage,** a startup must expand its governance in terms of monitoring the functioning of various committees, focus on fraud prevention and detection, minimise information asymmetry, plans for succession, and evaluate board performance.
- **Valuation:** Startups may strive for long-term value creation rather than short-term valuations. The valuations of businesses should be kept as realistic as possible.
- **Long Term Goals:** The needs of the business entity should be separated from the personal needs of its founder(s), but at the same time, the goals and needs of the founders, promoters, and initial investors should be aligned with the long-term goals of the business.
- **Separate Legal Entity:** The startup should be maintained as a separate legal entity with the organisation's assets distinct from the founders' assets.

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**Confederation of Indian Industry (CII)**
- The Confederation of Indian Industry (CII) is a **non-government, not-for-profit, industry-led and industry-managed business association organization** playing a proactive role in India's development process.
- Founded in **1895**, CII has members from the private and public sectors, including small and medium-sized enterprises and multinational corporations, and an indirect membership of enterprises from national and regional sectoral industry bodies.
- CII charts change by working closely with governments and thought

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> leaders and enhancing efficiency, competitiveness and business opportunities for industry.

## What is Corporate Governance?

- Corporate governance is the **system of rules, practices, and processes** by which a company is directed and controlled.
- It involves **balancing the interests of a company's stakeholders** i.e. shareholders, customers, suppliers, the government, and the community.
- Corporate Governance consists of;
  - o Explicit and implicit contracts between the company and the stakeholders for distribution of responsibilities, rights and rewards.
  - o Procedures for reconciling the conflicting interests of stakeholders in accordance with their duties, privileges and roles.
  - o Procedures for proper supervision, control, and information that flows to serve as a system of checks and balances.

## Regulatory Framework for Corporate Governance in India

- **The Companies Act, 2013:** It contains provisions like Composition of Board of Directors, Admitting Woman Director and Independent Director, Directors Training and Evaluation, Constitution of Audit Committee, Risk Management Committee, Subsidiaries Companies Management etc.
- **Securities and Exchange Board of India (SEBI):** SEBI is a regulatory authority to curb the malpractices in the financial market and protect the interest of its investors. It regulates the activities of Stock Exchange and to ensure the healthy development in the financial market.
- **Standard Listing Agreement of Stock Exchanges:** It is the basic document which is executed between companies and the Stock Exchange when companies are listed on the stock exchange. The main purpose of it is to ensure that companies are following good corporate governance.
- **Institute of Chartered Accountants of India (ICAI):** It issues accounting standards for disclosure of financial information.
- **Institute of Company Secretaries of India (ICSI):** It issues secretarial standards as per the provision of the Companies Act,2013.

## Challenges in Corporate Governance In India

- **Getting the board right:** In India, it is a common practice for friends and family of promoters to be appointed as board members.
- **Performance evaluation of directors:** To achieve the desired results on governance practices, there is often a call for results of performance evaluation to be shared in public. But corporate firms do not share it sometimes to avoid public scrutiny and negative feedback.
- **Removal of Independent Directors:** In most of the cases, the major issue in corporate governance arises as independent directors were easily removed from their positions by the promoters if they do not side with promoters' decisions.
- **Founders Control and Succession Planning:** In India, founders' ability to control the affairs of the company has the potential of derailing the entire corporate governance system. Unlike developed economies, in India, the identity of the founder and the company is often merged.
- **Risk Management:** The board is only playing an oversight role on the affairs of a company. However there is a need for framing and implementing the risk management policy.

## Committees for Resolving Issues

- **Kumar Mangalam Birla Committee:** It was set up to suggest suitable recommendations for the Listing Agreement of Companies with their Stock Exchanges.
  - o The Committee evolved a Code of Governance which was accepted by SEBI and a new Clause 49 was inserted into the Listing Agreement of Companies with their Stock Exchanges.
- **NR Narayan Murthy Committee:** Based on the

recommendations of this committee SEBI published a revised Clause 49 which included amendments /additions to provisions relating definition of independent directors, strengthening the responsibility of Audit Committees and requiring Boards to adopt a formal Code of Conduct.

**Importance of corporate governance**

- **Strengthens investors confidence:** Strong corporate governance maintains investors' confidence in the financial market, as a result of which companies can raise capital efficiently and effectively.
- **International flows of capital:** It enables companies to reap the benefits of the global capital markets which will contribute to economic growth.
- **Increased Productivity:** It also minimizes wastages, corruption, risks and mismanagement.
- **Brand Image:** It helps in brand formation and development of a company.It ultimately increases capital flows from foreign institutional investors (FII) and foreign direct investment (FDI).

**Startups in India**

- An entity shall cease to be a Startup on **completion of ten years** from the date of its incorporation/ registration or if its **turnover for any previous year exceeds one hundred crore rupees.**
- There are over **99000+ startups** recognized by the government of India as of 2023.
    A. **49%** of them have a base in Tier 2 – Tier 3 cities.
    B. These startups are spread over 669 districts from 36 States and Union Territories of India.
- As of 2023, India is home to 108 unicorns with a total valuation of $ 340.80 Bn.
    A. Unicorn is a term used in the venture capital industry to describe a **privately held startup company with a value of over $1 billion.**

# Internal Security & Defence

## 1. Infrastructure and Connectivity along LAC in Arunachal Pradesh

**Why In News?**
* Recently, India has accelerated the efforts to improve infrastructure and



connectivity along the Line of Actual Control with China.

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**Arunachal Pradesh**
– It is the 24th state of the Indian Union, and is located in the northeastern part of the country.
– It is **bordered by** *Bhutan to the west, Myanmar to the east, China to the north and north-east, and the plains of Assam to the south.*
– **Flora and Fauna:** The state bird is the **Hornbill**, the state animal is the *Mithun (Bos Frontalis)*, and the state flower is the **Foxtail Orchid (Rhynchostylis Retusa).**
– **Highest Peak:** The highest peak in the state is **Kangto**, which stands at 7,090 metres.

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**Enhanced Connectivity and Development**
* The Line of Actual Control (LAC) in Arunachal Pradesh, a contested border area between India and China, has seen significant developments in infrastructure and connectivity in recent years.

**Boosting Connectivity:**
* The **Indian Army** has been instrumental in connecting remote areas of the state, speeding up efforts to improve infrastructure along the LAC.
* It has both military and civilian advantages, boosting tourism and quickening the Army's movements.
* The work on the 2,400-km-long **Trans Arunachal Highway** is nearing completion, and the focus of infrastructure development has shifted to the trans-frontier highway, which will connect all the valleys in the state.
  o It aims to significantly reduce time and effort for both military and general movement, especially in eastern Arunachal Pradesh.
* **Nechiphu Tunnel:** It is the 500-metre long Nechiphu Tunnel on **Balipara-Chariduar-Tawang Road in Arunachal Pradesh**. This tunnel, along with the under construction **Sela Tunnel,** will provide all-weather connectivity to the **strategic Tawang Region.**

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**Border Roads Organisation (BRO)**
– It was formed in 1960 for coordinating the speedy development of an adequate road communication network of roads in the **North and the North-Eastern border regions** of the country.
– It works under the **administrative control of the Ministry of Defence.**

**Major Functions:**
– Support the armed forces meet their **strategic needs** by committed, dedicated and cost-effective development and sustenance of the infrastructure.
– Achieve international levels of quality excellence and time consciousness in a diversified sphere of construction activity in a cost-effective manner.
– Optimise potential and expertise through increased involvement in agency, transnational and national development projects.

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**Enhancing Surveillance:**

- In the last few years, the Army has significantly upgraded firepower and infrastructure along the LAC in the Tawang sector of Arunachal Pradesh.
- The pace of capability and infrastructure development in the rest of the state has gained significant pace in the last few years.
- This includes road infrastructure, bridges, tunnels, habitat and other storage facilities, aviation facilities, and upgradation of communications and surveillance.

**Associated Challenges**

- **Geographical Challenges:** The areas along the LAC in Arunachal Pradesh are characterised by high-altitude terrain and sparse population.
  - o It makes infrastructure development and connectivity a challenging task.
- **Educational Limitations:** The remote areas along the LAC have limited access to quality education.
  - o It is a significant challenge as it affects the quality of life for the residents of these areas.
- **Financial Constraints:** The cost of infrastructure development in these remote and difficult terrains is high.
  - o It poses a significant challenge in terms of resource allocation and management.
- **Security Concerns:** The proximity to the contested border with China adds a layer of complexity to the infrastructure development process.
  - o Ensuring the security of the infrastructure projects and the workers involved is a major challenge.
- **Lack of Last-Mile Connectivity:** While major highways and other connectivity improvements are being constructed, providing last-mile connectivity to the most forward posts is a significant challenge.

**Related Government Initiatives**

- **Inter-state Border Areas Development Programme (ISBADP):** It aims to provide facilities for the socio-economic development of the people living along the Inter-State boundary with Assam.
  - o Projects taken up under this program are to ensure sustainability and provide value addition to any given product.
- **Border Areas Development Department (BADP):** It is to meet the special developmental needs and well-being of the people living in remote and inaccessible areas situated near the International Boundary (IB).
  - o The provision of essential infrastructure facilities and opportunities for sustainable living would help integrate these areas with the hinterland, create a positive perception of care by the country and encourage people to stay on in the border areas, leading to safe and secure borders.
- **Infrastructure Development by Ministry of Home Affairs:** It includes the construction of fences, floodlighting, roads, Border Out Posts (BOPs), Company Operating Bases (COBs), and deployment of technological solutions along the *India-Pakistan, India-Bangladesh, **India-China**, India-Nepal, India-Bhutan, and India-Myanmar borders.*
- **Vibrant Villages Programme:** It has been instrumental in developing remote villages in Arunachal Pradesh.
  - o Under this programme, primary health centres and residences of school teachers are being upgraded, and concrete tracks are being laid.
  - o It has brought about a significant improvement in the quality of life for the residents of these villages.

**Conclusion**

- The development of infrastructure and connectivity along the LAC in Arunachal Pradesh is a testament to India's commitment to securing its borders and improving the lives of its citizens in border areas. While challenges remain, the progress made so far is promising and sets the stage for a more connected and secure future.

# 3. Issues of Fake News and Disinformation

**Why In News?**
- According to the **International Fact-checking Network (IFCN)**, a range of threats like **misinformation, and deep fakes** are recognised amidst the Lok Sabha polls in India.

**Fake News and Disinformation**
- It is defined as false news stories, meaning the story itself is fabricated and has no verifiable facts, sources or quotes.
  o Sometimes these stories may be propaganda, intentionally designed to mislead the reader, or they may be 'clickbait'.
- Some checks and balances exist in the mainstream media against fake news, but social media does not have such a mechanism.

**Misinformation and Disinformation**
- **Misinformation** is false information, but the person who shares it online believes it to be true and shares it without any ill intention or personal agenda.
- **Disinformation**, on the other hand, is false information, and the person who is disseminating it knows it is false. It is a deliberate lie.

**Impact of Fake News and Disinformation**
- **Threat to Democratic Processes:** Fake news and disinformation can influence public opinion, interfere with elections, and even incite violence.
  o Misinformation spread on social media platforms can sway voters' opinions.
- **Affects social & communal harmony:** By spreading extremists' ideologies especially in sensitive areas like radicalization of youths, inciting violence and hatred among the communities, swinging public opinions etc.
- **Role of Technology:** Artificial Intelligence (AI) and digital technology have been used to spread fake news and disinformation, posing threats to democracy.
  o South Korean President Yoon Suk Yeol, during a global summit, highlighted that fake news and

disinformation based on AI and digital technology not only **violate individual freedom and human rights** but also **threaten democratic systems.**
- **Impact on Trust and Social Cohesion:** The prevalence of falsehoods heightens political polarisation, decreases trust in public institutions, and undermines democracy.
  o Misinformation can create divisions within society, fueling conflict and misunderstanding.

**Challenges in controlling the Fake News**
- **No standard definition:** The term '**fake news' is vague** and there is **no official definition of what constitutes fake news.**
- **Lack of regulation:** Self-regulation by mainstream media has largely been ineffective.
  o Any direct effort by the government to control fake news is prone to be seen as an assault on the freedom of media which functions as the fourth pillar of democracy.
- **Difficult to achieve balance:** The efforts to control fake **news should not threaten to cramp legitimate investigative** and source-based journalism or freedom of expression as guaranteed in **Article 19 of the Constitution**.
  o Also, distinguishing between the **conscious fabrication of news** reports and news reports put out in the **belief that they are accurate.**
- **Tracking fake news on social media:** The vastness of the internet users and social media users makes tracing the origin of fake news almost impossible.

**Legal remedies available to tackle this menace**
- **Indian Broadcast Foundation (IBF):** This body was created in **1999 to look into the complaints against content aired by 24×7 channels.**
- **The Press Council of India:** It is created by an Act of Parliament, is a statutory body and keeps vigil on fake

news. It can **warn, admonish or censure the newspaper, the news agency.**

- **IPC Sections 153A and 295:** Under this action can be initiated against someone creating or s**preading fake news if it can be termed as hate speech**.
- **Broadcasting Content Complaint Council (BCCC):** A complaint relating to **objectionable TV content or fake news** can be filed to the Broadcasting Content Complaints Council.
- **Defamation Suit: IPC Section 499** makes defamation a criminal offence. Section 500 provides for punishment for criminal defamation.
- **The Information Technology (IT) Act**: It imposes an obligation on intermediaries such as search engine giant Google to remove any objectionable content pursuant to takedown notices by law enforcement agencies.
- **Contempt of Court laws:** False stories about judicial proceedings would be covered by contempt of court laws and false stories about Parliament and other legislative bodies would violate privilege.
- The **Constitution of India** provides a **long-term solution under Article 51A (h),** which says, "It shall be the duty of every citizen to develop the scientific temper, humanism and the spirit of inquiry and reform.

**Suggestive Measure**
- **Role of Artificial Intelligence:** AI has emerged as a powerful tool to fight the ever-growing menace of 'infodemic'.
  o AI capabilities can detect fake news, identify forged videos, and disseminate the correct information through chatbots.
- **Tech Giants' Initiatives:** Tech giants like Google have announced their efforts to fight misinformation in India through their products, programs, and partnerships.
  o **Google** has introduced the **'About This Result**' feature that will let users evaluate the information and understand its source.
- **Homeland Security Advisory Council:** It has released a report on disinformation best practices and

safeguards, presented an assessment and recommendations to address disinformation that poses a threat to the homeland while protecting civil rights and providing greater transparency across this work.

**The India Specific Measures:**
- **AI-enabled COVID-19 Helpdesk:** It is the world's largest WhatsApp chatbot *(MyGov Corona Helpdesk)* to aid our fight against the pandemic by disseminating timely and right information.
- **MyGov Saathi:** It is an AI-driven agent, deployed to better prepare the citizens for the crisis and empower them to reduce their risk of contracting the virus.
- **The Fact Check Unit (FCU) under PIB:** It was established with a stated objective of acting as a deterrent to creators and disseminators of fake news and misinformation.
  o However, the **Supreme Court of India stayed FCU** as a *'deterrent'* against the creation and dissemination of fake news or misinformation regarding the *'business'* of the Centre.

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**International Fact-checking Day (2nd April)**
- It is a global initiative that recognises the role of accurate information in an interconnected world**.**
- It was first commemorated by the IFCN in 2016 to celebrate and highlight the important work of fact-checkers worldwide.

**What is fact-checking?**
- It is a process of seeking to **'investigate (an issue) in order to verify the facts'**. It means that one has verified the facts they are asserting, say by checking the facts and figures one sees on social media before sharing it.
- False and misleading information can:
  a. lead to polarisation or shifting of people's views towards more extreme ideas, often along religious or ethnic lines;
  b. mislead people on important issues;
  c. harden attitudes and stereotypes

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about individuals or groups;
d.  trigger riots in extreme cases and add fuel to fire in violent situations.

## 4. Agni-Prime Ballistic Missile

**Why In News?**
- Recently, the new generation ballistic missile **Agni-Prime** was successfully flight-tested by the **Strategic Forces Command (SFC)** along with the DRDO from the Dr APJ Abdul Kalam Island off the coast of Odisha.

**About the Agni-Prime**
- It is a **two-stage**, surface-to-surface, canister-launched, road-mobile, and solid-fueled medium-range **ballistic missile**.
- The Agni-Prime is equipped with a dual redundant navigation and guidance system.
- It has a **range between 1000 to 2000 km.**
- The missile is lighter than all the earlier Agni series of missiles.
- It features significant upgrades to the composite motor casing, **a manoeuvrable reentry vehicle (MaRV)**, along with improved propellants, navigation, and guidance systems.

**Ballistic Missiles**
- It is a rocket-propelled, **self-guided** strategic-weapons system that follows a ballistic trajectory to deliver a payload from its launch site to a **predetermined target**.

- It can carry **conventional high explosives** as well as **chemical, biological, or nuclear munitions**.

**Strategic Forces Command (SFC)**
- The Strategic Forces Command (SFC), sometimes called **Strategic Nuclear Command**, forms part of **India's Nuclear Command Authority (NCA).**
  A. The Nuclear Command Authority comprises a **Political Council** and an **Executive Council**. The **Political Council is chaired by the Prime Minister.** It is the sole body which can authorise the use of nuclear weapons.
  B. The **Executive Council is chaired by the National Security Advisor**. It provides inputs for decision making by the Nuclear Command Authority and executes the directives given to it by the Political Council.
- It is responsible for the management and administration of the country's tactical and strategic nuclear weapons stockpile.

## 5. Project Akashdeep

**Why In News?**
- Recently, the Indian Army has started the induction of **Akashteer Command and Control Systems** under **'Project Akashdeep'** to bolster its air defence capabilities.

**About the Akashteer Command and Control Systems**
- It is developed by **Bharat Electronics Limited (BEL)** as part of the Atma Nirbhar Bharat initiative.

- It is a cutting-edge initiative designed to **automate air defence control and reporting processes** by digitising the entire process.

- The system's Control Centres, designed to be vehicle-based and mobile, can maintain operational capabilities even in challenging communication environments.
- It aims to enable monitoring of low-level airspace over the battle areas of the Indian Army and effectively control the **Ground Based Air Defence Weapon Systems.**
- By integrating radar and communication systems at all levels into a unified network, Akashteer aims to deliver an unprecedented level of situational awareness and control.

**Project Akashdeep**
- It is an **automated air defence control** and **reporting system**, **similar to the Indian Air Force's system**.
- It focuses on building a comprehensive air defence picture for *monitoring, tracking, and engaging* air defence assets by **digitising the entire process**.

## 6. Strategic Military Infrastructure Upgrade in Andaman & Nicobar Islands

**Why In News?**
- Recently, the Andaman and Nicobar Islands saw a major military infrastructure upgrade with revamped airfields to a robust surveillance infrastructure.

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**Andaman & Nicobar Islands**
- **Location**: They are a group of islands of India, located in the Bay of Bengal.
- **Extent**: These islands form an *arcuate chain (convex to the west)* and extend from 6° 45′ N to 13° 41′ N and from 92° 12′ E to 93° 57′ E. **Major Islands in the Group:** It is composed of more than 500 big and small islands, which are divided into two distinct groups of islands – The Andaman Islands and the Nicobar Islands.
  a. There are 836 islands/islets/rocky outcrops, of which 31 are inhabited.
- The islands are divided into 3 districts and 9 tehsils.

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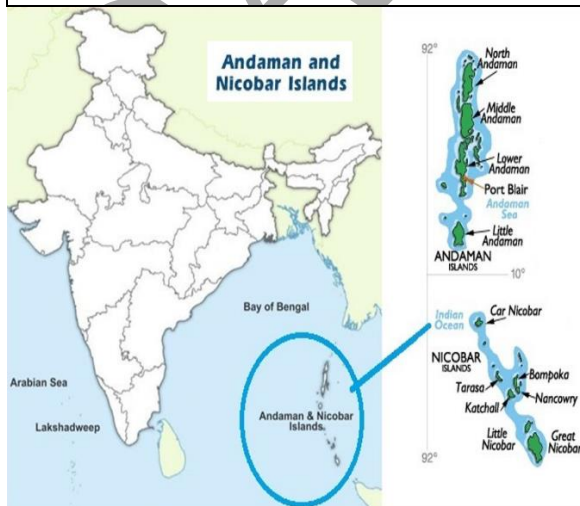


**Geostrategic Significance of Andaman and Nicobar Islands:**
- The islands' strategic location enables India to play an important role in the region, both in disaster situations and in dealing with maritime security threats.
- With these islands as their base, India, in concert with other countries, can be a net security provider to the region and the **Sea Lines of Communication (SLOCs)**.
- The islands give India a **commanding position** over the considerable traffic that flows to and fro between the **Andaman Sea (Indian Ocean) and South China Sea (Pacific Ocean) through the Malacca Strait.**
- The Andaman and Nicobar Command (ANC) is the first and only tri-service command in the islands and was established in 2001.

**Economic Potential:**
- The Andaman and Nicobar Islands constitute **just 0.2% of India's landmass but account for 30% of the country's 200-nautical-mile** Exclusive Economic Zone (EEZ).
- The **blue economy** of this island will have an important contribution to the development of India's economy.

**Strategic Military Infrastructure Upgrade:**
- **Revamped Airfields and Jetties:** Work on increasing the length of an airstrip at a vital naval air station is being carried out in phases to enable landing of larger aircraft like P8Is and fighter jets.

o The jetty at this location is also being enlarged to accommodate bigger ships.

- **Additional Logistics and Storage Facilities:** The improved infrastructure is aimed to facilitate deployment of additional military forces, facilities for larger and more warships, aircraft, missile batteries, and troops.
  o It includes plans to expand the runway to nearly 3,000 metres and creation of infrastructure for maintenance of assets.
- **Habitat for Troops:** There are plans to significantly enhance the surveillance infrastructure at one of the northern islands of A&N, and to construct a permanent habitat for troops in the Islands.
- **Robust Surveillance Infrastructure:** The ongoing large-scale construction activities come amid growing Chinese attempts to expand its influence in the region, which includes construction of a military facility at **Myanmar's Coco Islands lying 55 km north of A&N Islands**.

**Major Challenges and Issues**

- **Ecological Impact of Development Projects:** Developmental Projects pose a grave threat to the islands' fragile ecosystem and the **Particularly Vulnerable Tribal Groups (PVTGs)** inhabiting these islands.
- **Protection of Indigenous Tribes:** Protecting indigenous tribes, preserving the fragile ecology, providing basic amenities such as drinking water, and preventing illegal migration and encroachments are some of the main challenges confronting Andaman & Nicobar Islands.

- **Infrastructure and Industrialisation Challenges:** The islands face infrastructure challenges, including slow and interrupted internet speed, transportation bottlenecks, lack of skilled manpower, low population density, scattering of population in scattered islands, lack of market, and lack of raw materials.
- **Climate Change Vulnerability:** The islands' unique ecosystems are vulnerable to climate change events and anthropogenic developments.
  o Key sectors such as forests and biodiversity, coastal ecosystem and marine resources, agriculture and animal husbandry, fisheries, water resources, and energy are all vulnerable to climate change.

**Conclusion**

- The Andaman and Nicobar Islands are of great strategic importance to India, serving as a significant point for trade, commerce, and strategic cooperation.
- These are a core component of **India's Act East Policy** that aims to promote economic cooperation, cultural ties, and develop strategic relationships with countries in the **Asia-Pacific region** through continuous engagement at **bilateral, regional, and multilateral levels.**
- The strategic military infrastructure upgrade in the Andaman and Nicobar Islands is a significant step towards strengthening India's defence capabilities and maintaining a strong presence in the region.
- The development of these islands must be carried out responsibly, keeping in mind the need to protect their unique ecology and indigenous populations.

# 7. Parivartan Chintan

**Why In News?**

- The Tri-service Conference, **'Parivartan Chintan'**, was held in New Delhi.

**About**

- The 'Chintan' was curated as a brainstorming and idea incubation discussion to generate new and fresh ideas, initiatives and reforms to **further**

propel Jointness and Integration in the Armed Forces.

- Jointness and Integration are the cornerstones of the **transformation to Joint Structures** which the Indian Armed forces are progressing towards with the intention of being **"Future Ready".**

## Theatre Command

- A theatre command deploys elements of the three services i.e. the Indian Army, Indian Navy, and Indian Air Force **under a single, unified command structure.**
- Each command is assigned a **specific geographical region**, combining resources of the three services for operational roles.
- There will be **two land-based commands**—one focused on Pakistan and the other on China—**and a third maritime one,** overseeing the Indian Ocean Region.
  - The three theatre commands that will be set up first are likely to be located in **Jaipur, Lucknow and Karwar.**
- Creation of theatre commands and their structure has been under discussion for three years now.
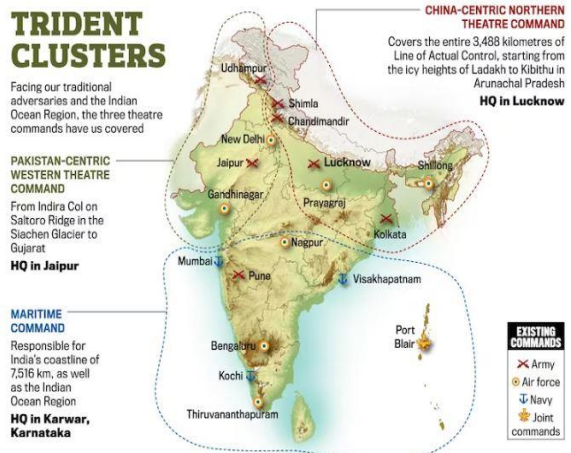


### Need for the Theatre Command

- **Hostile Neighborhood:** The main threat is from **China,** which works in collaboration with **Pakistan**. A two-front war is, therefore, a distinct possibility for India.
  - The prospect of high technology, multi-domain warfare where adversaries are **nuclear-armed** requires a swift and dynamic response.
- **Optimal use of Resources:** The forces will be able to pool their resources efficiently, resulting in the optimum utilisation of platforms, weapon systems, and assets.
  - This will also prevent resources from being allocated for duplicate purchases for the three services.

- **Help in Logistics:** Theatre commands, in the long run, could also improve logistics management in the forces.
- **Better Coordination:** Currently, India's multiple military commands are all located in different geographical areas. This, at times, causes communication hindrances during joint operations and exercises.
  - With a unified command structure, these communication processes could be simpler and more efficient.
- **In Practice in other Nations:** Armed forces of major military powers, including the United States, the United Kingdom, Russia, China and France all operate under theatre commands.
- **Efficient Planning:** Further, in the realm of policy, having a unified command structure with representatives from all three services will also lead to more efficient planning for both peacetime and wartime strategies.

### Challenges in Implementation

- **Difference of opinion among three forces:** There are differences among the three forces on scope, structure, and control of the commands.
- **Transfer of Resources:** There is a contention on the kind of war-fighting equipment that will be deployed under a single command and ambiguity surrounding the transfer of weapons, platforms, and resources from one theatre command to another.
- **Curriculum Framework:** In terms of preparing the educational bedrock for military personnel to serve in theatre commands, the country seems to be behind the curve.
- **Lack of NSS:** Many retired military professionals have criticised implementing theatre commands without having a coherent National Security Strategy (NSS).
  - Theatre commands will not have a clear blueprint and policy objective to work towards without an NSS.

### Conclusion

- India is moving towards implementing its biggest military overhaul, which could be a force multiplier, a few institutional and ideational changes will

have to be incorporated to find the correct balance in such a transformation.

- Given the threat India faces on its northern and western borders,

integrated theatre commands and the roles assigned will be key in dealing with any future conflict.

# 8. Doxxing

**Why In News?**
- In today's digital era, concerns of doxxing are increasing manifolds.
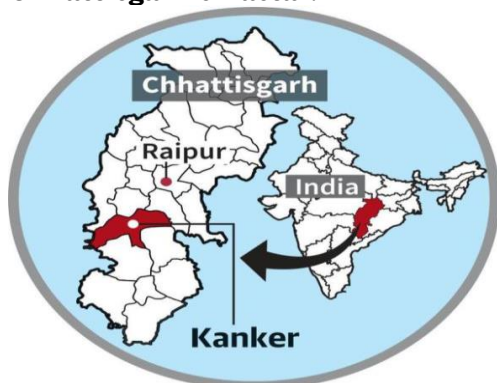
**About**
- The act of **digitally publicising a person's private details** is called doxxing.
  o Such as home addresses, phone numbers, private email IDs, medical conditions, government documents, live locations, etc.

- It allows abusers and criminals who are thousands of miles away **to target victims** by putting their private details online for others to exploit.
- Such information is usually obtained through **illegal methods such as hacking or theft.**
- Social media companies are bound by India's IT Rules, submitting a **cybercrime complaint** is one way to make sure the platform is forced to take action quickly.

# 9. Naxalism in India

**Why In News?**
- At **least 29 Maoists** were killed in an operation by security forces along the **Kanker-Narayanpur border in Chhattisgarh's Bastar.**



**Naxalism Problem**
- **Naxalism or Left Wing Extremism (LWE)** is one of the major challenges to India's internal security.
- Naxal affected areas in India are known as the **'Red Corridor'.**
- **Reason for Naxalism:** Naxalites seek to overthrow the State through violent means.
  o They openly proclaim lack of faith in the democratic means of ballot and adhere to the violence as a means of achieving their ends.
- **Initial Stage:** The Naxal movement started with the **tribal-peasant**

uprising against landlords in **Naxalbari village** of Darjiling district, West Bengal in **1967.**
  o The uprising was led by leaders such as **Charu Majumdar, Kanu Sanyal and Jangal Santhal.**
- **Communist Party of India (Maoist):** In **2004**, two main naxal groups, namely the **Maoist Communist Centre of India (MCCI)** and **People's War** merged to form the **CPI (Maoist) party.**
  o Eventually, by **2008** most of the other Naxal groups were merged into CPI (Maoist) which emerged as the **umbrella of Naxalite outfits.**
  o The CPI (Maoist) and all its front organization formations have been included in the list of **banned terrorist organizations** under the **Unlawful Activities (Prevention) Act, 1967.**

**Presence of Maoists in India**
- The States of **Chhattisgarh, Jharkhand, Orissa and Bihar** are considered **severely affected.**
- The States of **West Bengal, Maharashtra and Andhra Pradesh** are considered **partially affected.** The States of UP and MP are considered slightly affected.

- The CPI(Maoist) are making forays into Southern States of **Kerala, Karnataka and Tamil Nadu** and planning to link up the Western Ghats to the Eastern Ghats through these states.
- They are attempting incursions into **Assam and Arunachal Pradesh,** which has serious long-term strategic implications.
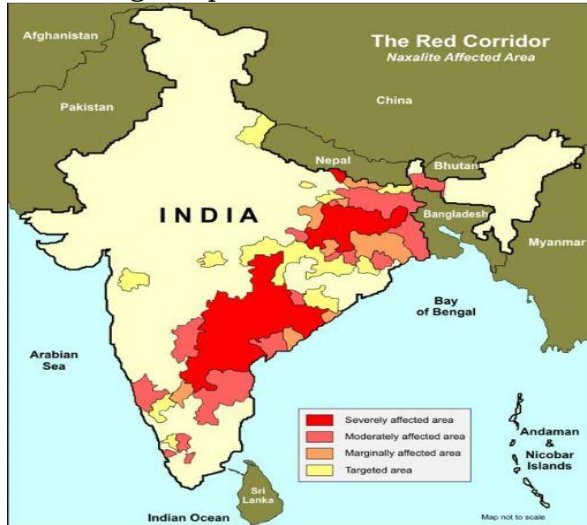


**Causes of Naxalism**
- **Marginalisation:** Naxalites do not belong to any particular religion, or community, but largely are Dalits, Adivasis and other marginalised sections of society.
  o They are led by people totally indoctrinated by the teachings of Mao. The basic issues are land reforms and economic development. The ideological dimension is provided by Maoism.
- **Support Base of Naxalites:** Naxalite movement has its support among the landless, share-croppers, agricultural labour, Harijans and tribals.
  o As long as these people are exploited and social justice continues to be thwarted, this support base of the Naxalites will continue.
- **Forest Management and Livelihood of Tribals:** For tribals, forest, land, and water mean their livelihood. They have been deprived of these under various acts and orders which increased the resentment against the authorities.
- **Lack of Development:** Absence of developmental activities and virtual absence of health care, drinking water, roads, electricity and educational

facilities in areas where Naxalism has taken roots.

**How Naxalites Possess a Challenge for Country?**
- **Vulnerability to External Threats:** The Maoist movement highlights India"s interior weaknesses, which makes India also vulnerable to external threats.
  o The CPI (Maoist) have close fraternal ties with many North-East insurgent groups.
  o Most of these outfits have linkages with external forces hostile to India.
  o The CPI (Maoist) have also frequently expressed their solidarity with the J&K terrorist groups.
- **Impediments to Economic Development:** The Maoists concentrate on the poor and marginalized regions of India, the more economic development (which is imperative to improving those regions" conditions) will be hampered. Internal order and stability are necessary for a nation"s economic development.
- **Additional Expenses on Internal Security:** The Naxalite activities are using up scarce resources on defence and internal security when it should be spent on areas such as social development.
- **Adverse Impact on Governance:** In the areas under Maoist domination, the absence of governance, which is created by their violent methods in the first place.
  o The service delivery systems are extinguished through killing, kidnap, intimidation and extortion.

