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CONTEMPORARY ISSUE BASED ESSAY

JUSTICE VS. CHARITY: REDEFINING SOCIAL WELFARE PARADIGMS

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APRIL, 2024

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SECTION-A
ESSAY

JUSTICE vs. CHARITY
REDEFINING SOCIAL WELFARE PARADIGMS

Model Essay

In the realm of social welfare, two fundamental paradigms—justice and charity—offer contrasting approaches to addressing societal inequalities and meeting the needs of vulnerable populations. While justice focuses on systemic change and structural reforms to promote equality and inclusion, charity entails individual or collective acts of generosity aimed at providing immediate relief to those in need. This brief delves into the nuances of these paradigms, their respective roles in addressing social issues, and the implications they hold for creating a more equitable society.

Exploring Justice:

Justice-oriented approaches to social welfare prioritize systemic change and structural reforms aimed at addressing root causes of inequality and injustice. These approaches advocate for policies and interventions that promote equal access to resources, opportunities, and rights for all members of society. For instance, affirmative action programs seek to level the playing field for marginalized groups by providing them with access to educational and employment opportunities that were previously unavailable to them. Similarly, anti-discrimination laws aim to eliminate barriers to equal treatment and ensure that individuals are not discriminated against on the basis of their race, gender, religion, or other characteristics.

Moreover, justice-oriented strategies often involve redistributive policies such as progressive taxation systems and social welfare programs that aim to reduce income and wealth disparities. By taxing the wealthy at higher rates and providing targeted assistance to low-income individuals and families, these policies seek to promote economic equity and social cohesion. Additionally, justice-oriented approaches prioritize social inclusion and empowerment, recognizing that marginalized communities often face systemic barriers that prevent them from fully participating in society.

Critiquing Charity:

While charity plays a vital role in providing immediate relief to those in need, it often falls short in addressing the root causes of social problems. Charity-based approaches typically involve individual or collective acts of generosity such as donations, volunteer work, or philanthropic initiatives aimed at alleviating the symptoms of poverty, hunger, homelessness, and other social issues. While these acts of kindness can make a difference in people's lives, they often do not address the underlying structural inequalities that perpetuate poverty and marginalization.

Furthermore, charity-based interventions may inadvertently reinforce power imbalances between donors and recipients, perpetuate cycles of dependency, and undermine the agency and dignity of the individuals they seek to help.

For example, providing handouts to people in need without addressing the structural factors that contribute to their vulnerability may create a sense of dependency and erode their sense of self-worth and autonomy. Moreover, charitable interventions may lack sustainability and long-term impact, leading to a continued need for assistance without addressing the root causes of social inequality.

Balancing Justice and Charity:

While justice and charity offer distinct approaches to social welfare, they are not mutually exclusive. Rather, they can complement each other in addressing social issues and meeting the needs of vulnerable populations. Justice-oriented strategies prioritize systemic change and structural reforms to address root causes of inequality, while charitable interventions provide immediate relief and support to those in need. By combining these approaches, societies can create a more holistic and equitable approach to social welfare that addresses both the symptoms and the root causes of social problems.

Moreover, justice-oriented approaches have the potential to make charitable interventions more effective and sustainable by addressing the underlying structural factors that perpetuate poverty and marginalization. For example, investing in education, healthcare, and economic development in marginalized communities can empower individuals and families to lift themselves out of poverty and build a better future for themselves and their children. Additionally, justice-oriented policies can create a more inclusive and equitable society where all members have equal opportunities to thrive and contribute to the common good.

CONCLUSION:

In conclusion, justice and charity represent two fundamental paradigms in social welfare, each with its own strengths and limitations. While justice-oriented approaches prioritize systemic change and structural reforms to address root causes of inequality, charity-based interventions provide immediate relief and support to those in need. By balancing these approaches and integrating them into comprehensive social welfare strategies, societies can create a more equitable and inclusive future for all members. Ultimately, redefining social welfare paradigms requires a multifaceted approach that addresses both the symptoms and the root causes of social problems, ensuring that all individuals have equal opportunities to thrive and lead fulfilling lives.

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SECTION-B
MAINS

EXTREME EVENTS & DISASTER PREPAREDNESS

CONTEXT

The IMD has issued an orange alert in West Bengal and the northeastern regions anticipating heavy rainfall. There is formation of a cyclonic circulation over northeastern Assam. Additionally, the influx of humid winds from the Bay of Bengal is saturating the northern and northeastern regions of the country with moisture.

1. **Dimension-Reason behind the changing rainfall pattern**

   ➤ **Global warming:** Global warming leads to a near-term collapse of the ocean's thermohaline circulation (global ocean circulation pattern).

   ➤ Due to this collapse of thermohaline circulation, warm surface waters move from the tropics to the North Atlantic and extra-warm water surfaces in the Pacific Ocean surrounding the equator.

   ➤ Thus, Western Europe, some parts of Asia, and many parts of the Americas get warmer than normal, and some parts of Europe get cooler rapidly. El Niño and La Niña are examples of this.

   ➤ This latest deviant trend generates dramatic weather impacts, such as:

     ● rapid cooling in some parts of the world

     ● greatly diminished rainfall in agricultural and urban areas

   ➤ **Shift in global wind pattern:** UNESCO and other studies found that changes in rainfall pattern could be attributed to the shifts in global wind pattern. These shifts are due to the changes in the ocean surface temperature.

   ➤ **Human activity:** Effect of human activity on the surface vegetation is also causing rainfall pattern variation.

   ➤ **Deforestation:** Widespread deforestation in parts of Africa and Asia is causing scarce rainfall and subsequent drought.

   ➤ **Triggered cyclogenesis process**: The **cyclone hotspot districts** - Puri, Chennai, Nellore, North 24 Parganas, Ganjam, Cuttack, East Godavari, and Srikakulum – were concentrated along the eastern coastline. The east coast's warming regional microclimate, land-use change, and degrading forest have triggered the region's cyclogenesis process.

2. **Dimension- Government mechanism for preparedness to reduce the risk during such events**

   ➤ The government employs **early warning systems, disaster management plans, resilient infrastructure, public awareness campaigns, coordination between agencies, specialized response teams, and community engagement** to prepare for and mitigate risks during heavy rain and sudden storms.

   ➤ More specifically, the plans range from national disaster plans to the state and district disaster plans from a DRR purview.

   ➤ Similarly, for climate actions, there is

     ● **NAPCC (National Action Plan on Climate Change)** at the national level

     ● **SAPCC (State Action Plan on Climate Change)** at the state level

FACT BOX

IMD's Colour Alerts

- When it comes to rainfall alerts, IMD issues four colour codes:
  - ➤ **Green code** denotes less than 64 mm of rain in 24 hours.
  - ➤ **Yellow alert** is issued if the expected rainfall ranges between 64.5 mm and 115. 5 mm.
  - ➤ **Orange alert** is issued when rainfall totals between 115.6 and 204.4 mm in a single day
  - ➤ **Red alert** is issued when rainfall totals exceed 204.5 mm in a 24-hour period.

UPSC PYQ

Q: Geography: Discuss the meaning of colour-coded weather warnings for cyclone-prone areas given by the India Meteorological Department. (UPSC 2022)

Q: Environment: The frequency of urban floods due to high-intensity rainfall is increasing over the years. Discussing the reason for urban floods, highlight the mechanism for preparedness to reduce the risk during such events. (UPSC 2016)

DENYING CHILD-CARE LEAVES TO MOTHER VIOLATES CONSTITUTION: SC

CONTEXT

The Supreme Court said that denying child care leave to working mothers of disabled children violated the constitutional mandate for equal participation of women in the workforce.

1. **Dimension-Significance of Child-Care Leaves (CCL)**

   - ➤ **Constitutional entitlement**: A bench of Supreme Court emphasised that the participation of women in the work force is not just a matter of privilege but constitutional entitlement by **Article 15 of the Constitution.**

   - ➤ **Violation of constitutional mandate**: The court said the provision of Child-Care Leaves (CCL) to women subserves an important constitutional object, and denying the same to mothers of children with disabilities would **violate the constitutional duty** to ensure equal women participation in the workforce.

2. **Dimension-Barriers addressed by this ruling**

   - ➤ **Systematic barriers**: At its core, this ruling addresses the systemic barriers faced by women in balancing their professional careers with caregiving duties, particularly when they have children with disabilities.

   - ➤ **Gender disparity and undermined children's rights**: Denying child care leave to these mothers not only perpetuates gender disparities in the workforce but also undermines the rights of children with disabilities to receive adequate care and support from their parents.

   - ➤ **Societal attitudes towards caregiving:** Moreover, the ruling underscores the broader societal attitudes towards caregiving, gender roles, and the inclusion of persons with disabilities.

   - ➤ **State's obligations:** Additionally, the ruling emphasizes the obligation of the state and employers to adopt inclusive policies that promote gender equality and support the diverse needs of working parents, including those with children with disabilities.

UPSC PYQ (RELATED)

Q: What are the continued challenges for women in India against time and space? (2019)

BRITAIN'S RWANDA MIGRANT DEPORTATION

CONTEXT

Britain's parliament has passed Safety of Rwanda (Asylum and Immigration) Act to deport asylum seekers to Rwanda who arrived illegally.

Issue of migration in Britain

- Tens of thousands of people have crossed the **English Channel** in small boats in recent years, many fleeing war and poverty.

- Britain's migration issue stems from various factors such as **economic opportunities, political instability, and humanitarian crise**s, driving individuals to seek refuge or better prospects in the country.
  - ➤ Official figures put 2022 annual net migration to Britain at a record of 745,000.

- The influx of migrants, including asylum-seekers and undocumented immigrants, has sparked debates on **national security, social cohesion, and resource allocation**.

- Policy responses, such as the **Rwanda Bill,** aimed at curbing migration often face criticism for their ethical implications, effectiveness, and feasibility, highlighting the complex challenges and controversies surrounding migration management in Britain.

FACT BOX

English Channel (Location)

⊙ The English Channel is an arm of the **Atlantic Ocean** that separates Southern England from Northern France.

⊙ It is located between the Isle of Great Britain's southern coast and France's northern coast and separated from the North Sea on the north by the Strait of Dover.

⊙ The **Strait of Dover** is the Channel's narrowest point.

⊙ **Important towns:** Calais, Dover, Isle of Wight, and the Island of Jersey.

RISING ANTI INDIA SENTIMENTS

CONTEXT

Recent developments have highlighted a growing anti-India sentiment in Bangladesh, reminiscent of the wave observed earlier in Maldives. Social media trolls have sparked controversy, leading to a diplomatic standoff between India and Bangladesh. This emerging trend underscores a significant shift in the bilateral relations between the two countries.

1. **Dimension-Factors fuelling the Anti-India Wave in Bangladesh**

   ➤ **Historical grievances**: Some segments of the Bangladeshi population harbor historical grievances, particularly regarding India's role in the **Bangladesh Liberation War of 1971.**

   ➤ **Perceived interference**: Recent political developments in Bangladesh, coupled with allegations of Indian interference in internal affairs (India's actively siding with Sheikh Hasina), have contributed to the anti-India sentiment.

   ➤ **Social media influence:** Similar to the situation in Maldives, social media platforms have played a pivotal role in amplifying anti-India narratives, further exacerbating tensions between the two nations.

2. **Dimension-Implication for Both Countries**

   ➤ **Diplomatic tensions**: The brewing anti-India sentiment has strained diplomatic relations between India and Bangladesh, potentially undermining years of bilateral cooperation and goodwill.

   ➤ **Regional stability**: As two neighboring countries, India and Bangladesh share a crucial relationship that impacts regional stability and security. Any deterioration in relations could have broader implications for **South Asian geopolitics.**

   ➤ **Economic cooperation**: A reduction in Indian imports may force Bangladesh to import from China. It will increase Bangladesh's dependence on China. It will impact Bangladesh's corporate sector, particularly in software and service-based businesses, as well as

FACT BOX

⊙ India shares a **4,100-km-long border with Bangladesh**. Bilateral trade between the countries exceeded **USD 15 billion in 2021-22.**

⊙ India is **Bangladesh's biggest trading partner.**

⊙ Bangladesh depends on India for essential imports, including **raw materials, machinery, and agricultural goods.**

⊙ India gains from Bangladesh's exports of **its garments, textiles, and medicines.**

⊙ **International Forums where India and Bangladesh are Common Members**

   ➤ South Asian Association for Regional Cooperation (SAARC)

   ➤ Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)

   ➤ Indian Ocean Rim Association for Regional Cooperation (IORA)

⊙ **Major Issues Between India and Bangladesh:** Teesta River Water Dispute, illegal migration, trafficking, Rohingya issue

UPSC PYQ (RELATED)

Q: **"The long sustained image of India as a leader of the oppressed and marginalised nations has disappeared on account of its newfound role in the emerging global order". Elaborate (UPSC 2019)**

RESURGENCE OF MINILATERAL GROUPINGS AGAINST CHINA

CONTEXT:

China's assertive foreign policy has spurred the formation of several minilateral groupings in recent years. The resurgence of the Quad, comprising Australia, India, Japan, and the US, in 2017-2018 and the establishment of AUKUS—Australia, UK, and the US—in 2021 were largely driven by concerns over Beijing's aggressive and coercive policies. Now, a novel trilateral partnership between the US, Japan, and the Philippines is currently in progress.

1. **Dimension- Reasons for Resurgence of Minilateral Groupings:**

   ➤ **China's Assertive Foreign Policy:** Beijing's aggressive and coercive policies, particularly in the South China Sea and beyond, have alarmed countries in the Indo-Pacific region and spurred them to form minilateral alliances as a response.

➤ **Concerns over Regional Stability:** China with its activity, has raised concerns among neighboring countries about regional stability and security.

➤ **Need for Collective Security**: Recognizing the limitations of bilateral engagements, countries have turned to minilateral groupings to strengthen collective security and deterrence against China's hegemonic ambitions.

2. Dimension- Implications of Minilateral Groupings:

➤ **Enhanced Security Cooperation:** Minilateral alliances like the Quad and the trilateral partnership between the **US, Japan, and the Philippines** facilitate enhanced security cooperation, intelligence sharing, and joint military exercises to counter China's influence.

➤ **Balancing China's Power**: By forming alliances, countries aim to balance China's growing power and influence in the region, preventing any **single country from dominating the Indo-Pacific** and ensuring a **rules-based order.**

➤ **Geopolitical Realignment:** The resurgence of minilateral groupings signifies a geopolitical realignment in the Indo-Pacific, with countries aligning themselves strategically to safeguard their interests.

➤ **Diplomatic Pressure on China:** It puts diplomatic pressure on China and signals a united front against its aggressive policies, thereby influencing Beijing's behavior and promoting stability in the region.

➤ **Economic Cooperation:** Such groupings also promote economic collaboration among member countries, fostering trade, investment, and development initiatives.

FACT BOX

About Minilaterals

⊙ Minilaterals enable like-minded countries to work together in areas that are hindered by multilaterals or bigger groups of nations.

⊙ They are part of a new effort to transcend the traditional alliance framework.

⊙ Minilaterals are networks, not blocs, making it possible to rethink regional geographies.

⊙ **Example:** QUAD, I2U2

GCC'S 'VISION FOR REGIONAL SECURITY'

CONTEXT

The Gulf Cooperation Council (GCC) announced the launch of its 'Vision for Regional Security', a new initiative formulated by the six-country bloc earlier.