**Government of India's Approach**
- **Deployment of the Central Armed Police Forces (CAPFs):** Battalions of the CAPFs/Naga Battalions (BNs) are deployed for assisting the State Police in the LWE affected States.
- **Security Related Expenditure (SRE) Scheme:** Funds are provided for meeting the recurring expenditure relating to insurance, training and operational needs of the security forces, rehabilitation of Left Wing Extremist cadres who surrender, and publicity material to create awareness against violence.

- **Review and Monitoring Mechanisms:** A number of review and monitoring mechanisms have been put in place by the Government and the Ministry of Home Affairs monitors the situation on a regular basis at various levels.
- **Strengthening the Intelligence Gathering Mechanism:** Several steps have been taken to strengthen and upgrade the capabilities of intelligence agencies at the Central and State levels.
  - These include intelligence sharing through Multi-Agency Centre (MAC) at the Central and State levels, and Multi Agency Centre (SMAC) at the subsidiary level on a 24×7 basis.
- **Better Inter-state Coordination:** The area of operation of the Maoist cadres is not confined to one single State. It is often spread over two or more States.
  - To improve inter-state coordination the government conducts frequent meetings and interactions between the official machinery of the bordering districts of Left Wing Extremism affected States across the country.
- **Tackling the challenge of Improvised Explosive Devices (IEDs):** IED is the most potent weapon in the hands of Maoists.
  - The Union Home Ministry has formulated a Standard Operating

Procedure (SOP) on 'Issues related to Explosives/IEDs/Landmines in naxal affected areas' and the same has been circulated to the stakeholders for compliance.
- **Strengthening of air support:** State Governments and the CAPFs have been provided with enhanced air support in terms of UAVs and helicopters for anti-naxal operations, including evacuation of causalities/injured persons.

**Way Ahead**
- There is a widely accepted view that the Naxal problem can be tackled successfully through a **combination of development and security related interventions.**
- The problem is not to be viewed entirely as a law and order issue. Often, innocent tribals who live in the interior forest regions fall prey to Naxal intimidation.
- Re-establishing control over Naxalite affected areas, their development, and enabling the marginalized people living there to lead a secure, dignified and better quality of life is vital.
- It is note-worthy that due to the measures initiated by the Government, LWE violence has significantly declined in the last few years.

# 10. National Cadet Corps (NCC)

**Why In News?**
- **The Ministry of Defence** is planning a **phase-wise augmentation** of the **National Cadet Corps (NCC)** from the current 17 lakh cadets to 27 lakh in the next 10 years.
  - This is aimed at **enhancing the reach of the tri-service** organisation to a **greater number of educational institutions,** with a focus on border areas.

**About**
- The NCC in India was formed under the **National Cadet Corps Act of 1948.**

- It can be traced back to the **"University Corps"**, which was created under the **Indian Defense Act 1917,** with the objective to **make up for the shortage in the Army.**
- It is the **youth wing of the Armed Forces** with its Headquarters at New Delhi.
- It is **open to school and college students on a voluntary basis.** NCC is the largest uniformed youth organization.
- It is a Tri-Services Organization, comprising the **Army, Navy and Air Wing**, engaged in grooming the youth of the country into disciplined and patriotic citizens.
- Its motto is **'Unity and Discipline'.**

# 11. DURGA-2 (Directionally Unrestricted Ray Gun Array)

## Why In News?
- DRDO is conducting tests on a prototype of its DURGA-2 laser defense system.

## About
- It damages or destroys its target using focused energy by means of lasers, microwaves or particle beams.
- Russia, France, Germany, the United Kingdom, Israel, and China already have this system.
- Their beams are not affected by the constraining effects of gravity or atmospheric drag.

## Advantages
- Directed energy weapons, also called l**aser weapons**, if developed and deployed operationally, can neutralise any drone or ballistic missile attacks from the skies or even at the originating location as it can travel at the speed of the light. It can deflect the path of the missiles and can even destroy a fighter aircraft.
- The present generation of anti-aircraft or anti-missile systems are not considered fool-proof but the laser weapon promises to have 100 percent kill probability.

# 12. Crystal Maze 2

## Why In News?
- The Indian Air Force (IAF) has conducted successful test firing of **Crystal Maze 2 missile.**

## About
- It is an air launched ballistic missile capable of hitting targets over **250 kilometers** away.
- It is an extended stand-off range **air-to-surface missile** designed to strike high-value stationary and relocatable targets, including long-range radars and air defense systems.
- It is specifically effective in GPS denied environments, and can also penetrate areas protected by air defense systems.

# 13. Rampage Missile

## Why In News?
- Recently, the Indian Air Force (IAF) and the Indian Navy have inducted a new weapon into their arsenal – the **Rampage missile.**

## About the Rampage Missile
- It is a long-range, supersonic, air-to-ground missile capable of hitting targets up to 250 kilometres away.
- Known as the **High-Speed Low Drag-Mark 2 Missile** in the Indian Air Force, it was extensively used by the **Israeli Air Force** in recent operations against Iranian targets.

## Integration with Fighter Aircraft
- The Rampage missile has been integrated into the Russian-origin aircraft fleet of the **Indian Air Force**, including the Su-30 MKI, MiG-29, and Jaguar fighters.
- The **Indian Navy** has inducted the missile into its MiG-29K naval fighter jets.
- This integration allows for the firing of multiple long-range air-to-ground missiles, including the over 400 Km strike range BrahMos supersonic missiles.

## Procurement Under Emergency Powers
- The procurement of the Rampage missiles was part of the emergency powers granted by the Defence Ministry to the armed forces, ***enabling them to equip themselves with critical weapons and equipment*** following the standoff with China in 2020.

These missiles offer a **longer range than the Spice-2000s**, which were used in the Balakot air strikes in 2019.

# Environment & Geography

## 1. Afar Depression

**Why In News?**

- Geologists predict that the **African continent's rift in the Afar Triangle** could lead to the **formation of a new ocean in 5 to 10 million years.**

**About**

- The Afar Triangle is also known as the **Afar Depression,** located in the **Horn of Africa.**
- The Afar Triangle is a geological depression wher**e three tectonic plates—the Nubian, Somali, and Arabian plates— converge.**
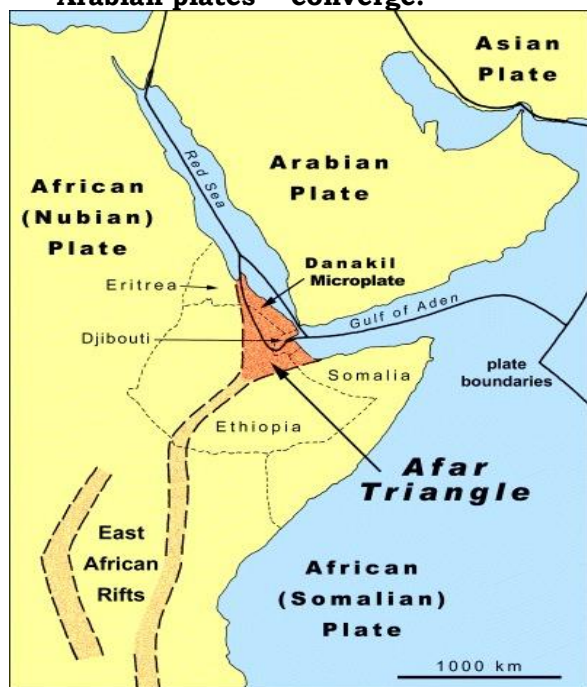


- This area is part of the **East African Rift system,** which extends from the Afar region down through eastern Africa.
- The rifting process occurring here is a result of the **tectonic plates slowly moving apart,** a phenomenon that has been taking place for millions of years.

**Formation of New Ocean**

- In 2005, a **35-mile-long rift opened up in the Ethiopian desert,** signaling the ongoing separation of the African continent.
- This rift is the surface expression of deep-seated tectonic forces at work, as the **Somali plate moves away from the Nubian plate,** stretching and **thinning the Earth's crust.**
- Geologists predict that in **5 to 10 million years,** the tectonic movement will eventually **split the African continent into two,** creating **a new ocean basin.**
- This new body of water would be the result of the **Red Sea and the Gulf of Aden** flooding over the Afar region and into the East African Rift Valley.
- Consequently, this part of East Africa **would evolve into its own distinct continent.**

## 2. International Network for Terrestrial Research and Monitoring in the Arctic (INTERACT)

**Why In News?**

- Recently, INTERACT research stations in the Arctic found that more than 1,000 billion tonnes of ice have been lost in the past four decades.

**About INTERACT**

- INTERACT is an infrastructure project for studying the environmental changes happening in the Arctic and

surrounding regions. Established under the auspices of SCANNET, an **existing Arctic network.**

- The network spans across northern Europe, the US, Canada, Greenland, Iceland, the Faroe Islands, and Scotland, as well as stations in northern alpine areas.

- It is a significant initiative aimed at building capacity for research and monitoring across the Arctic.

**Importance**

- **Capacity Building:** A major goal is to make research easier by providing access to stations, resources, and expertise for scientists worldwide.
- **Multidisciplinary Approach:** Research goes beyond just climate change. It encompasses various fields like:
  - Glaciology (ice studies)

  - Permafrost (frozen ground)
  - Climate
  - Ecology
  - Biodiversity
  - Biogeochemical cycling (movement of elements between living and non-living parts of the environment)
- **International Collaboration:** Scientists from across the globe collaborate using INTERACT's infrastructure and expertise. This is crucial for tackling complex environmental issues.

# 3. Katchatheevu Island

**Why In News?**

- Recently, the Prime Minister raked up the Katchatheevu Island issue, ahead of the Lok Sabha elections 2024.

**About the Katchatheevu Island:**

- It is an uninhabited island in the **Palk Strait,** and is believed to have been formed following **a volcanic eruption** in the 14th Century.
- It passed to the **Ramanathapuram-based Ramnad kingdom in India** in the **17th Century**.



- During the British Raj, it became part of the **Madras presidency**.
  - However, in 1921, both Sri Lanka and India, then British colonies, laid claim to Katchatheevu.

**The Controversy:**

- It began in earnest in 1974 when the **island was ceded to Sri Lanka** by the Indian government under the leadership of then Prime Minister Indira Gandhi.
  - The **island lies on the Sri Lankan side** of the *International Maritime Boundary Line (IMBL)* and was **'recognised' by India as Colombo's territory** under the *Agreement on the boundary in Historic Waters between the two countries and Related Matters.*
- It has been a point of contention ever since, particularly in the state of Tamil Nadu.
- The **main issue** revolves around the fishing rights of Indian **fishermen**.
  - Fishermen from Rameswaram routinely cross the island and consider the area their traditional fishing territories.

# 4. Swell Waves

**Why In News?**

- Swell waves inundated coastal areas in central and southern districts of Kerala.

**About**

- The phenomenon of Swell waves, referred to as **'Kallakkadal'** locally.

  - **'Kallakkadal'** is a colloquial term used by Kerala fishermen to refer to the freaky flooding episodes. In 2012 UNESCO formally accepted this term for scientific use.
  - During 'Kallakkadal events,' the sea surges into the land causing inundation.

**About Swell Wave**

- The waves in a fully developed sea outrun the storm that creates them, traveling great distances from the wind source and lengthening and reducing in height in the process.
  - o These **lower frequency waves are called swell waves.**
- Swells organise into groups smooth and regular in appearance.
- They are able to travel thousands of miles unchanged in height and period.
- The longer the wave, the faster it travels.
  - o As waves leave a storm area, they tend to sort themselves out with the long ones ahead of the short ones, and the energy is simultaneously

spread out over an increasingly larger area.
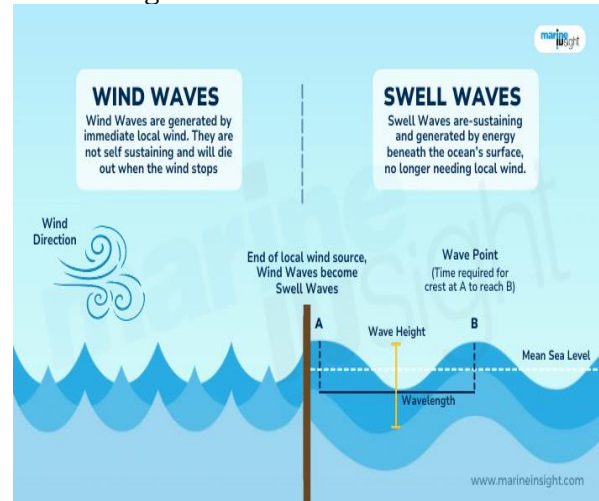


# 5. Supreme Court Ban Unregulated Soil Extraction

**Why In News?**

- Recently, the Supreme Court of India has barred the unregulated extraction of soil for linear projects such as roads and pipelines.

**About the Controversial Exemption:**

- The Union Environment Ministry issued a notification exempting the extraction of ordinary earth for linear projects from obtaining Environmental Clearance (EC) in March 2020.
- It was challenged before the **National Green Tribunal (NGT)**, which asked the Ministry to review it within three months.
  - o However, the **Ministry did not take any action**, leading the matter to reach the Supreme Court.

**The Supreme Court's Ruling:**

- The Supreme Court *struck down the 'blanket' and 'arbitrary' exemption*, and noted that the notification was introduced in a 'tearing hurry' during the Covid-19 lockdown without inviting objections or opinions through the publication of prior notice.
- The Centre had argued that the exemption was necessary **'for the aid of the general public',** and would help *'the kumhars (potters), farmers, gram panchayats, vanjara, oads of Gujarat',* and all non-mining activities identified by the states.

- o However, the Apex court stated that the Centre had failed to provide reasons for coming to the conclusion that the notification was issued in public interest.

**Implications of the Judgment:**

- It is a significant step towards environmental protection.
- By striking down the exemption, the court has ensured that any extraction of earth for linear projects will require an Environmental Clearance, thereby ensuring that such activities are carried out in a manner that minimises environmental harm.

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**The National Green Tribunal (NGT):**
- It is a **statutory body** that was set up under the **National Green Tribunal Act in 2010.**
  - a. It was set up as per recommendations of the Supreme Court, Law Commission and India's international law obligations to develop national laws on the environment and implement them effectively.
- It is a specialised judicial body equipped with expertise solely for the purpose of adjudicating environmental cases in the country.
  - a. It has been endowed with suo-motu powers to take up environmental issues across the country.

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**Power:**
– The NGT is not simply adjudicatory in nature. It performs vital roles that are **preventative, ameliorative, or remedial.**
– The NGT is **not bound by the procedure laid down under the Code of Civil Procedure (1908)**, but shall be **guided by principles of natural justice**.
– Its orders are **binding** and it has power to grant relief in the form of compensation and damages to affected persons.
– It has powers to review its own decisions. If this fails, the **decision can be challenged before the Supreme Court** within ninety days.

## 6. Impact of La Nina on Indian monsoon and Agriculture

**Why In News?**
- The Asia-Pacific Economic Cooperation (APEC) Climate Center, has forecast the return of the La Nina phenomenon in India.

**Monsoon forecast for India**
- According to global weather agencies, India is likely to experience above-normal rains.
- It is predicted for the region spanning eastern Africa to the Arabian Sea, India, the Bay of Bengal, and Indonesia, the Caribbean Sea, the tropical North Atlantic, southern Australia, and the southern South Pacific.

**Ocean-Atmosphere system**
- **Normal Conditions:** During normal conditions in the Pacific ocean, **trade winds** blow west along the equator, **taking warm water from South America towards Asia.**
  - To replace that warm water, cold water rises from the depths — a process called **upwelling.**
  - The warmer surface waters **near Indonesia create a region of low-pressure area,** causing the air to rise upwards. This also results in **formation of clouds and heavy rainfall.**
  - The air flow also helps in building up the monsoon system which brings **rainfall over India.**

- **Abnormal Conditions:** Both El Nino and La Nina usually begin to develop in the **March to June season,** reach their peak strength in the winters and then begin to dissipate in the post winter season.
  - Both these phases typically **last for a year,** though La Nina, on an average, lasts longer than El Nino.
  - While these phases alternate over a period of **two to seven years,** with the neutral phase thrown in between, it is possible for two consecutive episodes of El Nino or La Nina to occur.

**What is El Nino?**
- El Niño is the **warming of seawater** in the central-east Equatorial Pacific that occurs every few years.
- During El Niño, surface temperatures in the **equatorial Pacific rise,** and trade winds — east-west winds that blow near the Equator — weaken.
- **Impact:** El Niño causes dry, **warm winters in the Northern U.S. and Canada** and increases the risk of flooding in the U.S. gulf coast and southeastern U.S. It also brings drought to Indonesia and Australia.

# THE EL NIÑO PHENOMENON
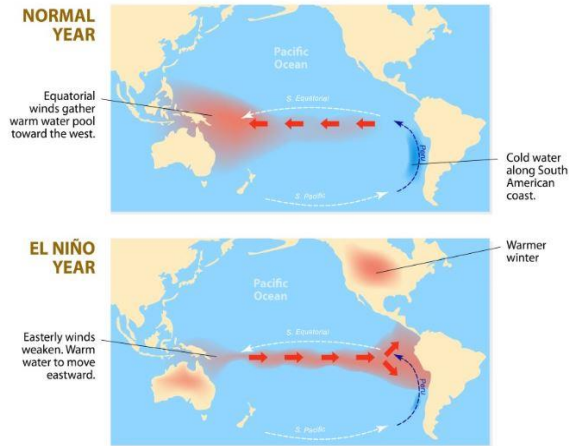


## What is La Nina?
- La Niña is the opposite of El Niño. La Niña witnesses **cooler than average sea surface temperature (SST)** in the equatorial Pacific region.
- Trade winds are stronger than usual, pushing warmer water towards Asia.
- **Impact:** This leads to **drier conditions in the Southern U.S.,** and heavy rainfall in Canada. It has also been associated with heavy floods in Australia.

## How does it affect the Indian Monsoon?
- **In El Niño years**, India faces **warmer temperatures and less rainfall**, causing droughts in some regions.
  - o This affects agriculture, water resources, and ecosystems.
  - o The El Nino phenomenon led to **1.4% decrease** in food grain production for the 2023-24 (July-June) crop year.
- **La Niña** brings cooler sea surface temperatures, leading to increased rainfall in certain parts of India.

## How is La Nina beneficial for India?
- **Water resource management:** Higher rainfall during La Niña events can improve water availability for irrigation.
- **Increased agricultural productivity:** La Niña tends to bring above-average rainfall during the monsoon season, which is crucial for agriculture in India.
- **Lower food prices:** Higher crop yields resulting from favorable weather conditions during La Niña events increases food supplies in the market.
- **Power generation:** In India, hydropower contributes significantly to the energy mix. Increased rainfall during La Niña events boost water levels in reservoirs, improving hydropower generation capacity.
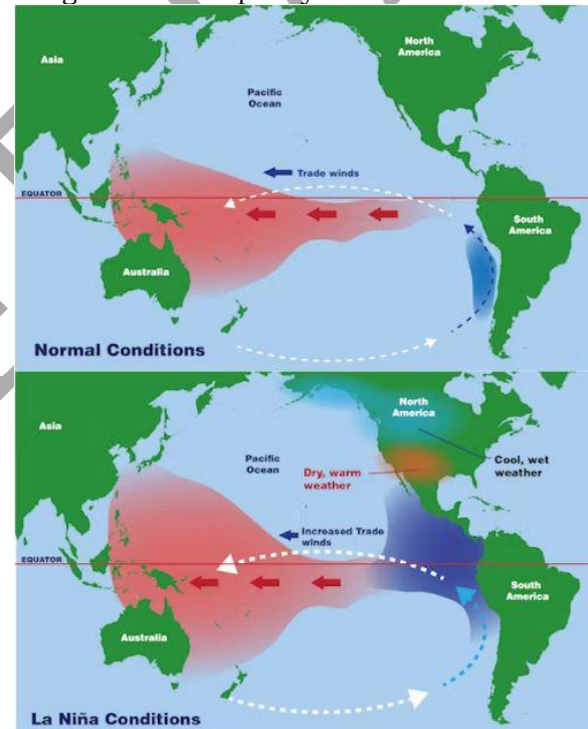


# 7. Seasonal Outlook for Hot Weather Season: IMD

## Why In News?
- The **India Meteorological Department (IMD)** issued an updated Seasonal outlook for the hot weather season (April to June) 2024.

## About
- **Above-normal temperatures** are likely to be recorded over most parts of the country

- During April May June hot weather season, **above normal heatwave** days are likely to occur over most parts of south peninsula, central India, east India and plains of northwest India.
- The **El Niño** however is likely to weaken during the upcoming season and eventually turn 'neutral'.
  - o Some models have even predicted the **possibility of La Niña**

**conditions developing during the monsoon**, which can intensify rainfall across South Asia, particularly in India's northwest and Bangladesh.

**Issues and Concerns**

- Above-normal maximum and minimum temperatures can cause heat-related illnesses in people as well as affect agricultural output, cause water scarcity, increase the demand for energy, and affect ecosystems and air quality.
- The announcement comes even as India is already struggling to keep up with its power demand, which increases significantly during summer season.
  o **India's hydroelectricity output fell** at the steepest pace in at least 38 years in the year ending March 31, 2024.
  o Hydroelectric output will possibly remain low in the coming months as well, leading to a greater dependence on coal at a time when India has, in its Nationally Determined Contributions under the Paris Agreement, promised to reduce the emissions intensity of its GDP by 45% by 2030, compared to the 2005 level.

**What is a heat wave?**

- **Qualitatively**, a heat wave is a condition of air temperature which becomes fatal to the human body when exposed.

- **Quantitatively**, it is defined based on the temperature thresholds over a region in terms of actual temperature or its departure from normal.
- Heat waves in India are typically recorded between March and June, and tend to peak in May.

**Criteria**

- The IMD declares a heat wave if the maximum temperature of a weather station reaches at **least 40 degrees C in the plains** and at **least 30 degrees C** in **hilly regions,** with a departure of aroun**d 4.5-6.4 degrees C from the normal maximum temperature.**
- The IMD can also declare a heat wave if the actual maximum temperature crosses 45 degrees C, and a 'severe heat wave' if it crosses 47 degrees C.

**India Meteorological Department (IMD)**

- It is an agency of the Ministry of Earth Sciences.
- It is the principal agency responsible for meteorological observations, weather forecasting and seismology.
- It is also one of the six Regional Specialised Meteorological Centres of the World Meteorological Organisation.
- IMD releases the long range forecast in two stages in April and June.

# 8. Damage to Cardamom Plantation

**Why In News?**

- The drought has caused extensive damage to cardamom plantations across Kerala.

**About**

- Indian Council of Agricultural Research, Krishi Vigyan Kendra (KVK) Idukki supporting small cardamom farmers through:
  o **Foliar application of Pigmented Facultative Methylotrophic Bacteria (PPFM)** to small cardamom during summer period which enhance the plant growth and increase yield,

  o The PPFMs inoculation induced number of stomata, chlorophyll concentration and malic acid content and led to increased photosynthetic activity,
  o Screening of such kinds of bacteria having immense plant growth promotes activities like nitrogen fixation, Phytohormone production.
- PPFMs are **aerobic, Gram-negative bacteria** that use one-carbon compounds like formate, formaldehyde, and methanol as their sole carbon and energy source. They have been well studied in agricultural systems. They can be **applied to seeds and crops as a foliar spray.**

**Cardamom Plantation**

- Cardamom belongs to the **ginger family (Zingiberaceae).** It has a strong, warm flavour that is both spicy and sweet
- Native to the **Western Ghats of South India**. It is a perennial herbaceous plant.
- Cardamom thrives in a **warm and humid climate** with well-distributed

rainfall ranging from 1500 to 2500 mm annually.
- The ideal temperature range is between 15°C to 35°C.
- The most suitable soil for cardamom plantation is deep, well-drained, and rich in organic matter.

# 9. Taiwan Earthquake

**Why In News?**
- Recently, Taiwan experienced its strongest earthquake of 7.2 magnitude in nearly 25 years.

**About**
- Taiwan has a long history of earthquakes due to its location along the **'Pacific Ring of Fire'**, a line of seismic faults encircling the Pacific Ocean where most of the world's earthquakes occur.

- The tension accumulated from the **interactions of two tectonic plates, the Philippine Sea Plate and the Eurasian Plate**, may lead to sudden releases in the form of earthquakes.
- The **first** recorded earthquake in Taiwan was in 1624.

**Earthquake**
- It is a **natural event** caused due to release of energy, which generates waves that travel in all directions.
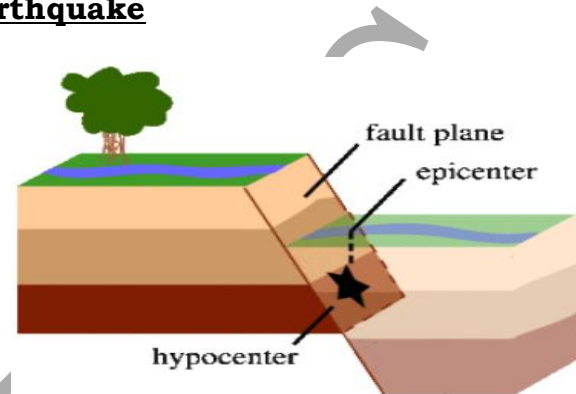
- The release of energy **occurs along a fault**, which is a sharp break in the crustal rocks, moving in opposite directions.
- The point where the energy is released is called the **focus of an earthquake**, alternatively, it is called the **hypocentre**.
- The point on the surface, nearest to the focus, is called **epicentre**.
  o It is the first one to experience the waves. It is a point directly above the focus.

**Measure of Earthquake:**
- By seismographic networks, which are made of seismic stations, beneath the earth.
- It is possible to convert the measured wave amplitude into the energy released for that earthquake (**magnitude of the earthquake)**.
  o It is measured in the **Richter scale.**

**Seismic waves:**
- When an Earthquake occurs, the elastic limit of the earth breakdown and energy is released in the form of elastic waves (known as Seismic waves).

**Types**:
- **Body waves:** Generated due to the release of energy at the focus and move

in all directions. Travel only through the interior of the earth. It is faster than surface waves.
- o **Types of Body Waves: P – Primary waves** (all medium) and **S – secondary waves** (travel only through solid materials).
- **Surface Waves:** Body waves interact with surface rocks, and a new set of waves is formed called surface waves.
  - o These are transverse waves in which particle movement is perpendicular to the wave propagation. (formed crests and troughs).
  - o 2 common surface waves are Love waves and Rayleigh waves.
    - **Speed of different Waves in descending order:** Primary Waves > Secondary Waves > Love Waves > Rayleigh Waves.

**Why Are There Frequent Earthquakes in the Pacific Region?**
- **The 'Pacific Ring of Fire'** is one of the most seismically and volcanically active zones in the world.



- It is primarily due to the movement of tectonic plates in this region.
- Much of the volcanic activity occurs along subduction zones, which are convergent plate boundaries where two tectonic plates come together.

**Socio – Environmental Consequences of Earthquakes**
- Earthquakes are often associated with fear and horror due to the scale, magnitude and suddenness.
- It becomes a calamity when it strikes the areas of high density of population. It not only damages and destroys the settlements, infrastructure, transport and communication network, industries and other developmental activities but also robs the population of their material and socio-cultural gains that they have preserved over generations.
- It renders them homeless, which puts an extra-pressure and stress, particularly on the weak economy of the developing countries.

# 10. Risk From Glacial Lake Floods

**Why In News?**
- The Uttarakhand government has constituted two teams of experts to evaluate the risk posed by five potentially hazardous glacial lakes in the region.
  - o These lakes are prone to **Glacial Lake Outburst Floods (GLOFs).**

**What are GLOFs?**
- GLOFs are disaster events caused by the abrupt discharge of water from glacial lakes — large bodies of water that sit in front of, on top of, or beneath a melting glacier.
- As a glacier withdraws, it leaves behind a depression that gets filled with meltwater, thereby forming a lake.

**73 | P a g e**

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- o The more the glacier recedes, the bigger and more dangerous the lake becomes.

**Reasons**
- GLOFs can be triggered by various reasons, including
  - o **Glacial calving**, where sizable ice chunks detach from the glacier into the lake,
  - o **Inducing sudden water displacement**
  - o **Incidents** such as avalanches or landslides can also impact the stability of the boundary around a glacial lake, leading to its failure, and the rapid discharge of water.
- In recent years, there has been a rise in GLOF events in the Himalayan region as **soaring global temperatures** have increased glacier melting.
  - o Rising surface temperatures across the globe, including India, have increased the risk of GLOFs
- **Rapid infrastructure development** in vulnerable areas has also contributed to the spike in such incidents.

**Impacts**
- GLOFs can unleash large volumes of water, sediment, and debris downstream with formidable force and velocity.
- The floodwaters can submerge valleys, obliterate infrastructure such as roads, bridges, and buildings, and result in significant loss of life and livelihoods.
- It has resulted in several disasters in the Himalayan states in recent years.

**Geographical Distribution:**
- Commonly associated with glacial regions, especially in mountainous areas with significant glacial activity. Examples include the Himalayas, Andes, and Alps.

- o Since 1980, in the Himalayan region, particularly in southeastern Tibet and the China-Nepal border area, GLOFs have become more frequent
- The National Disaster Management Authority (NDMA), which operates under the Union Ministry of Home Affairs, has identified 188 glacial lakes in the Himalayan states that can potentially be breached because of heavy rainfall.
  - o Thirteen of them are in **Uttarakhand**.



**13 OF THE MOST VULNERABLE LAKES**
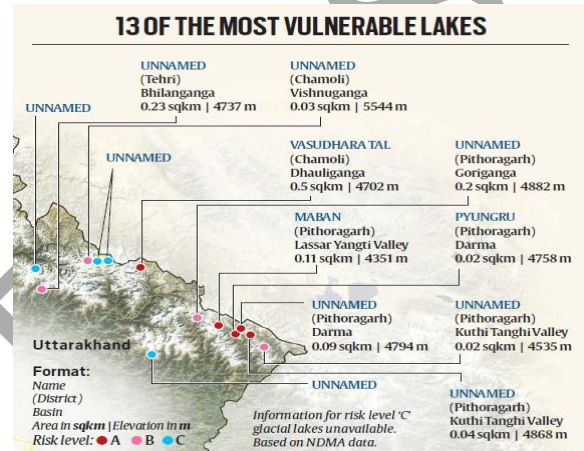
**Suggestions**
- There is a need to know more about the dynamics of glaciers and glacial lakes
- Therefore,It is important to learn as much as possible about past events and the dynamics behind them and to assess the overall GLOF risk in the region for better planning and implementation of disaster risk reduction measures and climate change adaptation in the region.
- There is a need to Utilise satellite imagery and remote sensing technology to monitor changes in glacial lakes and identify potential threats.
- Develop and communicate emergency preparedness plans to communities at risk.

# 11. Viability of Green Hydrogen

**Why In News?**
- The **Ministry of New and Renewable Energy (MNRE)** has announced to support efforts to **test the viability of green hydrogen as a fuel for cars and heavy vehicles.**

**Scheme Guidelines for Pilot Project**
- The scheme will support development of technologies for use of Green Hydrogen as a fuel in Buses, Trucks and 4-wheelers, based on **fuel cell/internal**

combustion engine-based propulsion technology.

- The other thrust area for the scheme is to support development of infrastructure such as **hydrogen refueling stations.**
- The scheme will also seek to support any other innovative use of hydrogen for reducing carbon emissions in the transport sector, such as blending of methanol/ethanol, based on green hydrogen and other synthetic fuels derived from green hydrogen in automobile fuels.

**What is hydrogen**
- Hydrogen is the chemical element with the **symbol H** and **atomic number 1.**
- Hydrogen is the **lightest element** and the most abundant chemical substance in the universe, **constituting roughly 75%** of all normal matter.
- It is colorless, odorless, tasteless, non-toxic, and highly combustible gas.

**Extraction of Hydrogen**
- Hydrogen exists in **combination with other elements.**
- Hence, for using it as a source of energy, it has to be **extracted from naturally occurring compounds** like water (which is a combination of two hydrogen atoms and one oxygen atom).
- **Green hydrogen** refers to hydrogen that is produced **using renewable energy sources**, such as wind, solar, or hydropower, through a process called electrolysis.
- Electrolysis involves splitting water ($H_2O$) into hydrogen ($H_2$) and oxygen ($O_2$) using an electric current.
- When this electricity comes from renewable sources, the hydrogen produced is considered "green" because the overall process has a **minimal environmental impact.**
- **Grey Hydrogen:** It involves extracting hydrogen from natural gas through a process called **steam methane reforming (SMR).**
  o This process releases **carbon dioxide ($CO_2$)** as a byproduct, contributing to greenhouse gas emissions.
- **Blue Hydrogen**: It involves **capturing and storing the CO2 emissions** generated during the production of hydrogen from **natural gas.**



Note: SMR = steam methane reforming.
* Turquoise hydrogen is an emerging decarbonisation option.

**Significance of Green Hydrogen**
- **Zero Emissions:** Unlike conventional hydrogen production methods that rely on fossil fuels, green hydrogen production emits no greenhouse gases or pollutants, making it a zero-emission energy carrier.
- **Energy Storage:** Green hydrogen can serve as a means of storing excess renewable energy generated during periods of low demand for later use, helping to balance the grid and enhance energy security.
- **Versatile Applications:** Hydrogen can be used as a fuel in various sectors including transportation, industry, and heating.
- **Economic Opportunities:** The transition to green hydrogen presents significant economic opportunities, including job creation, investment in new infrastructure, and the growth of related industries such as electrolyzer manufacturing and hydrogen fuel cell technology.
- **Climate Mitigation:** By replacing fossil fuels with green hydrogen, countries can reduce their carbon emissions and contribute to global efforts to mitigate climate change.

**Challenges**
- **Risks associated with the transportation:** Hydrogen in gaseous form is highly inflammable and difficult to transport, thereby making safety a primary concern.

- **Higher Cost:** Green hydrogen production is currently more expensive than conventional methods, primarily due to the high cost of renewable energy sources and electrolysis technology.
- **Lack of fuel station infrastructure:** India will need to compete with around 500 operational hydrogen stations in the world today which are mostly in Europe, followed by Japan and South Korea.

## Way Ahead
- Increasing renewable energy use across all economic spheres is central to India's Energy Transition.

- Hydrogen offers the possibility to decarbonize applications, end uses, and sectors that have been traditionally difficult to tackle with other clean energy solutions.
- Hydrogen is expected to be used widely in the transportation sector in the coming years, and as a large and growing market for both vehicles and energy.
- India stands to gain significantly from the large-scale adoption of green hydrogen as vehicular fuel.

## 12. Post Offices in Antarctica

### Why In News?
- Recently, the Chief Postmaster General Maharashtra Circle inaugurated the **Bharati Branch Post Office at Bharati Station of Antarctica** accompanied by the introduction of **a new PIN code, MH-1718.**

### Brief History of Post Offices in Antarctica
- In **1984**, shortly after the inaugural expedition to Antarctica, **India established its first-ever post office at Dakshin Gangotri** — the pioneering scientific base.
  o The eventual submersion of Dakshin Gangotri under ice during the **late 1980s,** leading to its **decommissioning**.
- On **January 26, 1990**, a new post office branch emerged at **India's Maitri research station in Antarctica**.

### Maitri and Bharati Post Offices
- These are **research bases of India in Antarctica** spanning a distance of 3,000 kms.
- They stand as a testament to the **nation's enduring presence in the polar landscape**, both falling under the **purview of the Goa Postal Division**.
- In practical terms, letters intended for Antarctica find their way to the **National Centre for Polar and Ocean Research (NCPOR) in Goa**, the

pivotal hub for India's polar endeavours.

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**India and Antarctica**
– India's engagement with Antarctica, the southernmost continent and site of the South Pole, traces back to 1981.
– It marked the initiation of the **Indian Antarctic Programme**, a multi-disciplinary, multi-institutional programme under the control of the **NCPOR, Ministry of Earth Sciences**.
  a. It gained global acceptance with **India's signing of the Antarctic Treaty** and subsequent construction of the **Dakshin Gangotri** (in 1983), **Maitri** (in 1989), **Bharati** (in 2012) were commissioned.
  b. Currently, India has two operational research stations in Antarctica: Maitri and Bharati.

**The Indian Antarctic Bill 2022**
a. It provides a **regulatory framework and legal mechanisms** for India's Antarctic activities.
b. It aims at having India's own national measures for protecting the Antarctic environment as also the dependent and associated ecosystem.
c. It proposes to set up the **Indian Antarctic Authority (IAA)** under the Ministry of Earth Sciences as the apex decision-making authority.

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# 13. Pashmina March

**Why In News?**

- Recently, the Ladakh administration imposed **'Section 144 in Leh',** banning public rallies ahead of proposed **'Pashmina March**' by climate activist Sonam Wangchuk.

**About the Pashmina March**

> **Section 144 of CrPC:**
> - It gave the police and the District Magistrate the powers in order to prevent unlawful gathering of people and also to direct any person to abstain from a certain activity.

- Sonam Wangchuk, an education reformist and climate activist, planned the Pashmina March **to draw attention to the threats posed by large Indian industrialists and China** to the grazing lands of Ladakh.
- Wangchuk likened his march to Mahatma Gandhi's historic Dandi March.
- It was organised to protest the alleged Chinese incursions into the grazing areas of Ladakh and to flag the 'ground realities' in the **ecologically fragile region** of the **Changthang Plateau of Ladakh.**

> **Changthang Region of Ladakh**
> – It is a part of the **high-altitude Tibetan Plateau**, extends from western and northern Tibet into southeastern Ladakh, India.
> – This vast highland, home to giant lakes and unique wildlife, is nestled at an altitude of 14,846 ft above sea level.
> – The region is inhabited by the **Changpa people,** pastoralist nomads who navigate their existence around their **prized assets: goats, yaks, and sheep.**
> – **Changthang** is a hub of a lucrative fibre trade, with the indigenous Changra goat used for producing one of the **world's most sought-after natural wool — GI Ladakh pashmina or cashmere**.

# 14. Gape Limitation

**Why In News?**

- In ecology, **'gape limitation'** stands for the idea that a predator can only eat things that fit in its mouth.

**About**

- Researchers pay attention to the concept because it **specifies which animals can eat which other animals.**
  - For example, small predators can only eat small prey, while bigger predators can eat bigger prey.

- Gape limitations also influence **how animals evolve over time.**
  - Prey animals might get faster or grow bigger to avoid being eaten by predators with smaller mouths.
  - On the other hand, predators may evolve larger mouths to eat larger prey.
- **Significance:** Understanding gape limitations is essential to predicting how changes in predator or prey populations, changes in habitats, and/or environmental disturbances could affect the structure and function of ecosystems.

# 15. Earth's Polar Vortex

**Why In News?**

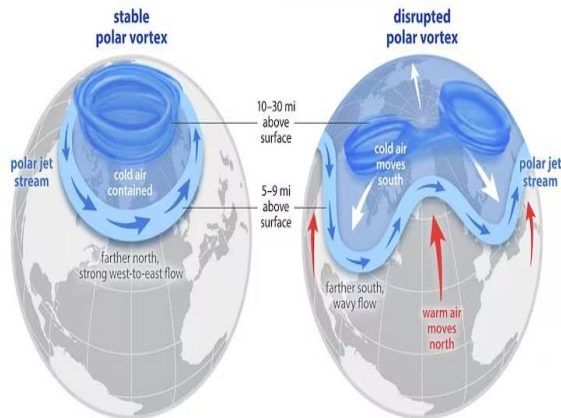- Recently, the atmospheric scientists have noticed the development of the polar vortex and characterised it as one of the biggest events in the last four decades.

**About the Earth's Polar Vortex:**

- It is a large **area of low pressure and cold air** that surrounds both of the Earth's poles.
- It exists **near the poles** throughout the year, but it **weakens in summer and strengthens in winter**.

o It is located in the polar stratosphere, above the layer of the atmosphere (the troposphere) where most weather, including the jet stream, occurs.

- The **Stratospheric Polar Vortex** forms in the winter hemisphere when the Earth's pole is pointed away from the sun.
- The term 'vortex' refers to the **counterclockwise flow of air** that helps keep the colder air near the Poles.



**Impact on Weather Patterns**

- It significantly influences winter weather.
- When the Polar Vortex is especially strong, the polar jet stream tends to stay farther north and exhibits a more zonal flow, with less meandering.
- At the surface, it is often associated with an even colder than usual Arctic, and milder-than-usual weather in the mid-latitudes.
- Conversely, when the Polar Vortex weakens, shifts, or splits, the polar jet stream often becomes extremely wavy, allowing warm air to flood into the Arctic and polar air to sink down into the mid-latitudes.
- It can result in extreme cold snaps, snowstorms, and other winter weather events in areas like North America, Europe, and Asia.

# 16. Forever Chemicals (PFAS)

**Why In News?**

- IIT Madras study revealed presence of 'forever chemicals' (Pre- and polyfluoroalkyl substances in Chennai lakes

**About PFAS**

- **Per- and polyfluoroalkyl substances (PFAS)** are a large, complex group of synthetic chemicals that have been used in consumer products around the world since about the **1950s**.
- They are ingredients in various everyday products such as non-stick cookware, upholstery, food packaging, water or stain resistant coatings, and industrial materials.
- They are resistant to water, grease, and heat.
- They do not break down or degrade in the environment.

- **Impact and Concerns:** They can move through soils and contaminate drinking water sources.
  o build up (bioaccumulate) in fish and wildlife.
  o They may affect reproduction, thyroid function, the immune system, and injure the liver
- **Solution** : PFAS can be broken down into mostly harmless components using sodium hydroxide, or lye, an inexpensive compound used in soap.
  o The most common method of destroying PFAS is incineration,
    ▪ Most PFAS will break down completely at incineration temperatures around 1,500 degrees Celsius (2,730 degrees Fahrenheit), but its energy intensive and suitable incinerators are scarce.

# 17. Ural River

**Why In News?**

- Recently, Russia declared an emergency in the **Orenburg region near**

**Kazakhstan** after the **Ural River (Europe's third longest river)** burst

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through a dam embankment in the city of Orsk.

**About the Ural River**
- It originates in the **southern Ural Mountains.**
- It embarks on a journey of 2,428 kilometres, making it the **third-longest river in Europe** after the Volga and the Danube.



- It flows south along the eastern flank of the Ural Mountains, passing through **cities like Magnitogorsk.** At Orsk, it cuts westward across the southern end of the Urals, past Orenburg, and turns south again across a lowland of semi-desert to **enter the Caspian Sea at Atyraū.**
- It is historically known as the Yaik, is a significant geographical feature that courses through Russia and Kazakhstan.
- It serves as a **natural boundary between Europe and Asia**, marking it as a geographical landmark of immense importance.

**Economic Importance**
- The Ural River provides a **natural waterway** that supports trade and transportation.
  o The river is navigable up to the **city of Oral in Kazakhstan**.
- Furthermore, a **dam and hydroelectric station** have been built at **Iriklinsky,** south of Magnitogorsk, harnessing the river's power for energy production.

# 18. Catastrophic Soil Erosion

**Why In News?**
- Recently, a study *'Geospatial modelling and mapping of soil erosion in India'* classified soil erosion on a pan-India basis **for the first time.**

**About Soil Erosion:**
- The **destruction of the soil cover** is described as soil erosion.
- It involves the breakdown, detachment, transport, and redistribution of soil particles by forces of water, wind, or gravity.
- **Agents : Wind and water** are powerful agents of soil erosion because of their ability to remove soil and transport it.
  o **Wind erosion** is significant in arid and semi-arid regions.
  o **Erosion by running water** is more significant in regions with heavy rainfall and steep slopes.
- **Sheet erosion** takes place on level lands after a heavy shower, and removes the finer and more fertile topsoil.

- **Gully erosion** is common on steep slopes.
  o Gullies deepen with rainfall, cut the agricultural lands into small fragments and make them unfit for cultivation.
- According to **Indian Council of Agricultural Research (ICAR)**, the extent of soil erosion, defined as soil loss more than 10 tonnes per hectare per year, in cultivable land of the country was 92.4 million hectares.

**The Extent of the Problem:**
- The study came up with **six classifications** for soil erosion — ranging from **'minor' to 'catastrophic'** — in terms of soil eroded in tonnes over a hectare over a year.
- It reveals that nearly 30% of India's landmass is experiencing minor soil erosion, while a critical 3% faces catastrophic topsoil loss.
  o A region would be **classified as 'catastrophic'** if it reports over 100

tonnes of soil lost to erosion over a hectare during a year's time.

**About Topsoil:**
– It is the uppermost layer of soil, and is vital for agriculture as it **holds nutrients and moisture** essential for plant growth.

> **Catastrophic Soil Erosion:**
> ● It refers to a severe level of soil degradation where the **topsoil layer is extensively removed.**

– The organic materials have got incorporated with the mineral matter, nutrients and water, which are necessary for the growth of plants.
   a. Erosion significantly reduces fertility and can lead to decreased crop yields.
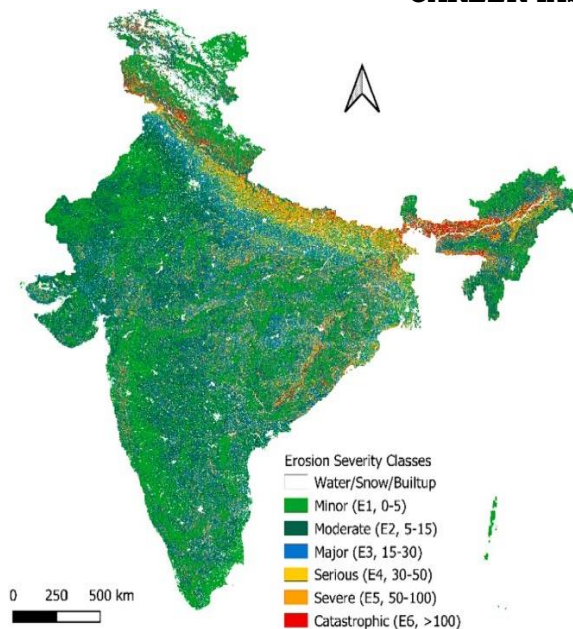
**The Worst-Affected Region:**
● **Brahmaputra Valley in Assam:** It is the biggest hotspot for soil erosion in India**.**
   o Data shows that the northeastern state of Assam lost close to 300 square kilometres or 31% of its surface soil to catastrophic erosion.
   o It has severe implications for the state's agriculture and the livelihoods of its people.
● **Lower reaches of the Himalayas:** These regions are characterised by moraine or loose soil and highly unstable slopes. It spans from the Kashmir Valley to the southern regions of Himachal Pradesh and Uttarakhand and extends across the border into Nepal and parts of Odisha.
● **Odisha,** which differs markedly from the Himalayas and the Brahmaputra valley in terms of topography and biodiversity, is also another hotspot for 'catastrophic' erosion.
● This region stands as one of the **most prominent erosion hotspots** in the country, exacerbated by its susceptibility to **seismic activity or earthquakes.**



Erosion Severity Classes
- Water/Snow/Builtup
- Minor (E1, 0-5)
- Moderate (E2, 5-15)
- Major (E3, 15-30)
- Serious (E4, 30-50)
- Severe (E5, 50-100)
- Catastrophic (E6, >100)

0   250   500 km

**The Impact of Soil Erosion:**
● Soil erosion of this magnitude has far-reaching consequences. According to the **Food and Agriculture Organization (FAO)** of the United Nations, it could take up to 1,000 years to produce 2 to 3 centimetres of topsoil.
   o It means that the land lost to erosion will take centuries to regain its fertility.
● The loss of soil not only affects the fertility of the land but also leads to a decrease in the water-holding capacity of the soil, affecting the overall ecosystem.
   o The increasing soil erosion is detrimental to the region's globally important biodiversity.

**The Need for Action:**
● The findings of this study underscore the urgent need for action. India needs a comprehensive strategy to combat soil erosion, which includes both preventive measures and efforts to restore eroded lands.
● Without such measures, the country's agricultural productivity could be severely impacted, threatening food security and rural livelihoods.

**Conclusion:**
● The study provides valuable insights into the extent and severity of soil erosion in India. It underscores the

urgent need for strategies to prevent soil erosion and restore degraded lands.

addressing soil erosion must be a top priority.

- As the country strives to achieve its sustainable development goals,

# 19. Water Rationing

## Why In News?

- Bogota, one of the highest capital cities in the world, started water rationing.

## What is Water Rationing?

- Water rationing is the act of limiting everyday water use when the resource is in scarce supply.
- It is a temporary suspension of water supply, or reduction of pressure below that required for adequate supply under normal conditions.

## About Bogota

- Bogotá is Colombia's sprawling, high-altitude capital.



- Bogota is located on a plateau in the **Andes** known as the **Altiplano Cundiboyacense.**

# 20. Volcanic Vortex Rings

## Why In News?

- Recently, **Mount Etna**, one of the most active volcanoes in the world, has been sending up almost perfect rings of smoke into the air, termed as 'volcanic vortex rings'.

## About the Volcanic Vortex Rings:

- These are generated when gas, *predominantly water vapour*, is released rapidly through a vent in the crater.
- The vent that has opened up in Etna's crater is *almost perfectly circular*.



- These rings are produced roughly in the same way as the smoke rings that some

cigarette smokers are able to blow out of their mouths.

## The History of Volcanic Vortex Rings:

- The phenomenon of volcanic vortex rings was **first observed at Etna and Vesuvius in Italy in 1724**.
- In more recent times, volcanic vortex rings have been observed at volcanoes such as *Redoubt in Alaska, Tungurahua in Ecuador, Pacaya in Guatemala, Eyjafjallajökull and Hekla in Iceland, Stromboli in Italy, Aso and Sakurajima in Japan, Yasur in Vanuatu, Whakaari in New Zealand, and Momotombo in Nicaragua.*

## Significance:

- Volcanic vortex rings provide valuable information about the volcano's activity.
- Scientists can study these rings to gain insights into the volcano's gas emissions, which can help predict future eruptions.

| Mount Etna: |
|---|
| – It is an **active volcano on the east coast of Sicily**, the largest island in the **Mediterranean Sea.** |

- Etna's peak is the highest in Italy south of the Alps, and it is Europe's largest and one of the most active volcanoes.
- Its summit has **five craters**, which are responsible for most of the volcano's eruptions.
  a. There are also **'flank' eruptions** that occur out of 300-odd vents of varying sizes along the slopes of the mountain.
- Etna is in almost constant activity, and has seen, since the year 1600, at least 60 flank eruptions and many more summit eruptions.
- It has been a **UNESCO World Heritage Site** since 2013.

# 21. Sustainable Hydrogel to Remove Microplastics

**Why In News?**
Researchers at the Indian Institute of Science (IISc) have designed a sustainable hydrogel to remove microplastics from water.

**About Sustainable hydrogel**
- The sustainable hydrogel has a **unique intertwined polymer network** that can **bind the contaminants** and **degrade** them **using UV light irradiation**.
- It consists of three different polymer layers – **chitosan, polyvinyl alcohol and polyaniline** – intertwined together, making an interpenetrating polymer network (IPN) architecture.
  o The team infused this matrix with nanoclusters of a material called **copper substitute polyoxometalate (Cu-POM)**.
  o These nanoclusters are catalysts that can use UV light to degrade the microplastics.

  o The combination of the polymers and nanoclusters resulted in a strong hydrogel with the ability to adsorb and degrade large amounts of microplastics.
- The **hydrogel was found to be highly efficient –** it could remove about **95% and 93% of two different types of microplastics** in water at near-neutral pH (~6.5).

**Do you know?**
- Microplastics are small plastic pieces less than five millimeters long which can be harmful to our ocean and aquatic life.
- They pose a great threat to human health as these tiny plastic debris can enter our bodies through the water we drink and increase the risk of illnesses.
- They are an environmental hazard and found even in remote areas such as polar ice caps and deep ocean trenches, endangering aquatic and terrestrial lifeforms.

# 22. Global Greenhouse Gas (GHGs) Levels

**Why In News?**
- Recently, the National Oceanic and Atmospheric Administration (NOAA) revealed that global carbon dioxide levels reached a record high in 2023.

**About the Carbon Dioxide (CO2):**
- It is an important **heat-trapping gas**, also known as a *greenhouse gas,* that comes from the extraction and burning of *fossil fuels (such as coal, oil, and natural gas),* from wildfires, **natural processes like volcanic eruptions**, and **land use changes** like deforestation, peat emissions, and agricultural activities.
- Since the onset of industrial times in the 18th century, human activities have raised atmospheric CO2 by 50% – meaning the amount of CO2 is now 150% of its value in 1750.

**ATMOSPHERIC CARBON DIOXIDE**
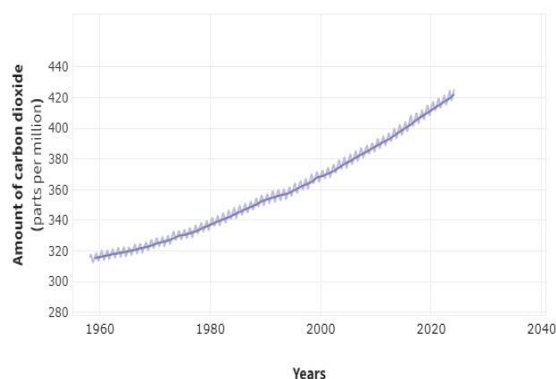
- This human-induced rise is greater than the natural increase observed at the end of the last ice age 20,000 years ago.

**Global Carbon Dioxide Levels (Current Status):**
- The global average atmospheric carbon dioxide was 419.3 parts per million (ppm) in 2023, which is more than 50% higher than pre-industrial levels.
  - This increase was the third-largest in the last decade.
- The increase between 2022 and 2023 was 2.8 ppm — the 12th year in a row where the amount of carbon dioxide in the atmosphere increased by more than 2 ppm.
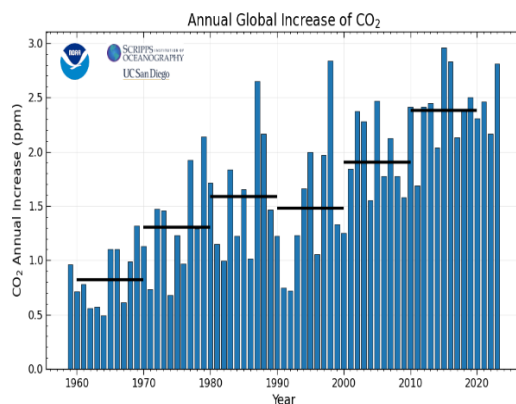
- The 2023 increase was the third-largest in the last decade and is likely a result of an ongoing increase of fossil fuel carbon dioxide emissions, coupled with increased fire emissions possibly as a result of the transition from La Nina to El Nino.
  - El Nino and La Nina are the warm and cool phases of a recurring climate pattern across the tropical Pacific called the El Nino-Southern Oscillation (ENSO).
- In March 2024, the CO2 levels at Mauna Loa Observatory, Hawaii, were recorded at 425.38 ppm, up from 420.99 ppm in March 2023.
  - It has the longest record of direct measurements of CO2 in the atmosphere.

**Global Methane Levels (Current Status):**
- **Methane** is emitted during the *production and transport of coal, natural gas, and oil.*
  - Methane emissions also result from *livestock and other agricultural practices, land use*, and by the *decay of organic waste in municipal solid waste landfills.*
- Despite being **less abundant than CO2**, **Methane is more potent** at trapping heat in the atmosphere.
- Methane levels in the atmosphere are now more than **160% higher than their pre-industrial level**.
  - It first rose in the 1980s, and nearly stabilised in the early 2000s before rapidly increasing again in 2007.

- o It went up to an average of 1922.6 parts per billion (ppb) in 2023 — a 10.9 ppb jump over 2022.
  - o The year 2023 marked the fifth-highest since 2007.
- More than 85% of the increase from 2006 to 2021 was due to increased microbial emissions generated by livestock, agriculture, human and agricultural waste, wetlands and other aquatic sources.
  - o The rest could be coming from fossil fuel emissions.

## Global Nitrous Oxide Levels (Current Status):

- Nitrous oxide is emitted during *agricultural, land use, and industrial activities*; combustion of fossil fuels and solid waste; as well as during treatment of wastewater.
- It is the third-most significant human-caused greenhouse gas, and its concentrations are 25% higher than the pre-industrial level of 270 ppb.
  - o The current levels climbed by 1 ppb to 336.7 ppb in 2023.
- This increase in recent decades is being traced back to the use of nitrogen fertiliser and manure from the expansion and intensification of agriculture.

## Impact of Rising Levels:

- Without carbon dioxide, Earth's natural greenhouse effect would be too weak to keep the average global surface temperature above freezing.
  - o By adding more carbon dioxide to the atmosphere, people are supercharging the natural greenhouse effect, causing global temperature to rise.
- The rising CO2 levels have put us in a precarious position, mirroring atmospheric conditions from the **Pliocene epoch**, a period roughly 4.3 million years ago.
- During that geological period, sea levels were approximately 23 metres higher than today, and the average temperature was higher than in pre-industrial times.

- If the current level of emissions persists, there is a 50% chance that global warming of 1.5°C will be exceeded in nine years.
  - o This is the opposite trend needed to reverse climate change.

## Conclusion:

- $CO_2$ is the single most important greenhouse gas leading to human-induced climate change.
- Although other GHGs are more powerful per molecule in warming the planet than $CO_2$, the $CO_2$ emissions stay in the atmosphere for hundreds to thousands of years, making $CO_2$ the biggest challenge in combating climate change.
- The increasing levels of carbon dioxide in our atmosphere are a clear indication of the urgent need for action.
- The data from NOAA highlight the critical state of earth's carbon cycle and underscore the importance of reducing greenhouse gas emissions.

**Do you know**
- India submitted its Third National Communication (TNC) and Initial Adaptation Communication to the United Nation's Framework Convention on Climate Change (UNFCCC) in December 2023.
- India's net national emissions in 2019 stood at 2.6 billion tonnes of carbon dioxide equivalent (CO2e), marking a 4.56 per cent increase from 2016 levels and a 115 per cent increase since 1994, according to TNC.
- Carbon dioxide continues to remain the most emitted GHG, comprising 79 per cent of total emissions in 2019.
- India's updated Nationally Determined Contributions are to be implemented over the period of 2021-2030, and they include:
  a. Reduction of emissions intensity of its GDP by 45 per cent by 2030 compared to 2005 level
  b. Achievement of 50 per cent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030

## 23. India to Get above-normal Monsoon Rainfall: IMD

**Why In News?**
- Recently, India Meteorological Department (IMD) has forecast 'above normal' rains in the country after a gap of eight years.

**About the Monsoon Forecast:**
- The IMD has predicted that the country will receive **106% of the long-term average rainfall (LPA)** this season, with a **model error of approximately 5%**.
- The LPA for the period between June and September is 87 centimetres (870 mm), and is calculated as the average rainfall between 1971-2020.
  - By this calculation, it means that there would be 92.2 cm of rainfall across India.

**About IMD**
– It is an agency of the **Ministry of Earth Sciences**.
– It is the principal agency responsible for meteorological observations, weather forecasting and seismology.
– It is also one of the **six Regional Specialised Meteorological Centres** of the **World Meteorological Organisation (WMO)**.
– It releases the long range forecast in two stages in April and June.

**IMD Categorisation Method of Monsoon:**
– **Long Period Average (LPA):** LPA of rainfall is the rainfall recorded over a particular region for a given interval (like month or season) averaged over a long period like 30 years, 50-years etc.
  a. It acts as a benchmark while forecasting the quantitative rainfall for that region for a specific month or season.

**Categories of Rainfall**
– Large Excess: ≥60% of LPA.
– Excess: 20% to 59% of LPA.
– Normal: -19% to +19% of LPA.
– Deficient: -59% to -20% of LPA.
– Large Deficient: – 99% to -60% LPA.

**Predicting the Monsoon**
– Monsoon season is from June to September in India as a whole, the long period average (LPA) is 88 cm and standard deviation is 9 cm (about 10% of mean value).
– Therefore, when the rainfall averaged over the country as a whole is within ±10% from its LPA or 90% to 110% of LPA, the rainfall is said to be **'normal'** and when the rainfall is <90% of LPA it is considered to be **'below normal'** and when it is >110% of LPA, the rainfall is said to be **'above normal'**.

**Factors Influencing the Forecast**
- **Retreat of El Nino, and Favourable La Nina Conditions:** El Nino conditions, currently prevailing over the equatorial Pacific region and generally responsible for warmer temperatures in many places around the world including in India, were likely to weaken to neutral **El Nino Southern Oscillation (ENSO)** conditions during the early part of the monsoon season.
  - The warming phase of the ENSO cycle is known as El Nino and its cooling phase as La Nina.
- **La Nina** conditions are likely to develop during the second half of monsoon season.
  - It is characterised by the unusual cooling of the central and east-central equatorial Pacific Ocean.
- Other key factors influencing the Indian monsoon are *Positive Indian Ocean Dipole (IOD), and Reduced Snow Cover in the Northern Hemisphere.*

**Indian Monsoon**
– The term 'monsoon' is derived from the **Arabic word 'mausim'**, which means season. Monsoons are characterised by a **seasonal reversal of wind direction.**
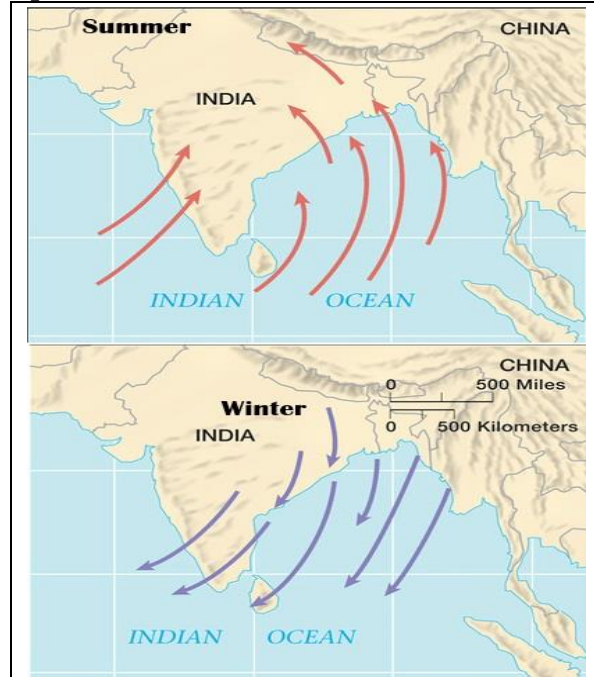
– The onset and retreat of the monsoon have profound implications for the country's climate, agriculture, and economy.

**Monsoon Onset (Arrival):**

– The winds blow from the **South-West** during the summer months (June to September).
– It typically arrives in the southern state of Kerala around the first week of June and gradually progresses northwards, covering the entire country by mid-July.
– The **IMD** officially declares the onset of the monsoon *based on specific criteria, including rainfall, wind field, and Outgoing Longwave Radiation (OLR) values*.

**Monsoon Progress:**

– After its onset over Kerala, the monsoon progresses northwards and covers the entire country in about a month and a half.
– The progress of the monsoon is closely monitored as it has significant implications for agriculture, particularly the **sowing of kharif (monsoon) crops**.

**Monsoon Retreat (Withdrawal):**

– It marks the transition from the rainy season to the dry winter season.
– The monsoon **begins to retreat from the northwestern states** of India around early September and withdraws completely from the country by early October.
– The retreat of the monsoon is not as abrupt as its onset.
   a. It's a more gradual process, with the monsoon maintaining its presence over the southern and northeastern parts of the country well into October.

**Impact on Agriculture and Economy**

– The Indian summer monsoon plays a crucial role in India's agriculture and affects the livelihood of a fifth of the world's population.
– About 80% *(about 70% from south – west branch of monsoon)* of the annual precipitation over India occurs during the summer period, supplying water to crops during the prime agricultural season.
   a. The southwest monsoon Agriculture accounts for about 14% of the country's GDP.

## 24. Science Based Targets initiative (SBTi)

**Why In News?**
- The SBTi recent declaration of allowing companies to utilize carbon offsets to fulfill their climate commitments has gathered widespread criticism

**About**
- **The Science Based Targets initiative (SBTi)** is a corporate climate action organization that enables companies and financial institutions worldwide to play their part in combating the climate crisis.
- SBTi perform various function such as;
  - **Defines and promotes best practice** in emissions reductions and net-zero targets in line with climate science.
  - **Develops standards, tools and guidance** to enable companies and financial institutions to set science-based targets in line with the latest climate science.
  - Through its validation services arm, it assesses and validates companies and financial institutions targets.

**What is a carbon offset?**
- A carbon offset refers to a way by which organizations or individuals can **cut down on their carbon dioxide emissions** from the atmosphere.
- These reductions are achieved through projects that either **capture and store carbon or prevent emissions** from occurring in the first place, such as through renewable energy projects, reforestation initiatives, and methane capture from landfills.
- Companies or individuals purchase carbon offsets to compensate for their own carbon emissions, thereby "offsetting" their environmental impact and contributing to climate change mitigation efforts.

## 25. Soil Acidification

**Why In News?**
- A study published in the journal Science found that soil acidification may strip billions of tonnes of essential carbon and affect crop growth in India.

**About the Soil Acidification**
- It is a process where the **soil pH decreases over time**, primarily due to the removal of base cations *(Calcium, Magnesium, Potassium, and Sodium)* from the soil and their replacement with acid-forming Hydrogen and Aluminium ions.
  - It is accelerated by intense agricultural activity and that can affect both the surface soil and subsoil.