Issues covered in the Vision

⊙ There are several topics that the vision covers, outlined in 15 specific points, such as issues relating to **regional security and stability, economy and development**, as well as **climate change.**

⊙ Israel issue: One geopolitical challenge that the vision seeks to resolve is **the issue of Israel's occupation of the Palestinian territories**, reaffirming the GCC's commitment to the **Arab Peace Initiative** that was first endorsed by the **Arab League in 2002**, despite Bahrain and the UAE normalising relations with Israel.

➤ The vision also calls for the end of Israeli settlements in the occupied West Bank and nots that the conflict is a key issue destabilising the region.

⊙ **Two-State Solution:** Among others, it calls for a **two-State solution**, the withdrawal of Israeli forces to the pre-June 1967 borders and the establishment of an **independent Palestinian State with East Jerusalem as its capital.**

⊙ Nuclear policy: It also addresses **nuclear non-proliferation in the region**, a long-standing issue due to Iran's nuclear programme, as well as a commitment on the right to civil nuclear use, a policy which has been sought by both the **UAE and Saudi Arabia**.

⊙ **Other points** include **addressing cyber security issues, global energy market stability, climate change and the advancement of implementing a 'circular carbon economy' and securing water security.**

FACT BOX

Gulf Cooperation Council (GCC)

⊙ The GCC is an economic and political bloc formed in 1981, in the face of regional conflict and tensions.

⊙ It includes **Kuwait, Qatar, Bahrain, Saudi Arabia, the UAE and Oman**, six countries with huge oil resources and some of the highest per capita GDPs in the world.

INDIA'S PUSH FOR TRANSNATIONAL TRANSPORT CORRIDOR

CONTEXT

From East to West, India is spearheading major transnational transport corridors that will eventually link the Atlantic to the Pacific via Asia.

1. Dimension- India's push for transnational transport corridor

⊙ India is making big push mainly for the following corridor:

◎ India-Middle East-Europe Economic Corridor (IMEC)**:** IMEC aims to connect India to Europe via the Arabian Peninsula through rail and sea links

◎ **International North-South Transport Corridor (INSTC):** **INSTC** spans 7,200 kilometres, encompassing ship, rail, and road routes connecting India through Iran and Central Asia to Russia.

◎ **India-Myanmar-Thailand Trilateral Highway:** It will connect the Indian city of Moreh in Manipur to Thailand's Mae Sot via Myanmar.

◎ **Chennai-Vladivostok route to the East:** The corridor holds promise for India's connectivity with the Russian Far East.

2. Dimension- Need at global level:

◎ **Filling up infrastructure gap:** The G7 recognised this infrastructure gap in 2021 when it announced the **Build Back Better World (B3W).** The B3W aimed to bridge the USD 40 trillion infrastructure gap in the developing world and offer an alternative to the BRI.

◎ **Alternate routes:** Whether Houthi attacks in the **Red Sea or the 2021 Suez Canal blockage** that halted global shipping for six days, countries have been exploring safe and alternate routes for goods transit.

◎ **Need of investment**: The world is at a place now where investments are more critical than ever.

3. Dimension- Significance of these transport corridors for India

◎ **Strategic alliance:** These transport corridors as necessary to meet its fast-paced economic growth and as a tool to nurture strategic alliances.

◎ **Land-based connectivity**: There is a need for lateral "land-based" connectivity in the Indian Ocean, thus need of India-Myanmar-Thailand (IMT) trilateral highway arises.

UPSC PYQ (RELATED)

Q: What is the significance of Industrial Corridors in India? Identifying industrial corridors, explain their main characteristics. (UPSC 2018)

INDIA'S BID TO OVERTAKE VIETNAM

CONTEXT

India wants to be the top manufacturer in Asia as companies shift away from China, but first it needs to lower taxes and improve supply chain efficiency if it wants to dethrone Vietnam.

Economies shifting away from China

◎ **Side-lining China:** The U.S. has pursued a "friendshoring" agenda as competition with China increases.

▶ The US administration has encouraged American companies to move electronics and technology manufacturing operations out of China and into friendlier countries, particularly Vietnam and India in Asia-Pacific.

◎ **Interesting alternative**: India and Vietnam are attractive manufacturing alternatives for foreign investors and companies, due in part to **low labor costs**.

Why Vietnam has an upper hand?

◎ Vietnam is still way ahead with 2023 exports totalling USD 96.99 billion, compared with India's USD 75.65 billion

◎ Vietnam has been known for their ability to manufacture electronics. India is just getting into that game.

◎ While India's relationship with the U.S. has warmed recently, Vietnam has had a trade and investment deal with Washington since 2007.

◎ Vietnam has a more **simple proposition** compared with India, which has "29 states and every state has a policy which may be different."

What factors will move the "needle" for India?

◎ India needs to solve the following problems to be on par or even overtake Vietnam's manufacturing strength:

▶ **Lowering import taxes**: India's import taxes were intended to protect domestic manufacturers, but lowering those duties will be part of the government's efforts to attract foreign firms to manufacture goods within the country.

▶ **Improving supply chain efficiency:** India's infrastructure is still lacking, leading to lengthy shipment and road delivery times. Improving efficiency is the key.

THE WIDENED INSURANCE NET

CONTEXT

IRDAI has lifted the age ceiling of 65 years for buying a medical insurance policy, a move that widens the insurance net and provides huge relief to senior Indians.

Key-highlights of the changed policies

◎ **Elimination of age factor:** The elimination of age limit by IRDAI aims to **broaden the market and offer comprehensive coverage.**

◎ **Coverage of all age groups**: IRDAI, has asked insurance companies to offer their usual health policies to everyone, including senior citizens, students, and children.

◎ **Enhanced access for high-risk health conditions**: The insurers are now also prohibited from refusing to issue policies to individuals with severe medical conditions like cancer, heart or renal failure, and AIDS.

◉ **Fixed compensation**: The insurance companies are barred from introducing **indemnity-based health policies**, which compensate for hospital expenses. Instead, they are only permitted to provide **benefit-based policies**, offering fixed costs upon the occurrence of a covered disease.

◉ This change, effective from **April 1,** makes health insurance more inclusive and accessible to individuals of all ages.

◉ IRDAI has committed to enable **'Insurance for All' by 2047.**

Significance of the move

◉ **Inclusive healthcare ecosystem:** The move aims to foster a more inclusive and accessible healthcare ecosystem, ensuring adequate protection against unforeseen medical expenses.

◉ **Diversified offering:** While creating a more inclusive healthcare ecosystem, it will encourage insurance provider companies to diversify their product offerings.

◉ **Humane approach:** The decision to prohibit from refusing to issue policies to individuals with severe medical conditions will lead to develop more humane and caring healthcare in India.

🔍 FACT BOX

Indian Insurance market

◉ The Indian Insurance market is expected to reach USD 200 BN by 2027.

◉ India is **9th largest Life Insurance Market**

◉ **Insurance density in India** has increased from USD 11.1 in 2001 to USD 91 in 2021 (Life insurance- USD 69, Non-life insurance – USD 22)

◉ **Insurance penetration in India** has been steadily increasing (from 2.7% in 2000 to 4.2% in 2021)

◉ **Ayushman Bharat PM-JAY** is the largest health assurance scheme in the world and is funded by the Government.

Important Government Interventions

◉ To realise the dream of **'Insurance for all' by 2047**, insurance regulators are taking many progressive steps like **BIMA SUGAM, BIMA VAHAK and BIMA VISTAAR** amongst others.

◉ **Digital Personal Data Protection (DPDP) Act, 2023** aims to help insurance providers to enhance data protection in the insurance sector.

◉ Financial inclusion programmes **like Pradhan Mantri Jan Dhan Yojana, Jeevan Suraksha Bandhan Yojana and Pradhan Mantri Suraksha Bima Yojana, Atal Pension Yojana** have played a pivotal role in bringing underpenetrated segment under the umbrella of insurance.

2G SPECTRUM CASE

CONTEXT

More than 12 years after it was delivered, the Centre moved the Supreme Court seeking modification of its verdict in the 2G spectrum case as the Centre wanted to grant 2G spectrum licences in some cases.

The settled Judgement of Supreme Court in 2G Spectrum Case

◉ The only mode: Auction is the only mode for granting licences for natural resources like spectrum, the radio frequencies allocated to the mobile phone industry for communication over the airwaves.

◉ Duty bound: When it comes to alienation of scarce natural resources like spectrum etc, it is the burden of the State to ensure that a non-discriminatory method is adopted for distribution and alienation, which would necessarily result in protection of national/public interest.

Significance of 2G Spectrum Case

◉ The allocation of natural resources, such as spectrum, is a critical issue that affects the functioning of various industries, particularly the telecommunications sector. The 2G spectrum case in India serves as a significant landmark in highlighting the importance of fair and transparent resource allocation methods.

◉ Auctions ensure transparency, fairness, and maximum revenue generation for the government, thereby safeguarding public interest.

◉ Lessons Learned:

   ➤ Transparency and Accountability: The 2G spectrum case emphasizes the need for transparent and accountable mechanisms in allocating natural resources. Auctions serve as a robust method to achieve these objectives, ensuring that resources are allocated efficiently and in the best interest of the public.

   ➤ Preventing Corruption and Favoritism: By mandating auctions as the sole mode of allocation, the Supreme Court's verdict aimed to curb corruption and favoritism in resource allocation processes. Auctions minimize the potential for undue influence and ensure equal opportunities for all stakeholders.

🔍 FACT BOX

About 2G Scam

◉ 2G, or second generation licenses for mobile networks, were given at throwaway prices instead of carrying free and fair auctions.

◉ According to the Comptroller and Auditor General of India, the scam has caused a notional loss of Rs 1.76 lakh crore to the Indian national exchequer.

INDIA'S ONE AIRSPACE IDEA

CONTEXT

India is planning a major move to unify its four Flight Information Regions (FIRs) in Delhi, Mumbai, Kolkata and Chennai, into one continuous airspace in Nagpur and have harmonized Air Traffic Management from Nagpur which has a unique central location in the country.

1. **Dimension- Persistent Challenges in air traffic management**

   ➤ **Inefficient air traffic management** exacerbates congestion issues and compromises flight safety. India's airspace is fragmented, with multiple air traffic control (ATC) authorities responsible for different regions, leading to coordination challenges and suboptimal routing.

   ➤ **Skies are already capacity-crunched** and are set to become even more so with the advent of new airspace users such as **electric vertical take-off and landing aircrafts (eVTOLs).**

   ➤ **Managing increased volume of airborne vehicles** efficiently, while maintaining or even enhancing safety and avoiding congestion, represents a significant challenge.

2. **Dimension- Impact of the move**

   ➤ The single continuum **Flight Information Region (FIR)** would yield a lot of benefits in terms of safety, efficiency, user satisfaction, reduced carbon footprint and optimum manpower utilization.

   ➤ **Indian Single Sky Harmonized Air Traffic Management at Nagpur (ISHAN)** is expected to reduce separations (between flights) and have more fuel-efficient flight paths for aircraft.

   ➤ The unification aims to streamline and enhance **air traffic management (ATM) operations** in the region.

   ➤ If this plan is implemented, the air traffic controllers of every area control would not be required to coordinate for domestic flights flying above 25,000 ft (flights in the upper airspace) as they would all be handled by **Air traffic controllers (ATCOs)** in Nagpur.

   ➤ The ATCOs in every region or airport would then only work to guide the flights approaching or taking off from an airport until it enters the upper space which is referred to as **'Area control'** in aviation parlance.

🔍 FACT BOX

India's Airspace

- India is the major air navigation service provider in the Asia-Pacific region and controls over 2.8 million square nautical miles.

- This quantum of airspace is controlled by India through four flight information regions (**Delhi, Mumbai, Kolkata, Chenna**i) with a sub-FIR at Guwahati.

- India is sharing its Flight Information Regions (FIR) with 12 neighbouring countries.

- **Director General of Civil Aviation (DGCA)** is the regulatory body for Civil Aviation in India.

- The **Airports Authority of India (AAI)** is the statutory body which is responsible for creating, upgrading, maintaining and managing civil aviation infrastructure in India.

   ➤ It also takes care of **Air Traffic Management (ATM) and Communication Navigation Surveillance (CNS) of Indian Airspace.**

   Rights over Airspace

- **Article 1** of the **Convention on International Civil Aviation**, with regards to sovereignty of Airspace states that *every State has complete and exclusive sovereignty over the airspace above its territory'.*

- Further, the territory of any state includes **12 nautical miles of territorial waters** off the coastline.

- Airspace which is not within any country's territorial limit is considered as **'International Airspace'.**

CLIMATE CRISIS IMPACTS CITIZENS' RIGHT TO LIFE: SC

CONTEXT

The landmark judgment by the Supreme Court of India sheds light on the critical intersection between climate change and human rights. It emphasizes the constitutional guarantee of the right to life and the imperative for India to prioritize clean energy initiatives, particularly solar power, to mitigate the adverse effects of the climate crisis.

1. **Dimension- Constitutional Right to Life and Health:**

   ➤ The **Supreme Court** underscores the impact of climate change on the fundamental right to life, stating that without a **clean and stable environment**, this right cannot be fully realized.

   ➤ **Factors** such as **air pollution, rising temperatures, and natural disasters like floods and droughts** directly affect citizens' health and well-being. The judgment highlights the need for citizens to be free from the adverse effects of climate change to uphold their constitutional rights.

   ➤ **Case Study:** The judgment references the petition to protect the **critically endangered Great Indian Bustard (GIB),** illustrating the **tangible impact** of climate change on wildlife conservation efforts.

2. Dimension- Impact on Tribal Rights and Equality

➤ Climate change disproportionately affects **indigenous communities**, threatening their lands, forests, and cultural heritage.

➤ The court acknowledges that the **destruction of tribal lands and displacement** from their homes can impact the constitutional guarantee of the right to equality.

➤ **Case Study:** The court discusses the plight of tribals in the **Andaman and Nicobar Islands**, highlighting how their relationship with nature is intertwined with their cultural and religious practices.

  - The **right to health** (which is a part of the right to life under **Article 21)** is impacted due to factors such as **air pollution, shifts in vector-borne diseases, rising temperatures, droughts, shortages in food supplies due to crop failure, storms and flooding.**

  - The inability of underserved communities to adapt to climate change or cope with its effects violates the **right to life (Article 21)** as well as the **right to equality (Article 14).**

3. Dimension- Unequal Energy Access

➤ Despite the potential of clean energy initiatives to address energy inequality, challenges remain in terms of infrastructure, financing, and policy frameworks. **Women spend an average of 1.4 hours a day collecting firewood and an average four hours cooking.**

➤ **Unequal energy access** disproportionately affects women and girls due to their gender roles and responsibilities such as through time spent on domestic chores and unpaid care work.

⊙ **Case Study:** The success of initiatives like the **Pradhan Mantri Sahaj Bijli Har Ghar Yojana (Saubhagya)** in electrifying rural households demonstrates the effectiveness of targeted policies in expanding energy access to marginalized communities.

FACT BOX

Constitutional Provisions recognising Environmental rights

⊙ **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 to protect and improve the natural environment (forests, lakes, rivers and wildlife), and to have compassion for living creatures.

⊙ **Article 21** recognises the right to life and personal liberty while **Article 14** indicates that all persons shall have equality before law and the equal protection of laws.

TELEMEDICINE IN INDIA

CONTEXT

Telemedicine has emerged as a viable alternative to in-person consultations with doctors in many CONTEXT:s.