**Causes of Soil Acidification**
- **Natural Phenomena:** Soils acidify naturally through processes of soil formation. Weathering of soil minerals yields H+ ions, causing a decreasing pH over time.
  - Even unpolluted rain has a naturally acid pH of roughly 5.6, and therefore contributes to the process of soil acidification.
- **Anthropogenic Causes:** Soils are turning acidic due to industrial activities and intensive farming.
  - The application of high levels of ammonium-based nitrogen fertilisers to naturally acidic soils and leaching of nitrate nitrogen, originally applied as ammonium-based fertilisers, are some of the contributing factors to soil acidification.
- The **other causes** of soil acidification are *long term rainfall, draining of potentially acid sulphate soils, acid deposition, excessive application of ammonium-based fertilisers, deforestation and land use practices* that remove all harvested materials.

**Extent of Soil Acidification**
- **Globally:** The future global warming and soil pH changes will deplete SIC in the top 0.3 m of soil by 1.35, 3.45 and 5.83 gigatonnes of carbon (GtC) under different scenarios, where temperatures

could likely reach around 1.8°C, 2.7°C and 4.4°C warming by 2100, respectively.

- o Further, every year, approximately 1.13 billion tonnes of inorganic carbon are lost from soils to inland waters.
- o It could have overlooked implications for carbon transport between the land, atmosphere, freshwater and ocean.
- **In India:** Over 30% of cultivable land is said to carry acidic soil, impacting plant growth in India, affecting about 48 million hectares (mha) out of 142 mha of arable land.
  - o Acidic soils in India are widespread in the humid southwestern, northeastern and Himalayan regions.
  - o The northeastern region, in particular, has recorded acidity in approximately 95% of the soils.

## Impact of Soil Acidification

- Soil acidification creates an environment ripe for depletion of **soil inorganic carbon (SIC)**, which is important for soil health, ecosystem services, among others.
- Acidic soils affect crop growth and productivity by reducing the availability of plant nutrients.
  - o It also predisposes plants to other biotic and abiotic stress factors.
  - o Excessively acidic soils may lead to a dramatic decline in crop and pasture production because the pH of the soil changes the availability of soil nutrients.
- **In India**, soil acidification might lead to the loss of 3.3 billion tonnes of soil inorganic carbon (SIC) from the top 0.3 metres of its soil over the next 30 years.
  - o It could hurt the health of soil and its ability to regulate nutrient levels, foster plant growth and store carbon.

**Do you know?**
- Carbon in soil can be stored in the form of **Soil Inorganic Carbon (SIC) or Soil Organic Carbon (SOC).**
  - A. **SIC** includes mineral forms of carbon like calcium carbonate produced by weathering parent material in soil or from the reaction of soil minerals with atmospheric carbon dioxide.
  - B. **SOC** plays a role in nutrient cycling, is the main component of soil organic matter such as plant and animal waste, microbes and microbial byproducts.

## Efforts to Improvement of Acidic Soil (Amelioration)

- **Sustainable methods** to lower soil acidity like compost and wood ash mix (rich in potassium) in acidic soil.
- **Management strategies** like achieve a high rate of crop recovery of applied nitrogen and sulphur fertilisers, and minimise leaching of nitrate-N by applying appropriate amounts of nitrogen fertiliser in a timely manner relative to crop need and with good irrigation management.
- **Liming**: It is carried out using any liming material **capable of neutralising soil acidity** and these materials are usually oxides, hydroxides and carbonates of Ca and Mg.

## Government Efforts

- **Soil Health Card Scheme:** It provides farmers with information about the nutrient status of their soil, which helps them apply appropriate inputs to improve soil health and fertility.
  - o It contains the status of soil with respect to 12 parameters, namely N, P, K (Macronutrients); S (Secondary nutrient); Zn, Fe, Cu, Mn, Bo (Micro – nutrients); and **pH**, Electrical Conductivity (EC), Organic Carbon (OC) (Physical parameters).
- **Paramparagat Krishi Vikas Yojana:** It promotes organic farming, which can help reduce soil acidity by improving soil organic matter.
- **Neem Coating of Urea:** The government has mandated the neem coating of urea, a chemical fertiliser.
  - o It reduces the speed at which urea dissolves, thus ensuring that it is absorbed by plants and does not degrade the soil.
- **Save Soil Movement:** It focuses on five main things:
  - o making the soil chemical-free;
  - o saving the organisms that live in the soil;

o maintaining soil moisture;
o removing the damage happening to the soil due to less groundwater; and
o stopping the continuous erosion of soil due to the reduction of forests;

**Conclusion**
- Soil acidification is a significant environmental issue that needs immediate attention.

- It not only affects the health of the soil and its productivity but also has far-reaching impacts on the ecosystem and the livelihoods of the people dependent on agriculture.
- As we continue to grapple with this issue, it becomes imperative to adopt sustainable agricultural practices and effective soil management strategies to mitigate the impacts of soil acidification.

# 26. Renewable Energy Capacity of India

**Why In News?**
- According to the Ministry of New & Renewable Energy (MNRE), India has added 21% higher renewable energy capacity in 2023-24 than previous year.

**About the Renewable Energy Capacity in India**
- India, a country with a rapidly growing economy and increasing energy demands, has made significant strides in its renewable energy sector.
  o It added 18.48 GW of renewable energy capacity in the fiscal year 2023-24, which is over 21% higher than the 15.27 GW added a year ago.
- It was **primarily driven by solar installations** (12.78 GW) and **wind energy** (2.27 GW).
- The total installed renewable energy capacity has increased from **76.37 GW in 2014 to 178.98 GW in October 2023**, marking an increase of around 2.34 times.

**Leading States in Renewable Energy**
- **Gujarat and Rajasthan (27 GW each)** have the largest renewable energy capacities, followed by Tamil Nadu (22 GW), Karnataka (21 GW) and Maharashtra (17 GW).
- Himachal Pradesh and Andhra Pradesh (11 GW each) have installed renewable energy capacity.

**India Towards a Greener Future:**
– India aims to reach a non-fossil fuel energy capacity of **500 GW by 2030** and fulfil at least half of its energy requirements via renewable energy by 2030 **at the COP26**.
  a. To achieve this ambitious target, the

MNRE is targeting the bidding of around 50 GW of renewable energy projects per annum.
– India's **installed non-fossil fuel capacity** has **increased 396% in the last 8.5 years** and stands at more than 190.97 GW (including large Hydro and nuclear), about 44% of the country's total capacity *(as of Feb 2024)*.
– India's renewable energy sector has the potential to employ around one million people by 2030, and most of the new jobs would be generated by **small-scale renewable energy projects.**

**Challenges Faced by the Renewable Energy Sector in India**
- **Financial Health of Power Distribution Companies (DISCOMs):** The poor financial condition of power distribution companies (discoms), which are mostly owned by state governments.
  o Almost all renewable energy is purchased by such discoms, resulting in very long and unsustainable payment cycles.
- **Land Utilisation and Availability:** Issues such as lack of a proper **Land Utilisation Policy**, poorly maintained land records, land ceiling limits, and the task of obtaining permissions from local bodies act as roadblocks to the implementation of large-scale renewable energy projects.
- **Rapid Demand Growth and Chronic Supply Shortages:** India currently experiences a significant increase in energy demand driven by rapid economic growth, which necessitates a shift away from fossil fuels.

o However, fossil fuels still dominate global energy consumption, continuing to raise GHG emission levels.

## Government Efforts in India's Renewable Energy Sector

- **Permitting FDI:** India has permitted FDI up to 100% under the automatic route to attract foreign investments.
- **Waiver of Inter State Transmission System (ISTS) charges:** For inter-state sale of solar and wind power for projects, ISTS charges have been waived off.
- **Major Renewable Energy Schemes and Programmes:**
  o Scheme for Development of Solar Parks and Ultra-mega Solar Power Projects;
  o Central Public Sector Undertaking (CPSU) Scheme Phase-II;
  o Production Linked Incentive (PLI) Scheme 'National Programme on High Efficiency Solar PV Modules';
  o PM-KUSUM Scheme;
  o Rooftop Solar Programme Phase II;
  o Green Energy Corridors (GEC), and;
  o Bio-Energy Programme.
- **Increasing Awareness:** Efforts have been made by the Government to increase awareness about the use of renewable energy through introduction of various schemes and publicity through print and media.

## Conclusion:

- India's record addition of renewable energy capacity in FY24 is a testament to the country's commitment to a sustainable and green future.
- As the world grapples with the challenges of climate change, India's strides in renewable energy offer a beacon of hope and a model for other countries to follow.

## 27. Jiadhal River

### Why In News?

- Excessive rainfall, caused by changing climate, has triggered unprecedented shifts in the course of the Jiadhal river.

### About

- **The Jiadhal River** is a northern sub-tributary of the Brahmaputra River in the Indian state of Assam.
- The river originates from the hills of **Arunachal Pradesh.**

- The Jiadhal river flows through the Dhemaji district of Assam and takes the name of **Kumotiya River** from Gogamukh.
- The river finally joins **Subansiri river,** a major tributary of Brahmaputra River.
- Jiadhal River is known as **'Sorrow of Dhemaji'** for the heavy damage caused by annual flood and erosion.

## 28. Green Credit Programme (GCP)

### Why In News?

- Recently, the Union Environment Ministry has made significant changes to the Norms of the Green Credit Programme.

### About the Green Credit Programme (GCP)

- It is an innovative initiative launched by the **Ministry of Environment, Forest and Climate Change (MoEF&CC)** that was announced under the government's **'Lifestyle for Environment' or 'LiFE'** movement.
- It aims to create a market-based mechanism for incentivising *'voluntary*

*environmental actions'* by individuals, urban local bodies, communities and the private sector.
- It is designed **to incentivise voluntary environmental actions** across diverse sectors, by various stakeholders like individuals, communities, private sector industries, and companies.
- In its initial phase, the GCP focuses on **two key activities: water conservation and afforestation.**

### Implementation of the Programme

- The **GCP's governance framework** is supported by an inter-ministerial

Steering Committee and the Indian Council of Forestry Research and Education (ICFRE) serves as the GCP Administrator, responsible for **programme implementation, management, monitoring, and operation**.

- A user-friendly digital platform will streamline the processes for registration of projects, its verification, and issuance of Green Credits.
- The **Green Credit Registry and trading platform**, being developed by **ICFRE** along with experts, would facilitate the registration and thereafter, the buying and selling of Green Credits.
  - o To obtain Green Credits, individuals and entities must register their activities to the government.
  - o The Administrator will verify the activity through a designated agency, with self-verification for small projects.

### Impact of the Programme

- GCP aims to incentivise environmental positive actions through a market-based mechanism and generate green credit,

which shall be tradable and made available for trading on a domestic market platform.

- It adds that if generating green credits led to measurably reducing or removing carbon emissions, it could also be used to get carbon credits.

### Changes to the Programme

- Amid concerns that the GCP may encourage tree planting for financial gains, the government has clarified that **primacy must be accorded to restoring ecosystems** over merely tree planting.
  - o Preference would be given to indigenous species and naturally growing seedlings would be retained.
- The Ministry has changed the earlier requirement that there be a minimum of 1,100 trees per hectare to qualify as a reforested landscape and **left it to States to specify them.**
  - o The actual afforestation will be carried out by State forest departments.

## 30. Forests as National Asset: Supreme Court

### Why In News?

- Recently, the Supreme Court of India has asserted in a judgement that forests in India are a national asset and a major contributor to the nation's financial wealth.

### Forest as Financial Wealth and National Asset

- The **Supreme Court of India** has asserted that forests in India are a national asset and a major contributor to the nation's financial wealth.
  - o The judgement was based on an appeal filed by the **State of Telangana** against a **High Court decision 'graciously gifting' forest land** to a private person.

### Do You Know?

– The **Forest Conservation (Amendment) Act (2023)** is accused of giving a **free hand to States** to regularise encroachments in protected forests and determine diversions of forestlands.

– It has been criticised for paving the way for the commercial exploitation of forests, besides exempting infrastructural projects from environmental clearance.

- The Supreme Court observed that **India's forests serve as a major sink of carbon dioxide (CO2)**. The value of mitigation has put a conservative value of **US\$ 5 per tonne of CO2 locked in our forests** *(about 24,000 mt of CO2 is worth \$120 billion, or ₹6 lakh crores)*.
- According to the *'India's Forest and Tree Cover: Contribution as a Carbon Sink (2009)',* from '1995 to 2005, the carbon stocks stored in our forests and trees have increased from 6,245 million tonnes (mt) to 6,662 mt, registering **an annual increment of 38 mt of carbon** or 138 mt of CO2 equivalent'.

### Forest Resources in India

- India, with its diverse ecosystems, is rich in forest resources.

- The **Forest Survey of India (FSI)**, an organisation under the Ministry of Environment, Forest and Climate Change (MoEF&CC) is responsible for the survey and assessment of forest resources in the country.

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**Forest Survey of India (FSI)**
– Established in 1981, the FSI succeeded the **'Pre-investment Survey of Forest Resources (PISFR)'**, a project initiated in 1965 by India with the help of the **Food and Agriculture Organisation** (FAO)/**United Nations Development Programme (UNDP)**.
– The FSI's **principal mandate** is to conduct a survey and assessment of forest resources in the country.
– The FSI's activities include nationwide forest cover mapping in a **biennial cycle** using **remote sensing techniques**, **national forest inventory, forest fire monitoring**, and many projects based on geospatial techniques and inventory.
– It assesses **forest carbon** to be reported to the United Nations Framework Convention on Climate Change (UNFCCC).
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**Forest Cover in India**
- The FSI's reports identify **63 million hectares of potential areas for restoration** across different categories, namely, **open forest,** recently impaired forests, cultural wastelands, agro-forestry plantations, and potential for plantations along roads and railway tracks.
- The **National Forest Policy of India (1988)** envisaged a **goal of achieving 33%** of the geographical area of the country under forest & tree cover.
  o The remote sensing-based nationwide Forest Cover mapping at a biennial interval serves as a monitoring mechanism towards the achievement of this goal.
- Forests in India cover about **24.62% of the country's land area** *(including tree cover)* and are some of the most biodiverse forests in the world.
- They provide a range of important ecosystem services, such as protecting against soil erosion, regulating the water cycle, and serving as a home for a wide variety of plant and animal species.

**Community Forest Resources**
- These play a crucial role in supporting rural livelihoods.
- An **estimated 200 million forest-dependent people** collect several valuable products from India's forests.
- These are used as **raw materials in diverse industries**, such as *processed foods and confectionery, pharmaceuticals, alternative medicine, cosmetics and perfumery, and paper and pulp.*

**Ecological Importance**
- Forests are often referred to as the 'green lungs' of the nation by providing various ecological services like *clean air, water, maintenance of soil-moisture regime by checking soil erosion, preserving biodiversity, checking global warming and climate change* by sequestering carbon dioxide.

**Social Importance**
- Forests provide habitats to diverse animal species and form the source of livelihood for many different human settlements.
- They offer watershed protection, timber, and non-timber products.
  o Over 1.6 billion people depend on forests for food or fuel.

**Conservation Efforts**
- India has developed a strong legal and policy framework for the forestry sector for sustainable forest governance through the *National Forest Policy, 1988, Indian Forest Act, 1927, Forest (Conservation) Act, 1980, and Wildlife (Protection) Act, 1972.*
- The **National Forest Policy** sets a strategy of forest conservation with the principal aim of ensuring environmental stability and maintenance of ecological balance by bringing a minimum of one-third of the total land area of the country under forest or tree cover.

**Conclusion**
- India's forest resources are a vital part of the country's ecological and economic wealth.

- The Supreme Court's judgement underscores the importance of forests as a national asset and a significant contributor to the nation's financial wealth.

- It highlights the need for effective forest conservation policies and strict enforcement to protect and preserve these valuable resources.

# 31. Fourth Global Mass Coral Bleaching

**Why In News?**
- The National Oceanic and Atmospheric Administration (NOAA) revealed the fourth global **mass coral bleaching** event has started due to ocean temperatures.

**About**
- The first mass bleaching took place in 1998 in which 20% of the world's reef areas suffered bleaching-level heat stress.
- The next two global bleaching events occurred in 2010 (35% of reefs affected) and between 2014 and 2017 (56% of reefs affected).
- The fourth global bleaching event is currently underway. Nearly 54 countries, territories and local economies — from Florida, the US, Saudi Arabia to Fiji — have confirmed bleaching.

**Reason for Rising Temperature & Bleaching**
- The primary reason behind the soaring temperatures is the **rising emissions of heat-trapping greenhouse gases (GHGs)** such as carbon dioxide and methane in the atmosphere. Nearly 90% of the extra heat trapped by GHGs has been absorbed by the oceans.
- The rise in temperature has been exacerbated by **El Niño**, a weather pattern which is associated with warmer oceans.
- Coral Bleaching could have serious consequences for ocean life and millions of people who rely on reefs for food, jobs, and coastal defence.

**What are Coral & Coral Reefs?**
- Corals are essentially animals, which are sessile, meaning they permanently attach themselves to the ocean floor.
- Each individual coral animal is known as a polyp and it lives in groups of hundreds to thousands of genetically identical polyps that form a 'colony'.
- Corals are largely classified as either **hard coral or soft coral**. It is the hard corals that are the architects of coral reefs.
- Unlike soft corals, hard corals have stony skeletons made out of limestone that are produced by coral polyps. When polyps die, their skeletons are left behind and used as foundations for new polyps.
- **Geographical Conditions: Temperature: 20°C- 35°C; Salinity: Between 27% to 40%**. Coral reefs grow better in shallow water; less than 50 m.
- **Australia's Great Barrier Reef (World Heritage Site)** is the largest in the world, stretching across 2,028 kilometers.
- **Coral reefs in India:** Gulf of Kutch, Gulf of Mannar, Andaman & Nicobar, Lakshadweep Island and Malvan.

**Coral Bleaching**
- Most corals contain algae called **zooxanthellae** — they are plant-like organisms — in their tissues. Corals and zooxanthellae have a **symbiotic relationship.**
- While corals provide zooxanthellae a safe place to live, zooxanthellae provide oxygen and organic products of photosynthesis that help corals to grow and thrive. Zooxanthellae also give bright and unique colours to corals.
- Corals are very sensitive to light and temperature and even a small change in their living conditions can stress them. When stressed, they **expel zooxanthellae and turn entirely white**. This is called **coral bleaching.**
- Coral bleaching doesn't immediately lead to the death of corals. Coral bleaching reduces the reproductivity of corals and makes them more vulnerable to fatal diseases.

- Global mass bleaching of coral reefs is when significant coral bleaching is confirmed in the Atlantic, Indian and Pacific oceans.



## Importance of Corals

- Coral reefs, also referred to as "rainforests of the sea", have existed on the Earth for nearly 450 million years.

- Thousands of marine species can be found living on one reef.
- These massive structures also provide economic goods and services worth about $375 billion each year. More than 500 million people across the world depend on coral reefs for food, income and coastal protection from storms and floods.
- Coral reefs can absorb up to 97% of the energy from waves, storms, and floods, which prevents loss of life, property damage, and soil erosion.

## Way Ahead

- To curb global warming to no more than 1.5 degree Celsius, countries need to bring GHG emissions to a net zero by 2050, according to the Paris Agreement.
- Steps needed in direction of Climate resiliency (Paris agreement, SDG 8 & 12)
- R & D for heat resistant corals.

# 32. Olive ridley Sea Turtles

## Why In News?

- Recently, there was a media highlight that the annual mass nesting of Olive Ridley turtles near the Rushikulya river mouth has been delayed by over a month compared to the previous year.

## Olive Ridley Sea Turtles (*Lepidochelys Olivacea*)

- **Location**: Found in warm waters of the Pacific, Atlantic and Indian oceans.
- Known for their unique mass nesting called **Arribada** (which means 'arrival by the sea' in Spanish), where thousands of females come together on the same beach to lay eggs.

**Sea Turtles in India:**
- *Leatherback;*
- *Loggerhead;*
- *Hawksbill;*
- *Green; and*
- *Olive Ridley.*

- They hatch in 45 to 60 days.
- **Gender:** determined by the temperature at which they are hatched.
  - A male turtle is born if the egg hatches at a temperature below 29 degrees Celsius.
  - Above that, the hatchling is a female.
- **Features:**
  - One of the smallest sea-turtles on the earth.
  - Olive green colour of their shell.
  - They can grow up to two-and-a-half feet in length and weigh 30-45 kilograms.
- **Food:** Mainly shrimp, crab, molluscs, fish and crabs.
- **Nesting Sites:**
  - Rushikulya rookery coast (Odisha),
  - Gahirmatha beach (Bhitarkanika National-park) and
  - Mouth of the Devi River.

## Threats:

- More frequent and intense flooding and cyclones
- Sex ratio is getting skewed because of global warming.
- Hunted for meat, shell
- Anthropogenic factors like fishing trawlers etc.

## Conservation Status:

- **IUCN Red List:** *Vulnerable*

- **Wildlife (Protection) Act, 1972:** Schedule I
- **CITES:** Appendix I

## 33. World Earth Day

### Why In News?
- **World Earth Day,** also known as **International Mother Earth Day, is Celebrated annually on April 22.**

### About
- It is a globally recognised event dedicated to **raising awareness and promoting the sustainability of the planet.**
- **Origin:** The concept of Earth Day can be traced back to the late **1960s**, which saw a surge in public debate over environmental issues.
  - It was first celebrated across **US college campuses in 1970** —
months after a massive oil spill in Santa Barbara. The movement has since mobilised more than a billion individuals in over 192 countries.
- **Theme:** The themes for each Earth Day vary, focusing on different aspects of environmental protection and sustainability.
  - The theme for 2024 is **'Planet vs. Plastics.**
  - It highlights the threat plastics pose to the planet and human health, thereby calling an end to all plastic waste by demanding a **60% reduction in the production of plastics by the year 2040.**

## 34. Vietnamese Methods to Reduce Methane

### Why In News?
- Vietnamese rice farmers are pioneering new methods to cut down on **methane emissions.**

### Vietnamese Model of Rice Cultivation
- **Irrigation Methods:** Vietnamese Rice farmers are adopting a water-saving irrigation technique called alternate wetting and drying (AWD). AWD reduces methane emissions because it keeps paddies moist but not constantly flooded, unlike traditional methods.
- **Using Drones:** To save the labour costs they are opting drone technology.
- **Stubble Disposal:** Once crops are harvested, he no longer burns the rice stubble — a major cause of air pollution in Vietnam. Instead, it's collected by the Loc Troi Group for sale to other companies that use it as livestock feed and for growing straw mushrooms, a popular addition to stir-fries.

### Rice Cultivation & Climate Change
- Rice is a semi-aquatic plant **cultivated in flooded fields,** where it thrives under a layer of **stagnant water.**
  - This creates the **ideal anaerobic conditions** for bacteria to thrive on decomposing organic matter (mainly
rice straw residue) and **release methane.**
- Poor absorption by the rice plant of nitrogen-based fertilizers, often overused by farmers, leads to **nitrous oxide emissions.**
- This phenomenon contributes significantly to **global methane emissions,** with rice production alone accounting for approximately **10%** of these emissions worldwide.



Methane Emissions in Rice Farming

### India's Methane Emissions through Agriculture
- India's methane emissions in 2016 were 409 million tone CO2e of which, **73.96% was from Agriculture sector,** 14.46% from Waste sector,

10.62% from Energy sector and 0.96% was from Industrial Processes and Product Use sector.

- The two predominant sources of methane emissions in India are **enteric fermentation and paddy cultivation.**

**Measures to Reduce Methane Emissions**

- **National Mission on Sustainable Agriculture (NMSA):** This mission by the Ministry of Agriculture & Farmers Welfare promotes climate-resilient practices, including techniques that reduce methane emissions during rice cultivation.
- **Livestock Management:** The National Livestock Mission promotes practices that can reduce methane emissions from livestock. These practices include:
  - o Green fodder production
  - o Silage making
  - o Chaff cutting
  - o Total mixed ration feeding
- **Biogas Programs:** The New National Biogas and Organic Manure Programme (NNBOMP) and the Gobar-Dhan scheme encourage the use of biogas produced from cattle dung and organic waste.
- Though India has opted various measures, however, **India is not currently part of the Global Methane Pledge**, an international agreement to reduce methane emissions b**y 30% by 2030.**

## 35. Pulicat Lake

**Why In News?**

- Recently, there was a concern arising from the fact that the State government plans to denotify a sizable area of the Pulicat wetland and sanctuary.

**About the Pulicat Wetland**

- It is located in the **northern part of Tamil Nadu** and the **southern part of Andhra Pradesh**, is the **second-largest brackish water ecosystem in India**.
- The **Pulicat Ecosystem** supports a very rich and diverse biota and acts as a breeding ground for several species of bird and marine life.
- Pulicat Lake is a **biodiversity hotspot** that hosts around 250 species of birds, 50 of which are **intercontinental species.**
- The lake's **unique hydrology** and the presence of more **mangrove plantations** in its **eco-sensitive zone (ESZ)** make it a significant habitat for wildlife.
  - o It plays a crucial role in the **Central Asian Flyway** for birds.

## 36. Vultures

**Why In News?**

- Vultures, including those residing in protected areas, continue to remain at immense risk from **diclofenac, a painkiller** that is used for treating cattle.

**About**

- The drug was banned for use in veterinary practice across South Asia during the 1990s and early 2000s.
- In India, the use of diclofenac as a veterinary drug was banned in 2006.
- Besides diclofenac, the Indian government has also **banned ketoprofen** and aceclofenac, although they are still manufactured for human use.

**Vulture Population in India**

- India has **lost 99 per cent of the population** of the three species — **Oriental White-Backed Vulture**, **Long-billed Vulture** and **Slender-billed Vulture**.
- The **Red-headed and the Egyptian Vulture** populations have also crashed by 91 per cent and 80 percent respectively.
- There are 23 species of vultures found in the world out of which 9 species are found in India.

**Major Threats**

- Use of **Diclofenac**, **Lack of Nesting** Trees, **Electrocution** by power lines, Food Dearth and **Contaminated Food**, **Pesticide poisoning** also threaten vultures across the country.

- **Restoring the population** is an uphill task as vultures are slow breeders. If they become extinct, there will be a huge ripple effect.

## Importance of Vultures

- **Act as Natural Scavengers:** Feeding on the infected carcass=> Killing of Pathogens=> breaking the chain of infections.
- They prevent the **contamination of water sources.**
- Vultures are critically important to the **Parsi community**. The community leaves its dead atop the Towers of

Silence to be consumed by vultures. Now, they use solar accelerators**.**

## Conservation efforts

- Vulture Action Plan 2020-25
- Vulture Conservation Breeding Programme by Central Zoo Authority (CZA) & BNHS
- Banning of Diclofenac by Drugs Controller General of India
- India Signatory to Convention on Migratory Species
- In 2015, Tamil Nadu became the first state to ban the veterinary use of ketoprofen in Nilgiri, Erode and Coimbatore districts.

## 37. Vasuki Indicus

### Why In News?

- Researchers at the IIT Roorkee have reported the discovery of fossils of one of the largest snakes that ever existed on Earth.

### About

- The fossils were found in **Kutch, Gujarat**, and the reptile, named Vasuki Indicus, could have been anywhere between 10 meters and 15 meters long.
  o Vasuki refers to the mythical snake often depicted around the neck of the Hindu god Shiva.

- The reptile existed **47 million years ago** during a period called the **Middle Eocene,** when Africa, India and South America were one, conjoined landmass.
- It likely had a broad and **cylindrical body**, hinting at a robust and powerful build and was as big as **Titanoboa,** a massive snake that once roamed the earth and is reportedly the longest ever known.
- Much like present-day pythons and anaconda, Vasuki Indicus killed its prey by suffocation.

## 38. Honeycomb Clouds and Clean Air of Southern Ocean the Earth

### Why In News?

- Recently, scientists have found the honeycomb-shaped clouds are the reason for having the cleanest air on Earth.

### About the Honeycomb Clouds

- These are **'open-cell clouds'.**
- These are low, flat clouds resembling a quilt when viewed from an aeroplane, with patches of open air framed by walls of clouds.
- Honeycomb cloud networks are a regular occurrence under certain conditions in the **mid-latitudes**. They can form **as part of a low-pressure system or cyclone**.

### Formation:

- It is attributed to a simple form of **convection**, which is the movement

of air caused by warm air rising and cold air falling.
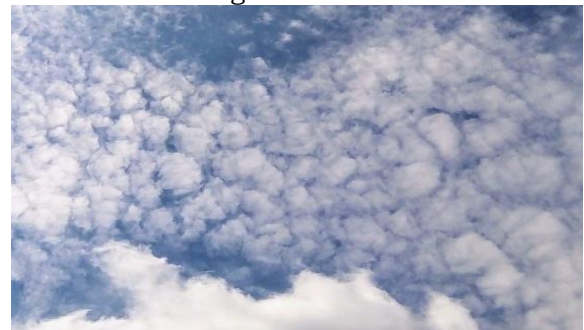
- It is the same phenomenon that occurs in a pot of boiling water.
  o When the bottom plate (or in this case, the Earth's surface) is heated up, the warm air near it rises, pushing down the cold air from above.

o These upward and downward movements, known as updrafts and downdrafts, start to form vertical 'walls' in the atmosphere.

- In a **uniform heating scenario**, these updrafts and downdrafts create **hexagonal cells on the surface** that **resemble a honeycomb.**
- However, the Earth's oceans are not heated uniformly, resulting in open-cell clouds that don't look perfectly hexagonal.

**Role of Aerosols**

- The atmosphere is a complex place where **factors other than heating** come into play to determine when and where clouds form.
- For instance, **aerosols**, which are **tiny particles of dust and dirt** floating in the air, **serve as surfaces for water to collect on, forming cloud droplets**.
- The number and size of aerosols can change the size of cloud droplets and determine whether clouds will produce rain.

**Southern Ocean's Clean Air**

- The Southern Ocean's air is considered clean due to its low levels of aerosols, fine solid particles or liquid droplets suspended in the air.
- While the lack of human activity in the region contributes to this, natural sources of fine particles, such as salt from sea spray or dust whipped up by the wind, also play a part.

**The Role of Honeycomb Clouds**

- Recent research has discovered that clouds and rain, particularly from open honeycomb clouds, play a crucial **role in scrubbing the atmosphere clean**.

o The Southern Ocean is the cloudiest place on Earth and experiences short-lived, sporadic showers like nowhere else.

- These honeycomb-like clouds, known as **Mesoscale Cellular Convection (MCC)** clouds, have a major role in regulating the climate.
- When a honeycomb cell is **filled with clouds or 'closed',** it appears **whiter and brighter**, **reflecting more sunlight back to space** and helping keep the Earth cool.
- **Empty or 'open' honeycomb cells**, on the other hand, **let more sunlight in**.

**Rainfall: The Key to Clean Air**

- The research showed that days with the cleanest air were associated with the presence of open honeycomb clouds.
- These clouds generate sporadic but intense rain showers, which seem to 'wash' the aerosol particles out of the air.

> **Other Reasons Behind Cleanest Air on Earth:**
> – **Remote Location:** The Southern Ocean's remote location minimises human-induced air pollution.
> – **Cold Temperatures and Strong Winds:** These conditions promote efficient dispersion of air pollutants.
> – **Lack of Large Surrounding Landmass:** This limits the input of continental aerosols.
> – **Phytoplankton:** Seasonal variation in the growth of tiny plant-like organisms called phytoplankton, which are a source of airborne sulphate particles, also influences aerosol levels.

**What are Clouds?**
– A cloud is defined as a visible suspension of small particles in the atmosphere.
– These particles can be liquid water, ice, or both, and the smallest of these, the **cloud condensation nuclei (CCN),** can have rather little water vapour and are made up of substances to which water can attach.

**Types:**
– Clouds are categorised primarily by **two major factors – location and shape.**
– **High Clouds** form several kilometres up in the sky.
   a. The highest clouds in the atmosphere are **cirrus, cirrostratus, and cirrocumulus**.
   b. **Cirrus clouds** are thin and wispy and often curve with the wind.
– **Low Clouds** generally form within 1 or 2 km from the Earth's surface. In fact, low clouds can even form touching the ground – called fog.
   a. The lowest clouds in the atmosphere are **stratus, cumulus, and stratocumulus.**
   b. **Cumulus clouds** tend to be big and fluffy, looking like giant cotton balls or other shapes in the sky.
   c. **Stratus clouds** form sheets of clouds that cover the sky.
– **Middle-level Clouds** form between low and high clouds.
   a. These include **altocumulus and altostratus.**
   b. It can form parallel streaks of clouds.

**Clouds with Vertical Development:**
– It includes cumulus and cumulonimbus. If a cold cloud consists entirely of ice, it is said to be glaciated.
– If a cold cloud contains both ice particles and supercooled droplets, it is a mixed cloud.

# 39. Pelagia noctiluca

**Why In News?**
• A bloom of venomous jellyfish (Pelagia Noctiluca) was reported by marine researchers across the Visakhapatnam coast.