Benefits of Telemedicine

⊙ **Easy and time saving**: It saves patients time and expenses, which can be considerable if they are located in remote areas and/or are not well to do. In India, where 70% of the population lives in villages, a hospital visit often requires expensive long-distance travel to urban centres, which imposes its own considerable carbon footprint.

⊙ **Lower emissions:** According to a recent study, India's healthcare sector emitted 74 million tonnes of carbon dioxide in 2014, around 3% of India's total emissions of the gas that year. Vehicular emissions are a major contributor to local pollution and global warming. Telemedicine can be of help here.

⊙ **Filling Gap:** Most Indians live in rural areas while most doctors operate from urban locations. This leads to a gap in health care access that can be solved with telemedicine.

⊙ **Economic impact**: It can save time and money, lower fees and premiums.

⊙ **Making up to doctor-population ratio:** WHO recommends a doctor-population ratio of **1:1000** while the current doctor population ratio in India is only **0.62 : 1000.** The ratio is expected to remain low for a long time to come. This deficit is partly being made up by the **active telemedicine services** in various parts of the country.

FACT BOX

Government Initiatives for Telemedicine

⊙ **eSanjeevani** is Govt. of India's free telemedicine service. It is a national telemedicine service that strives to provide an **alternative to the conventional physical consultations** via digital platform.

⊙ **AROGYASREE** is another internet-based mobile telemedicine conglomerate that integrates multiple hospitals, mobile medical specialists, and rural mobile clinics.

⊙ **Telemedicine Practice Guidelines under the NMC Act, 2019,** regulate telemedicine in India. These guidelines outline prescription protocols and the responsibilities of registered medical practitioners during online consultations.

⊙ **Information Technology Act, 2000,** governs data collection by teleconsultation intermediaries.

REVISION IN MGNREGA WAGES & ISSUE OF WAGE DISPARITY

CONTEXT

The central government has announced a three to 10 percent increase in wage rate for unskilled workers under the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) for the financial year 2024-25.

Issue of disparity in wages under MGNERAGA

- Last year, the **Parliamentary panel** had stressed on the need to address the issue of disparity in wages under MGNREGA. It had asked the ministry to explore the possibility of making **wages uniform** across the country.

- It said, "Disparity of wages and non-increase in wages commensurately with inflation is perhaps the most discouraging aspect for labourers to undertake MGNREGA works."

- The issue of divergence between wage rates under MGNREGA is on account of the fact that the states **do not follow a uniform policy of wage revision** for **minimum agricultural wage**. In 2023-24, the lowest wages were in Chhattisgarh and Madhya Pradesh at Rs 221, while the highest was in Haryana at Rs 357.

- Drawing on inflation data, together with the rural monthly wage index published by the **Indian Labour Bureau, the Ministry of Finance** has observed negative trends in the purchasing power of rural Indian wages in recent years.

  - Thus, in its Economic Survey 2022-23, the Ministry highlighted a n**egative growth in real rural wages** (that is, rural wages adjusted for inflation) due to elevated inflation between April and November 2022.

🔍 FACT BOX

Mahatma Gandhi National Rural Employment Guarantee Act

- MGNREGA was passed in 2005, and the demand-driven scheme guarantees 100 days of unskilled work per year for every rural household that wants it.

- The wage rates are notified annually as mandated in the Act. It is the amount to be paid to unskilled workers per day for the work done under the scheme.

- Currently, there are close to **14.34 crore active workers under MGNREGS** and the average per day rate for unskilled work is around Rs 235 per day, as per the rural development ministry.

DIGITAL DIVIDE AND INDIA

CONTEXT

During his interaction with Gates, PM Modi covered a spectrum of critical topics ranging from AI to India's impressive advancements in digital technology. Pointing to technology's role in sectors like agriculture, education, and healthcare, Modi ruled out a digital divide in India.

1. Dimension-Trends of Digital Divide

- **Gap:** There exists a grave digital divide in India wherein gaps exist in the usage of the internet and access to digital infrastructure based on gender, area of residence whether rural-urban, caste, or age.

- **Gender inequality:** Men have greater access to the internet and greater ownership of mobile phones. However, it is important to note that there have been some improvements in women's access to cell phones between 2015–16 and 2019–21 which demonstrates that the efforts to reduce the digital divide are steadily coming into fruition.

- **Rural-Urban divide**: While there might be small variances, urban men are much better off than others both in terms of access to the internet and ownership of phones when compared to urban women, rural men, and rural women.

2. Dimension-Implications of digital divide

- **Further increasing inequality**: The inability to access technology has the potential to increase existing social exclusions and deprive individuals of essential resources.

- **Impact on employment:** Digital literacy is no longer a luxury but a prerequisite for active participation in today's job market.

- **Impact on every aspect of life:** With the increasing dependence on digital technologies and the internet, the digital divide has ramifications on education, health, mobility, safety, financial inclusion, and every other imaginable aspect of life.

🔍 FACT BOX

Statistics of Digital India

- According to **ICRIER's State of India Digital Economy 2024 report**, while "India as a nation is highly digitalised, the average Indian is not".

- **Nearly 48 % of Indians do not access the internet** and the quality of fixed line internet services does not match up to other G20 countries.

- According to IAMAI's internet in India report 2023, at 759 million, **52% Indians have access to the internet.**

- **India's gender gap** in internet connectivity is, at 10%, higher than the world average of 9%, and the rural-urban divide is at 58%, higher than the world average of 49%.

- While the digital divide along gender is large, it is **declining.**

UPSC PYQ

Q: Implementation of Information and Communication Technology (ICT) based projects/programmes usually suffers in terms of certain vital factors. Identify these factors and suggest measures for their effective implementation. (UPSC 2019)

REBOOT OF THE GEM

CONTEXT

The Government e Marketplace (GeM) plans to seek the Centre's approval to enable work contracts for construction and building projects to also be bid out through the platform with a transparent monitoring mechanism to assess the progress in such contracts.

1. Dimension-Role of GeM in public procurement in India

- **Transparent process:** GeM endeavours to make public procurement process transparent, efficient and inclusive.

- **Inclusiveness:** It drives inclusiveness and ease of doing business (EoDB) with the government.

- **Standardization:** It provides for standardization of processes backed by the regulatory framework

- **Automated system:** It is a fully automated system enabled through advances technologies.

- **Efficiency:** As an end-to-end online and integrated portal, GeM increases efficiency in public procurement by eliminating manual interventions at various stages of the procurement process.

- **Minimum Government, Maximum Governance**: The platform has been effectively contributing to the government's commitment of "**Minimum Government, Maximum Governance**".

2. Dimension-Need of GeM in public procurement

- The public procurement process involves several steps, starting with the government publishing a tender. Interested sellers participate, and once the participation deadline passes, the government

(buyer) evaluates the bids to determine eligibility. The contract is then awarded to the bidder offering the lowest rate.

- However, this process wasn't always as **straightforward and transparent** as it needed to be, which led to the **introduction of the Government e-Marketplace (GeM)**.

FACT BOX

About GeM

- **Launched in:** 2016

- GeM is an online platform for public procurement of goods and services.

- The platform is now used for everything from critical defence procurements to services like aircraft chartering and printing of election-related material, envisaged for the coming year.

- **GeM Statistics:** It offers over 12,000 product and 320 service categories generally sought by central and State government departments, and has even onboarded 90,000 Gram Panchayats as buyers.

SWEEPING POWERS OF DIRECTORATE OF ENFORCEMENT (ED)

CONTEXT

The Supreme Court endorsed the sweeping powers of the Directorate of Enforcement (ED), saying the Central agency could call "anybody for any information" even as it castigated Tamil Nadu District Collectors for failing to appear in person in response to a summons issued to them by the anti-money laundering body.

1. Dimension- Power and Function of ED:

- **Search and Seizure**- ED carries out search (property) and seizure (money/documents) under Section 16 and Section 17 of the PMLA.

- **In case of Arrest-** If the person is arrested, the ED gets **60 days** to file the prosecution complaint (charge sheet) as the punishment under PMLA doesn't go beyond **seven years.**

- **In property attachment**- If no one is arrested and only the property is attached, then the prosecution complaint along with attachment order is to be submitted before the **adjudicating authority** within 60 days.

2. Dimension- Power of ED for 'interrogation' and 'Custody':

- **Under Prevention of Money Laundering Act, 2002 (PMLA):** Following the recommendations of the Financial Action Task Force (FATF) India enacted PMLA.

➤ The ED has been entrusted with the responsibility of executing the provisions of PMLA 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 ED carries out **search (property) and seizure (money/documents)** after it has decided that the money has been laundered, under **Section 16 (power of survey) and Section 17 (search and seizure)** of the PMLA.

➤ On the basis of that, the authorities decide if arrest is needed as per Section 19 (power of arrest).

➤ Under Section 50 of the PMLA, the ED can also directly carry out search and seizure without calling the person for questioning.

➤ It is not necessary to summon the person first and then start with the search and seizure.

➤ If the person is arrested, the ED gets 60 days to file the prosecution complaint (chargesheet) as the punishment under PMLA doesn't go beyond seven years.

➤ If no one is arrested and only the property is attached, then the prosecution complaint along with attachment order is to be submitted before the adjudicating authority within 60 days.

FACT BOX

Important Judgments:

◉ **Supreme Court's view**: In its "*Vijay Madanlal Choudhary v. Union of India*", the Supreme Court upheld various provisions of the PMLA which relate to the **powers of arrest, attachment, search, and seizure conferred upon the ED.**

   ➤ The court was of the opinion that all the provisions under PMLA have a reasonable nexus with the objects sought to be achieved by the **Act to prevent money-laundering** effectively.

◉ In **P. Chidambaram v. Directorate of Enforcement (2019),** the Supreme Court rejected a prayer for anticipatory bail with respect to an offence of money laundering and proceeded to grant custody to the ED.

   ➤ The court reasoned that in a case of money laundering which involves many stages of placement and layering of funds, a '**systematic and analysed'** investigation is required which would be frustrated if pre-arrest bail is granted.

Enforcement Directorate (ED):

◉ Directorate of Enforcement is **a Multi-Disciplinary Organization** mandated with the task of enforcing the provisions of **two special fiscal laws – Foreign Exchange Management Act, 1999 (FEMA) and Prevention of Money Laundering Act, 2002 (PMLA).**

◉ Whenever any offence is registered by a local police station, which has generated proceeds of crime **over and above Rs 1 crore**, the ED steps in.

◉ As per the Prevention of Money Laundering Act, the ED got its power to investigate under **Sections 48** (authorities under act) and **49** (appointment and powers of authorities and other officers).

◉ If money has been laundered abroad, **the PMLA court** (constituted as per the Act) has the right to send a letter of rogatory **under Section 105** (reciprocal arrangements regarding processes) of the Code of Criminal Procedure.

MAINS PRACTICE QUESTION

Q: **Despite being a central agency, the Enforcement Directorate possesses jurisdiction across India, posing intricate legal inquiries. Comment (250 words)**

UPSC PYQ (Related)

Q: **The jurisdiction of the Central Bureau of Investigation (CBI) regarding lodging an FIR and conducting probe within a particular state is being questioned by various States. However, the power of States to withhold consent to the CBI is not absolute. Explain with special reference to the federal character of India. (UPSC 2021)**

GLOBAL FOREST EXPANSION AND IMPACT ON TRIBALS

CONTEXT

A symposium at the University of Arizona discussed the rights of indigenous people. It highlighted concerns about how the Kunming-Montreal Global Biodiversity Framework, combined with India's Forest (Conservation) Amendment Act of 2023, will particularly impact the country's tribes, already affected by the establishment of national parks.

1. **Dimension-Implication for indigenous community**

➤ **Resource at the cost of indigenous community:** The goals of GBF seems to tilt the scale in favour of corporate houses eyeing **forest resources** at the **expense of the indigenous communities living with nature.**

➤ **PAs as hunting grounds for elites:** PAs were initially created "as recreational opportunities, hunting grounds for western colonial elites".

   • The concept has not changed much with **ecotourism or sustainable ecotourism projects** reducing the indigenous peoples to animals in a zoo, made to sit in "model replicas" of traditional houses wearing traditional dresses and ornaments, and playing traditional musical instruments.

2. Dimension- GBF and India's Case

➤ **Threatened indigenous people**: About **84% of India's national parks** (89 out of a total of 106) were established in areas **inhabited by the indigenous peoples** and meeting the GBF targets will threaten their existence.

• For instance, the initiative to upgrade the **Kumbhalgarh Wildlife Sanctuary** in Rajasthan to a tiger reserve will affect 162 tribal villages located inside and outside the sanctuary

• The expansion of the **Nauradehi Sanctuary** in Madhya Pradesh is set to affect 62 villages of mostly tribal people.

Case Study: Indigenous People and Forest

◉ **Indonesia:** Indigenous peoples have been denied the **right to housing, health, education, electricity, and security** in **Indonesia's Ujungkulon National Park** while **Heng Saphen** living, an indigenous leader living inside the **Beng Per Wildlife Sanctuary** of Cambodia was convicted by a kangaroo court for cultivating on her own land.

◉ **Cambodia:** About **18% of Cambodia's Botum Sakor National Park** stand protected after much of its land was sold off to private firms.

◉ **India:** Involving the private sector in forest conservation is a bad idea and India has taken a step in that direction with the **Forest (Conservation) Amendment Act to 2023** to include **zoos, safaris, ecotourism facilities, etc., as forest active**

🔍 FACT BOX

India's Forest Cover

◉ '**Forest cover**', in India, refers to land **greater than one hectare in size** where the **tree canopy density is greater than 10%.**

◉ India's total forest cover rose to **38,251 sq. km from 2001 to 2021.**

UPSC PYQ

Q: "**Economic growth in the recent past has been led by increase in labour productivity.**" **Explain this statement. Suggest the growth pattern that will lead to creation of more jobs without compromising labour productivity. (UPSC 2022)**

Q: **Normally countries shift from agriculture to industry and then later to services, but India shifted directly from agriculture to services. What are the reasons for the huge growth of services vis-a-vis industry in the country? Can India become a developed country without a strong industrial base? (UPSC 2014)**

DISASTER RELIEF FUNDS & DELAY

CONTEXT

The Tamil Nadu government has moved the Supreme Court against the Centre for allegedly not releasing relief funds for damages caused by the recent floods and cyclone Maichung. The inaction on the part of the Centre is ex-facie illegal, arbitrary and violative of fundamental rights guaranteed to its citizens under Article 14 and Article 21 of the Indian Constitution.

1. Dimension-Centre's Constitutional Responsibilities in Disaster Times

➤ The constitutional framework governing **Centre-State relations in disaster management** is not explicitly outlined in the **Seventh Schedule of the Constitution**.

➤ Disaster management **does not fall under any of the three lists – Union, State, or Concurrent.**

➤ Since disaster management is not mentioned in any of the lists, it falls under the residuary powers of the Union government as per **Article 248 of the Constitution.**

➤ The **Disaster Management Act, 2005** was enacted by the Union government by tracing its legislative competence to the Concurrent List entry on "**Social security and social insurance; employment and unemployment.**"

• The primary responsibility for disaster management rests with the states.

• The Centre plays a supportive role by providing financial assistance, technical expertise, and coordination between multiple states during disasters, as mandated by the Act

➤ **NDMA:** The Act established the National Disaster Management Authority (NDMA) as the apex body for disaster management in India, with the **Prime Minister as its chairperson.**

➤ **SDMA:** At the state level, the Act mandated the creation of State Disaster Management Authorities (SDMAs), **headed by the Chief Ministers.**

2. Dimension- Issues arising out of debate

➤ **Central vs. State Responsibilities in DM**: The case highlights the debate regarding the division of responsibilities between the Central and State governments in managing natural disasters.