**About Pelagia Noctiluca**
• It is also known as the mauve stinger or purple-striped jellyfish.
• Unlike other jellyfish species, it has stingers not just on the tentacles, but on the bell too.
   o These are **bioluminescent**, having an ability to produce light in the dark.
• **Distribution:** The Pelagia noctiluca is found worldwide in tropical and warm-temperature seas.
   o In January 2024, the Pelagia noctiluca bloom was spotted in Thailand
      ▪ In the past, a bloom of Pelagia noctiluca had damaged penned salmon in Ireland.
   o **It is** rarely seen in the **East coast of India** but scores of the venomous jellyfish species were spotted acros**s**

**RK Beach and other parts of the coas**t.
• **Related concerns:** It is **venomous** and causes **varying degrees of illness** such as diarrhoea, extreme pain, vomiting and anaphylactic shock (a severe allergic reaction that can develop quickly and be life-threatening).
   o Venomous jellyfish blooms have in the past been known to have caused massive **damage to the fishing industry and impacted tourism.**
• **Suggestions:** An advisory should be issued for people to not step into the waters until information of the species disappearing from the coast is given,

**Do you know?**
– A jellyfish bloom is when the population of the species increases dramatically within a short period of time, usually due to a higher reproduction rate.
– According to marine biologists, jellyfish blooms are reported frequently as a result of rising ocean temperatures, one of the main causes of substantial population growth.

# Social issues

## 1. Panel to Examine issues Faced by Queer Community

**Why In News?**

- The Ministry of Law and Justice notified a six-member committee to address issues related to the queer community.

**Background**

- In 2023, the Supreme Court dismissed a plea to legalize **same-sex marriages,** asserting that the right to marry is not a fundamental right and falls under the purview of legislative regulation in accordance with societal norms.
- However, the Court directed the government to establish a high-powered committee to thoroughly examine all relevant factors pertaining to the queer community.

**Queer community**

- The queer community is an inclusive and diverse group of people who identify as lesbian, gay, bisexual, transgender, queer, questioning, intersex, asexual, or any other sexual orientation, gender identity, or expression that falls outside of societal norms.

**Challenges faced by Queer Community**

- **Discrimination and ostracisation:** They face discrimination in employment, educational institutes, and within families which severely affects their overall wellbeing.
- **Identity crisis:** They are often forced to identify with a gender with which they are not associated at the workplace despite the government passing the Transgender Persons (Protection of Rights) Act, 2019 which allows the community the right to self-perceived gender identity.
- **Social Stigma:** They often face difficulty in property inheritance or child adoption. Because of being socially ostracised, they are compelled to take up menial jobs despite good qualifications or forced into sex work.
- **Health Disparities:** Queer individuals often face disparities in healthcare access and quality, as well as specific health concerns such as higher rates of mental health issues, substance abuse,
- **Lack of public amenities:** They face issues with the accessibility of public toilets and public spaces. They often face problems in prisons, hospitals and schools.

**Various Judgment related to LGBTQ+**

- The ruling in **National Legal Services Authority (NLSA) v. Union Of India (2014)** famously known as the NALSA Case, has following implications;
  - The Court directed Centre and State Governments to grant legal recognition of gender identity whether it be male, female or third-gender.
  - Recognising third gender persons as a "socially and educationally backward class of citizens", entitled to reservations in educational institutions and public employment.
- **Navtej Singh Johar v. Union of India (2018):** The Supreme Court, in the verdict, struck down parts of **Section 377,** effectively **decriminalizing consensual homosexual** acts between adults. The court recognized the rights of LGBT individuals to equality, privacy, and dignity.

**Initiatives taken by government**

- **Transgender Persons (Protection of Rights) Act, 2019:** The law passed by the Parliament aims to end discrimination against transgender persons in accessing education, employment and healthcare and recognise the right to self-perceived gender identity.
- **National Council for Transgender Persons:** In pursuance of the **Transgender Persons (Protection of Rights) Act, 2019,** the National Council for Transgender Persons has been constituted to advise the Central Government on the formulation and evaluation of policies, programmes,

legislation and projects for the welfare of the transgender community.
- **National Portal for Transgender Persons:** The Ministry of Social Justice and

Empowerment launched the National Portal for Transgender Persons in **2020.**
- Any Transgender applicant can **obtain a certificate of identity** and identity card without any physical interface with the office of issue.
- **Garima Greh:** The scheme aims to provide shelter to Transgender persons,

with basic amenities like shelter, food, medical care and recreational facilities.

### Conclusion
- While there has been significant progress in advancing LGBTQ+ rights and reducing discrimination, there are still many challenges to address.
- Continued advocacy, education, and policy change are necessary to ensure full equality and acceptance for the LGBTQ+ community worldwide.

# 2. Bridging the Gaps in India's Education System

### Why In News?
- Recently, it has been observed that there is a persistent hierarchy and gaps in education in India.

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**Education in India at a Glance**
- Education plays a significant and remedial role in balancing the socio-economic fabric of the country.
- 'Education' in India is a **'Fundamental Right'** and it falls under the *Concurrent List (List III)* of Schedule VII of the Constitution of India.

> **Do You Know?**
> - The **42nd Constitution Amendment Act (1976)** transferred five subjects to Concurrent List from State List:
>   - *Education*
>   - *Forests*
>   - *Weights and Measures;*
>   - *Protection of Wild Animals and Birds, and;*
>   - *Administration of Justice;*

- **The Constitution (Eighty-sixth Amendment) Act, 2002,** inserted **Article 21-A** to provide free and compulsory education of all children in the age group of six to fourteen years as a Fundamental Right.
  a. It led to the enactment of the **Right of Children to Free and Compulsory Education (RTE) Act** in 2009.
- **Article 41:** Right to work, to education and to public assistance in certain cases.
- **Article 45:** Provision for free and compulsory education for children.

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- **Article 46:** Promotion of educational and economic interests of Scheduled Castes, Scheduled Tribes and other weaker sections.
- **The Ministry of Education** *(erstwhile Ministry of Human Resource and Development)* was created on September 26, 1985, through the **174th amendment to the Government of India (Allocation of Business) Rules, 1961**.
  a. Currently, the MoE works through two departments:
  1. Department of School Education & Literacy;
  2. Department of Higher Education;

### Gaps in India's Education System
- **The Learning Gap:** The Annual Status of Education Report (ASER) 2023 revealed that more than half of rural students aged 14 to 18 years struggled with basic mathematics, a skill they should have mastered in Classes 3 and 4.
  o About 25% in this age group could not read a Class 2 level text in their vernacular.
  o As they grew older, the rate of dropouts increased.
- **Enrollment Rates:** Overall, 86.8% of 14-18-year-olds are enrolled in an educational institution.
  o However, there are notable differences visible by age, with 3.9% of 14-year-olds and 32.6% of 18-year-olds not enrolled.

- **Vocational Training:** Only 5.6% are taking vocational training or related courses.
  - o It is more prevalent among college-level students (16.2%).
  - o Most youth are taking short duration courses of six months or less.
- **Basic Abilities:** About 25% of the youth cannot read a Class II level text fluently in their regional language.
  - o Over half struggle with division problems (3-digit by 1-digit), with only 43.3% of 14-18-year-olds able to solve such problems correctly.
- **Digital Awareness and Skills:** Close to 90% of all youth have a smartphone in the household, and 43.7% of males have their own smartphone compared to 19.8% of females.
  - o Males generally outperform females in digital tasks, and performance on digital tasks improves with education level and basic reading proficiency.
- **Socio-Economic Disparities:** The hierarchy between social groups persists; Scheduled Tribes are still the most disadvantaged.
  - o The education arrangements in India are not founded on the resident-driven standard. Rather, these seem to have been forced on them.

**Bridging the Gaps**
- **Role of Technology:** Technology has emerged as a powerful tool to bridge the education gap, **especially in tier 2 and tier 3 cities**.
  - o EdTech platforms are catering to the gaps in the Education system, providing online consultancy to ensure that students from non-metropolitan cities make informed career decisions.
  - o AI tools are helping bridge learning gaps that widened in schools during the COVID-19 pandemic.
- **Devolution of Central and State Grants to Local Bodies:** The Central and State grants should be disaggregated gram panchayat-wise and urban local body-wise.
  - o It aims to ensure direct transfer of untied funds to schools.

- **Community Management of Schools and Equal Resource Sharing:** Schools must be community-managed, and the State government should primarily act as the financing agent.
  - o The Central and State governments should equally share the additional resources needed to rejuvenate the system, given that education is a Concurrent subject from 1976 onwards.

**Budget (2024-25) for Education**
- **Department of School Education & Literacy:** It has been allocated ₹73,498 crore for FY 2024-25.
  - o This is the **highest ever allocation** for the department.
  - o There has been an overall increase of ₹12,024 crore (19.56%) in the FY 2024-25 from the Revised Estimates (RE) of 2023-24.
- **Department of Higher Education:** It has been allocated ₹47,619.77 crore for FY 2024-25.
  - o The scheme allocation is ₹7,487.87 crore and the non-scheme allocation is ₹40,131.90 crore.
  - o There has been an overall increase of ₹3,525.15 crore (7.99%) in the FY 2024-25 with respect to FY 2023-24.

**Other Major Government Initiatives**
- **Ek Bharat Shreshtha Bharat:** It aims to enhance the understanding and bonding between states, thereby strengthening the unity and integrity of India.
- **PM e-VIDYA:** It was launched as part of Atma Nirbhar Bharat Abhiyan, which unifies all efforts related to digital/online/on-air education to enable multi-mode access to education.
- **MANODARPAN:** An initiative covering a wide range of activities to provide psychosocial support to students, teachers, and families for Mental Health and Emotional Wellbeing during the COVID outbreak and beyond.
- **Centrally Sponsored Scheme on Teacher Education:** It aims to create a sound institutional infrastructure for pre-service and in-service training of elementary & secondary school teachers and for provision of academic resource

support to elementary and secondary schools.

- **Scheme for Infrastructure Development of Private Aided/Unaided Minority Institutes (IDMI):** It provides financial assistance to minority institutions to augment their infrastructure.

- **Strengthening for providing quality Education in Madrassas (SPQEM):** It aims to encourage traditional institutions like Madrassas and Maktabs by giving financial assistance to introduce science, mathematics, social studies, Hindi and English in their curriculum.

- **Adult Education – Saakshar Bharat:** It aims to further promote and strengthen adult education, especially of women, by extending educational options to those adults who have lost the opportunity of access to formal education and crossed the standard age for receiving such education.

- **Central Sector Interest Subsidy Scheme, 2009 on Model Education Loan Scheme of IBA:** It provides full interest subsidy during the period of moratorium on loans taken by students from economically weaker sections for pursuing any of the approved courses of studies in technical and professional streams from recognized institutions in India.

### Conclusion

- Bridging the gaps in India's education system is crucial for the country's socio-economic development. While significant strides have been made, there is still a long way to go.

- It requires concerted efforts from the government, educational institutions, and society at large to ensure that every child in India has access to quality education.

## 3. Girl Empowerment Mission (GEM)

### Why In News?

- NTPC Limited, India's largest integrated power company, is gearing up to launch the **latest edition of Girl Empowerment Mission (GEM).**

### About

- It is a flagship **Corporate Social Responsibility initiative,** initiated as a pilot project in **2018** for children belonging to **underprivileged sections** of the society.

- The program aligns with the **Government of India's Beti Bachao, Beti Padhao initiative** and aims to tackle **gender inequality** by nurturing girls' imaginations and fostering their ability to explore opportunities.

- Under the mission a **1-month workshop for young girls** during summer holidays is offered for their **all-round upliftment and development.**

  o The workshop focuses on **health, hygiene, safety, fitness, sports and yoga.**

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**Corporate Social Responsibility**

- It is a **self-regulating business model** that helps a company be socially accountable to itself, its stakeholders, and the public.

- CSR can help improve society and promote a positive brand image for companies.

- **CSR includes four categories:** environmental impacts, ethical responsibility, philanthropic endeavors, and financial responsibilities.

- In India, **Enactment of Companies Act, 2013 by the Ministry of Corporate Affairs,** introduced the **CSR as a mandatory provision** by imposing statutory obligation on Companies to take up CSR projects towards social welfare activities.

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## 4. Protection of Women from Domestic Violence Act 2005

### Why In News?

- The Delhi High Court has recently observed that the Protection of Women

from Domestic Violence Act is a **"measure of social justice applicable to each woman irrespective of religious affiliation or social background"**.

## Protection of Women from Domestic Violence Act 2005

- It has come into force since **2006.**
- **Aim:** To provide **protection to wife or female live-in partner** from violence at the hands of the husband or male live-in partner or his relatives.
- **Domestic Violence:** Domestic violence under the Act includes actual abuse or threat of abuse, whether physical, sexual, verbal, emotional, or economic.
  o Harassment by way of unlawful dowry demands to the women victim or her relatives would also be covered under the definition of Domestic violence.
- **Extension of Protection:** The Law extends protection to women who are sisters including adopted sisters and mothers.

## Salient features of the Act:

- Ensures Right to Residence under sec 17.
- Ensures economic relief by recognising economic violence.
- Recognises verbal and emotional violence.
- Provides temporary custody of the child.
- Judgements within 60 days of filing of the case.
- Multiple Judgements in a single case.

## Protection Officers

- Protection Officers have been appointed by the Government to help the aggrieved woman in filing the case against her husband or against any male adult person who has committed domestic violence and who is in domestic relationship with the petitioner.
- The Protection Officer facilitates the women to approach the court by providing legal aid and get appropriate relief from the courts concerned.

## Arguments Against the Act

- **Gender Bias:** Critics argue that the Act is inherently biased as it only provides protection to women, ignoring the fact that men can also be victims of domestic violence.
- **Misuse and False Accusations:** There are concerns that the Act is misused by some women to falsely accuse their partners or family members of domestic violence for personal gain, such as gaining leverage in divorce or child custody proceedings.
- **Family Disruption:** The Act's emphasis on providing protection orders and support services to victims may contribute to the breakdown of families and marriages rather than facilitating reconciliation and family harmony.
  o This could have negative consequences, particularly for children who may be adversely affected by family disruption.
- **Legal Complexity and Delay:** The legal processes involved in seeking protection orders under the Act can be complex and time-consuming, leading to delays in obtaining relief for victims.
  o This may deter some women from seeking help or prolong their exposure to abusive situations.
- **Need for Comprehensive Approach:** Addressing domestic violence requires a more comprehensive approach that goes beyond legal remedies alone.
  o This includes addressing underlying factors such as poverty, lack of education, and gender inequality, which contribute to the perpetuation of violence in intimate relationships.

## Arguments in Favour of the Act

- **Legal Protection:** The Act provides a comprehensive legal framework specifically tailored to address domestic violence against women.
- **Recognition of Various Forms of Abuse:** The Act recognizes multiple forms of abuse beyond physical violence, including emotional, verbal, sexual, and economic abuse.
  o This recognition reflects a broader understanding of the ways in which domestic violence manifests and harms women.
- **Empowerment of Victims:** By providing legal remedies such as

protection orders, the Act empowers victims to take action against their abusers and seek protection for themselves and their children.

- **Access to Support Services:** The Act mandates the establishment of protection officers and support services, including shelters, counseling, and legal aid, to assist victims in accessing the resources they need to escape abusive situations.
- **Gender Equality:** The Act acknowledges the systemic inequalities and power imbalances that contribute to domestic violence and seeks to address them.

- **International Obligations:** India is a signatory to various international conventions and treaties that obligate it to combat violence against women, including the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW).

### Conclusion
- Overall, the Protection of Women from Domestic Violence Act represents a significant step forward in addressing domestic violence against women in India and is crucial for promoting gender equality, protecting women's rights, and creating a safer and more just society.

## 6. Law on Abortion in India

### Why In News?
- Recently, the Supreme Court of India has allowed a 14-year-old victim of sexual assault to terminate her almost 30-week pregnancy.

### About Abortions Law in India
- Abortion, a subject often surrounded by ethical, moral, and legal debates, is regulated in India by the **Medical Termination of Pregnancy (MTP) Act, 1971.**
- It permits licensed medical professionals to perform abortions under specific predetermined situations.

> **Historical Background**
> - In the 1960s, due to a high number of induced abortions taking place, the **Shantilal Shah Committee** was constituted to deliberate on the legalisation of abortion in the country.
> - To reduce maternal mortality owing to unsafe abortions, the MTP Act was brought into force in 1971.
> - It is an **exception to the Indian Penal Code (IPC)** provisions of 312 and 313 and sets out the rules of how and when a medical abortion can be carried out.

### Key Provisions of the MTP Act
- It allows the termination of pregnancy under certain circumstances.
  - **Up to 20 weeks:** Termination is allowed on the advice of one doctor.
  - **20-24 weeks:** Abortion is allowed as an exception, but only under certain categories, after two registered medical practitioners have evaluated the right to seek termination.
  - **After 24 weeks of pregnancy**: The law requires that **a medical board** be set up in approved facilities, which may **allow or deny termination** of pregnancy **only if there is substantial foetal abnormality.**
- Under **Section 312 of the IPC**, a person who 'voluntarily causes a woman with child to miscarry' is liable for punishment, attracting a jail term of up to three years or fine or both, unless it was done in good faith where the purpose was to save the life of the pregnant woman.
  - It effectively makes unconditional abortion illegal in India.
- **Section 313 of the IPC** states that a person who causes the miscarriage without the consent of the pregnant woman, whether or not she is in the advanced stages of her pregnancy, shall be punished with life imprisonment or a jail term that could extend to 10 years, as well as a fine.

### Amendments to the MTP Act
- Broader amendments to the original Act were introduced in 2020 and the amended Act came into force in 2021.

- It increased the upper gestation **limit from 20 to 24 weeks** for special categories of women, including survivors of rape, victims of incest, and other vulnerable women like differently abled and minors.
- A confidentiality clause was added which said that the name and other particulars of a woman whose pregnancy has been terminated cannot be revealed except to a person authorised by law.
- It extended MTP services, under the clause of failure of contraceptive, to unmarried women to provide access to safe abortion based on a woman's choice, irrespective of marital status.

## Current Scenario
- Despite the liberal and pro-choice nature of India's MTP Act, frequent cases of women approaching the court late in their pregnancies appear to suggest a legislative gap.
- The **Supreme Court of India** ruled that all women, whether married or not, have equal rights to access abortion up to 24 weeks of gestation, in compliance with the provisions of the MTP Act.
- Recently, the Supreme Court noted that the **continuation of the pregnancy against the will of the minor** may impact **negatively on the physical and mental well-being of a minor** who is barely 14 years old.
  o It allowed a 14-year-old victim of sexual assault to terminate her almost 30-week pregnancy.

## Conclusion
- The recent ruling by the Supreme Court underscores the complexities of the issue of abortion, particularly in cases involving minors and sexual assault victims. While the MTP Act is considered liberal and pro-choice, frequent cases of women approaching the court late in their pregnancies appear to suggest a legislative gap.

It highlights the need for ongoing discussions and potential revisions to the existing laws to ensure the rights and well-being of women and girls are adequately protected.

# Science & tech

## 1. Shallow Fakes

**Why In News?**
- The influx of shallow fakes on social media is increasing every day.

**About Shallow fakes**
- Shallow fakes or cheap fakes are pictures, **videos and voice clips created without the help of AI technology** but by either editing or by using other simple software tools.
- Shallow fake videos are **manually altered or selectively edited**.
- They can be created easily, in some cases it can be just a clipped video being shared without any Why In News?.

**The difference between deepfakes and shallow fakes**

| Deep Fakes | Shallow fakes |
|---|---|
| Deep Fakes describe photorealistic and audio-realistic images, video and audio created or manipulated with artificial intelligence to deceive. | Shallow fakes or cheap fakes are made with existing technologies—for example a conventional edit on a photo, or slowing-down a video to change the speech patterns of an individual, or more often rely on mis-captioning or mis-Why In News?ualising an existing image or video, claiming it is from a time or place which it is not from. |

## 2. Fukushima Water Issue

**Why In News?**
- **Japanese and Chinese Experts** held talks to assuage **concerns over the discharge of treated radioactive wastewater** from the Fukushima Daiichi nuclear power plant into the sea.

**About**
- The discharges have been opposed by **fishing groups and neighboring countries, especially China,** which banned all imports of Japanese seafood.
- China's move has largely affected Japanese scallop growers and exporters to China.

**What is the Fukushima Water Issue?**
- In 2021, Japan's government announced plans to release **over one million tonnes of contaminated water** from the Fukushima nuclear plant into the sea over the **next 30 years.**
- The wastewater is a byproduct of the **catastrophic 2011 earthquake and tsunami,** which **disabled the Fukushima Daiichi nuclear power plant,** leading to the release of radioactive materials.
- After more than a decade of storing this wastewater, Japan says they are **running out of storage space,** and allege that the now treated water is safe for release.

**Nuclear Disasters**
- A nuclear and radiation accident is an event that has led to significant **consequences to people, the environment or the facility.**
  - Examples include **lethal effects to individuals, large radioactivity release to the environment, or reactor core melt.**
- Worldwide there have been 99 accidents at nuclear power plants.
  - Fifty-seven accidents have occurred since the Chernobyl disaster, and 57% of all nuclear-related accidents have occurred in the USA.
  - Serious nuclear power plant accidents include the Fukushima Daiichi nuclear disaster (2011), Chernobyl disaster (1986), Three Mile Island accident (1979), and the SL-1 accident (1961).

## Concerns Over the Fukushima Water Release

- **Tritium and Carbon-14:** Fukushima water is filtered through Advanced Liquid Processing System (ALPS), which reduces most radioactive substances to acceptable safety standards, apart from tritium and carbon-14.
  - Both emit very low levels of radiation, but can pose a risk if consumed in large quantities.
- **Lack of Study:** The scientists say it requires more studies on how it would affect the ocean bed and marine life.
- **The Pacific Islands Forum regional group** has called the plan "another major nuclear contamination disaster", as several of its members are still dealing with the consequences of US nuclear testing.



Currents carry water around the Pacific
— Cold current   — Warm current
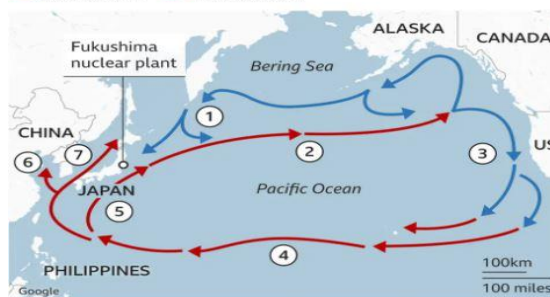
1. Oyashio Current
2. North Pacific Current
3. California Current
4. North Equatorial Current
5. Kuroshio Current
6. Yellow Sea warm Current
7. Tsushima warm Current

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**Nuclear Energy Summit 2024**
- **First ever Nuclear Energy Summit** was recently held in **Brussels**.
- It highlighted the **role of nuclear energy i**n addressing the global challenges to reduce the use of fossil fuels, enhance energy security and boost economic development.
- The Summit comes in the wake of the historic **inclusion of nuclear energy in the Global Stocktake** agreed at the UN Climate Change Conference (COP28) in Dubai in 2023.

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# 3. Genetic Profiling

## Why In News?

- The **Wildlife Institute of India (WII)** is carrying out the genetic profiling to add the details of the elephants to a **national database.**
  - WII is an **autonomous institution** under the Ministry of Environment, Forest and Climate Change with the objective of advancing wildlife research, education, and conservation in the country.

## What is Genetic profiling?

- It is an Information about changes in specific genes, gene expression, or chromosomes in cells or tissue of a person.
- They may also be a sign that a person has an increased risk of developing a specific disease or condition or of having a child or other family member with the disease or condition.
- A genetic profile may be used to help diagnose disease, plan treatment, or find out how well treatment is working.
- In forensic science, genetic profiling is used for identifying individuals based on DNA evidence, such as in criminal investigations or paternity testing.

# 4. Antiretroviral Therapy (ART) Initiative

## Why In News?

- Twenty years of Free Antiretroviral Therapy (ART) initiative have been completed recently.

**About Antiretroviral Therapy (ART) initiative**

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- It was on April 1, 2004 for **Persons living with HIV (PLHIV).**
- It is the treatment of people infected with human immunodeficiency virus (HIV) using anti-HIV drugs.
- The standard treatment consists of a **combination of drugs** (often called "highly active antiretroviral therapy" or HAART) that suppress HIV replication.
- **Rationale behind the initiative:** At the emergence of HIV/AIDS in the early 1980s, the disease was considered a death sentence and was met with a lot of fear, stigma and discrimination.
  o Access to many medicines including the first antiretroviral drug**, AZT (zidovudine),** remained limited for most of the world's population except in some high-income countries.
- **Impact:** In 2023, the prevalence of HIV in 15-49 years has come down to 0.20 (confidence interval 0.17%-0.25%) and the burden of disease in terms of estimated PLHIV has been coming down to 2.4 million.
- India's share in PLHIV globally had come down to 6.3% (from around 10% two decades ago).

- The annual new HIV infections in India have declined by 48% against the global average of 31% (the baseline year of 2010).

**Other Related Initiatives**
- There were many complementary initiatives which have contributed to halting the HIV epidemic.
  o These include the provision of **free diagnostic facilities**; attention on prevention of parent to child transmission of HIV (PPTCT) services.
  o **Dolutegravir** (DTG), a new drug with superior virological efficacy and minimal adverse effects was introduced in 2020.
  o In 2021, **India adopted a policy of rapid ART initiation** in which a person was started on ART within seven days of HIV diagnosis, and in some cases, even the same day.
  o The ongoing and **fifth phase of India's National AIDS Control programme(NACP) aims to (by 2025)** reduce the annual new HIV infections by 80%, reduce AIDS-related mortalities by 80% and eliminate vertical transmission of HIV and syphilis.

## 5. Kodaikanal Solar Observatory

**Why In News?**
- Kodaikanal Solar Observatory completed its **125 years of establishment.**

**About the Kodaikanal Solar Observatory**
- It is located in the **Palani range of hills** in the Indian state of **Tamil Nadu**, is a significant scientific establishment that has been observing the Sun for over a century.
- It was established **in 1899 as a Solar Physics Observatory**, and has been recording images of the Sun every day for more than a hundred years, providing one of the longest series of solar data.

**Key Scientific Discoveries:**
- **Spectroscopic observations** taken during the August 18, 1868, total solar eclipse from Guntur in Andhra Pradesh

led to the **discovery of helium**, the Universe's second-most abundant element after hydrogen.
- **Data Collection and Analysis:** The data consist of **full disc spectral images of the Sun** using the Ca II K and H-alpha lines.
  o Both these lines image the atmospheric layer of the Sun known as the chromosphere.
- The Kodaikanal Solar Observatory boasts a mammoth **digital repository** containing 1.48 lakh digitised solar images of 10 terabytes.
- **Contribution to Solar Physics:** Understanding the **magnetic field evolution** in the past improves our understanding of the physics itself.
  o In the work, the timing of the **polarity reversal**, which is also very important, has been discussed.

o **Solar variations**, both of long scale and short, depend on the magnetic field, and these can affect both the **climate and space weather.**

**Links to the Great Drought**
– Scanty rainfall over south India during the winter monsoon of 1875 triggered one of the worst droughts the country had experienced till then.
– Multiple failed crops over the famine-stricken peninsular India killed 12.2 to 29.3 million people across the Madras and Mysore Provinces during 1875-1877.
– **India, along with China, Egypt, Morocco, Ethiopia, southern Africa, Brazil, Columbia and Venezuela**, suffered concurrent multi-year droughts during 1876-1878, later named the **Great Drought**, and an associated **global famine** that killed nearly 50 million.
– The drought was thought to be **due to multiple reasons** – *solar activity; cool Pacific Ocean conditions followed by a record-breaking El Nino (1877-1878); strong Indian Ocean Dipole and warm North Atlantic Ocean conditions.*

# 6. Artificial Sun Produced Heat of 100 Million Celsius for a Record Period

**Why In News?**
- **South Korean scientists** have been able to **produce heat of 100 million Celsius** for a **record period of 48 seconds** through **Artificial Sun.**

**About**
- The Korea Institute of Fusion Energy's (KFE) Korea Superconducting Tokamak Advanced Research (KSTAR) fusion reactor reached temperatures **seven times that of the Sun's core**.
- The temperature of the **core of the Sun** is **15 million degrees Celsius.**

**Artificial Sun**
- It is a **nuclear fusion reactor facility,** and it is called an "artificial sun" because it **mimics the nuclear fusion reaction that powers the real sun** – which uses hydrogen and deuterium gases as fuel.
- Scientists generally use a **donut-shaped reactor called a tokamak** in which hydrogen variants are heated to extraordinarily high temperatures **to create a plasma.**
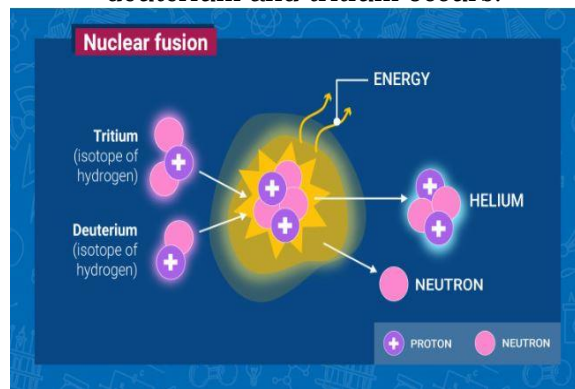
**What is Nuclear Fusion?**
- Nuclear fusion is the process by which **two light atomic nuclei** combine to form **a single heavier one** while releasing **massive amounts of energy.**
- Fusion reactions take place in a **state of matter called plasma** — a hot, charged gas made of positive ions and free-moving electrons with **unique properties distinct from solids, liquids or gases.**
- The sun, along with all other stars, is powered by this reaction.
- **Process:** The **Deuterium (H-2) and Tritium (H-3)** atoms are combined to form **Helium (He-4)**. A free and fast neutron is also released as a result.
  o The neutron is powered by the kinetic energy converted from the 'extra' mass left over after the combination of lighter nuclei of deuterium and tritium occurs.



**Significance of Fusion energy?**
- **Clean Energy:** Nuclear fusion — just like fission — does not emit carbon dioxide or other greenhouse gases into the atmosphere, so it could be a long-term source of low-carbon electricity

from the second half of this century onwards.

- **More Efficient:** Fusion could generate four times more energy per kilogram of fuel than fission (used in nuclear power plants) and nearly four million times more energy than burning oil or coal.
- **Fusion fuel is plentiful and easily accessible:** Deuterium can be extracted inexpensively from seawater, and tritium can potentially be produced from the reaction of fusion-generated

neutrons with naturally abundant lithium.
  - o These fuel supplies would last for millions of years.
- **Safer to Use:** Future fusion reactors are also intrinsically safe and are not expected to produce high activity or long-lived nuclear waste.
  - o Furthermore, as the fusion process is difficult to start and maintain, there is no risk of a runaway reaction and meltdown.

# 7. NICES Programme

**Why In News?**
- Recently, the National Information System for Climate and Environment Studies (NICES) programme invited Indian researchers to join in combating climate change.

**About the NICES Programme:**
- It is a programme operated by the **Indian Space Research Organisation (ISRO)** and the **Department of Space**, along with other ministries and institutions under the framework of the **National Action Plan on Climate Change (NAPCC)**.
- It was **conceptualised in 2012** to meet the ongoing challenge of monitoring climate variability and climate change from space.

- It functions under the guidance of the **NICES – Programme Management Council (PMC)**.

**Objectives:**
- To generate and disseminate long-term **Essential Climate Variables (ECVs),** derived from Indian and other Earth Observation (EO) satellites, which are crucial for characterising Earth's climate.
  - o NICES has developed and made accessible over 70 geophysical variables related to **Terrestrial, Ocean, and Atmospheric conditions**.
- Key focus area are S*pace-based ECVs and Climate Indicators, Climate Change Challenges, Weather Extremes, Climate Services*, etc

# 8. Nuclear power For India's Economic Development

**Why In News?**
- According to a study by IIM Ahmedabad, investments in nuclear energy should be a priority to be a developed country by 2047 and to achieve net zero by 2070.

**What is Nuclear Energy?**
- **Nuclear energy** is the energy released during nuclear reactions, either through fission (splitting of atomic nuclei) or fusion (merging of atomic nuclei).
- **In nuclear fission,** heavy atomic nuclei, such as those of uranium or plutonium, are split into lighter nuclei, releasing a large amount of energy.
- This process is utilized in nuclear power plants to generate electricity.

**India's Nuclear Programme**
- Nuclear Energy is a non-carbon-emitting energy source that contributes less than **2%** of India's total electricity generation.
- NPCIL owns and operates India's current fleet of nuclear power plants, with a **capacity of 7,500 MW**, and has committed investments for another 1,300 MW.
- India imports uranium fuel for nuclear plants from Russia, Kazakhstan, Uzbekistan, France and Canada under bilateral agreements.

NUCLEAR POWER PLANTS UNDER OPERATION IN INDIA

**Nuclear Energy for economic development**

- **Energy Security:** The fuel to power output ratio for nuclear energy is incredibly high. A relatively small amount of uranium can be used to fuel a 1000 Megawatts electric plant, thus providing enough electricity to power a city of about half a million people.
- **Clean energy:** The World Nuclear Association found that the average emissions for nuclear power are **29 tonnes of CO2** per gigawatt-hour (GWh) of energy produced.
  - This compares favorably with solar (85 tonnes per GWh), wind (26 tonnes per GWh) and fossil fuels like lignite (1,054 tonnes per GWh).
- **Low Operating Costs:** Nuclear power produces very inexpensive electricity and is cheaper than gas, coal, or any other fossil fuel plants.
- **Industrial Growth:** Reliable and abundant electricity supply will provide a stable source of power for Industries such as steel, cement etc. which will lead to economic development.

**Challenges**

- **Risky source of energy:** The risks of nuclear power are ultimately uncontrollable.
  - The **Chernobyl disaster of 1986** and **Fukushima disaster** in **Japan** in **2011** have

already shown the dangers of nuclear power.

- **Radioactive Waste Disposal:** A nuclear power plant creates 20 metric tons of nuclear fuel per year, and with that comes a lot of nuclear waste.
  - Also the waste transmits radiation and high temperature, causing damage to living things in and around the plants.
- **Uranium availability:** Limited supplies of natural uranium, a critical fuel restricted by international embargo, is the biggest hurdle for nuclear power development.
- **Financial Constraints:** India would need close to ₹150-200 lakh crore between 2020-2070 to finance these transitions.

**Suggestions as per the IIM report**

- If nuclear power rises five-fold from today's levels to 30 GW (gigawatt) by 2030 and 265 GW by 2050, the emissions in 2070 will fall to 0.55 billion tonnes of carbon dioxide ('net zero' scenario).
- It means nuclear power contributing **4%** of India's total energy by 2030 and sharply rising to 30% by 2050.
- In the same scenario, the share of solar power falls from 42% in 2030 to 30% in 2050.
  - Currently, solar energy accounts for 16% of India's installed generation capacity and coal 49%.

**Conclusion**

- Nuclear energy is a clean and environment-friendly source of electricity, which is available 24X7, and can provide the country long-term energy security in a sustainable manner.
- The growth of the Indian nuclear power program is imperative to meet the twin goals of energy security and sustainable development.

## 9. First Home-Grown Gene Therapy For Cancer

**Why In News?**

- The President of India, launched India's first home-grown gene therapy which is

**112 | P a g e**

https://careerias.org/

**CAREER IAS (Delhi):-** 09910632418 | **CAREER IAS (PATNA):-** 09599585219, 09599585723 | **CAREER IAS (AGRA):-** 09910632418

CAR-T cell therapy (NexCAR19) for cancer at IIT Bombay.

**About**
- NexCAR19 is the indigenously developed **therapy for B-cell cancers** (types of cancers that form in the immune system's cells) such as leukemia and lymphoma.
- It has been developed collaboratively by **Immuno ACT,** a company incubated at the Indian Institute of Technology Bombay (IITB), and **Tata Memorial Hospital**.

**CAR-T Cell Therapy**
- T cells are the cells of the immune system that fights infections and can kill cancer.
- But, sometimes cancers can evade the T cells and there comes the use of "CAR-T cell therapy" or **Chimeric antigen receptor (CAR) T-cell therapy.**
- In this, patients own T cells are taken and modified in the lab so that they can recognise and react against the cancer.
- These modified T cells, also called CAR-T cells are then reinfused back into the patients. Now, these cells can better recognise cancer and are able to attack it.
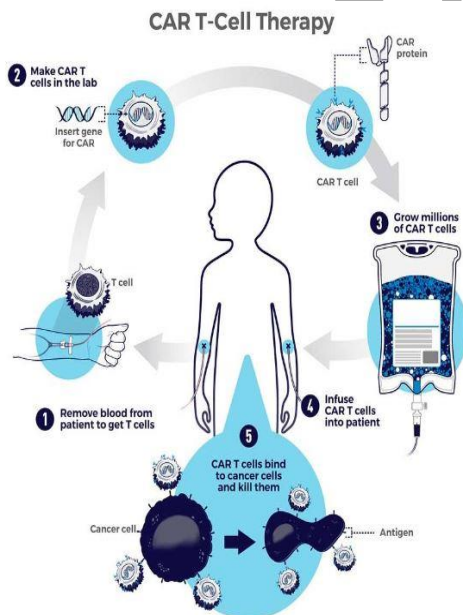


**CAR T-Cell Therapy**

**Different types of cell therapies**
- **Stem cell therapy:** This type of therapy involves the transplantation of stem cells to replace damaged or diseased cells. Stem cells have the ability to differentiate into various types of cells, including blood cells, nerve cells, and muscle cells, and can help repair damaged tissue.
- **Dendritic cell therapy:** This type of therapy involves the use of dendritic cells, which are immune cells that help to coordinate the immune response against cancer.

**What are B and T-Cells?**
- B-cells and T-cells are a specific type of white blood cell called lymphocytes.
- **Types of T cells:**
  o **Cytotoxic T-cells:** They kill cells infected with viruses and bacteria, and they also destroy tumor cells.
  o **Helper T-cells:** They send signals that direct other immune cells to fight infection.
  o **Regulatory T-cells (Tregs):** These cells suppress excessive immune responses to prevent autoimmune reactions and maintain immune tolerance. They play a crucial role in preventing the immune system from attacking the body's own cells and tissues.
- **T-cells** start in bone marrow, mature in thymus and eventually relocate to lymph tissue or bloodstream.
- **B-cells** make antibodies in response to antigens (antibody generators).
  o **There are two main types of B-cells:** plasma cells and memory cells. Both types help to protect from infection and disease.

**Cancer and Its Types**
- Cancer is a large group of different diseases that can start in almost any organ or tissue of the body when abnormal cells grow uncontrollably.
- Cancers are further categorized based on their behavior, such as whether they are benign (non-cancerous) or malignant (cancerous), and their stage of progression.

Some of the most common types of cancer include:
A. **Carcinomas:** These cancers originate in the skin or tissues that line the internal organs. The most common carcinomas include breast, lung,

prostate, and colon cancer.
B. **Sarcomas:** Sarcomas develop in the connective tissues such as bone, cartilage, fat, muscle, or other supportive tissues.
C. **Leukemias:** Leukemias are cancers that begin in the bone marrow, where blood is produced. They often involve abnormal production of white blood cells.
D. **Lymphomas:** Lymphomas affect the lymphatic system, which is part of the body's immune system. They typically begin in lymph nodes and lymphoid tissues.
E. **Central nervous system cancers:** These cancers affect the brain and spinal cord. Gliomas, for example, arise from the glial cells in the brain.

# 10. Quantum Mechanics

**Why In News?**
- India celebrated **World Quantum Day 2024** on April 14.

**About**
- **The World Quantum Day** aims at engaging the general public in the understanding and discussion of Quantum Science and Technology.
- It is a decentralized and bottom-up initiative **launched in 2021** and first celebrated in **2022.**

**What is Quantum Mechanics?**
- Quantum mechanics is a subfield of physics that describes the behavior of particles- atoms, electrons, photons and almost everything in the molecular and submolecular realm.
- It explains how extremely small objects simultaneously have the characteristics of both **particles** (tiny pieces of matter) and **waves** (a disturbance or variation that transfers energy).
  - o This phenomenon is also known as the **"wave-particle duality."**
- In classical mechanics, objects exist in a specific place at a specific time. In quantum mechanics, objects instead exist in a haze of probability; they have a certain chance of being at point A,

another chance of being at point B and so on.
- Quantum Technology exploits the principles of superposition, entanglement, and measurement.

**Applications**
- **Quantum computers** use the quantized nature of particles to store and transfer information.
- **Quantum Cryptography:** Quantum mechanics enables secure communication through methods like quantum key distribution (QKD).
- **Quantum Sensors:** Quantum mechanics can develop sensors, such as atomic clocks, magnetometers, and gyroscopes having applications in navigation, mineral exploration, and medical imaging.
- Quantum Mechanics principles are being utilized to develop technologies such as **LEDs, lasers, and ultra-precise atomic clocks** used in the Global Positioning System.

**Challenges of Quantum Mechanics**
- **Decoherence:** Quantum systems are susceptible to decoherence, which occurs when a system interacts with its environment, leading to the loss of quantum coherence.

- **Quantum Measurement and Control:** Making precise measurements and controlling quantum systems at the individual quantum level is challenging due to noise, imperfections in experimental setups, and the delicate nature of quantum states.
- **Practical Implementation:** Building reliable quantum computers, quantum communication networks, and other quantum technologies requires overcoming issues related to scalability, error correction, and compatibility with existing infrastructure.
- **Cost and Accessibility:** Quantum technologies are expensive and resource-intensive.

## Way Ahead

- The emergence of quantum computers poses a threat to conventional encryption algorithms, necessitating the development of **Post-Quantum Cryptography (PQC)** and **Quantum Key Distribution (QKD)** to ensure quantum-safe encryption.
- Robust **quantum error correction codes** are essential to address errors caused by decoherence and imperfections in quantum hardware.

- Investment in research and development of new technologies, including **novel qubit architectures**, **quantum memory devices,** and **quantum communication protocols**, is vital to accelerate the practical application of quantum technologies and overcome current limitations.

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**National Quantum Mission (NQM)**
– It was conceptualized by the Prime Minister Science Technology Advisory Council (PM-STIAC) with a total outlay of **Rs 6003.65 Crore** for a period of **eight years.**
– The Mission aims to seed, nurture, and scale up scientific and industrial R&D and create a vibrant & innovative ecosystem in Quantum Technology (QT).
– The Mission aims to establish **four Thematic Hubs (T-Hubs)** in domains such as,
  1. Quantum Computing,
  2. Quantum Communication,
  3. Quantum Sensing & Metrology, and
  4. Quantum Materials & Devices.

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# 11. Space Tourism

## Why In News?

- Gopi Thotakura, an Indian entrepreneur and aviator, is set to make history as the first Indian space tourist and will join five other crew members on the NS-25 mission of Blue Origin.

## About Space Tourism

- Space tourism is essentially a section of the aviation sector which seeks to provide tourists with the opportunity to become astronauts and experience space travel for recreational, leisure, or business purposes.
- If the mission is successful, **Thotakura would be the second Indian to go into space**.
  o The **first one** was Wing Commander **Rakesh Sharma**, who flew to the **Salyut 7 Space Station on a Soviet spacecraft in 1984**.

## Types

- **Sub Orbital:** Sub-orbital spacecraft take passengers **just beyond the Kármán line** — nearly 100 kilometres from earth and considered to be the **boundary between Earth's atmosphere and outer space**.
  o The passengers get to spend a few minutes in outer space and then come back to Earth.
- **Orbital:** Orbital tourism, on the other hand, entails remaining in space for at least one full orbit.
  o This is a major focus of governmental agencies and private space companies, all of which have the long-term goal to inhabit the moon and Mars.

## Rise of Space Tourism

- According to media reports, in 2023, the space tourism market was valued at $848.28 million.

- o It is expected to grow to $27,861.99 million by 2032.
- However, there are several challenges, such as high cost, and environmental concerns, that may limit the industry's growth.

## Major Players in Space Tourism

- There are now **six major space companies** that are arranging or planning to arrange touristic flights to space: *Virgin Galactic, Blue Origin, SpaceX, Boeing, Axiom Space, and Space Perspective*.
- While the first two (*Virgin Galactic, Blue Origin*) are focused on suborbital flights, Axiom and Boeing are working on orbital missions.
  - o **SpaceX**, in its turn, is prioritising **lunar tourism** in the future.

## Challenges Associated with Space Tourism

- **High Costs:** Currently, space tourism is an expensive venture, accessible only to the wealthier sections of society.
  - o A passenger generally has to pay at least a million dollars to reach outer space.
  - o This high cost leads to social inequity and elitism, as it limits access to a privileged few.
- **Safety Concerns:** The weakening of bones and muscles due to lack of gravity *(atrophy)*, potential damage to spacecraft from extreme temperatures and collisions with space debris, and health problems from extended space travel and radiation exposure are all risks associated with space tourism.
- **Environmental Impact:** Several studies have pointed out that space tourism may lead to environmental damage as rockets emit gaseous and

solid chemicals directly into the upper atmosphere.
  - o Scientists worry that growing numbers of rocket flights and the rise of space tourism could harm Earth's atmosphere and contribute to climate change.
- **Legal and Regulatory Challenges:** The regulatory framework for space activities is complex, with numerous international treaties and agreements governing space activities and national laws and regulations varying between countries.
  - o There is an urgent need to draft new treaties to regulate the space tourism industry.
- **Infrastructure Limitations:** Limited infrastructure for space travel and tourism is another challenge that needs to be addressed.
  - o As more companies invest in developing spacecraft and launch infrastructure, there will be an increased demand for engineers, technicians, pilots, and other specialised professionals.

## Conclusion

- Space tourism represents a new frontier in human exploration. It not only offers the promise of space travel to ordinary people but also has the potential to drive technological innovation and inspire a new generation of explorers.
- The high cost of space travel and the potential environmental impact are significant hurdles that need to be addressed.
  - o Moreover, the physical and psychological effects of space travel on humans are still not fully understood.
- As we stand on the cusp of this new era, it is clear that space tourism will play a significant role in shaping the future of human space exploration.

## 12. Meningitis

### Why In News?

- **Nigeria** has become the **first country in the world** to introduce a **new, highly effective vaccine against meningitis.**

### About

- Meningitis is a dangerous **inflammation of the membranes** surrounding the **brain and spinal cord.**

- It can be caused by **viruses, bacteria, fungi, or parasites** and can lead to serious complications, including **brain damage, hearing loss and learning disabilities.**
- Bacterial meningitis, specifically caused by the **meningococcus bacteria,** is a particular concern in Africa.
  - o A region of **26 countries known as the "African meningitis belt"** stretches across the continent, including Nigeria.
- The vaccine, called **Men5CV,** is recommended by the World Health Organization (WHO) and offers protection against five strains of the meningococcus bacteria in a single shot.

# 13. Nitroplast

**Why In News?**
- An international team of researchers has discovered the **"nitroplast"** — first **known nitrogen-fixing organelle within a eukaryotic cell.**

**About**
- This finding challenges the **long-held belief** that **only bacteria** can fix nitrogen.
  - o **Nitrogen fixation** is the process by which nitrogen is taken from its **molecular form (N2) in the atmosphere** and converted into **nitrogen compounds useful for other biochemical processes.**
- The nitroplast organelle discovery marks the **fourth instance of primary endosymbiosis in history,** a process where a **prokaryotic cell is engulfed by a eukaryotic cell and evolves into an organelle.**
  - o A symbiotic relationship **where one organism lives inside the other** is known as endosymbiosis.

- **Prokaryotic and Eukaryotic Cells:** The cell is the basic unit of life and forms the building blocks of all living organisms. It was discovered by **Robert Hooke In 1665.**
  - o Some cells have **membrane-bound organelles** and some do not. Depending upon the internal structure of the cell, two types of cells are found in an organism namely **Eukaryotic and Prokaryotic.**
  - o Prokaryotic cells are **simpler and smaller in size,** while eukaryotic cells **are more complex and larger.**
- These findings show that **Candidatus Atelocyanobacterium thalassa UCYN-A** has **evolved from a symbiont to a eukaryotic organelle** for nitrogen fixation—the nitroplast—thereby expanding a function that was thought to be exclusively carried out by prokaryotic cells to eukaryotes.

# 14. Euvichol-S

**Why In News?**
- Recently, the World Health Organisation (WHO) prequalified a new oral simplified vaccine for **cholera.**

**About the Euvichol-S**
- Euvichol-S is a **simplified formulation** of the WHO prequalified inactivated **oral cholera vaccine, Euvichol-Plus.**
  - o **Cholera**, **a deadly diarrheal disease, caused by the bacterium**

**Vibrio cholerae,** has been surging globally since 2021, with **high case fatality rates** despite the availability of simple, effective, and affordable treatment.
- The approval of Euvichol-S is expected to increase the overall supply of oral cholera vaccines available in 2024, with approximately 50 million doses now forecasted to be available to the global stockpile this year, compared to 38 million in 2023.

# 15. Aditya Mission

**Why In News?**
- Aditya L1 solar mission of the ISRO is continuously sending data about the Sun.

**What is the Aditya-L1 mission?**
- **Aditya-L1** is the first space-based Indian observatory to study the Sun. It was launched on September 2, 2023 by the **PSLV-C57.**
- Solar observatory is placed at Lagrangian point **L1** for "Observing and understanding the chromospheric and coronal dynamics of the Sun" in a continuous manner.
- Placing the Aditya-L1 in a halo orbit around L1 point has advantages as compared to placing in a Low Earth Orbit (LEO):
  o It provides a smooth Sun-spacecraft velocity change throughout the orbit, appropriate for helioseismology.
  o It is outside of the magnetosphere of Earth, thus suitable for the "in situ" sampling of the solar wind and particles.
  o It allows unobstructed, continuous observation of the Sun, and view of earth for enabling continuous communication to ground stations.
- **It is equipped with seven payloads** (instruments) on board with four of them carrying out remote sensing of the Sun and three of them carrying in-situ observation.

**What are the seven payloads?**
- **The Visible Emission Line Coronagraph (VELC)** will study the Corona, imaging and spectroscopy, and Coronal mass ejections.
- **The Solar Ultraviolet Imaging Telescope (SUIT)** will focus upon the Photosphere and Chromosphere imaging- narrow and broadband. It will

also measure the solar irradiance variations.
- **The Solar Low Energy X-ray Spectrometer (SoLEXS)** and **High Energy L1 Orbiting X-ray Spectrometer (HEL1OS)** will study the soft and hard X-ray flares from the Sun over a wide X-ray energy range.
- **The Aditya Solar wind Particle Experiment (ASPEX)** and **Plasma Analyser Package For Aditya (PAPA)** will analyze the electrons and protons in the Solar wind or particles. It will also study the energetic ions.
- **The Advanced Tri-axial High Resolution Digital Magnetometers** will study the interplanetary magnetic field at L1 point.

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**What is a Lagrange Point?**
– **Lagrange points** are positions in space where objects sent there tend to stay put. At Lagrange points, the gravitational pull of two large masses
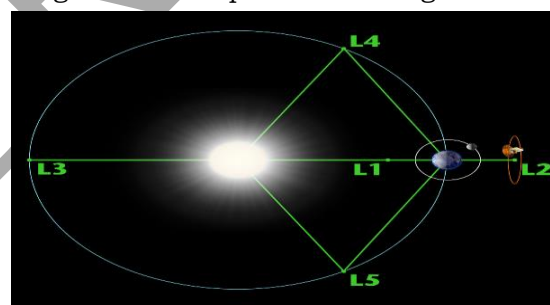


precisely equals the centripetal force required for a small object to move with them. – There are five Lagrange points, three are unstable and two are stable. The unstable Lagrange points are labeled L1, L2 and L3. The stable Lagrange points are labeled L4 and L5.
– **The L1 point** of the Earth-Sun system affords an uninterrupted view of the sun and is currently home to the Solar and Heliospheric Observatory Satellite SOHO.

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# 16. Pink Hydrogen

**Why In News?**
- Recent studies claim that pink hydrogen facilities can achieve a high capacity factor due to the steady base load profile of nuclear power.

**About the Pink Hydrogen**
- **Hydrogen, a versatile energy carrier,** has been gaining attention as a

key player in the transition to a sustainable energy future.
- o While **green hydrogen, produced using renewable energy**, another variant, known as pink hydrogen, is emerging as a promising alternative.
- **Pink hydrogen** is generated through the electrolysis of water, similar to green hydrogen. However, the **key difference lies in the source of electricity used** for the process.
- Pink hydrogen **uses electricity generated by nuclear power**.
  - o It makes **pink hydrogen a potential game-changer in the energy sector**, as it can enable large-scale hydrogen production without emitting greenhouse gases.
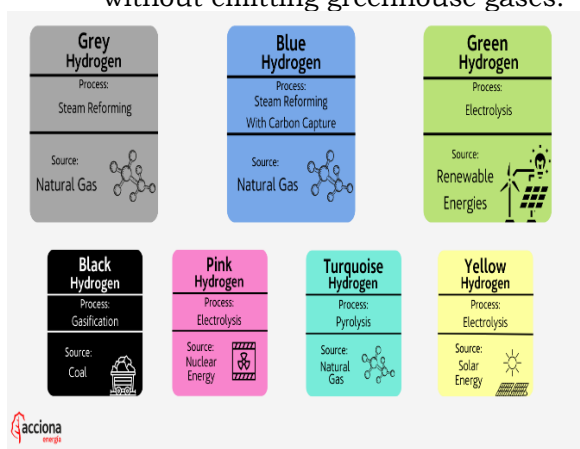


**Role of Nuclear Power**
- Nuclear power, with its ability to provide a steady supply of electricity, is well-suited for the production of pink hydrogen.
- The **International Atomic Energy Agency (IAEA)** has developed a **Hydrogen Economic Evaluation Program (HEEP)** to support the development of pink hydrogen projects worldwide.

**Do you know?**
- In India, the Atomic Energy Act, 1962, restricts private ownership of nuclear plants.
- However, proposed amendments to the Act could facilitate private investments in the nuclear sector, including the promotion of clean power like pink hydrogen.
- The production of pink hydrogen underscores the complexity of decision-making in advancing such projects.

# 17. Membranous Nephropathy (MN)

**Why In News?**
Researchers from Kerala have reported a series of cases wherein the use of fairness creams has been linked to **nephrotic syndrome**.
- Doctors describe a series of 15 cases of **Membranous Nephropathy.**

**About**
- The link between face creams containing mercury and nephrotic syndrome is well-established worldwide.
  - o **Mercury is a highly toxic heavy metal** which is used in fairness/anti-ageing creams as in its inorganic form (mercury salts) it can inhibit the formation of melanin resulting in a lighter skin tone.
- According to a new Zero Mercury Working Group (ZMWG) report released in October 2023, despite being banned

by a global treaty, **mercury-containing skin lightening products a**re still sold by some of the world's biggest online retailers to unsuspecting consumers.

**About Membranous Nephropathy (MN)**
- It is an **autoimmune disease** resulting in **nephrotic syndrome**, a condition when too much **protein is released into the urine** (proteinuria), ultimately resulting in renal failure**.**
- A kidney biopsy is used to confirm the diagnosis of membranous nephropathy.
- In approximately 70% to 80% of cases of MN, the target antigen has been **phospholipase A-2 (PLA2R).**
- Recently, another antigen, Neural epidermal growth factor-like **protein 1 (NELL-1)**, has been linked to a rare form of MN.

- **Treatment**: The key to limiting further kidney damage was recognising the actual cause of nephrotic syndrome by

diligently focussing on the patient's clinical history.

o  Immunosuppressive therapy plays a major role in the treatment of this disease.

# Art, Culture & History

## 1. Centenary of the Vaikom Satyagraha

**Why In News?**
- The year 2024 marks the centenary of the **Vaikom Satyagraha.**

**About Vaikom Satyagraha**
- **Background:** Vaikom was a temple town in the princely state of Travancore. The low-caste Hindus were not allowed to enter into the temples.
- The issue of temple entry was first raised by **Ezhava leader T KMadhavan** in a 1917 editorial in his paper **Deshabhimani**.
  - In the **1923 session of the INC in Kakinada**, a resolution was passed by the Kerala Provincial Congress Committee to take up **anti-untouchability as a key issue.**
  - Vaikom, with its revered Shiva temple, was chosen as the location for the very first satyagraha.
  - Vaikom Satyagraha was the first among temple entry movements in India
    - It lasted for 604 days (20 months) from March 30, 1924 to November 23, 1925
      - **Reasons**:The princely state of Travancore had a "feudal, militaristic, and ruthless system of custom-ridden government.
  - The idea of caste pollution worked not only on the basis of touch but also sight — lower castes were forbidden entry to any "pure" place, such as temples and the roads surrounding them.
- **Prominent Leaders:** The movement, led by TK Madhavan, EVR Periyar, MK Gandhi, and Narayana Guru.
- **Temple Entry Proclamation:** In **November 1936**, the Maharaja of Travancore signed the historic Temple Entry Proclamation which removed the age-old ban on the

entry of marginalised castes into the temples of the state.

**Impacts of the Vaikom Satyagraha**
- Vaikom Satyagraha was a **testing ground for the Gandhian Principles of Satyagraha.**
- In 1925, Gandhiji wrote to W. H. Pitt, then Police Commissioner of Travancore to resolve the ongoing matter. Thus, Pitt intervened and a settlement was signed between the Government and Gandhiji.
- The Vaikom Satyagraha proclaimed its significance almost a decade later when in November 1936, the **historic Temple Entry Proclamation** was passed, which lifted the age-old orthodox ban on the entry of marginalized depressed castes into the temples of Travancore.
- It was also a **great opportunity for the Indian National Congress Party** to Grow in Kerala.
- It became the **first struggle for human rights in India.**
- The Vaikom Satyagraha had a significant impact on Indian society and politics. The Sree Narayana Dharma Paripalana Yogam (SNDP), a social reform organization that worked for the upliftment of the lower castes in Kerala began building temples that would allow entry to all people.

**Conclusion**
- The Vaikom Satyagraha was a pivotal moment in the Indian independence movement that brought attention to the injustices of the caste system and the need for social reform.
- The Kerala government, in July 2014, announced the establishment of **Vaikom Satyagraha Memorial Museum** and Mahatma Gandhi statue at Vaikom.

## 2. Satpula Dam

### Why In News?

- Recently, the Satpula dam was In News due to its unique character of reliable source of water and acting as a defence against possible intruders in mediaeval times.

### About the Satpula:

- Satpula, a magnificent **Tughlaq-era dam**, is a historical marvel nestled in the heart of Delhi.



- It was built **in 1340 by Mohammad Bin Tughlaq**, served **two purposes**:
  - Providing a reliable source of water for irrigation, and;
  - Acting as a defence against possible intruders.
- The dam finds mention in **Sir Sayyid Ahmad Khan's Asar-us-Sanadid** (The Remnant Signs of Ancient Heroes) — considered among the first books describing Delhi's numerous monuments in vivid detail.
- The Satpula dam was built using **Delhi quartz**, a stone found in the Aravallis, and is a testament to the superior masonry and architectural skills that marked the Tughlaq era.

### Current State

- Centuries later, the stream over which the dam was built was diverted by the British, reducing the water body to a mere drain flowing on one side.
- However, the Satpula structure remains formidable as ever, reminding one of the type of masonry the empire was capable of.

## 3. Gudi Padwa

### Why In News?

- Recently, Gudi Padwa was celebrated on the first day of the month of Chaitra, which synchronises with the first day of the new moon.

### About the Gudi Padwa

- It is a spring festival celebrated predominantly in **Maharashtra and Goa**, marking the start of the new year for Marathi and Konkani Hindus.

**Some Regional New Year Festivals:**
- Yugadi or Ugadi: In Telangana, Andhra Pradesh and Karnataka.
- Poila Boishak: In West Bengal.
- Baisakhi: In Punjab.
- Puthandu: In Tamil Nadu
- Vishu: In Kerala.
- Bohag Bihu: In Assam.
- Pana Sankranti: In Odisha.
- Navreh: in Kashmir.
- Cheti Chand: Sindhi New Year.

- It falls on the first day of the Chaitra month in the Hindu calendar, is a vibrant celebration filled with rituals, festivities, and a sense of community.
- The **term 'Gudi Padwa'** is derived from two words – **'Gudi' which means flag,** and **'Padwa'** which represents the **first day of the lunar fortnight**.
  - A Gudi is hoisted on this day, giving the festival its name.

### Significance

- Gudi Padwa signifies the arrival of spring and the reaping of Rabi crops.
- It is believed that on this day, Lord Brahma created the universe.
- It marks the beginning of the harvest season in Maharashtra.
- It promotes the traditional arts, as the making of the Gudi and the drawing of rangoli require creativity and artistic skills.

# 4. Journey of Baba Saheb Ambedkar

**Why In News?**

The 133 rd Birth anniversary of Bharat Ratna Dr. Babasaheb Ambedkar was celebrated.

**About Bhim Rao Ambedkar**

- He was an Indian jurist, economist, politician and social reformer.
  - He was **first Minister of Law and Justice** of independent India and is considered as the **chief architect of the Constitution of India.**
- **Early Life**: He was born in a **low-caste Mahar** family on 14th April, 1891 to Subedar Ramji Maloji Sakpal.
- **Education:** He got his early education in Bombay and he completed his graduation at Elphinstone College, Bombay, for which he was getting a scholarship from **His Highness Sayajirao Gaikwad of Baroda.**
  - In 1913 he was selected as a scholar to go to the U.S.A, for higher studies.
  - He got his M.A. and Ph.D. degrees from Columbia University in 1915 and 1916 respectively.
  - He acquired sound knowledge of Economics, Politics, Law, Philosophy and Sociology, in pursuing his studies; he had to face many social odds.
- **Works and Contributions** : He contributed to **India's Independence struggle** and in its reforms post-independence.
  - He played a **significant** role in the **formation of the Reserve Bank of India**.
    - The Central bank was formed on the concept presented by Babasaheb to the Hilton Young Commission.
  - In 1924 he started an **Association for the welfare** of the depressed classes, with Sir Chimanlal Setalvad as the President and Dr. Ambedkar as the Chairman.
  - He founded **Bahishkrit Hitkarini Sabha (Society for Welfare of the Ostracized)** and led social movements such as **Mahad Satyagraha** in 1927 to demand justice and equal access to public resources for the historically oppressed castes of Indian society.
  - The **Bahishkrit Bharat newspaper** was started in 1927 to address the cause of the depressed classes in view of the new reform.
- In 1936 he addressed the Bombay Presidency Mahar Conference and advocated the **renunciation of Hinduism**.
- In **1936, he formed the Independent Labour Party** to safeguard the interest of the depressed classes, which mostly formed the labour population.
- **In 1942**, he was appointed to the **Executive Council of the Governor General of India** as a Labour member
- In 1946, he was elected to the **Constituent Assembly of India**.
- On 15 August 1947, he took oath as the **first Law Minister of independent India**.
  - Subsequently, he was **elected Chairperson of the Drafting Committee of the Constituent Assembly**, and steered the process of drafting of India's Constitution
- **In 1951, he resigned his ministership,** expressing his differences on the Kashmir issue, India's Foreign Policy and Nehru's Policy towards the Hindu Code Bill.
- He published his book, **Who were Shudras**?
- In **1955**, he published his book titled **Thoughts on Linguistic States.**

**Legacy and Importance in present scenario**

- He was perhaps India's most radical thinker who transformed the social and political landscape in the struggle against British Colonialism, by making the downtrodden politically aware of their own situation.
  - Ambedkar famously said to Dalits something that bears immense importance even today – "Educate, Agitate, and Organise"..
- He dedicated the rest of his life for equality, brotherhood and humanity.
- He has left behind thought provoking writings and speeches bearing

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interdisciplinary perspectives, with insightful analysis of socio political situations which evoke intellectual reasons and emotions.

- o His writings have a profound sense of justice manifested in emancipation of marginalised masses.

- Today, the Indian Economy and Indian Society are facing many economic and social problems. Dr. Ambedkar's thoughts and actions may guide us for the solution of these problems.

**Efforts to Honour him**

- In 1952, Columbia University conferred upon him the degree of LL.D. in recognition of the work done by him in connection with the drafting of India's Constitution.

- He was awarded a Doctorate in 1953, from Osmania University.

- He was conferred with the title of "Bodhisattva" by the Buddhist monks at "Jagatik Buddhism Council" in 1954 in Kathmandu, Nepal.

- Dr. B.R. Ambedkar's death anniversary is observed as Mahaparinirvan Diwas across the country.

- o In 1956, he embraced Buddhism in a historic ceremony in Nagpur and died on 6th December 1956.

- **In 1990, the Bharat Ratna**, India's highest civilian award, was posthumously conferred upon him.

## 5. Bohag Bihu

**Why In News?**

- **Traditional Assamese Gamosa (**rectangular piece of cloth) sees surge in demand ahead of **'Bohag Bihu'.**

**About the Bihu**

- Bihu is the essence of **Assam** and is celebrated across the state with a tremendous zeal and enthusiasm.

- There are three **Bihu festivals namely**
  - o **'Bohag Bihu**' is celebrated in the month of 'Bohag' (Baisakh, the middle of April): It is also called the **Rongali Bihu and** is a festival of merriment and heralds the Assamese New Year and the onset of spring.

- **'Magh Bihu**' is celebrated in the month of 'Magh' (the middle of January): It is also called Bhogali Bihu, which is quintessentially the festival of food.

- o It marks the end of the harvesting season. The eve of the Magh Bihu is called the Uruka.

- **'Kati Bihu'** is celebrated in the month of 'Kati' (Kartik, the middle of October) :
  - o It is also called **Kongali Bihu** unlike the other Bihu's, is not a flamboyant festival and the festivities are graver in nature. An earthen lamp is lit near the Tulsi plant which is termed as the 'Tulsi Bheti'.