➤ **Financial Assistance and Relief Funds**: It raises questions about the adequacy and timeliness of financial assistance provided to states affected by natural calamities. This issue reflects on the effectiveness of disaster management policies and procedures in the country.

➤ **Principles of distributive justice:** The allegation of differential treatment and class discrimination in the release of funds underscores the importance

of equity and fairness in resource allocation during times of crisis.

➤ **Constitutional and Legal Remedies:** Tamil Nadu's decision to approach SC highlights the role of constitutional and legal mechanisms in resolving disputes between the Centre and the states.

➤ **Impact on development and public welfare:** Delayed relief efforts hamper state's development and affect public welfare.

FACT BOX

Constitutional Articles involved in the dispute

- **Article 131** of the Indian Constitution grants the **Supreme Court original jurisdiction** in disputes between the Government of India and one or more states, or between states.

- Tamil Nadu's plea against the Central Government falls under the purview of Article 131, as it involves a dispute between the state and the Union regarding the release of relief funds.

GLOBAL TRAGEDY OF FOOD WASTAGE

CONTEXT

Households around the world binned one billion meals a day in 2022, as per a report by the United Nations.

1. Dimension- Impact of food waste

- **GHG Emissions:** Food waste necessitates the conversion of vast areas of land for the production of crops that are never eaten and it emits five times as many greenhouse gases into the atmosphere as the aviation industry.

- Big contributor to the climate and biodiversity crises**:** Not only is this waste squandering natural resources, it is also a big contributor to the climate and biodiversity crises, displacing wildlife from intensive farming, as more than a quarter of the world's agricultural land is given over to the production of food that is subsequently wasted.

- **Economic loss**: Food loss and waste causes about USD 940 billion per year in economic losses. Reductions can save money for farmers, companies, and households.

Case Study: Required Approach

- **Food Waste Collection**: In the UK, the government has announced £295m of funding for local councils to organise **weekly collections of food waste**, aimed at composting and preventing food waste from going to landfill, where its rotting generates methane, a powerful greenhouse gas.

- Collecting food waste separately can encourage people to reform their habits, as they see clearly how much of what they buy is going into the bin.

- **Food rescue scheme**: In Johannesburg, South Africa, a food rescue scheme is channelling waste foods to those who need it most during the pandemic.

- **Food banking** is also an important and unique model in reducing food loss and waste, because food banks not only work with farms, manufacturers, retailers and food services to rescue wholesome food, but they also make sure that food ends up on the tables of people facing food insecurity.

FACT BOX

Key-highlights of the Report

- **Report Title:** Food Waste Index Report. It tracks the progress of countries attempting to halve food waste by 2030.

- **Over USD 1 trillion worth of food** (which is nearly one-fifth of the produce available on the global market) was thrown away by businesses and households when about 800 million people were going hungry.

- **Food loss in supply chain**: These figures exclude an additional 13% of food that is lost in the food supply chain, between harvest and market, often from rejection or spoilage of edible food.

- Few countries have plans in place to reduce food waste and most fail to include it in their proposals for reducing carbon emissions.

- Around the world, about 79kg of food is wasted per person annually. But in some countries, including the UK, Australia, Indonesia, Mexico and South Africa, food waste has been cut substantially since 2007. Japan has cut its food waste by nearly a third, and the UK by about 18%.

- Indian household wastage

- 78.2 - million tonnes every year

- 233.9 million - of world's 783 million population (**Global Hunger Index 2023**)

- Ranked **111 -** In 125 countries, indicating a hunger severity level

OVERHAUL OF INDIAN RAILWAYS

CONTEXT

The Indian Railways, as the country's largest national transport network, has long been a focal point for policymakers aiming to enhance its efficiency and modernize its infrastructure. Successive governments have grappled with the challenges and opportunities presented by the vast railway system.

1. Dimension- Challenges in Enhancing Efficiency

➤ **Human Resource Complexity:** The Indian Railways is a significant employer, making it challenging for governments to implement changes swiftly due to the complexities associated with managing a large workforce. Dealing with human resource issues, such as training and deployment, poses a substantial challenge to railway modernization efforts.

➤ **Safety Concerns:** Despite advancements, safety remains a concern, especially regarding the implementation of systems like the **Kavach anti-collision system** and combating driver fatigue. Safety measures are crucial for preventing accidents and ensuring passenger and employee well-being.

➤ **Infrastructure Complexities:** The complexity of railway infrastructure poses hindrances to the seamless implementation of safety measures and technological upgrades. Upgrading existing infrastructure while ensuring minimal disruption to services is a daunting task.

2. Dimension- Progress and Achievements

➤ **Vande Bharat Trains:** The Vande Bharat trains, symbolizing a generational shift in Indian railways, offer high-speed point-to-point services with amenities akin to airlines, showcasing India's manufacturing capabilities. This initiative reflects the government's commitment to enhancing passenger experience and reducing travel time.

➤ **Expansion of High-Speed Train Corridors:** Efforts are underway to construct more high-speed train corridors, including the Mumbai-Ahmedabad bullet train project, aimed at enhancing connectivity and reducing travel time. These initiatives are crucial for meeting the growing demands of passengers and freight transport.

➤ **Capital Outlays and Infrastructure Development:** The Modi government's emphasis on capital outlay, including the highest-ever investments in railways, has led to significant advancements in track laying, electrification, maintenance, and infrastructure development. These investments are vital for modernizing railway infrastructure and improving operational efficiency.

FALL IN HOUSEHOLD SAVINGS

CONTEXT

The fall in household savings has become a focal point of discussion in India, particularly with a sharp decline in net financial savings leading to a four-decade low in the household net financial savings to GDP ratio.

1. Dimension- Interpreting lower financial savings

➤ **Definition:** Household net financial savings are the difference between gross financial savings and borrowing. Gross financial savings include assets like **bank deposits, currency, and financial investments.**

➤ **Factors leading to reduction:**

• **Consumption Expenditure:** While consumption remained largely unchanged, the reduction in net financial savings suggests increased borrowing or decreased financial savings, stimulating aggregate demand.

• **Tangible Investment:** The role of increased borrowing for physical investment was limited, indicating a slight increase in physical savings but a significant rise in borrowing.

• **Interest Payments:** Higher interest rates led to increased interest payments, which households financed by borrowing or depleting financial savings.

2. Dimension- Implication of higher debt burden

➤ **Financial Fragility:** Increased debt raises concerns about households' ability to repay, impacting financial sector income and possibly leading to credit rationing, affecting the **macroeconomy.**

➤ **Consumption Demand:** Higher debt can reduce consumption as households may seek to preserve wealth by saving more or may face credit rationing due to perceived default risk.

3. Dimension- Macroeconomic implication

➤ **Vulnerability:** Increasing trends in liabilities to disposable income and debt to net worth indicate household vulnerability.

➤ **Policy Implications:** Tight monetary policy, aiming to control inflation, can exacerbate household debt, potentially pushing them into a debt trap.

➤ **Impact on Consumption:** High debt burden can decrease consumption, affecting aggregate demand and economic stability.

INDIA'S STRUGGLE WITH AGRICULTURAL LABOR DEPENDENCY

CONTEXT

The recent report highlighting India's comparatively lower rate of transitioning its working-age population away from farm-related work compared to its neighboring countries has brought renewed attention to the longstanding issue of agricultural labor dependency in the country.

Key-highlights of the Report (the shift)

◉ **Report by:** *World Bank's April South Asia Development Update Report.*

◉ **Time Period**: 2000 to 2023

- **Crux:** India has managed to move a smaller share of its working-age population away from farm-related work than many of its neighbours.

- **Bangladesh, Bhutan, Sri Lanka and Nepal** managed to shift a bigger share of jobs to non-agricultural work than India.

- Only Pakistan and the Maldives show a lower shift among South Asian peers.

- The share of working-age Indians who are employed in agri-based jobs has come down over the years. This employment ratio for India was 63.9 per cent in 2000. It declined to 58.9 per cent by 2010; and further to 53.8 per cent in 2019.

- Since 2000, South Asian countries witnessed rising productivity but only marginally rising, or even declining, employment ratios.

- Employment ratios fell in **Bhutan, India, Maldives, and Nepal**, while in **Bangladesh, Pakistan, and Sri Lanka.**

- **Men's employment ratio** in India declined by 9.6 percentage points. Most South Asian countries recorded a decline.

- **Women's employment ratio** in India increased by 1.4 percentage points. It was the highest for Bangladesh at 11.6 percentage points. The increased participation of women could be driven by **rising self-employment** among them driven by economic distress.

Why the findings are concerning?

- **Growth challenges:** The slower transition of India's working-age population from agriculture poses challenges for sustainable economic growth and inclusive development.

- **Distress:** Both self-employment and agriculture constitute fallback options for workers who have lost work and cannot afford to remain unemployed.

- **Reduced earnings:** More women serving the same market translated into increased competition and lower earnings.

- **Poor quality of jobs:** Indian agricultural labourers mostly moved to other low-paying and informal jobs such as petty retailing, small eateries, domestic help, sanitation, security staffing, and transport.

- **Low-paid employment:** The labour transfer is happening within the low-productivity informal economy. The jobs that are getting generated outside agriculture are mostly in low-paid services and construction.

🔍 FACT BOX

Government Initiatives to Shift Farmers to Non-Agricultural Jobs

- **Skill Development Programs**: Skill India Mission focus on providing vocational training and certification to enhance employability in diverse sectors.

- **Rural Employment Schemes**: Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)

- **Promotion of Entrepreneurship**: Startup India initiative

- **Investment in Rural Infrastructure**: Pradhan Mantri Gram Sadak Yojana (PMGSY)

- **Industry-Focused Policies**: Make in India, Digital India, and Startup India

UPSC PYQ

Q: "Economic growth in the recent past has been led by increase in labour productivity." Explain this statement. Suggest the growth pattern that will lead to creation of more jobs without compromising labour productivity. (UPSC 2022)

Q: Normally countries shift from agriculture to industry and then later to services, but India shifted directly from agriculture to services. What are the reasons for the huge growth of services vis-a-vis industry in the country? Can India become a developed country without a strong industrial base? (UPSC 2014)

GAPS IN WEALTH AND INCOME IN AN UNEQUAL INDIA

CONTEXT

A recent study 'Income and Wealth Inequality in India, 1922-202 The Rise of the Billionaire Raj' by the World Inequality Lab (WIL), presents facts about 'inequality'.

Key-highlights of the Report

- **Income inequality:** 22.6% of India's national income in 2022-23 went to the top 1%, the highest proportion in the last 100 years.

- **Wealth inequality:** The share of the top 1% in wealth was as high as 40.1% in 2022-23, also its highest level since 1961.

  ➤ The share of wealth among the top 10% increased from 45% in 1961 to 65% in 2022-23.

  ➤ Conversely, the share of the bottom 50% and middle 40% in wealth has declined.

- **Wealth concentration**: India's wealth inequality is not as **extreme as Brazil and South Africa**, but its wealth concentration has already increased threefold between 1961 and 2023.

- Additionally, with India's income inequality being the world's highest, higher than South Africa, Brazil and the United States of America, it will only add to wealth inequality in times to come.

Growing inequality and Concerns

- **Negative impact on growth:** Income inequality negatively affects growth and its sustainability. Growth is critical to the reduction of poverty; the greater the inequality, the lower the impact of growth on poverty reduction

- **Inverse relationship**: There is an inverse relationship between the income share of the rich and economic growth. (**IMF Study**).

  - If the share of the top 20% of the population increases by 1 percentage point, GDP growth is actually 0.08 percentage points lower in the following five years, suggesting that the benefits do not trickle down.

  - Instead, a similar increase in the income share of the bottom 20% is associated with 0.38 percentage point higher growth.

- **Affected policy-making**: The super-rich affect decisions by being in and out of the corridors of power.

- **Cut on public goods**: The enhanced power of the elite could result in a more limited provision of public goods that boost productivity and growth, and which disproportionately benefit the poor.

- **Inequality dampens investment**, and hence growth, by fuelling economic and political instability.

UPSC PYQ

Q: Explain intergenerational and intragenerational issues of equity from the perspective of inclusive growth and sustainable development. (2020)

INNOVATION IN TRADITIONAL PRACTICES OF AGRICULTURE

CONTEXT

In Rajasthan's Shekhawati region, farmers are opting for innovations in traditional practices and adopted new techniques to turn their land into a profitable venture amid the decline in the groundwater level and erratic rainfall.

Adopted techniques:

- Solar power panel running pumps, slim polyethylene hoses for drip irrigation, uniformly spaced trees, jets shoot water mixed with fertilizer directly at the roots; climate-controlled greenhouses, rainwater harvesting techniques, establishment of climate-controlled polyhouse for growing vegetables, organic farming with the help of **vermicompost**

  - **Sundaram Verma of Danta village** has developed techniques to grow crops with less water and conserve water in the arid regions. He was awarded the **Padma Shri in 2020** for developing **'dryland agroforestry'**, a method to help tree plantation efforts.

- **Technology in Agriculture:** Sensor Data Used for Smart Farming, Climate Smart Agriculture Mechanization Using Robotics, GPS Technology for Climate-Smart Agriculture, Drones for Climate-Smart Agriculture, Precision Agriculture

Emerging e-Technologies in Agriculture

- **Agriculture Sensors:** These sensors can detect moisture and nitrogen levels. This information can be used to determine when to water and fertilize rather than rely on a predetermined schedule.

- **Weather Tracking**: Drones, remote sensors, and satellites gather 24/7 data on weather patterns in and around the fields. This provides farmers with vital information on temperature, rainfall, soil, humidity.

- **Satellite Imaging:** It allows for real-time crop imagery. It lets a farmer examine crops as if he or she were standing there without actually standing there.

- **Pervasive Automation:** It refer to any technology that reduces operator workload. It expands accurate and controlled growing through proper guidance to farmers about optimum planting, timely harvesting, nutrient management and pest attacks. **Examples** include autonomous vehicles controlled by robotics.

- **Minichromosomal Technology:** Using mini-chromosomes, agricultural geneticists can add dozens and perhaps even hundreds of traits to a plant. In this, the plant's original chromosomes are not altered in any way.

- **Radio-frequency identification (RFID) Technology**: RFID based sensors provide information that can be associated with farming yields. **For example**, barcode on the yields can be scanned with a smartphone in order to access information about the soil that yielded them.

- **Vertical Farming:** Vertical farming a component of urban agriculture is the practice of producing food in vertically stacked layers. Farmers in all areas can use it to make better use of available land and to grow crops that wouldn't normally be viable in those locations.

- **Others:** Blockchain in Agriculture, Internet of Things (IOT), Drone Technology

🔍 FACT BOX

Steps taken by the Government in the Direction

- **AgriStack:** AgriStack is a government initiative to build an ecosystem that facilitates the delivery of digital agriculture services, including responsible advisories and access to quality inputs.

- **Digital Agriculture Mission**: This has been initiated for 2021 -2025 by the government for projects based on new technologies like artificial intelligence, block chain, remote sensing and GIS technology, use of drones and robots etc.

- **Sub-Mission on Agricultural Mechanization (SMAM):** Under this Scheme, subsidies are provided for purchase of various types of agricultural equipment and machinery.

- ◉ **Other Digital Initiatives:** Kisan Call Centres, Kisan Suvidha App, Agri Market App, Soil Health Card (SHC) Portal, etc.

UPSC PYQ

Q: **How does e-Technology help farmers in production and marketing of agricultural produce? Explain it. (UPSC 2023)**

Q: **What are the present challenges before crop diversification? How do emerging technologies provide an opportunity for crop diversification? (UPSC 2021)**

LOW WAGES HAUNTS INDIA'S ECONOMY

CONTEXT

Amidst the backdrop of economic uncertainty and volatility, daily wage workers continue to face myriad challenges. From meager wages to precarious employment opportunities, the plight of daily wagers underscores the urgent need for comprehensive interventions to address their vulnerabilities.

1. Dimension-Factor behind low wages

- ➤ **Low capital and skills**: Since capital is scarce and labour abundant and less productive, wages are relatively lower in India.

- ➤ **Vicious cycle**: The pervasive problem of low wages perpetuates **cycles of poverty and deprivation** among daily wage earners.

- ➤ **Persistence of informal set up**: Informal economy suffers from long working hours, low pay and difficult conditions, low job security, inadequate social security regulation and others.

- ➤ **Extreme weather events** remain a key factor as rural jobs are dependent on agriculture which is dependent on monsoon and *rabi and kharif* production.

Stark difference in India's minimum wage

India	America
In India, minimum wages are not market clearing wages. They are regulatory wages to ensure that market wages do not fall below subsistence. They are expected to cover the essential current costs of accommodation, food and clothing (***roti, kapada aur makaan***) of a small family. It is inadequate for a **dignified life.**	In America, the minimum wage captures the market value of food, accommodation, utilities, transportation, healthcare and social security at subsistence levels for small nuclear families.

2. Dimension- Impact on low wages on economy

- ➤ **Low contribution to aggregate demand:** Despite the celebration of higher economic growth, declining incomes mean that people at large do not have sufficient buying power in their hands. These households contribute substantially to economic output, making up 44-45% of **Gross Value Added (GVA).**

- ➤ **Poor standard of living**: Labors are forced to live in poor conditions with many sharing a small room in a slum. Water is scarce and drinking water more so. Access to clean toilets is limited and disease spreads. There is lack of civic amenities like sewage. Their children are often deprived of schools and playgrounds.

- ➤ **Lack of investment in education**: The sporadic nature of employment opportunities and lack of job security not only undermines their financial stability but also impedes their ability to plan for the future and invest in skill development or education.

- ➤ **Increased vulnerability to economic shocks**: The absence of **adequate social protection** mechanisms further exacerbates their **financial insecurity**, leaving them **vulnerable to economic shocks and crises.**

🔍 FACT BOX

National Floor Level Minimum Wage (NFLMW)

- ◉ **NFLMW** is the minimum wage below which no state government can fix the minimum wage. It was brought into effect from 1996 by the Centre. State governments can set their own minimum wages.

- ◉ India is planning to **replace its minimum wage system with a living wage by 2025** to lift millions out of poverty and ensure their well-being.

Government schemes/Acts for labourers

- ◉ **Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (ABPMJAY)** provides health cover.

- ◉ **Pradhan Mantri Shram Yogi Maan-dhan (PM-SYM) Pension Scheme** provide old age protection to unorganised sector workers

- ◉ **Others:** One Nation One Ration Card Scheme under National Food Security Act, Mahatma Gandhi National Rural Employment Guarantee Act, Deen Dayal Upadhyay Gramin Kaushal Yojana, Pradhan Mantri Awas Yojana, Gareeb Kalyan Rojgar Abhiyan, Mahatma Gandhi Bunkar Bima Yojana, Deen Dayal Antyodaya Yojana, PMSVANidhi, Pradhan Mantri Kaushal Vikas Yojana etc.

> ➤ Atmanirbhar Bharat Rozgar Yojana (ABRY, Unemployment benefit under Atal Beemit Vyakti Kalyan Yojana (ABVKY), Pradhan Mantri Garib Kalyan Rojgar Abhiyan (PMGKRA), National Social Assistance Program, Deen Dayal Upadhyay Gramin Kaushalya Yojana (DDU-GKY), Pradhan Mantri Garib Kalyan Rojgar Abhiyan (PM-GKRA), Pradhan Mantri Kisan Maan-Dhan Yojana (PM KMDY), Pradhan Mantri Kisan Samman Nidhi etc.

UPSC PYQ

Q: 'Despite the implementation of various programmes for eradication of poverty by the government in India, poverty is still existing'. Explain by giving reasons. (UPSC 2018)

Q: While we found India's demographic dividend, we ignore the dropping state of employability. What are we missing while doing so? Where will the jobs that India desperately needs come from? Explain (UPSC 2014)

INDIA RISKS 'SQUANDERING' DEMOGRAPHIC DIVIDEND: WORLD BANK

CONTEXT

The World Bank's South Asia regional update, "Jobs for Resilience," highlights concerns regarding the region's utilization of its demographic dividend, particularly focusing on India's employment growth.

1. **Dimension- Observations on Employment Trends**

   ➤ **Slow Job Creation:** The South Asia region, including India, is not effectively leveraging its demographic dividend, as job creation lags behind the growth in the **working-age population.**

   ➤ **Unemployment Rate:** India, in particular, has witnessed employment growth significantly below the **average growth** in its working-age population from 2000 to 2023, leading to a **decline in the employment ratio.**

      • The youth unemployment rate was 45.4 per cent in 2023, according to the Centre for Monitoring Indian Economy, a think-tank.

   ➤ **Female employment ratios** in many south Asian countries, including India, are among the lowest in the world, at less than 40 per cent.

2. **Dimension- Untapped benefits from the demographic dividend**

   ➤ **Economic growth:** Better economic growth is brought about by increased economic activities due to a higher working-age population and lower dependent population thereby increasing labor force along with rising in women workforce.

➤ **Policy Framing:** Effective policy making by strictly implementing schemes and programs for the benefit of the people.

➤ **Rise in employment:** A higher employment-seeking population will lead to the rapid increase of industrialization and urbanization.

➤ **Increased workforce:** The working-age population rising to 65% will increase the workforce.

➤ **Swelling labour force:** India's labour force is swelling as its baby boomers reach working age. It would boost India's growth.

➤ **Effective diversion of resources:** India's population has the potential to divert resources from spending on irrelevant things to investing in physical and human infrastructure.

➤ **Rise in women's workforce:** There is a rise in women's workforce activity that naturally accompanies a decline in fertility.

➤ **Easy accumulation:** The fourth is that working ages also happen to be the prime years for savings, which is key to the accumulation of capital and technological innovation.

➤ **Approach to seize Demographic Advantage:** Upgrading Education Standards, Fulfilling Health-Related Requirements, Inter-Sectoral Collaborations, Bridging Gender Gaps in Workforce, Federal Approach for Diverse States

🔍 FACT BOX

India's demographic dividend

⊙ India is home to more than 600 million people aged between 18 and 35, with 65% under the age of 35.

⊙ India's demographic dividend is expected to persist at least until 2055–56 and will peak around 2041, when the share of the working-age population — 20–59 years — is expected to hit 59%.

UPSC PYQ

Q: The nature of economic growth in India is described as jobless growth. Do you agree with this view? Give arguments in favour of your answer. (UPSC 2015)

Q: While we flaunt India's demographic dividend, we ignore dropping rates of employability. What are we missing doing so? Where will the jobs that India desperately needs come from? Explain. (UPSC 2014)

RURAL INDIA'S DEMAND DEPRESSION

CONTEXT

India's economic growth, though robust overall, is marked by significant disparities, particularly evident in the lagging performance of rural areas amid the pandemic and adverse weather conditions.

1. Dimension- Economic Growth Disparity:

- ➤ **Fast Economic Growth:** India's economy is experiencing rapid growth, outpacing many other large economies globally, showcasing its resilience and potential for development.

- ➤ **Rural Lag:** Despite overall growth, rural India has not experienced commensurate progress, highlighting a disparity between urban and rural economic trajectories.

- ➤ **Impact of Pandemic**: The COVID-19 pandemic exacerbated **rural-urban economic disparities**, with rural demand severely affected by lockdowns and economic disruptions.

2. Dimension- Rural Challenges and Setbacks:

- ➤ **Pandemic Fallout:** Rural areas faced significant setbacks during the pandemic, with disruptions to livelihoods and economic activities exacerbating existing economic disparities.

- ➤ **Weather Conditions:** Poor weather conditions further compounded the challenges faced by rural India, contributing to a decline in rural demand and exacerbating economic disparities.

- ➤ **Need for Addressing Disparities:** The widening gap between urban and rural economic growth underscores the importance of targeted policies and initiatives to uplift rural communities and ensure inclusive economic development.

RBI @ 90

CONTEXT

The Reserve Bank of India (RBI) celebrates its 90th anniversary, prompting reflections on its evolution and challenges ahead.

1. Dimension- Historical Evolution and Challenges:

- ➤ *Significant Legacy:* Established in 1935, the RBI is among the oldest central banks in developing countries, witnessing India's transition from **pre- to post-independence eras** and navigating various economic shifts.

- ➤ *Management of Transitions*: Over its existence, the RBI has adeptly managed transitions from planned economies to market-oriented structures and now towards an increasingly digital economy, learning from past experiences and adapting to new challenges.

- ➤ *Tackling Economic Disruptions*: Throughout its history, the RBI has confronted significant economic disruptions, including the global financial crisis, demonetization, and the COVID-19 pandemic, while also addressing issues like the banking sector's **bad loan crisis.**

2. Dimension- Recent Achievements and Future Challenges:

- ➤ *Resolution of Bad Loans:* With proactive measures like the **Insolvency and Bankruptcy Code (IBC) framework** and capital infusion, the RBI has successfully tackled the problem of bad loans, reducing the **non-performing asset (NPA) ratio** significantly and fostering healthy credit growth.

- ➤ *Adoption of Inflation Targeting:* The formal adoption of inflation targeting by the RBI has helped in keeping inflation in check and anchoring inflation expectations, despite occasional disruptions due to external factors like the pandemic.

- ➤ *Technological Innovations*: Embracing technological advancements, the RBI has revolutionized the payments ecosystem through initiatives like the **Unified Payments Interface (UPI),** laying the groundwork for further digital transformation and innovation.

INDIA'S INFRASTRUCTURE BOOST ALONG CHINA BORDER

CONTEXT

India is ramping up efforts to enhance infrastructure and connectivity along the LAC with China, extending beyond the Kameng region. While Kameng and Tawang have witnessed development over the past decade, other areas are now catching up to match China's infrastructure standards along the LAC.

1. Dimension- The rate of development

- ➤ **Highway:** Work on the 2,400-km trans-Arunachal highway is expected to be completed this year.

  - The new, almost 1,800-km-long frontier highway, on which work has commenced, will fill a critical void facilitating inter-valley movement. It will start from Bomdila in Arunachal's west and end in Vijaynagar, near the Indo-Myanmar border.

  - Another 3,000 km of road infrastructure is also under planning and construction in the State.

- ➤ **Operational tracks**: A number of operational tracks are being built by the Army to ensure last-mile connectivity in the forward areas, and in addition, a large number of projects have been sanctioned under the **Prime Minister Gati Shakti project** for infrastructure development.

- ➤ **Bridges:** A total of 34 new bridges have been constructed between 2020 and 2023.

- ➤ **Connectivity across river:** Another infrastructure development is the connectivity across the Lohit river, which, for India, starts from Kibithoo and flows to Tezu, and then joins the Brahmaputra in Assam, a distance of almost 350 km, dividing the stretch into east and west banks.

- ➤ **From 2G to 4G:** The Universal Service Obligation Fund (USOF) was established to provide access to

"basic telegraph services" to people in remote and rural areas at aordable and reasonable prices.

2. Dimension- Vibrant village program and its significance

➤ The VVP was approved as a Centrally-sponsored scheme in 2023 (in **Kibithoo)** for the development of 2,967 villages in 46 blocks across 19 districts in the border States of **Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand,** and the Union Territory of **Ladakh.**

➤ The objective is comprehensive development of these villages to improve the **quality of life of people,** thereby **reversing outmigration**.

➤ The VVP is an effort to counter **China's model villages — called Xiaokang** and located very close to the LAC opposite Uttarakhand, Sikkim, and Arunachal Pradesh — which have raised apprehensions in the security establishment.

FACT BOX

LAC's Division

◉ The Indian Military has divided the Line of Actual Control into 3 sectors –

➤ **Western sector** across Ladakh and the Chinese-held Aksai Chin

➤ **Central sector** across Himachal Pradesh and Uttarakhand

➤ **Eastern sector** across Sikkim and Arunachal Pradesh

The Army's demarcation of Arunachal Pradesh

◉ For administrative purposes, the Army classifies Arunachal as **Kameng,** derived from the name of the river that flows through the State.

◉ Tawang district is part of the Kameng area, while the remaining part of the State is considered separate and was earlier referred to as the **Rest of Arunachal Pradesh (RALP).**

◉ Of the 3,488-km-long Line of Actual Control (LAC), 1,346 km falls in the eastern sector, comprising **Sikkim and Arunachal.**

◉ While the Tawang and Kameng areas are under the Army's IV Corps (Tezpur)

◉ RALP is under the III Corps (Dimapur).

Kibithoo

◉ Kibithoo is one of the easternmost villages in Anjaw district of Arunachal Pradesh.

◉ Inhabited by people of the **Meyor tribe**, it is located about 7-8 km from the **Line of Actual Control (LAC),** the contested line that separates India and China.

AFSPA EXTENSION

CONTEXT

The contentious Armed Forces Special Powers Act (AFSPA) continues to be a subject of debate and concern as the central government announces its extension in three districts and three police stations of Arunachal Pradesh for a further six months. This decision raises questions about the balance between security imperatives and the protection of civil liberties in the northeastern state.

1. Dimension- Need of the Act in India's north-east

➤ Arunachal Pradesh, shares its borders with **China, Bhutan, and Myanmar**, making it strategically significant from a security standpoint.

➤ Over the years, the region has witnessed sporadic incidents of insurgency and militancy, prompting the deployment of security forces and the enactment of special legal provisions such as AFSPA.

➤ The extension of **AFSPA** in three districts—**Tirap, Changlang, and Longding**—and three police stations underscores the persistent security challenges facing certain pockets of Arunachal Pradesh.

➤ These areas have been identified as being **vulnerable to insurgent activities, cross-border infiltration,** and other **threats to public order and national security.**

2. Dimension- Efficacy of such legal measures in addressing security challenges

➤ AFSPA is essential for dealing with insurgencies and protecting civilians from armed groups, critics view it as a draconian law that enables human rights abuses and undermines democratic principles.

➤ While security agencies emphasize the need for uninterrupted powers to combat insurgency and maintain stability, civil society organizations and human rights activists raise concerns about the potential for abuse of power and violations of fundamental rights.

➤ Reports of extrajudicial killings, arbitrary detention, and other human rights violations have fuelled calls for the repeal or reform of AFSPA.

➤ **SC on AFSPA:** The Supreme Court established legal principle **"Accountability is a facet of the rule of law."** It rules that the armed forces cannot escape investigation for excesses in the course of the discharge of their duty even in **"disturbed areas".**

FACT BOX

About AFSPA

◎ Under the **Armed Forces (Special Powers) Act**, an area is declared as **"disturbed"** for the convenience of security forces.

◎ An area or district is notified as a disturbed area under the AFSPA to facilitate the operations of the armed forces.