**Significance**

- Each Bihu coincides with an idiosyncratic phase in the farming calendar. The Bohag Bihu marks the New Year at the advent of seeding time, the Kati Bihu marks the completion of sowing and transplanting of paddies, and the Magh Bihu marks the end of the harvesting period.

## 6. Konda Reddi Tribe

**Why In News?**

- **Konda Reddi tribe's indigenous knowledge** of **Indian laurel tree** has proven to be resourceful for Forest Department authorities.

**About**

- The Konda Reddi Tribe is a **Particularly Vulnerable Tribal Group** inhabiting the Papikonda hill range in the **Godavari region of Andhra Pradesh.**

- The Andhra Pradesh Forest Department authorities cut the bark of an Indian laurel tree (Terminalia tomentosa) found in the Papikonda National Park in the Alluri Sitharama Raju district to learn that the **tree indeed stores water,** particularly in the summer, as claimed by the tribe.

- o Known as **Indian Silver Oak,** the timber of the Indian laurel has great commercial value.

## Who are Particularly Vulnerable Tribal Groups (PVTGs)?

- In 1973, the **Dhebar Commission** set up a separate category for **Primitive Tribal Groups (PTGs)**.
  - o **In 1975,** the Union identified 52 tribal groups as PTGs.
  - o **In 1993,** 23 more groups were added to the list. Later, in 2006, these groups were named PVTGs.
- PVTGs are a **more vulnerable group** among tribal groups in India.

- o These groups have primitive traits, geographical isolation, low literacy, zero to negative population growth rate and backwardness.
- o Moreover, they are largely dependent upon hunting for food and a pre-agriculture level of technology.
- It is said that more developed tribal groups take advantage of the development funds, and thus, there is a **need to direct more funds towards PVTGs.**
- According to the 2011 Census, **Odisha** has the largest population of PVTGs followed by Madhya Pradesh.

## 7. Excavation Reveals Harappan Settlement in Kachchh

### Why In News?
- A **human skeleton,** along with **pottery artifacts and animal bones** has been found on the slope of a **hillock in a Gujarat village.**

### About
- Archaeologists excavated a site called **Padta Bet,** it was 1.5 km from the **mass burial ground of Juna Khatiya,** an Early Harappan necropolis.
- **In 2018,** archeologists had unearthed a **mass burial site with 500 graves** on the outskirts of Khatiya village in Gujarat's Kutch district which raised the questions of whose graves are these?
- The latest find bolsters the theory that the **graveyard site may have served as a common facility** for a cluster of several such smaller settlements.
- The Archaeologists also found **semi precious stone beads** made of **carnelian and agate,** terracotta spindle whorls, copper, lithic tools, cores and debitage, grinding stones and hammer stones.

### Harappan Civilization
- The Harappan civilization is believed to be **one of the oldest world civilizations** together with Egypt and Mesopotamia.
- It was developed along the **river Indus** and for that reason it is also

known as the **Indus Valley Civilization.**
- The Harappan civilization is identified as a **Bronze-age civilization** because many objects have been found that are made up of **copper based alloys.**

### Major Features of Civilization
- **Urban Planning:** Their towns were well planned and they had brick houses which were situated along the roads.
  - o Every house was equipped with a staircase, a kitchen and several rooms.
  - o Their courtyards had wells, bathrooms and they had proper drainage systems.
- **Ornaments:** The Harappans wore ornaments made of **gold, silver, ivory,shell, clay, semi-precious stones and others.**
- **Trade and Commerce:** The civilization had extensive trade networks, reaching as far as Mesopotamia, Afghanistan, and the Arabian Peninsula.
- **Religion and Iconography:** Harappan artifacts depict various symbols and motifs believed to be related to religious beliefs.
  - o These include figures such as the **"Priest King"** and images of animals like **bulls,** suggesting possible reverence for certain animals.
- **Craftsmanship and Artistry:** The Harappans produced **intricate**

pottery, including the **famous red pottery** with black painted motifs.
  - They also created jewelry, sculptures, and seals made of **steatite, terracotta, and other materials.**
- **Agriculture:** They cultivated crops such as **wheat, barley, peas, and cotton**.
- **Social Organization:** The society was likely stratified, with evidence suggesting a **hierarchical structure.** This is indicated by variations in housing sizes and the presence of public buildings.
- **Decline and Disappearance:** The reasons for the decline of the Harappan Civilization are still debated among historians and archaeologists.
  - Possible factors include ecological changes, such as shifts in river courses, as well as invasions and internal conflicts.

**Major Harappan Sites**

| Site | Present Day |
|---|---|
| Harappa | Punjab, Pakistan |
| Mohenjo-Daro | Sindh, Pakistan |
| Dholavira | Kutch district of Gujarat, |

| Kalibangan | Rajasthan |
|---|---|
| Lothal | Gujarat |
| Rakhigarhi | Haryana |
| Chanhudaro | Sindh, Pakistan |
| Ganweriwala | Punjab, Pakistan |
| Sutkagendor | Baluchistan Province, Pakistan |
| Alamgirpur | Uttar Pradesh |
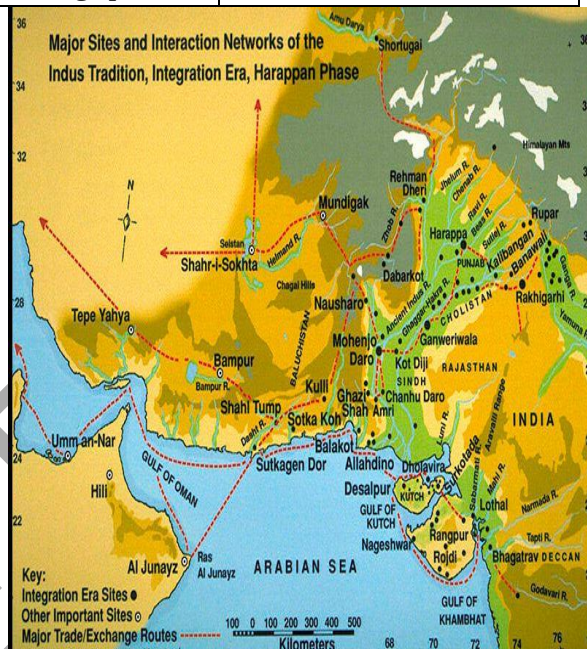


# 8. Ahobilam Temple

**Why In News?**
- The Forest Department and Sri Lakshmi Narasimha Swamy Devasthanam (SLNSD) imposed certain restrictions on visitors arriving at Ahobilam temple in the wake of the intense heat wave that can impact the movement of wild animals.

**About temple**
- Ahobilam is a town and holy site in the Allagadda mandal of Kurnool district in the Indian state of **Andhra Pradesh.**
- It is surrounded by picturesque hills of the **Eastern Ghats** with several mountain hills and gorges.
- It is situated within the Nallamala forest.
- It is the centre of worship of **Narasimha, t**he lion-headed avatar of **Vishnu**, to whom the nine Hindu

temples and other shrines are all dedicated.

**Significance**
- It is traditionally regarded as the place where Vishnu in the form of Narasimha killed the Rakshasa Hiranyakashipu in order to save his devotee Prahlada.
- The legend says that Narasimha emerged from a rock pillar to slay the Rakshasha.
- The moment is represented in a number of murti in the various temples.

**Do you know?**
– The Ahobilam National Tiger Conservation Authority (NTCA), constituted as per the provisions of the Wild Life Protection Act, 1972, by the Ministry of Forests, Environment and Climate Change, oversees the rare flora and fauna specific to the region.

# 9. Rakhigarhi Findings in NCERT Books Added

**Why In News?**
- The National Council of Educational Research and Training (NCERT) has proposed to add findings from the archaeological site of Rakhigarhi in Haryana.

**What are the DNA Findings?**
- The study of ancient DNA from archaeological sources in Rakhigarhi, Haryana suggests that the genetic roots of the Harappans go back to 10,000 BCE.
- The DNA of the Harappans has continued till today and a majority of the south Asian population appears to be their descendants.
- The study indicates **genetic continuit**y without large-scale immigration.
- People from bordering areas and distant regions were **absorbed into Indian society.**

**Rakhigarhi**
- **Site location:** The present-day Rakhigarhi is located 27 km from the Ghaggar river, in the Ghaggar-Hakra river plain.

- The archaeological site, dating back to **2600-1900 BCE.**
- It is the **largest Harappans site** in the Indian Subcontinent.
- **Findings**
  - **Granary:** A granary belonging to the mature Harappan phase (2600 BCE to 2000 BCE) has been found here. It has 7 rectangular or square chambers.
  - **Culture, clothing and worship:** Fire altars and apsidal structures were revealed in Rakhigarhi.
  - **Cemetery and burial sites:** A cemetery of Mature Harappan period is discovered at Rakhigarhi, with eight graves found.
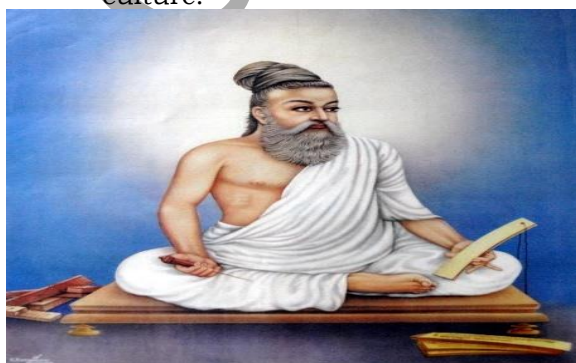


# News in Short
# 9. Thiruvalluvar

**Why In News?**
- Establishment of Thiruvalluvar Cultural Centres globally proposed in a political manifesto.

**About Thiruvalluvar**
- Thiruvalluvar was a celebrated Tamil poet and scholar.
  - He is a venerated figure in Tamil culture.



- The historicity of Thiruvalluvar is uncertain.
- The period during which he lived is debated, as is his religious affiliation. Some accounts place him in the 3rd or 4th century CE; others date him to around 500 years later, in the 8th or 9th century.
- He has been identified as both a Hindu and a Jain sage, while Dravidian groups consider him as a saint with no religious identifiers except his Dravidian roots.
- **Works :** He is best known as the author of 'Tirukkural', a collection of couplets on matters like ethics, politics, economics and love.
  - Tirukkural is considered one of the greatest works in Tamil literature.
  - He has influenced a wide range of scholars through the years in

disciplines like ethics, politics, economics, philosophy and spirituality.

# 10. Science Behind Surya Tilak Ceremony

**Why In News?**

- Recently, the forehead of Lord Ram's idol in Ayodhya's newly-built temple was lit up by a beam of sunlight.

**About the Concept of Surya Tilak**

- The term Surya Tilak is derived from Surya (Sun) and Tilak (a mark worn on the forehead).



- It involves a complex **interplay of mirrors, lenses, and a specialised gearbox** to precisely align the sun's rays and direct them onto the forehead of the Ram Lalla idol.
- The significance lies in Lord Ram's lineage tracing back to the **Ishvaku clan,** believed to be descendants of the sun, or Suryavanshis.

**The Mechanism:**

- The Surya Tilak mechanism involves a complex system designed and implemented by the **Central Building Research Institute (CBRI) in Roorkee**, in collaboration with the **Indian Institute of Astrophysics (IIA)** and a **Bangalore-based company, Optica**.
- This intricate setup, comprising brass and bronze components for durability, directs the sun's rays into the **Sanctum Sanctorum at the appointed time**.
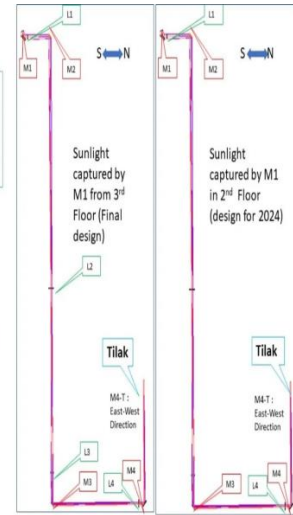


- The mechanism consists of **four mirrors and four lenses** fitted inside a **tilt mechanism**.
  o The **first mirror**, responsible for receiving the sunlight, is positioned at an angle along the path of the sun rays.
  o The light is then **reflected to three other mirrors** and passes through four lenses until it is of the desired intensity, and is **directed to the idol's forehead.**
  o The mirrors direct the beams while the lenses make them converge to the required intensity.

**Significance**

- The Surya Tilak ceremony is a testament to the **fusion of ancient tradition with modern science.**
- The practice of Surya Tilak using integration of optics and mechanics is not new and has been essential to the ancient temples of the Indian subcontinent.
- Various temples across India perform this ceremony, each having a distinct engineering technique that illuminates deities with sunlight at specific times.
  o For instance, the **Suriyanar Kovil Temple in Tamil Nadu**, built between the 11th-12th centuries, illuminates specific areas throughout the year, including the deity Suriyanar and his consorts.

# 11. World Heritage Day

**Why In News?**
- World Heritage Day, also known as the International Monuments and Sites Day, is observed on 18 April every year.
  o **The theme** of World Heritage Day is '**Discover and Experience Diversity'.**

**Background**
- **World Heritage** is the designation for places on Earth that are of outstanding universal value to humanity and as such, have been inscribed on the World Heritage List to be protected for future generations to appreciate and enjoy.
- In **1982**, The **International Council on Monuments and Sites (ICOMOS)** proposed that April 18 should be observed as the World Heritage Day.
  o Later, the date was approved by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) at the 22nd General Conference in **1983.**

**Significance**
- On this day, several organizations, societies, governments, and individuals come together to advocate the preservation of these marvels and increase public awareness about their significance.
- Several historic monuments and sites present in India are in dire need of preservation, to keep the cultural heritage intact.

**Monuments of National Importance (MNI) of India**
- The MNIs are officially conserved by the **Archaeological Survey of India (ASI),** which functions in accordance with The Ancient Monuments and Archaeological Sites and Remains Act of 2010 **(AMASR Act 2010).**
- There are **3697** ancient monuments and archaeological sites and remains declared as of national importance in the country.

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**Architecturally significant caves in India**
- **Ellora Caves:** They are situated in Maharashtra and are a remarkable fusion of Buddhist, Hindu, and Jain monuments.
  a. The site includes 34 caves, carved out of solid rock between the 6th and 10th centuries CE.
  b. **The Kailash Temple**, carved from a single rock and dedicated to Lord Shiva, attracts visitors from all over the world.
- **Ajanta caves:** the caves are located in **Maharashtra** and are renowned for their exquisite Buddhist rock-cut cave monuments.
  a. These caves date back to the 2nd century BCE.
- **Krishna Mandapam:** It is located on the Coromandel Coast of the Bay of Bengal, in the Kancheepuram district, **Tamil Nadu.**
  a. The rock-cut cave temple is dedicated to Lord Krishna and depicts scenes from Hindu mythology, including Lord Krishna lifting the Govardhan Hill.
- **Varaha Cave Temple:** In the coastal town of Mahabalipuram in Tamil Nadu stands the Varaha Cave Temple, a UNESCO-listed monument carved out of a single rock in the **7th century CE.**
  a. It was made by the **Pallava rulers,** depicting various forms of Lord Vishnu, including his avatar or incarnation as Varaha (boar) to save Goddess Earth.
- **Elephanta Caves:** The site is located in **Elephanta Island,** Maharashtra. It features a collection of rock-cut temples dedicated to **Lord Shiva.**
  a. These caves, dating back to the **5th century CE.**
  b. The most notable among the network of caves is the **Trimurti**, a massive three-headed statue representing the aspects of Shiva.

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# 12. World Craft City Programme

## Why In News?
- Recently, it was expected that the **Srinagar** of Indian UT of Jammu and Kashmir, known for its unique and high-quality craftwork, to be on the list of World Craft Cities.

## About the World Craft City (WCC) Programme
- It establishes a dynamic network of craft cities across the globe, *launched in 2014 by **World Crafts Council International (WCCI),** aligning with the principles of the **creative economy.***
- It aims to highlight craft expertise, encourage government support, foster innovation and tourism, and facilitate knowledge exchange among the selected cities featured on its platform.

> **World Crafts Council International (WCCI)**
> – It is a **Kuwait-based organisation** working on the recognition and preservation of

traditional crafts across the globe, has initiated a groundbreaking program known as the **World Craft City (WCC) Programme.**
- It recognises the pivotal role local authorities, craftspeople, and communities play in cultural, economic, and social development worldwide.

## Do You Know?
- **Sonargaon**, one of the old capitals of the historic region of Bengal, has been recognised as the **'World Craft City'** earlier for being the **birthplace of Jamdani**.
- **Jamdani** is a **fine muslin textile of Bengal,** produced for centuries and whether figured or flowered, it is a woven fabric in cotton which is also a symbol of aristocracy.

# 13. 2550th Mahaveer Nirvan Mahotsav

## Why In News?
- Recently, the Prime Minister of India inaugurated the 2550th Bhagwan Mahaveer Nirvan Mahotsav on the auspicious occasion of Mahaveer Jayanti at Bharat Mandapam in New Delhi.

## About Mahaveer Jayanti (aka Mahavir Janma Kalyanak)
- It celebrates the birth of Mahavira, the last Tirthankara and the founder of Jainism.
- Mahavira was born on the 13th day of the bright half of the Hindu month of Chaitra, which usually falls in March or April.

**Mahavira Swami Birth and Early Life:**
- He was **born** to King Siddhartha and Queen Trishala of the **Ikshvaku dynasty**, in 540 BC at Kshatriyakund (part of the well known **Vaishali republic**) in **Bihar**.
- He was named Vardhaman, which means continuously increasing.
- He was a kshatriya prince of the

Lichchhavis, a group that was part of the **Vajji Sangha.**
- Though he was born with worldly comforts and luxuries, they never attracted him and at the age of thirty, he left home and went to live in a forest. For twelve years he led a hard and lonely life.

**Kevaljnan:**
- At the age of forty-two he attained **Kevaljnan (omniscience)** through *right knowledge, right faith and right conduct (Three Jewels of Jainism).*
- He became a **Jina (conqueror)** and the twenty-fourth tirthankara.
  a. **Rishabh Deva was the first tirthankara**.

**Teachings and Contributions:**
- All living beings have a soul and all souls are equal.
- He questioned the authority of the Vedas and also emphasised individual agency and suggested the masses to

attain liberation from the trials and tribulations of worldly existence.
a. This was in marked contrast to the Brahmanical position, wherein, an individual's existence was thought to be determined by his or her birth in a specific caste or gender.
– He added one more vow to the four great vows from the time of Lord Parshvanath. The five great vows are:
  a. **Ahimsa (non-violence);**
  b. **Satya (truth);**
  c. **Asteya (non-stealing);**
  d. **Aparigraha (non-possession);**
  e. **Brahmacharya** (chastity, *added by Mahavira*).
– There are two forms of these five vows:
  a. **Mahavrata**: The 5 great vows followed by Jain monks and nuns.
  b. **Anuvrata**: The less strict version of great vows followed by Jain lay people.
– As the last Tirthankar, he revived the Tirth (religious order) and this order is known as the Jain Sangh (order).

**Language:**
– He used **Prakrit language** so that ordinary people could understand the teachings as Sanskrit was not understood by many.
– There were several forms of Prakrit, used in different parts of the country and named after the regions in which they were used.
  a. For example, the **Prakrit spoken in Magadha** was known as Magadhi Prakrit.

**Death:**
– He attained mahaparinirvana at the age of seventy-two at **Pavapuri near Patna** in 468 BC and became a Siddha (free from the cycle of birth and death).

**Jainism**
• The word Jain comes from the term Jina, meaning conqueror.
• The basic philosophy was **already in existence in North India before the birth of Lord Mahavira.**
• According to Jain tradition, **Mahavira was preceded by 23 tirthankaras (teachers)**, literally, those who guide men and women across the river of existence.
• The most important idea in Jainism is that the entire world is animated and even stones, rocks and water have life.
  o Non-injury to living beings, especially to humans, animals, plants and insects, is central to Jain philosophy.
• According to **Jain teachings,** the cycle of birth and rebirth is shaped through karma and asceticism and penance are required to free oneself from the cycle of karma. This can be achieved only by renouncing the world, therefore, monastic existence is a necessary condition of salvation. In order to do so, Jain monks and nuns had to take the five vows.

**Seven Tattvas (elements) of Jain Philosophy:**
• *Jiva (living substance);*
• *Ajiva (matter or non-living substance);*
• *Asrava (influx of Karmic matter in the soul);*
• *Bandha (bondage of soul by Karmic matter);*
• *Samvara (stopping of Asrava);*
• *Nirjara (gradual removal of Karmic matter);*
• *Moksha (attainment of perfect freedom or salvation).*

**Karmas responsible for distortions of the soul:**
• **Ghati (Destructive) Karma:** These obstruct the true nature of the soul.
  o Jnanavarniya (Knowledge obscuring) Karma;
  o Darshanavarniya (Perception obscuring) Karma;
  o Antaräy (Obstructing) Karma;
  o Mohniya (Deluding) Karma
• **Aghati (Non-destructive) Karma:** These affect only the body in which the soul resides. As long as Aghati karmas will be present, human souls will stay caged in some kind of a body and will have to experience pain and sufferings in many different forms.
  o Vedniya (Feeling producing) Karma;
  o Nam (Body determining) Karma;
  o Gotra (Status determining) Karma;
  o Ayushya (Age determining) Karma;
  o Vedniya (Feeling producing) Karma

**Spread of Jainism:**
- Over hundreds of years, it spread to different parts of north India and to Gujarat, Tamil Nadu and Karnataka.

**Literature:**
- Jain scholars produced a wealth of literature in a variety of languages namely Prakrit, Sanskrit and Tamil.
- Jain literature is classified into **two major categories**
  - **Agam Literature:** This consists of original scriptures compiled by Ganadhars and Srut-kevalis. They are written in the Prakrit language.
  - **Non-Agam Literature:** This consists of commentary and explanation of Agam literature and independent works, compiled by elder monks, nuns, scholars, etc. and are written in many languages such as Prakrit, Sanskrit, Old Marathi, Gujarati, Hindi, Kannad, Tamil, German and English.

**Jain Councils:**

| Jain Councils | Year | Place | Chairman | Development |
|---|---|---|---|---|
| 1st | 300 BC | Patilputra | Sthulabhadra | Compilation of Angas. |
| 2nd | 512 AD | Vallabhi | Devardhi Kshmasramna | Final compilation of 12 Angas and Upangas. |

**Sects of Jainism**
- Famine in Magadha led to the division of Jainism into two sects namely Digambar (meaning sky clad) and Shwetamber (meaning white clad).

**Digambar Sect:**
- It was led by **Bhadrabahu**, leader of monks who moved to the south. It is more austere and is closer in its ways to the Jains at the time of Mahavira.
  - In recent centuries, it has been further divided into various sub-sects.

| Major sub-sects: | Minor sub-sects: |
|---|---|
| Bisapantha Terapantha Taranapantha or Samaiyapantha | Gumanapantha Totapantha |

**Shwetambar Sect:**
- It was led by **Sthulabhadra**, the leader of Monks who stayed in the North.
  - Like the Digambar Sect, it has also been divided into three main sub-sects:
    - Murtipujaka
    - Sthanakvasi (avoided Idol Worship/Murtipujak)
    - Terapanthi (simpler worship pattern than Digambar TeraPanthi)

**Differences Between Digambar and Shwetambar:**

| Dimensions | Digambar | Shwetambar |
|---|---|---|
| Clothes | They live completely naked. | They wear white clothes. |
| Women | Women cannot achieve liberation. | Women can achieve liberation. |
| Images | Digambara images of tirthankaras have downcast eyes, are plain and always carved as naked figures. | Svetambara images have prominent staring eyes and are richly decorated. |

**Difference Between Jainism and Buddhism**

| Dimension | Buddhism | Jainism |
|---|---|---|
| Soul | Does not believe in the soul. No soul theory is propounded (Nairatmyavada). | Believe in the soul, which is present in everything. |
| God | Generally silent on questions related to the existence of God. | Does believe in God, not as a creator, but as a perfect being. |
| Varna System | Condemn it. | Do not condemn it. |
| Incarnation | Do not believe in incarnations. | Believe in incarnations. |

# 14. Panhala Fort

**Why In News?**
- The Archaeological Survey of India (ASI), Mumbai Circle celebrated World Heritage Day at Panhala Fort.

**About**
- **Location:** It is located in Panhala, Kolhapur in Maharashtra. It is strategically placed in proximity to the trade routes connecting the Sahyadri mountains, the Deccan plateau, and the Konkan coast.
- The fort was built between **1178 and 1209 CE**, by the **Shilahara** ruler **Bhoja II.**
- The fort reflects the transfer of power in the hands of the Yadavas of Devagiri, the Bahmani of Bidar, the Adil Shahi of Bijapur, the Marathas and the Mughals.

**Architecture**
- The fort had 3 double walled gates, namely; **Chaar Darwaja, Teen Darwaja, Wagh Darwaja.**

- There are several **water bodies** such as, Someshwar Tank, Sadhoba Tank, Khokad Tank and Idgah Tank.
- There is a three-storied tower called the **Nayikinicha Sajja** or the dancing girl's tower, built during the reign of **Ibrahim Adil Shah II.**
- **Sajja Kothi** is a double storied structure with an upper gallery occupying the prominent and highest position on the hill.

**Significance**
- In 1954, Panhala Fort was declared as a Monument of National Importance.
- Panhala Fort, is one of the 11 forts that has been nominated by ASI for inclusion in the UNESCO World Heritage List under the title, '**Maratha Military Landscapes'.**

# 15. Indian Historical Records Commission (IHRC)

**Why In News?**
- Recently, the Indian Historical Records Commission (IHRC) adopted a new logo and motto.

**About the Indian Historical Records Commission (IHRC)**
- It is, *established in 1919,* an **all-India forum** of creators, custodians, and users of records.
- It is **an apex advisory body** on archival matters that **advises** the Government of India on **all issues connected with the management of records** and their use for historical research.
- The **Union Minister of Culture** heads the IHRC.

**Role and Significance**
- The IHRC plays a vital role in *identifying, collecting, cataloguing, and maintaining* historical documents, manuscripts, and other sources of historical information.
- By doing so, the Commission ensures that valuable historical knowledge is conserved for future generations.

- The IHRC has contributed significantly to the growth of public interest in the conservation and use of archives.

**New Logo and Motto**
– The logo signifies the **theme and uniqueness** of IHRC entirely.
– The pages in the **shape of lotus petals** represent IHRC as the resilient nodal institution for maintaining historical records.
– The **Sarnath pillar** in the middle represents India's glorious past.
– The **brown colour theme** reinforces the organisation's mission of preserving, studying, and honouring India's historical records.
– **Motto: *'Where history is preserved for the future'.***
   a. The motto holds great significance for the IHRC and its work.

# 16. Dongria Kondh Tribe

**Why In News?**

- Several members of **Dongria Kondh community**, **a Particularly Vulnerable Tribal Group (PVTG) in Odisha,** have warned of boycotting the upcoming elections unless 'false' cases registered against them for anti-mining protests and for allegedly having Maoist links are withdrawn.

**About**

- The **Niyamgiri hill range in Odisha state,** is home to the Dongria Kondh tribe.
- The Dongria have **distinctive jewellery, tattoos and hairstyles.**
- Women wear many rings through their ears and three through their noses, while boys wear two nose rings.
- Dongria girls wear clips in their hair and rings and beads around their necks.

**Who are Particularly Vulnerable Tribal Groups (PVTGs)?**

- In 1973, the **Dhebar Commission** set up a separate category for **Primitive Tribal Groups (PTGs)**.
  o **In 1975,** the Union identified 52 tribal groups as PTGs.
  o **In 1993,** 23 more groups were added to the list. Later, in 2006, these groups were named PVTGs.
- PVTGs are a **more vulnerable group** among tribal groups in India.
  o These groups have primitive traits, geographical isolation, low literacy, zero to negative population growth rate and backwardness.
  o Moreover, they are largely dependent upon hunting for food and a pre-agriculture level of technology.
- According to the 2011 Census, **Odisha** has the largest population of PVTGs followed by Madhya Pradesh.

# Report & Indices

## 1. UNFPA on India's Population

**Why In News?**

- According to a recent report by the **United Nations Population Fund (UNFPA),** India's population is estimated to have reached 1.44 billion, with 24% in the 0-14 age bracket.

**About**

- The UNFPA's State of World Population – 2024 report, titled *'Interwoven Lives, Threads of Hope: Ending Inequalities in Sexual and Reproductive Health and Rights'*, revealed that India's population is estimated to double in 77 years.
- **India** leads globally with an estimated population of 1.44 billion, **followed by China** at 1.425 billion.
  - o India's population was recorded at 1.21 billion during the last census, conducted in 2011.
- **Demographic Categorisation in India:**
  - o An estimated 24% of India's population is aged 0-14, while 17% is within the 10-19 age range.
  - o The segment aged 10-24 is estimated to constitute 26%, with the 15-64 age group making up 68%.
  - o Additionally, 7% of India's population is aged 65 years and above, with men having a life expectancy of 71 years and women 74 years.

**Key Takeaways From the Report**

- **Progress in Sexual and Reproductive Health:** Over the past 30 years, significant strides have been made in fulfilling the **International Conference for Population and Development (ICPD) agenda.**
  - o The global rate of unintended pregnancies has fallen by nearly 20% globally.
  - o The number of women using modern contraceptive methods has doubled.
  - o At least 162 countries have adopted laws against domestic violence, and

maternal deaths have decreased by 34% since 2000.

- **Persistent Inequalities:** Despite the progress, millions are still denied their health and rights every day.
  - o Gender-based violence remains rampant in practically every country and community.
  - o There has been zero reduction in maternal mortality since 2016, and in an alarming number of countries, the rates are rising.
  - o Nearly half of women still are unable to make decisions about their own bodies.
- **Marginalised Groups:** The report shows that although women across socioeconomic classes and ethnicities say barriers to health care have come down over time, the women most marginalised have experienced the least improvement.
  - o Women of African descent are found to be more vulnerable to obstetric mistreatment and negative maternal health outcomes.
  - o Indigenous women are often denied culturally appropriate maternal health care, and their own childbirth practices may be criminalised, resulting in significantly higher risk of death in pregnancy and childbirth.

**Key Concerns Highlighted in the Report**

- **Discrimination and Stigma:** The report highlights the role **racism, sexism, and other forms of discrimination** continue to play in blocking broad gains in sexual and reproductive health for women and girls.
  - o Women and girls with **disabilities** face up to 10 times more gender-based violence while also facing higher barriers to sexual and reproductive information and care.
  - o **LGBTQIA+** people face serious health disparities in addition to –

and as a result of – discrimination and stigma.

- **Health and Social Challenges:** The report has found that 30 years of progress in sexual and reproductive health has mostly ignored the most marginalised communities worldwide.
  o According to it, the **child marriage percentage** in India was at 23% between 2006-2023.
  o The **maternal deaths in India** have **fallen** considerably, accounting for 8% of all such fatalities worldwide.
  o However, the report noted that India continues to see **inequities in maternal death risk**.

**Conclusion and Way Forward**

- The report suggests that to fulfil the promise of universal sexual and reproductive health and rights, one needs to **root out inequalities from our health systems and policies** and focus as a **priority** on those women and young people who are **most marginalized and excluded**.
- On the other hand, the large young population presents a significant opportunity for economic growth and development.

o However, it also underscores the need for continued efforts in improving health and social outcomes, particularly for the most marginalised communities.

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**United Nations Population Fund (UNFPA)**

– It is *(formerly known as the United Nations Fund for Population Activities)* a UN agency, *established in 1969*, aimed at improving reproductive and maternal health worldwide.

– It is the largest international source of assistance for population programs for the implementation of the Programme of Action of the International **Conference on Population and Development (1994).**

– UNFPA works directly to tackle Sustainable Development Goals on health (SDG3), education (SDG4) and gender equality (SDG5).

– UNFPA is entirely supported by voluntary contributions of donor governments, intergovernmental organizations, the private sector and foundations and individuals, **not by the United Nations regular budget**.

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## 2. India lost 2.33 million hectares of tree cover since 2000: Global Forest Watch

**Why In News?**

- India has lost **2.33 million hectares of tree cover since 2000,** equivalent to a **six percentdecrease in tree cover** during this period, according to the latest data from the **Global Forest Watch monitoring project.**
  o The Global Forest Watch **tracks forest changes in near real-time using satellite data and other sources.**

**Findings**

- **Primary Forest Loss:** India lost 4,14,000 hectares of **humid primary forest** (4.1 per cent) from 2002 to 2023, making up **18 percent** of its total tree cover loss in the same period.