◎ The AFSPA gives armed forces personnel, operating in disturbed areas, sweeping powers to search, arrest and to open fire if they deem it necessary for **"the maintenance of public order".**

UPSC PYQ

Q: Human right activists constantly highlight the view that the Armed Forces (Special Powers) Act, 1958 (AFSPA) is a draconian act leading to cases of human rights abuses by the security forces. What sections of AFSPA are opposed by the activists? Critically evaluate the requirement with reference to the view held by the Apex Court. (2015)

NABARD'S CLIMATE STRATEGY 2030

CONTEXT

To address India's escalating need for green financing, National Bank for Agriculture and Rural Development (NABARD) unveiled its Climate Strategy 2030 document on the occasion of Earth Day.

1. Dimension-Need to focus on Green Financing

➤ Green finance, which aligns financial investments with sustainable and eco-friendly projects, has emerged as a pivotal force in fostering the advancement of renewable energy in India.

➤ India's commitment to renewable energy, aiming to achieve **500 GW of renewable energy** capacity by 2030, requires **green funding.**

➤ While facilitating the expansion of renewable energy infrastructure, green finance contributes to a **reduction in the carbon footprint**.

2. Dimension-Challenges in the sector

➤ **Insufficient green finance:** India requires approximately USD 170 billion annually to reach

a cumulative total of over USD 2.5 trillion by 2030, current green finance inflows are critically insufficient. As of 2019-20, India garnered about USD 49 billion in green financing.

➤ **Minimal private sector engagement:** With the majority of funds earmarked for mitigation, only USD 5 billion was allocated towards adaptation and resilience.

➤ **Viability issues:** Private sector is showing less interest in these areas due to challenges in bankability and commercial viability.

➤ **Other hurdles:** Issues such as project risks, policy uncertainties, and the need for standardized green finance metrics pose hurdles for the sector.

FACT BOX

NABARD's Climate Strategy 2030

◎ It is a comprehensive blueprint designed to tackle India's growing demand for **green financing**.

◎ It is structured around four key pillars.

➤ Accelerating green lending across sectors

➤ Playing a broader market-making role

➤ Internal green transformation of NABARD

➤ Strategic resource mobilisation

NATIONAL CLEAN AIR PROGRAMME & CHALLENGES

CONTEXT:

The Indian government initiated the National Clean Air Programme (NCAP) in 2019 with the goal of reducing atmospheric Particulate Matter (PM) concentration by 20-30% by 2024, based on 2017 levels. However, this target was subsequently revised to a more ambitious goal of 40% reduction by 2026.

1. Dimension- Implementation Issues of NCAP

➤ Under the programme, cities continuously violating annual PM levels in India need to prepare and implement annual **Clean Air Action Plans (CAAPs).**

➤ **Inconsistency:** Tough most cities proactively submitted their CAAPs, their implementation has been inconsistent.

➤ **Implementation issue**: On average, only 60% of the allocated funds have been used thus far, with 27% of cities spending less than 30% of their designated budgets.

➤ **Delayed approvals:** Implementation delays hinder NCAP's success, particularly delays in approvals from the competent authorities.

➤ **Lack of SOP:** Furthermore, there is lack of standard operating procedures for the implementation process.

➤ **Other issues:**

• Absence of well-defined timelines create further delays

• Bureaucratic red-tape and lingering doubts regarding the effectiveness of proposed mitigation measures

2. Dimension- Required Measures

➤ There is need of swift implementation on the ground and focus on reducing bureaucratic red tape by utilising shared, standardised technical evaluations.

➤ Prior budgeting and time management play crucial roles as NCAP funding is linked with the performance of cities (based on the annual average PM concentration reduction).

➤ **Technical feasibility, budgeting, and time estimates** need to be part of the initial plans.

🔍 FACT BOX

About NCAP

◎ **Launched in:** 2019

◎ **Objective**: to improve air quality in 131 cities (non-attainment cities and Million Plus Cities) in 24 States/UTs by engaging all stakeholders.

◎ **Target**: The programme envisages to achieve reductions up to 40% or achievement of **National Ambient Air Quality Standards for Particulate Matter10 (PM 10)** concentrations by 2025-26.

HEATWAVES CONDITIONS ACROSS INDIA

CONTEXT

Anthropogenic climate change is turning ambient heat into an inevitable environmental hazard. India is poised to encounter an increased number of heat-wave days than usual from April to June and this expansion of the realm of extreme heat is potentially the gravest consequence of climate change for India.

1. Dimension: Impact of Heat Waves over different sectors

➤ **Health impact:**

• **Heat Stress:** Exposure to severe or continuous heat leads to heat stress. Illnesses range from superficial/mild and manageable (e.g. prickly heat, heat-related swelling, heat cramps, heat exhaustion) to a medical emergency (i.e. heat stroke).

• **Heat stroke** is the most severe of heat-related illnesses. It presents with impaired brain function (i.e. stroke) due to uncontrolled body heating. It is a time-critical condition that often turns fatal if there is a delay or failure in reducing body temperature by rapid, active cooling. Besides neurological impairment, high core body temperature (at least 40 degrees C), or hot, dry skin are other heat stroke symptoms. Someone in perfect health and participating in what seem to be normal activities may die from heat stroke within an hour.

➤ **Environmental impact:** Heatwaves also have compound and cascading environmental impacts like concurrent drought, glacial lake outbursts causing flash floods, urban/wildfires, and increased air pollution from ground-level ozone and dust storms.

➤ **Economic Impact:**

• **Impact on crops:** There are concerns about the potential adverse effects on wheat, rapeseed, and chickpea production. India, being the world's second-largest wheat producer, could face significant repercussions.

• **Power demand**: There are possibility of surpassing power demand over supply during the summer season.

🔍 FACT BOX

Heat Wave

◎ Heat wave is a condition of air temperature which becomes fatal to 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**.

◎ For declaring a heat wave, the temperature should be 4.5 °C above normal for that time in a region.

◎ The criteria for the coastal station maximum temperature should be greater than or equal to 37 °C.

UPSC PYQ

Q: Discuss the consequences of climate change on the food security in tropical countries. (2023)

NATURAL GAS: CLEANER BUT NOT CLEAN

CONTEXT

Amidst global energy politics, the narrative of natural gas being 'cleaner' in comparison to coal requires closer scrutiny, especially considering the continuing overuse of oil and gas by developed countries despite their share of the carbon budget.

1. Dimension- Significance of Natural Gas for India

➤ **Economic benefits**: India is largely dependent on import of fossil to meet energy needs. Adoption of natural gas will reduce import costs and thus foreign exchange. It will create new employment opportunities to harness demographic dividend.

➤ **Environmental benefits**: It will help in achieving target of increasing non fossil fuel energy consumption to 40% by 2030.

➤ **Social benefits**: It will tackle health challenges due to rise in pollution by fossil fuels. AS per WHO, estimates that globally about seven million people die prematurely each year from diseases linked to air pollution

2. Dimension-The other side of natural gas

➤ Natural gas produces half as much carbon dioxide (C02) when burned than coal, but that doesn't make it harmless.

➤ **Rising production of natural gas is** emerging as one of the biggest drivers of climate change.

➤ **Methane releases** from the natural gas supply chain are a key factor in equalising overall GHG emissions between gas and coal, creating emissions parity.

MAPPING OF SOIL EROSION IN INDIA

CONTEXT

A new study has revealed a worrying trend for India's soil health. Nearly 30 per cent of the country's landmass is experiencing "minor" soil erosion, while a critical 3 per cent faces "catastrophic" topsoil loss.

1. Dimension- Findings and Concerns

➤ The biggest hotspot for soil erosion in the country is the **Brahmaputra Valley in Assam.**

FACTSHEET: SOIL EROSION

In a first, a study conducted by a group of researchers, has come out with pan-India data on surface soil erosion. While soil erosion is a natural phenomenon, increase in land use and land cover — which can be attributed to anthropogenic intervention like deforestation and rigorous farming practice over the years — has led to large swathes of land exposed to water erosion. In a damning observation, a little over 3% of the total surface soil in India has reported 'catastrophic erosion' or where erosion has been over 100 tonnes per hectare per year. Assam — and in particular the Brahmaputra valley — being one of the major hotspots for erosion, has reported a whopping 31% of its total surface soil exposed to 'catastrophic erosion'.
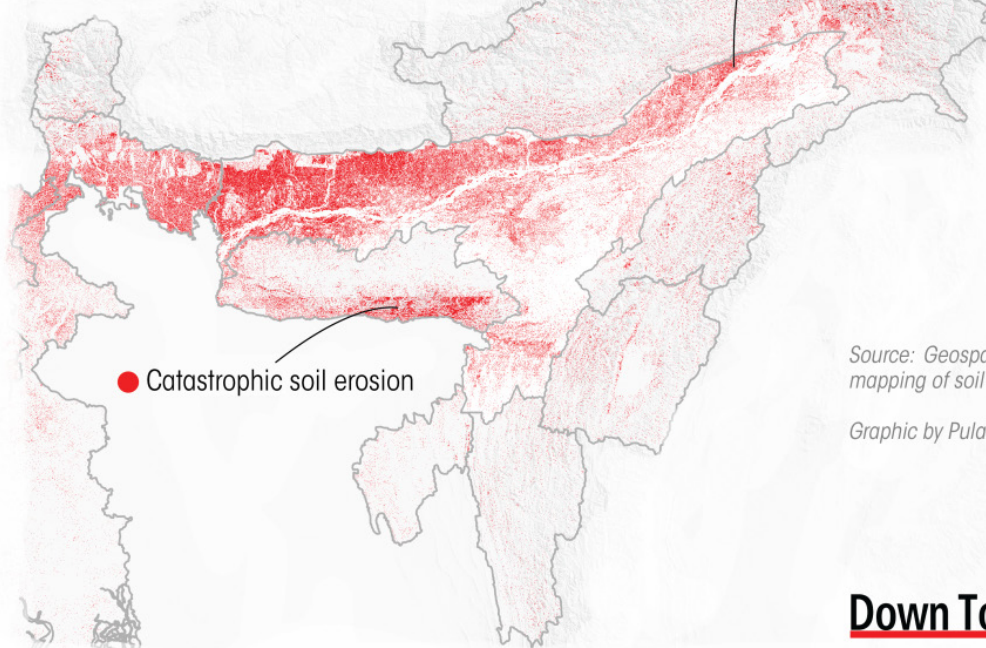
Erosion severity (tonnes/hectare/year)

Waterbodies etc.
Minor - 0 to 5
Moderate - 5 to 15
Major - 15 to 30
Serious - 30 to 50
Severe - 50 to 100
Catastrophic > 100

● Catastrophic soil erosion

Source: Geospatial modeling and mapping of soil erosion in India

Graphic by Pulaha Roy

Down To Earth

➤ The **north-eastern state Assam** lost close to 300 square kilometres or 31 per cent of its surface soil to **"catastrophic" erosion.**

➤ Apart from the Brahmaputra Valley, the **lower reaches of the Himalayas** are characterised by moraine or loose soil and highly unstable slopes.

➤ **Topsoil** is vital for agriculture as it holds nutrients and moisture essential for plant growth. Erosion significantly reduces fertility and can lead to decreased crop yields.

➤ **Carbon:** Land degradation reduces the soil's ability to absorb carbon.

➤ **Worsened climate change:** Land degradation and climate changefuel each other.

➤ **Threat to food security:** Degraded land in the country is either rainfed farmland, responsible for the food security of the country, or forest land that offers the best defence against climate change.

➤ **Economic loss**: Lost productivity can weigh heavily on the economy.

2. Dimension- Factors killing soil & solution

➤ **Farming practices** such as tilling break up the soil and destroy its natural structure, killing many of the vital bacteria.

➤ **Agricultural chemicals** can alter the physiological, metabolic and biochemical behaviour of microbiota in the soil. This can disrupt the relationships between plants and microbes, decreasing nutrient bioavailability.

➤ **Pressures of population growth**, food insecurity and agricultural intensification are leading to widespread soil degradation. This degradation can take many forms- **degradation, erosion, acidification, salinization**

➤ **Others:** Burning of crop residues, land misuse and soil mismanagement and climate change

➤ **Solution:** Replenishment, adopting organic practice (inter-cropping, mixed cropping, practicing crop rotation, Agroforestry, Permaculture, adopting biofertilizers).

RUSSIA'S WAR LIMITS ABILITY TO TRACK ARCTIC CLIMATE

CONTEXT

Russia's war in Ukraine and the resulting halt to western collaboration with Russia, now stifles climate research in the Arctic to such an extent that it may soon be impossible for scientists to predict future climate change in the Arctic, which would also weaken predictions of climate change in the rest of the world.

1. Dimension- Impact of the loss of data

➤ **No data for mitigation**: With this, the ability to initiate **well-informed management and conservation efforts**, which would help mitigate some of the negative consequences and risks exposed by climate change, are greatly reduced.

➤ **Increased uncertainty**: The lack of insight into this particular section of the Arctic will almost double the statistical uncertainty of central parts of Arctic climate research.

➤ **Negative impact of established research:** It affects eight key components of the so called **Earth System Models**, where years of observations of temperatures, rain and snowfall are combined with factors such as **carbon exchange** between plants and atmosphere and emissions of CO2.

➤ **Loss of insight into emission**: It leads to the loss of insight into emissions of CO2 and methane from the permafrost in Siberia.

● The thaw of the permafrost may cause CO2 and methane to develop and escape from layers of up to 90 meters of frozen biomass consisting of decomposed dead plants and animals, much of which has been frozen since the latest ice-ages.

● The scientists call this biomass **yedoma**; a Russian term as Russia is the **epicenter of this phenomena.**

2. Dimension- The Ticking Bomb

➤ Russia accounts for almost half the land in the Arctic and several of the ecosystems in this part of the Arctic are unique. Arctic hold some 1700 gigaton of CO2 or about double the amount already present in the atmosphere.

➤ **Global temperatures are rising**, but temperatures in the Arctic region are rising even faster.

➤ The **melting permafrost** and rising sea-levels can have devastating effects on local ecosystems as well as the climate.

🔍 FACT BOX

Location of Research Station

◎ Nearly one third of the 60 stations they selected were located in Russia, and all were above 59 degrees north latitude, just below **Greenland's southern tip.**

◎ Half of the research stations in Russia are in the **boreal zone**. The boreal forest uptakes a substantial amount of carbon, carbon that is accumulated as biomass and soil organic carbon.

◎ The researchers excluded stations located on Greenland's ice sheet, however, because it is not a typical terrestrial ecosystem.

◎ India has had a **research base in the Arctic since 2008** and also has **two observatories** in the region.

◎ The country presently has a single station, **Himadri, in Ny-Alesund, Svalbard, a Norwegian** archipelago, where research personnel are usually present for 180 days.

- Before the war, 21 Russian research stations shared their data with the international consortium **INTERACT**.
  - ▸ INTERACT is a scientific collaboration between the eight Arctic countries.

Arctic Region

- The region surrounding the North Pole consists of a large ocean surrounded by land.
- This ocean, called the Arctic Ocean, is like no other ocean on Earth; and because of its special location and climate, the lands that surround it are unique.
- The Arctic region covers parts of eight countries: **Canada, Greenland, Iceland, Norway, Sweden, Finland, Russia, and the United States.**

RISKS AT ZAPORIZHZHIA NUCLEAR POWER PLANT

CONTEXT

Russia and Ukraine have each accused the other of launching kamikaze drones at the Zaporizhzhia nuclear power plant.

Risks at Zaporizhzhia nuclear power plant after drone attack

- **Constant threat:** Fighting a war around a nuclear plant has put nuclear safety and security in constant jeopardy.
- **Direct risk from crash**: The model of containment structure used in Zaporizhzhia "exhibits vulnerabilities to the effects of an aircraft crash" and a fighter jet crashing downwards into the dome, where the **structure is thinner, could penetrate it**, causing **concrete chunks** and **aircraft engine parts** to fall inside.
- **Potential target:** External power lines essential to **cooling nuclear fuel** in the reactors are a softer potential target. Cooling fuel even in reactors in cold shutdown is necessary to prevent a nuclear meltdown.
- **Risk of explosion: Pressurised water** is used to transfer heat away from the reactors even when they are shut down, and pumped water is also used to cool down removed spent nuclear fuel from the reactors. Without enough water, or power to pump the water, the fuel could melt down and the **zirconium cladding** could release hydrogen, which can explode.

🔍 FACT BOX

Zaporizhzhia nuclear power plant

- **Location:** Energodar, Ukraine
- **River:** Dnieper River
- **Located on reservoir bank:** Kakhovka reservoir

- The Zaporizhzhya Nuclear Power Plant is located near the town of Enerhodar in Zaporizhzhia Oblast, Ukraine.
- It is situated on the Dnieper River, approximately 80 kilometers (50 miles) southeast of the city of Zaporizhzhia.
- **Type:** The Plant consists of six power units, and each unit is equipped with a specific type of reactor. The reactors at Zaporizhzhya are of the **VVER (Water-Water Energetic Reactor) type**, which is a pressurized water reactor (PWR) design.
- The plant is just 500 km (300 miles) from the site of the world's worst nuclear accident, the 1986 **Chornobyl disaster.**
  - ▸ The Chornobyl accident spread **Iodine-131, Caesium-134, Strontium-90 and Caesium-137** across parts of northern **Ukraine, Belarus, Russia, northern and central Europe**.

CYBER SLAVERY

CONTEXT

Cyber slavery is emerging as a form of organized crime of unprecedented severity and scale. Over 5,000 Indian nationals are reported to be held captive in Cambodia, coerced into committing cyber frauds targeting individuals in India.

Factors responsible for growth of cybercrime

- **Internet:** The internet allows criminals to operate seamlessly across borders, accessing a marketplace of victims anywhere, anytime and at scale. The internet also helps criminals to conceal their own identity, location and size.
- **Cybercrime-as-a-service:** Criminals have their own 'cybercrime-as-a-service' where experienced cybercriminals sell accessible tools and knowledge to help others carry out cybercrimes.
- **Difficult to catch:** The difficulty in countering cybercrime is also a major factor.
- **Battlefield advantage:** Cross-border attacks make cybercrime difficult for law enforcement to deal with, constrained as they are by national boundaries.

🔍 FACT BOX

Cyber slavery

- Criminals take advantage of the poor job opportunities available to young graduates and professionals in many countries.

- The criminals convince people to travel abroad with promises of high-quality work and then threaten them and physically coerce them into working as online fraudsters.
- They are forced to work on online scam farms run by cybercriminals.

PRATUSH - INDIA'S MOON BASED TELESCOPE

CONTEXT

Astronomers are looking forward to opening a new window on the universe by posting high-resolution telescopes on the moon, and in orbit around it. One such proposal, PRATUSH, hails from India.

1. **Dimension-Challenges for Earth-based Telescopes:**
   - **Earth-based telescopes,** optical telescopes (which collect visible light at longer wavelengths) and radio telescopes (which collect radio waves with the shortest wavelengths), face hurdles due to the **atmosphere's interference.**
   - **Optical telescopes** struggle with pollution, while **radio telescopes** contend with **electromagnetic interference** from various sources, including **communication signals.**
   - It also does not help that the **earth's ionosphere blocks radio waves** coming from outer space.

2. **Dimension-Benefits of placing telescope on Moon**
   - Scientists are considering placing optical and radio telescopes on the far side of the moon, which always faces away from the earth.
   - **Clear visibility**: The pristine, airless desolation of the moon provides optical telescopes crystal-clear seeing conditions throughout the long lunar night.
   - **Protection:** Radio telescopes on the lunar far side will also be protected by the moon (its diameter is 3,476 km) — that blots out radio transmissions from the earth and electrically charged plasma winds blowing from the Sun.
   - It promises the **most radio-quiet location** in the solar system.

FACT BOX

About PRATUSH

- **PRATUSH (Probing ReionizATion of the Universe using Signal from Hydrogen)** is being built by the Raman Research Institute (RRI) in Bengaluru with active collaboration from the **Indian Space Research Organisation (ISRO).**

- Initially, ISRO will place PRATUSH into orbit around the earth. After some fine-tuning, the space agency will launch it moonwards.

US-UK PARTNERSHIP ON AI

CONTEXT

The United States and Britain announced a new partnership on the science of artificial intelligence safety, amid growing concerns about upcoming next-generation versions.

What is the partnership on AI safety, testing?

- **Objective:** to jointly develop advanced AI model testing.
- This is the **first agreement of its kind anywhere in the world.**
- Under the formal partnership, Britain and the United States plan to perform at least one joint testing exercise on a publicly accessible model and are considering exploring personnel exchanges between the institutes. Both are working to develop similar partnerships with other countries to promote AI safety.
- Both countries will share vital information about the capabilities and risks associated with AI models and systems, according to the agreement, which has taken effect immediately.
- They will also share fundamental technical research on AI safety and security with each other, and work on aligning their approach towards safely deploying AI systems.

AI Regulation around the world

- As the private industry innovates rapidly, lawmakers around the world are grappling with setting legislative guardrails around AI to curb some of its downsides.
- **India:** The IT Ministry issued an advisory to generative AI companies deploying "untested" systems in India to seek the government's permission before doing so.
  - However, after the government's move was criticised by people from across the world, the government scrapped the advisory and issued a new one which had dropped the mention of seeking government approval.
- **EU:** Last year, the EU reached a deal with member states on its AI Act which includes safeguards on the use of AI within the EU, including clear guardrails on its adoption by law enforcement agencies.

THE EVOLUTION OF NEUROSCIENCE & CONCERNS

CONTEXT

Neuroscience is increasingly applied in India to solve business challenges, such as understanding consumer behaviour; ethical considerations arise particularly concerning informed consent and transparency.

1. **Dimension- Significance of neuroscience**
   ➤ **Understanding Brain Function:** The nervous system controls essential body functions and processes thoughts, emotions, and behavior through neural connections in the brain. Neuroscience aims to study these neural connections and their role in information processing, both in healthy states and when damaged.
   ➤ **Impact on Human Health**: Neuroscience contributes to understanding various conditions like **Down syndrome, autism, ADHD, addiction, schizophrenia, Parkinson's disease, and immune disorders.**
   ➤ **Technological Advancements**: Recent technologies like membrane clamp electrophysiology, PCR, and genome sequencing have enhanced our understanding of cellular and molecular processes in the brain. Future advancements are anticipated to provide even deeper insights into how neurons function collectively, the origins of diseases, and the unique aspects of the human brain.

2. **Dimension- Ethical concerns**
   ➤ **Informed Consent and Privacy:** Informed consent from research participants, especially when invasive techniques are used, and protecting their privacy regarding sensitive brain-related data.
   ➤ **Cognitive Enhancement and Manipulation**: The use of neuroscience for cognitive enhancement or manipulation, raises questions about fairness, autonomy, and unintended consequences on individuals and society.

🔍 FACT BOX

What is Neuroscience?

◎ Neuroscience is a multidisciplinary science that combines physiology, anatomy, molecular biology, developmental biology, chemistry, philosophy, computer science, mathematics, linguistics and medicine.

◎ It is the scientific study of the structure and function of the human brain and nervous system.

◎ Neuroscientists study the **cellular, functional, behavioral, evolutionary, computational, molecular, cellular, and medical aspects** of the nervous system, which contains billions of cells called neurons, or nerve cells.
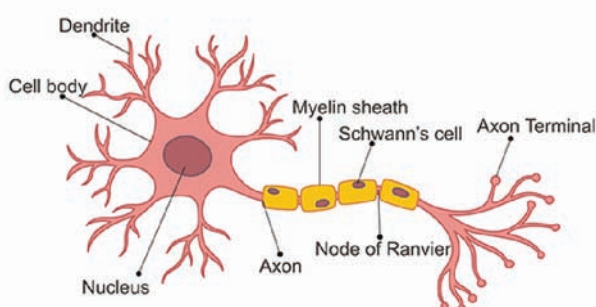
Ethics Questions (Case Study)

A prominent pharmaceutical company has developed a **groundbreaking neurotechnology** that enhances **cognitive abilities, memory retention, and learning capacity**. The technology, when implanted in the brain, significantly boosts intellectual performance and productivity. However, the company faces ethical dilemmas regarding the widespread deployment of this technology.

Q: Discuss the ethical implications of introducing neuroenhancement technologies like the one described in the case study.

Q: How should policymakers balance the potential benefits of such advancements with concerns related to individual autonomy, societal fairness, and unintended consequences?

Q: Evaluate the ethical framework that should guide the regulation and ethical use of neurotechnologies in society.

ASIA WORST HIT BY DISASTERS IN 202 WMO

CONTEXT

In the year 2023, Asia faced the most disasters in the world as 79 events associated with extreme weather, climate, and water-related hazards, affecting over nine million people in the region and claiming over 2,000 lives, as per a new report by the World Meteorological Organization (WMO).

Key-highlights of the Report (Climate Disaster Profile)

◎ **Report Title:** State of the Climate in Asia 2023

◎ Asia has warmed faster than the global average and the warming trend has nearly doubled since the 1961-1990 period.

◎ Key climate change indicators such as surface temperatures, glacier retreat and sea level rise will have major consequences for Asia, its economy and ecosystems.

◎ In India alone, severe heatwaves in April and June resulted in about 110 reported fatalities due to heatstroke.

◎ In August 2023, India experienced a record-high monthly mean temperature and exceptional rainfall deficit, which can be linked to **El Niño**

◎ Floods were the leading cause of death in reported events in 2023 by a substantial margin.

Disaster Management in India:

◎ Disaster Risk Management implies **the systematic process of using administrative decisions, organisation, operational skills, and capacities to implement policies, strategies and coping capacities of the society** and communities to lessen the impact of natural hazards and related environmental and technological disasters.

◉ **Disaster risk reduction** aims to reduce disaster risks through systematic efforts to analyse and reduce the causal factors of disasters.

➤ **Pre-Disaster risk reduction includes-**Mitigation and Preparedness

➤ **Post-Disaster risk reduction includes-**Rescue, Relief and Recovery

🔍 FACT BOX

Recent Initiatives

◉ **Working group on DRR**: The world's major economies—as part of the G20—now have a working group on **disaster risk reduction (DRR)** for the first time. It has five priority areas: early warning systems, climate resilient infrastructure, financing framework for disaster risk reduction, disaster response systems, and an ecosystem-based approach to risk reduction.

◉ **Early Warnings for All initiative**: It aims to ensure everyone on Earth is protected from hazardous weather, water, or climate events through life-saving early warning systems by the end of 2027.

◉ **Coalition for Disaster Resilient Infrastructure:** Launched in 2019, CDRI is now a global coalition of 39 countries and seven organisations.

◉ **Aapda Mitra Scheme**: It is a centrally-sponsored scheme by the NDMA aiming to impart training to community volunteers in disaster response in the most affected districts identified across the country on the basis of past disasters.

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SECTION-C
QUICK BYTES

TOTAL SOLAR ECLIPSE

CONTEXT

The world is set to witness the **first solar eclipse of 2024** that crossed **North America**, passing over **Mexico, the United States, and Canada.**

About

- A solar eclipse occurs when the moon "eclipses" the sun.
- This means that the moon, as it orbits the Earth, comes in between the sun and the Earth, thereby blocking the sun and preventing any sunlight from reaching Earth.

- **During the eclipse, the environment undergoes dramatic changes**. Temperatures drop, wind pattern changes, stars appear, and diurnal animals may alter their behaviour in response to the sudden darkness.

- There are **four types** of solar eclipses:

Partial solar eclipse	The moon partially covers the sun, creating a crescent shape. In this case, observers will notice a reduction in sunlight.

What Is a Solar Eclipse?

A solar eclipse is when the Moon passes between the Sun and the Earth, partially or totally blocking the view of the Sun.

Sun

Moon

Earth

Umbra
Penumbra

sciencenotes.org
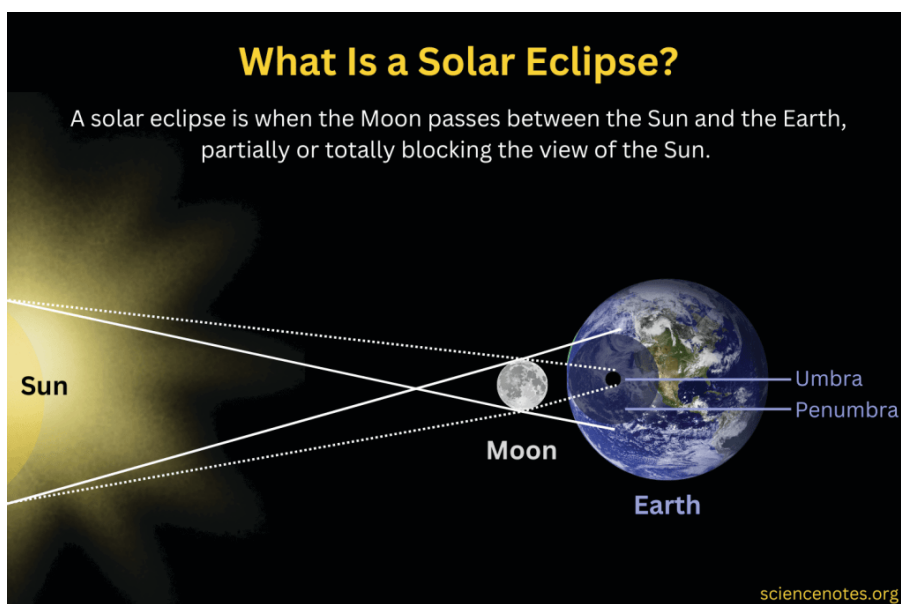
Annular solar eclipse	It occurs when the moon is too far away from the Earth to completely cover the sun's disk. This results in a ring of sunlight, or an annulus, around the dark silhouette of the moon. The unobscured and glowing ring, or "annulus," around the sun is also popularly known as the "ring of fire."
Total solar eclipse	The moon totally blocks out the sun for a few minutes, leading to a period of darkness -- and the resulting eclipse is called a **total solar eclipse. Solar corona can be witnessed during this.**
Hybrid solar eclipse	A hybrid solar eclipse is when the type of eclipse changes between annular and total as the moon's shadow moves across the curved surface of the Earth.

TAIWAN & ITS EARTHQUAKE PROBLEM

CONTEXT

Taiwan was recently hit by its **biggest earthquake** in at least 25 years.

Reason behind earthquakes in Taiwan

◎ Taiwan is prone to earthquakes as it lies along the Pacific "**Ring of Fire**" — where **90% of the world's earthquakes take place.**

◎ The Ring of Fire witnesses so many earthquakes due to **constant sliding past, colliding into, or moving above or below each other of the tectonic plates.**

➤ As the edges of these plates are quite rough, they get stuck with one another while the rest of the plate keeps moving.