- Stable forest — 59.2 Mha
- Gain — 1.88 Mha
- Loss — 1.01 Mha
- Disturbed — 6.17 Mha
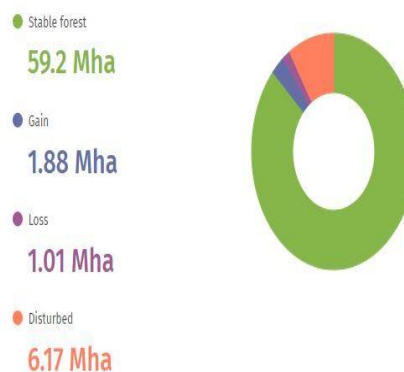
- **Tree Cover Loss:** From 2001 to 2023, **India lost 2.33 Mha of tree cover,** equivalent to a **6.0% decrease in tree cover since 2000.**

o From 2013 to 2023, **95% of tree cover loss** in India occurred within **natural forest.**
o **Five states** accounted for **60 percent** of **all tree cover loss** between **2001 and 2023.**
o **Assam had the maximum tree cover loss** followed by Mizoram, Arunachal Pradesh, Nagaland, and Manipur.

- **Tree Cover Gain:** In India, the top **6 regions** were responsible for **54%** of all tree cover gain between 2000 and 2020. **Karnataka** had the most tree cover gain.
  o From 2000 to 2020, India gained **1.4% of the global total.**
- **All Tree Cover:** As of 2010, the **top 7 regions represent 55% of all tree cover.**
  o **Arunachal Pradesh** had the most tree cover followed by **Assam, Chhattisgarh, Kerala and Odisha.**
- **Loss Due to Forest Fires:** India lost 35,900 hectares of tree cover due to fires from 2002 to 2022, with 2008 recording the maximum tree cover loss due to fires.
  o From 2001 to 2022, **Odisha had the highest rate of tree cover loss due to fires**. Arunachal Pradesh lost 198 hectares, Nagaland 195 hectares, Assam 116 hectares, and Meghalaya 97 hectares.
- **Carbon Sink:** Between 2001 and 2022, forests in India emitted 51 million tons of carbon dioxide equivalent a year and removed 141 million tons of carbon dioxide equivalent a year.
  o This represents a net carbon sink of 89.9 million tons of carbon dioxide equivalent a year.

**Conclusion**
- The tree cover loss data featured on the Global Forest Watch represents the best available spatial figures on **how forests are changing around the world.**
- The monitoring and alert system is designed to empower people everywhere with the information they need **to better manage and conserve forest landscapes.**

## 3. India 4th largest military spender in 2023: SIPRI

**Why In News?**
- Recently, the Stockholm International Peace Research Institute (SIPRI) has released the report based on the Global Military Expenditure including India.

**About the Global Military Expenditure**
- According to the SIPRI report, the **world military expenditure rose by 6.8% in real terms** (i.e. when adjusted for inflation) to $2443 billion in 2023, the highest level ever recorded by SIPRI.
  o In 2023 military spending **increased in all five geographical regions** for the first time since 2009.
- Total military expenditure accounted for 2.3% of the global gross domestic product (GDP) in 2023.
- The **five biggest spenders in 2023** were the **United States, China, Russia, India and Saudi Arabia**, which together accounted for 61% of world military spending.

**India's Military Spending**
- India's military spending in 2023 was up by 4.2% from 2022 and by 44% from 2014.
  o It was mainly a result of growing personnel and operations costs, which made up almost 80% of the total military budget in 2023.
- SIPRI highlighted that **India's** military expenditure was the **fourth** and it is worth **$83.6 billion in 2023.**
- It aligns with the government's priority to strengthen the operational readiness of the armed forces amid ongoing tensions with China and Pakistan.

**About SIPRI**
- It was founded **in 1966 by the Swedish parliament** as an independent research institute to conduct research on issues related to international peace and security, including arms control, disarmament, and conflict resolution.
- It is funded by a combination of government grants, private donations, and project-based funding.

- SIPRI's flagship publication is the **SIPRI Yearbook**, which provides comprehensive data and analysis on global military expenditure, arms transfers, and other relevant security issues.
- It produces o**ther reports, briefs, and databases** on various topics related to conflict, arms control, and peacebuilding.
- It maintains an *extensive database of military expenditure, arms transfers, and other relevant data*, which is freely available on its website.
- **SIPRI is based in Stockholm, Sweden**, but has a global reach and influence, with its research and analysis informing policy decisions and public debates in many countries.

# 4. "Special 301" Report 2024

**Why In News?**
- The United States Trade Representative (USTR) placed India in the 'priority watch list' of countries on its 2024 Special 301.

**About**
- The "Special 301" Report is an annual review of the global state of IP protection and enforcement.
- The Report identifies a wide range of concerns that limit innovation and investment, including:
  o The deterioration in the effectiveness of IP protection and enforcement,
  o Reported inadequacies in trade secret protection in countries around the world,
  o Market access barriers, including non-transparent, discriminatory or otherwise trade-restrictive measures
  o Ongoing, systemic IPR enforcement issues at borders and in many trading partner markets around the world.
  o The continuing challenges of copyright piracy and the sale of counterfeit trademarked products on the Internet.

**Key highlights of the report**
- **Indonesia, Chile, and Argentina** also feature in the '**priority watch list'** of seven countries.

- Twenty trading partners are on the **'watch list',** which include countries that the US believes merit bilateral attention to address underlying IP problems but are better than the `priority watch list' countries.
- USTR removed the **Dominican Republic** from the Watch List this year.

**Concerns raised by the report**
- According to the USTR office, serious problems exist in the country like Inadequate IP enforcement, including high rates of online piracy, an extensive trademark opposition backlog, and insufficient legal means to protect trade secrets.
- India still needs to fully implement the WIPO Internet Treaties and ensure that copyright statutory licenses do not extend to interactive transmissions.
- The potential threat of patent revocations and the procedural and discretionary invocation of patentability criteria under the Indian Patents Act impact companies across different sectors is also troubling for the USA.

**India's initiative in safeguarding IPR**
- **National IPR Policy 2016** encompassing all IPRs into a single vision document setting in place an institutional mechanism for

implementation, monitoring and review of IP laws.
  o The policy encourages innovation and creativity by providing stronger protection and incentives for inventors, artists, and creators.
- **Cell for IPR Promotion and Management (CIPAM):** It has been set up to coordinate the implementation of the National IPR Policy.
- **National Intellectual Property Awareness Mission (NIPAM),** a flagship program to impart IP awareness and basic training in educational institutes.

**Scheme for Facilitating Startups Intellectual Property Protection (SIPP):** it is introduced to foster innovation and entrepreneurship by providing a supportive ecosystem for startups to protect and manage their IP assets.

| **What is Intellectual Property?** |
| --- |
| – Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce.<br>– IP is protected in law by patents, copyright and trademarks, which enable people to earn recognition or financial benefit from what they invent or create.<br>– By striking the right balance between the interests of innovators and the wider public interest, the IP system aims to foster an environment in which creativity and innovation can flourish.<br><br>**Types of intellectual property**<br>– **Patent:** A patent is an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem. |

| |
| --- |
| – **Copyright:** It is a legal term used to describe the rights that creators have over their literary and artistic works.<br>– **Trademark:** It is a sign capable of distinguishing the goods or services of one enterprise from those of other enterprises.<br>– **Industrial design:** It constitutes the ornamental or aesthetic aspect of an article.<br>– **Geographical indications and appellations of origin** are signs used on goods that have a specific geographical origin and possess qualities, a reputation or characteristics that are essentially attributable to that place of origin.<br>– **Trade secrets** are IP rights on confidential information which may be sold or licensed. |

**Concluding Remarks**
- While there has been progress under the US-India Trade Policy Forum in addressing certain issues with trademark infringement investigations and pre-grant opposition proceedings, numerous long-standing concerns remain.
- India has always maintained that its intellectual property laws were in strict adherence to the **WTO's Trade Related Intellectual Property Rights (TRIPS) Agreement** and that it was not bound by any global rules to make changes in its laws.
- No action is threatened by the US against countries on the 'priority watch list', but if a country slips further and is categorized as a 'priority country', the USA may impose 'retaliatory' measures.

## 5. Global Trade Outlook and Statistics Report

**Why In News?**
- According to the World Trade Organization's (WTO), **Global Trade Outlook and Statistics,** Global goods trade is expected to pick up in 2024 following a contraction in 2023.

**Key Findings**
- **World merchandise trade volume** is expected to increase by 2.6% in 2024 and 3.3% in 2025 after a decline of 1.2 per cent in 2023.
- **World real GDP growth** at market exchange rates slowed from 3.1% in

2022 to 2.7% in 2023 but is expected to remain stable over the next two years at 2.6% in 2024 and 2.7% in 2025.

- **The US dollar value of world merchandise trade** fell 5% in 2023 to US$ 24.01 trillion but this decline was mostly offset by a strong increase in commercial services trade, which rose 9% to US$ 7.54 trillion.

- **Trade in services:** World commercial services trade grew 9% in 2023 despite a decline in freight transport.



Chart 3: World merchandise trade volume and GDP growth, 2018-2025
Annual % change
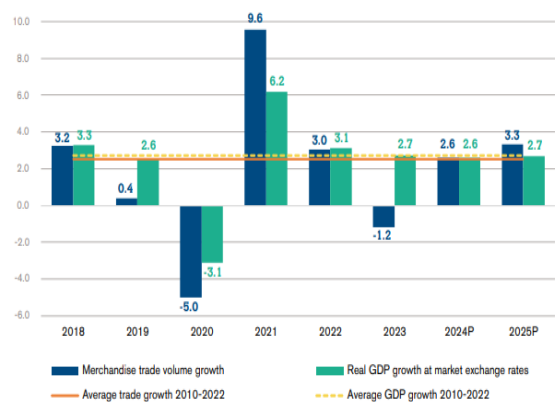
### Regional trade outlook

- **Africa's exports** will grow faster than those of any other region in 2024, up 5.3%.
- North America (3.6%), the Middle East (3.5%) and Asia (3.4%) should all see moderate export growth. European exports are expected to lag behind those of other regions, with growth of just 1.7%.
- **Merchandise exports of least-developed countries (LDCs)** are forecasted to grow 2.7% in 2024, down from 4.1% in 2023, before growth accelerates to 4.2% in 2025.
- I**mports by LDCs** should grow 6.0 percent this year and 6.8 percent next year following a 3.5% contraction in 2023.

### Downside risks

- **Red Sea crisis:** Attacks on commercial ships in the Red Sea and the Gulf of Aden have caused the average number of weekly passages to plunge more than **45%** (264 in 2024, compared to 489 a year earlier).
  o The monthly volume of shipments through the Suez Canal in metric tons has fallen **54%.**

- **Energy Prices:** Red sea crisis raised concerns about a potential temporary oil shortage in certain regions potentially contributing to additional inflationary pressures.

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**World Trade Organization (WTO)**
- **WTO** is the international organization that deals with the rules of trade between countries.
- **History: WTO** was founded in **1995.** It is the successor to the General Agreement on Tariffs and Trade (GATT) established in the wake of the Second World War.
- **Headquarters:** Geneva, Switzerland
- **Member:** The WTO is run by its 164 members.
- **Mandate:** Its aim is to promote free trade, which is done through trade agreements that are discussed and signed by the member states. a. The WTO also provides a forum for countries to negotiate trade rules and settle economic disputes between them.

**WTO's Ministerial Conference**
- The Ministerial Conference is the WTO's **top decision-making body**. It usually meets every two years.
- All members of the WTO are involved in the Ministerial Conference and they can take decisions on all matters covered under any multilateral trade agreements.

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# 6. Asian Development Outlook (ADO), 2024

### Why In News?

- The Asian Development Bank (ADB) has prepared the **Asian Development Outlook (ADO), 2024.**

### Key Findings

- Asia's economy expanded by **5.0% in 2023** from 4.3% in 2022, but growth was uneven across subregions. Growth will remain at 4.9% in 2024 and 2025.

- Export growth for high-income technology exporters turned positive in the last quarter of 2023, rising by 5.4% as demand for semiconductors and electronics began to gain traction.
- International tourism continued to recover, reaching 73% of pre-pandemic levels by the end of 2023.
- Asia's inflation is projected to fall from 3.3% in 2023 to 3.2% in 2024 and 3.0% in 2025.

**Asian Development Bank GDP growth forecast (%)**
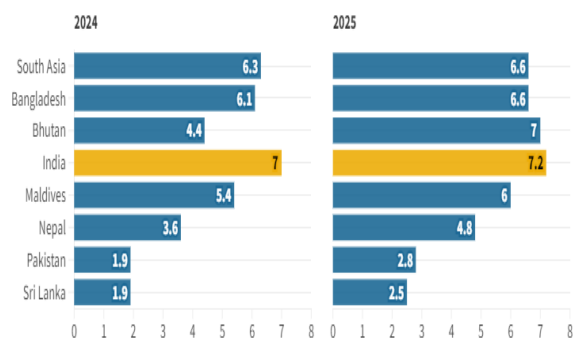


**Issues and Concerns**

- There are several risks to developing Asia's growth outlook, including the current conflicts in the Middle East and geopolitical tensions.
- Uncertainty about US interest rates, intensified weakening of the property sector in the People's Republic of China, and the effects of extreme weather also weigh on the region's outlook.

**Indian Scenario**

- ADB revised its GDP growth forecast for India, raising it to 7% for the fiscal year 2023-24 from its previous projection of 6.7%.
- India's 'persistent' food inflation is expected to drop to 5.7% as farm output returns to trend this year.
- As India accounts for 80% of South Asia's GDP, it is still the fastest-growing sub-region with improving domestic demand as prices moderate in most economies.

- India's growth will be driven by public and private sector investment demand and by gradual improvement in consumer demand as the rural economy improves.
- Foreign direct investment inflow will likely remain muted in the near term due to tight global financial conditions but will pick up in 2025-26 with higher industry and infrastructure investment.

**Suggestions for Boosting Trade**

- India's growth strategy is predicated on substantial export growth. It can be achieved through integration into **global value chains (GVCs).**
  o A target of $2 trillion in exports of goods and services has been set by the government to be achieved by 2030.
- Participation in GVCs encourages FDI, which can generate spillover benefits in terms of productivity improvement and technology upgrades.
- India has been a global leader in service trade. Its share of global service exports increased from 3.5% in FY2017 to 4.6% in FY2022. However, goods exports have a larger impact on employment and growth than do service exports.
- A simplified tariff policy is needed along with continued efforts to improve trade and logistics infrastructure

| **Asian Development Bank** |
| :--- |
| – ADB is a regional development bank established in **1966** for Social and Economic Development. It has **68 members.** |
| – It is a **multilateral development bank,** which seeks to help its developing member countries to reduce poverty and improve their people's quality of life through inclusive economic growth, environmentally sustainable growth and regional integration. |
| – **Headquarters:** Manila, Philippines. |

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# Schemes in news

## 1. Pradhan Mantri Fasal Bima Yojana

**Why In News?**

- The number of States that implement the Centre's flagship crop insurance scheme **Pradhan Mantri Fasal Bima Yojana (PMFBY) may jump to 22** as **Jharkhand and Telangana** are likely to start enrolment for the ensuing kharif season.

**About**

- It was launched in **2016** by the **Ministry of Agriculture & Farmers welfare.**
- **Objectives:** It is a crop insurance scheme that provides financial support to farmers in case of crop failure or damage due to natural calamities, pests, or diseases.
    - o to stabilize the income of farmers to ensure their continuance in farming;
    - o to encourage farmers to adopt innovative and modern agricultural practices;
    - o to ensure flow of credit to the agriculture sector.
- **Coverage:** All farmers including sharecroppers and tenant farmers growing the notified crops in the notified areas are eligible for coverage.
- **Coverage of Crops:** Food crops (Cereals, Millets & Pulses), Oilseeds and Annual Commercial / Horticultural crops.

| S.No | Season | Crops | Maximum Insurance charges payable by farmer (% of Sum Insured) |
|------|--------|-------|----------------------------------------------------------------|
| 1 | Kharif | All foodgrain & Oilseeds crops,(all Cereals,Millets, Pulses, & Oilseeds crops) | 2.0% of SI or Actuarial rate, whichever is less |
| 2 | Rabi | All food grain & Oilseeds crops, (all Cereals Millets, Pulses, & Oilseeds crops) | 1.5% of SI or Actuarial rate, whichever is less |
| 3 | Kharif & Rabi | Annual Commercial / Annual Horticultural crops | 5% of SI or Actuarial rate, whichever is less |

**Share between Centre and State:** As the States have major role in implementation of the scheme the premium subsidy is shared by the **Central and State Government on 50 : 50 basis** and for **North-Eastern States sharing pattern has been made 90.**

## 2. An Overview of the PMAY-U Scheme

**Why In News?**

- Recent estimates of the government show that there is a shortage of three million houses in urban centres.

**About the Pradhan Mantri Awas Yojana (PMAY) Scheme**

- It is a flagship and Centrally Sponsored Scheme by the Union **Ministry of Housing and Urban Affairs (MoHUA)**, launched in 2015, to provide affordable housing to the urban poor.

**Objectives**

- The PMAY scheme aims to address the urban housing shortage among the *Economically Weaker Section (EWS), Lower Income Group (LIG), and Middle Income Group (MIG) categories*, including slum dwellers.



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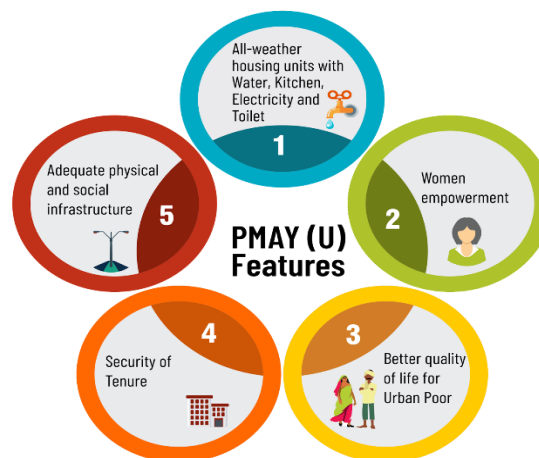
- It includes the *rehabilitation of slum dwellers* with the participation of private developers, promotion of affordable housing for the **weaker sections through Credit Linked Subsidy Schemes (CLSS)**, affordable housing in partnership with public and private sectors, and **subsidy for Beneficiary-led Construction (BLC)**.
- It ensures a **pucca house** to all eligible urban households *(housing for all)* by the year 2022, coinciding with the **75th year of India's Independence**.

## Coverage

- It covers the **entire urban area** consisting of *Statutory Towns, Notified Planning Areas, Development Authorities, Special Area Development Authorities, Industrial Development Authorities* or any such authority under State legislation which is entrusted with the functions of urban planning & regulations.

## Components (Four Verticals)

- **In-situ Slum Redevelopment (ISSR):** It involves the rehabilitation of slum dwellers with the participation of private developers.
- **Affordable Housing in Partnership (AHP):** This involves the promotion of affordable housing for the weaker sections through partnerships with the public and private sectors.
- **Credit Linked Subsidy Scheme (CLSS):** This scheme provides interest subsidy on housing loans to eligible beneficiaries.
- **Beneficiary-led Construction (BLC):** This involves providing central assistance to eligible families for the construction or enhancement of houses.

## Additional Initiatives of MoHUA under PMAY

- **Affordable Rental Housing Complexes (ARHCs):** It is a **sub-scheme under PMAY-U** that aims to provide ease of living to urban migrants/poor in the Industrial Sector as well as in the non-formal urban economy by providing access to dignified affordable rental housing close to their workplace.
- **Global Housing Technology Challenge – India (GHTC-India):** It aims to identify and mainstream a basket of innovative construction technologies from across the globe for the housing construction sector that are sustainable, eco-friendly, and disaster-resilient.

## Progress of the PMAY Scheme

- As of now, the PMAY (Urban) scheme has sanctioned 118.64 lakh houses, grounded 114.15 lakh houses, and completed 82.16 lakh houses.
- The Central Assistance Committed is ₹2 Lakh Cr., and the Central Assistance Released is ₹163926 Cr. The total investment is ₹8.07 Lakh Cr.

## Challenges ahead of the scheme:

- **Housing Shortage:** The urban housing shortage has increased by 54%, from 1.88 crore in 2012 to 2.9 crore in 2018.
  - As of April 2024, there is a shortfall of around 40 lakh houses from the sanctioned and completed segments.
- **Implementation Issues:** There is a shortfall of around 40 lakh houses from the sanctioned and completed segments.
- **In-situ Slum Redevelopment:** The ISSR vertical has failed, with only 2,10,552 houses sanctioned for eligible beneficiaries.
  - Under the ISSR, only 2,10,552 houses have been sanctioned for eligible beneficiaries.
  - Even if the remaining houses are constructed by the end of 2024, it would have addressed just about 37% of the real need.
  - Almost 2.4 crore households will still be without a roof.
- **Unmet Targets:** The PMAY-U has only addressed about 25.15% of the housing shortage by delivering 80 lakh homes.

## Future of the PMAY Scheme

- In August 2022, the government approved the continuation of the **PMAY-U *up to December 31, 2024***, for the completion of already sanctioned houses till March 31, 2022.
- However, the current housing programme, which was a kind of **merger of the Rajiv Awas Yojana into the PMAY**, has spent over $29 billion in the last five years providing

support for both rural and urban low-cost housing.

- Despite this focus and budgetary infusion, 'Housing for All' remains an unfulfilled promise.

**Conclusion**

- PMAY is a significant step towards achieving the goal of 'Housing for All' by 2022. It has made some progress in addressing India's urban housing shortage, but fallen short of its ambitious goals.

- The challenges faced by the scheme highlight the complexities of urban development and the need for comprehensive and sustainable solutions.

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# Miscellaneous

## 1. Nuclear Safety Concerns over Zaporizhzhia Nuclear Power Station

**Why In News?**
- Russia has demanded Western Countries to respond to Ukraine's strike on the **Zaporizhzhia nuclear power station** controlled by Russian forces.

**About**
- **The International Atomic Energy Agency**, said it was the first time the nuclear plant was directly targeted **since 2022 and said the attack had endangered nuclear safety.**
- Russian forces took control of the plant in 2022 shortly after their full-scale invasion of Ukraine.
- Both Russia and Ukraine have repeatedly accused each other of **risking a nuclear accident by attacking the plant.**

**Zaporizhzhia Nuclear Power Station**
- The Zaporizhzhia plant, in **southern Ukraine,** is the largest nuclear plant in Europe.
- The facility stopped generating power in 2022, but needs a constant supply of electricity to cool one of its reactors which is in a state of **"hot conservation", meaning it is not fully offline.**
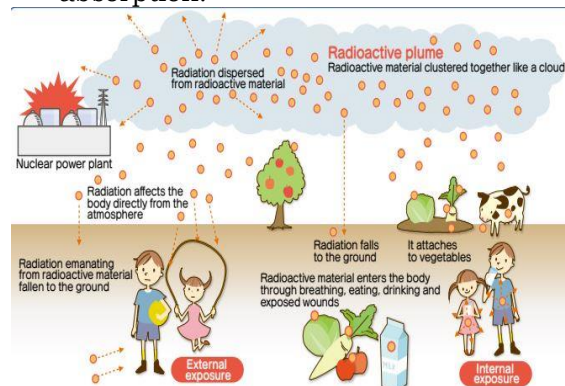


**Nuclear Disasters**
- A nuclear disaster is damage caused by the **abnormal emission of radiation or radioactive material** resulting from **an accident, etc. at a nuclear facility.**

  - It causes **lethal effects to individuals, large radioactivity release to the environment, or reactor core melt.**
- Worldwide there have been 99 accidents at nuclear power plants.
  - Fifty-seven accidents have occurred since the Chernobyl disaster, and 57% of all nuclear-related accidents have occurred in the USA.
  - Serious nuclear power plant accidents include the Fukushima Daiichi nuclear disaster (2011), Chernobyl disaster (1986), Three Mile Island accident (1979), and the SL-1 accident (1961).

**Concerns Related to Nuclear Disasters**
- **Radiation Exposure:** Exposure to ionizing radiation released during a nuclear disaster leads to acute and chronic health effects, including radiation sickness, cancer, genetic mutations, and reproductive problems.
- **Contamination of Air, Water, and Soil:** Radioactive particles released into the atmosphere contaminate the air, water bodies, and soil, posing risks to ecosystems, agriculture, and human health through ingestion, inhalation, or absorption.



- **Displacement and Evacuation:** Nuclear disasters often result in the evacuation and

displacement of large populations from affected areas.

- **Economic Costs:** The economic costs associated with nuclear disasters are substantial, including cleanup and decontamination efforts, healthcare expenses, loss of livelihoods, and long-term environmental remediation.
- **Intergenerational Impact:** The effects of nuclear disasters can span generations, with potential genetic mutations and health issues affecting not only the exposed population but also their descendants.
  o Some doctors in Europe advised pregnant women to undergo abortions on account of radiation exposure due to the Chernobyl accident.
- **Psychological Impact:** Stigmatisation of both exposed and evacuated populations following the Nuclear accidents has strongly contributed to a significant rise in alcoholism, depression, anxiety, bullying and suicides.
- **Challenges in Disaster Response and Management:** Responding to nuclear disasters presents unique challenges, including the need for specialized equipment, trained personnel, and coordinated international efforts to mitigate the spread of radiation and manage the aftermath effectively.

**Safety Measures to Prevent a Nuclear Disaster**

- **Stringent Regulatory Framework:** Governments should establish and enforce comprehensive regulatory frameworks governing nuclear safety, including licensing, operational standards, emergency preparedness, and environmental protection.
- **Risk Assessment and Management:** Authorities should conduct thorough risk assessments to identify potential hazards and vulnerabilities at nuclear facilities, and implement risk management strategies to mitigate risks effectively.
- **Design and Engineering Standards:** Ensure that nuclear facilities are designed, constructed, and maintained according to rigorous engineering standards to prevent accidents and withstand natural disasters.
- **Safety Systems:** Install multiple layers of safety systems to prevent and mitigate accidents, including reactor shutdown systems, containment structures, emergency cooling systems, and backup power supplies.
- **Operator Training:** Provide comprehensive training for nuclear plant operators and personnel, ensuring they have the knowledge, skills, and competence to operate facilities safely and respond effectively to emergencies.

**International Regulatory Framework for Preventing Nuclear Disasters**

- **Convention on Nuclear Safety (CNS):** The CNS is a legally binding international treaty that establishes fundamental safety principles and obligations for the safe operation of nuclear power plants.
  o Participating states are required to submit national reports on the implementation of safety measures and undergo peer review by other parties to assess compliance with safety standards.
- **Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management:** This convention addresses the safe management and disposal of spent nuclear fuel and radioactive waste, aiming to prevent accidents and minimize environmental and health risks associated with radioactive materials.
  o Participating states commit to implementing safety measures throughout the entire lifecycle of radioactive waste, from generation to disposal.
- **International Atomic Energy Agency (IAEA):** The IAEA plays a central role in promoting nuclear safety worldwide through its safety standards, guidelines, and technical assistance programs.
  o The Agency conducts safety reviews, assessments, and peer reviews of nuclear facilities to evaluate compliance with international safety standards and identify areas for improvement.

- **Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency:** It adopted in **1986** following the Chernobyl nuclear plant accident, sets out an international framework for co-operation among States Parties and with the IAEA to facilitate prompt assistance and support in the event of nuclear accidents or radiological emergencies.

**Regulation in India**
– Activities concerning establishment and utilisation of nuclear facilities and use of radioactive sources are carried out in India in accordance with the relevant provisions of

the **Atomic Energy Act, 1962.**
– The environment protection aspects are governed by the **Environmental Protection Act, 1986.**
– The regulations for radiation protection aspects are as governed by the **Radiation Protection Rules, 1962.**
– Safety aspects in mining and milling of prescribed substances are governed by the **Mines Minerals Prescribed Substance Rules, 1984.**
– Safe waste disposal is ensured by implementation of the **Atomic Energy Safe Disposal of Radioactive Waste Rules, 1987.**

## 2. Port of Baltimore

**Why In News?**
- A cargo ship leaving the Port of Baltimore in Baltimore struck the (I-695) Francis Scott Key Bridge which caused a collapse of the bridge.
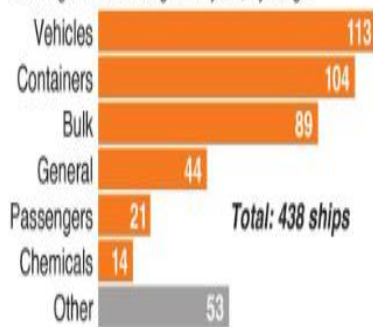
**About Port of Baltimore**
- It is strategically located in the **Mid-Atlantic region of the U.S. east coast.**
- It is one of the busiest harbours in the U.S



BALTIMORE PORT TRAFFIC, 2024
Dockings west of bridge this year, by cargo*

| | |
|---|---|
| Vehicles | 113 |
| Containers | 104 |
| Bulk | 89 |
| General | 44 |
| Passengers | 21 |
| Chemicals | 14 |
| Other | 53 |

Total: 438 ships

Baltimore
Maryland
U.S.

- It is the **ninth largest U.S. port** by overall trade volume.
  o In 2023 alone, it moved around 50 million tonnes of goods between the U.S. and other countries.
- It is smaller than other ports on the East Coast and in the Gulf of Mexico, it still plays a critical role in processing U.S. international trade traffic.
  o That's especially true for some products, such as automobiles, heavy machinery and coal.
  o It also handles a large share of U.S. sugar imports.

## 3. Mount Etna

**Why In News?**
- Volcanic vortex rings emerged from a new pit crater on the north side of the southeast crater of the Etna Volcano in Sicily, Italy.

**About Mount Etna**
- It is an active stratovolcano volcano on the east coast of Sicily, the largest island in the Mediterranean Sea.
- Etna's peak is the highest in Italy south of the Alps, and it is Europe's largest

and one of the most active volcanoes of the world.

- Its summit has **five craters**, which are responsible for most of the volcano's eruptions.
- It lies above the convergent plate margin between the African Plate and the Eurasian Plate.
- It has been a UNESCO World Heritage Site since 2013.

## 4. Skytrax World Airport Awards-2024

**Why In News?**
- Recently **Hamad International Airport in Doha** has been named as the best airport in the world by the research firm Skytrax.

**About**
- The Skytrax World Airport Awards have been handed out Since **1999** and are based on surveys of passenger experiences in several areas, including arrivals, check-in, immigration, shopping, transfers, security, and departure.

**Global Scenario**
- **Changi Airport in Singapore** ranked **2nd** and **Incheon Airport in Seoul** was awarded the best family-friendly airport for 2024 and ranked **3rd** number.
- Tokyo's twin facilities of **Haneda and Narita** took **fourth and fifth** spots.

**Indian Scenario**
- **Four airports** in India were included in the top list.
- **The Delhi airport** remained **36th** on the list, while the Mumbai airport slipped to 95th.
- **Rajiv Gandhi International Airport (RGIA), Hyderabad** airport moved up to **61st** place and Bengaluru airport pushed ten spots, moving up to **59.**
  o RGIA clinched the 'Best Airport Staff in India & South Asia 2024'.

## 5. Nagorno – Karabakh Region

**Why In News?**
- Recently, it was found that the Russian peacekeepers started withdrawal from Nagorno – Karabakh region amid Russia – Ukraine conflict.

**About the Nagorno – Karabakh Region**
- It is rugged highland, often referred to as the 'garden in the mountains', located within the **internationally recognized territory of Azerbaijan**.

- It is predominantly populated by ethnic Armenians and has been the centre of a protracted **conflict between Armenia and Azerbaijan.**

**Historical Background**
- Nagorno-Karabakh, also known as **Artsakh in Armenian**, has been ruled by several empires, including the **Ottomans, the Persians, and the Russians**.
- In 1923, the Soviet Union established the **Nagorno-Karabakh Autonomous Oblast** within the Azerbaijan Soviet Socialist Republic.

  o However, the region's legislature passed a resolution in 1988 declaring its intention to join the Republic of Armenia, **leading to armed conflict** and escalated into a full-scale war in the early 1990s.
  o By 1993, Armenia had gained control of Nagorno-Karabakh and occupied 20% of Azerbaijan's geographic area.
- A ceasefire known as the **Bishkek Protocol** was brokered by Russia in 1994, leaving Nagorno-Karabakh **de facto independent** but heavily reliant on Armenia.

# 6. Longevity India Initiative

**Why In News?**
- Recently, the **Indian Institute of Science (IISc)** has launched the **'Longevity India Initiative'** aiming at extending human healthspan and tackling ageing-related challenges.

**About the Longevity India Initiative**
- It brings together a multidisciplinary team of experts from academia, industry, and healthcare to address complex challenges related to ageing.
- It primarily focuses on identifying early disease indicators, investigating ageing biomarkers, and developing new therapeutics and technologies to aid healthy ageing.
- It seeks to enhance the understanding of aging through both fundamental and applied research, and to develop

solutions that can improve quality of life.

**Funding and Support**
- The initiative has received initial grant funding support from Prashanth Prakash, Founding Partner, Accel India.

**Significance**
- It is an attempt to bring together multiple stakeholders working in the space, and explore the subject, factoring in India's specific and diverse needs.
  o India's elderly population is projected to surge to 347 million by 2050.
- It is imperative to leverage technology to provide accessible geriatric healthcare, nurture the silver economy, and invest in digital systems that support ageing populations.