◎ An earthquake occurs when the plate has moved far enough and the edges unstick on one of the faults.

◎ Taiwan experiences earthquakes due to the interactions of two tectonic plates

➤ Philippine Sea Plate

➤ Eurasian Plate

🔍 FACT BOX

Ring of Fire

◎ The Ring of Fire is a string of hundreds of volcanoes and earthquake-sites which runs along the Pacific Ocean.

◎ It is a semicircle or horse shoe in shape and stretches nearly 40,250 kilometres.
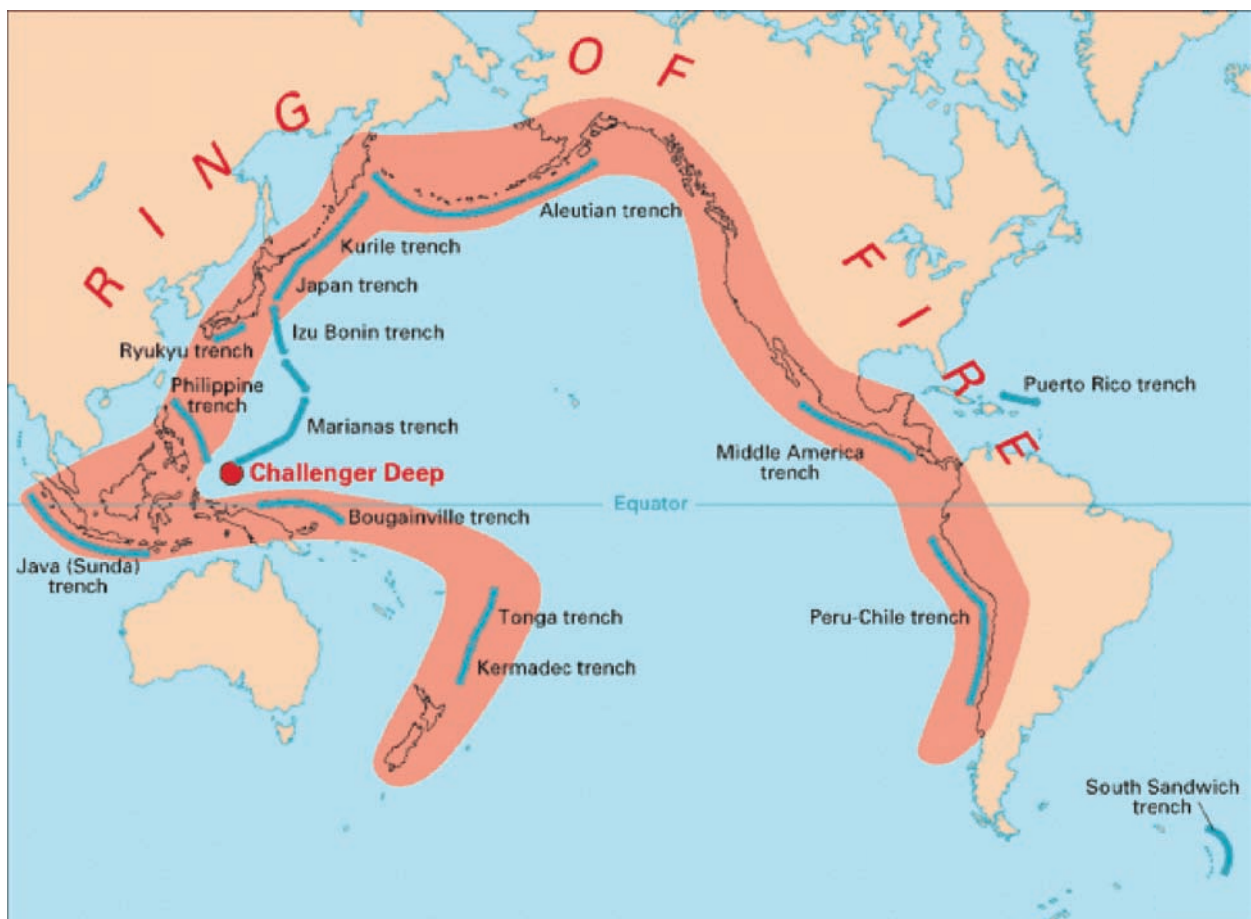
- The Ring of Fire traces the meeting points of numerous tectonic plates, including the **Eurasian, North American, Juan de Fuca, Cocos, Caribbean, Nazca, Antarctic, Indian, Australian, Philippine, and other smaller plates**, which all encircle the large Pacific Plate.

(Figure: 2)

UNIFIED STANDARD OF TIME FOR THE MOON

CONTEXT

NASA has been directed to establish a **unified standard of time** for the moon **(Coordinated Lunar Time (LTC))** and other celestial bodies, the same way as Earth has.

What is a time standard?

- A time standard is a specification for measuring time intervals, defining the units of time (e.g., seconds, minutes, hours) and providing a reference for timekeeping.

- Time standards are not similar to time zones, as a time zone is a region of the Earth that has the same standard time.

- The Moon requires a time standard due to factors such as differing gravitational forces and other celestial influences, which alter the time compared to Earth. Time on the Moon moves a tad quicker — 58.7 microseconds every day — compared to the Earth.

Working of Earth's Time Standard

- Time Zones are a geographical world globe division of 15° each, starting at Greenwich, in England, created to help people know what time is it now in another part of the world.

- The local time within a time zone is defined by its offset (difference) from Coordinated Universal Time (UTC), the world's time standard.
  - ▶ UTC is essentially an internationally agreed upon standard for world time.

- It is tracked by a weighted average of more than **400 atomic clocks** placed in different parts of the globe.

- Atomic clocks measure time in terms of the **resonant frequencies** — the natural frequency of an object where it tends to vibrate at a higher amplitude — of atoms such as **cesium-133**.
  - ▶ **In atomic time, a second is defined** as the period in which a caesium atom vibrates 9,192,631,770 times. As the vibration rates at which atoms absorb energy are highly stable and ultra-accurate.

- UTC time changes 1 hour forward and backward corresponding to a 1-hour difference in mean solar time for every 15 degrees east or west of the prime meridian (0° longitude) in **Greenwich, London, United Kingdom**.

- The offset is expressed as either **UTC- or UTC+** and the number of hours and minutes.

TIME ZONES AND HOUR ANGLES
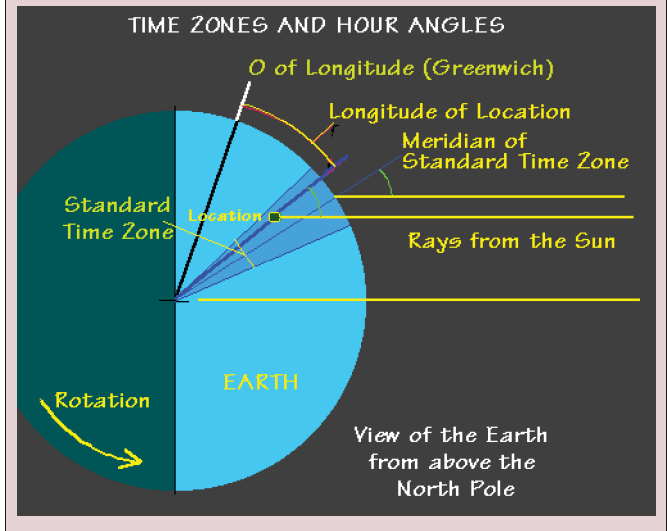
INDIA'S MINERAL PRODUCTION

CONTEXT

The index of **mineral production** for the month of Feb 2024 was 139.6, which is 8.0% higher as compared to the level in the month of Feb 2023. The cumulative growth of this index for the 11-month period of April–Feb of FY24 over the corresponding period of the previous year was higher by 8.2%.

Key-highlights

- Some of the non-fuel minerals showing positive growth during the month of Feb 2024 as compared to the corresponding month of the previous year are **Bauxite, Chromite, Copper Concentrate, Gold, Zinc Concentrate, Manganese Ore, Phosphorite, Diamond, Graphite (R.O.M.), Limestone, Magnesite, etc.**

- **Iron ore and Limestone** together account for about 80% of the total MCDR mineral production by value.

- In the non-ferrous metal sector, production of primary **Aluminium metal** has increased.

'KALLAKKADAL' STRIKES COASTAL KERALA

CONTEXT

High sea waves which are also known as swell waves, have flooded numerous houses in the Kerala's coastal areas. This flooding caused by the swell waves is called swell surge or Kallakkadal in Malayalam.

What is Kallakkadal?

- Kallakkadal is a **geographical phenomenon** which causes **flooding through high waves in the south-west coast of India,** predominantly during the pre-monsoon season which is from April to May.

- The term Kallakadal was officially approved by the **United Nations Educational, Scientific and Cultural Organization (UNESCO).**

- Kallakkadal is caused by swell waves which emerge due to ocean swell which is mostly caused by storms such as hurricanes or gale winds.

- During these fierce winds, a **massive energy transfer** takes place from the air into water.

- This then leads to formation of **extremely high waves** that can roll up to thousands of kilometres.

GLACIAL LAKE OUTBURST

CONTEXT

The Uttarakhand government has decided to evaluate the risk posed by five potentially hazardous glacial lakes in the region. These lakes are prone to **Glacial Lake Outburst Floods (GLOFs),** the kind of events that have resulted in several disasters in the Himalayan states in recent years.

What is Glacial Lake outburst?

- When the boundary around unstable glacial lake breaks, and huge amounts of water rush down the side of the mountains, which could cause flooding in the downstream areas.
- This is called glacial lake outburst floods or GLOF.
- **Factors causing GLOF**:
- GLOF can be triggered by several reasons, including **earthquakes, extremely heavy rains and ice avalanches.**
- **Features of GLOF:**
  - ☐ They involve sudden (and sometimes cyclic) releases of water.
  - ☐ They tend to be rapid events, lasting hours to days.
  - ☐ They result in large downstream river discharges (which often increase by an order of magnitude).

MOUNT RUANG VOLCANO

CONTEXT

Indonesia's Mount Ruang volcano erupted five times in a row, prompting the closure of a nearby airport and a tsunami alert.

About

- Ruang is situated in the Sangihe Islands arc, North Sulawesi, Indonesia.
- It comprises an island that is 4 by 5 kilometers wide, with a summit containing a partial lava dome reaching an altitude of 725 meters (2,379 ft).

- From its summit, peaks such as Klabat, Siau, and Ternate can be observed in the south, north, and east, respectively.
- The top of the mountain is partially filled with a lava dome formed as a result of activity in 1904.

Types of Volcanoes:

- Stratovolcanoes vs. Shield Volcanoes
  - ➤ **Stratovolcanoes:** Steep, cone-shaped with more viscosity. Strato Volcanoes comprise the **largest percentage** (60%) **of** the **Earth's individual volcanoes**, and most are characterized by **eruptions of andesite and dacite**, **lavas** that are **cooler and more viscous than basalt.**
  - ➤ **Shield Volcanoes:** Low-profile, resembling a shield lying on the ground.
- **Variety of Volcanic Features**
  - ➤ Cinder cones, lava domes, and other features form from erupted magma
  - ➤ Geological processes shape the diverse forms of volcanoes.

SRINAGAR VIES FOR GLOBAL CRAFT CITY TAG

CONTEXT

The **World Crafts Council International (WCCI)** has turned its focus towards Srinagar as a potential candidate for the esteemed title of **World Craft City (WCC).**

About Srinagar's traditional craft

- Srinagar, spread over 416 square kilometres, has a registered artisan base of 20,822 craftsmen, who are involved in multiple disciples of **papier mâché, walnut wood carving, hand-knotted carpet, Kani shawl, Khatamband, pashmina, Sozni craft etc**.
- The total craft related workforce in Srinagar stands at 1.76% approximately.
- The contribution of the handicraft to the overall economy of J&K stood at 2.64% by 2016-17.
- In 2021, Srinagar was designated as part of **UNESCO Creative Cities Net Work (UCCN),** and with this it has entered the club of 295 Creative Cities Net Work across the world.
  - ➤ After **Mumbai, Chennai, Hyderabad, Varanasi and Jaipur, Srinagar** is the sixth Indian city to achieve this distinction for different categories.
- Srinagar became the second Indian city after Jaipur which was selected under the **UCCN 'Crafts and Folk Art category'.**
- The **Indian National Trust for Art and Cultural Heritage-Kashmir (INTACH-K)** is collaborating with the J&K Handicrafts department to map the craft sector ahead of the final nomination.

About WCCI

- **Founded in**: 1964
- **Headquarters:** Kuwait
- The World Crafts Council International (WCCI) is dedicated to the recognition and preservation of **traditional crafts** globally.

THRISSUR POORAM 2024

CONTEXT

Thrissur Pooram, one of the **largest temples festivals** celebrated across the world, is being celebrated in Kerala.

About

- Thrissur Pooram is an important temple festival in Kerala that dates back over 200 years.
- The festival was first celebrated in 1798 by Raja Rama Varma (the Maharaja of Cochin).
- It is an impressive exhibition of cultural customs and traditions, featuring adorned elephants, colourful umbrellas, and percussion music.
- Thrissur Pooram is celebrated in the Malayalam month of Medam (April-May).
- It is observed on the pooram day, when the moon rises with the Pooram star.

Historical Belief

- The festival's origin dates back to 1796, when a group of temples was prohibited from attending the **Arattupuzha Pooram festival** due to heavy rainfall.
- Upon hearing their grievances, **Shakthan Thampuran** decided to organise his own festival, which eventually became the **Thrissur Pooram** celebrated on the same day in May.

INDIA GRANTS GI TAGS TO OVER 60 ITEMS

CONTEXT

Over 60 products from across India have been given the **Geographical Indication (GI) tag.**

The important products

- **Tripura:**
  - Pachra-Rignai, which is a traditional dress worn on special occasions
  - Matabari Peda, a sweet preparation

- **Uttar Pradesh (Banaras)**
  - Banaras Thandai, a drink made by blending milk with a nutritious mix of nuts, seeds and spices
  - The Banaras Tabla, Banaras Shehnai, Banaras Lal Bharwamirch and Banaras Lal Peda.

- **Assam:**
  - Six traditional crafts from Assam — Asharikandi terracotta craft, Pani Meteka craft, Sarthebari metal craft, Jaapi (bamboo headgear of rural Assam), Mishing handloom products, and the Bihu dhol.
  - Others:
    - Bodo Dokhona, the traditional attire of Bodo women
    - Bodo Eri silk, referred to as the fabric of peace or ahimsa (non-violence), which comes from the silkworm Samia ricini that feeds mostly on the leaves of the castor plant (Ricinus communis), and cassava
    - Bodo Jwmgra (a traditional scarf)
    - Bodo Gamsa (traditional dress of Bodo men)
    - Bodo Thorkha (a musical instrument)
    - Bodo Sifung (a long flute)

- **Meghalaya:**
  - Meghalaya Garo Textile weaving (Garo dakmanda)
  - Meghalaya Lyrnai Pottery
  - Meghalaya Chubitchi (traditional drink)
  - Lakadong turmeric

FACT BOX

GI Tag

- The Geographical Indication is awarded to products that have a **specific geographical origin**, and that have characteristics related to a **particular location.**
- The **first GI tag** in the country was given two decades ago to the famous **Darjeeling tea.**

VASUKI INDICUS

CONTEXT

In a surprising discovery, fossils of an extinct snake or one of the largest snakes that ever existed and likely lived 47 million years ago during **Middle Eocene period**, were found in Kutch, Gujarat. The reptile is named *Vasuki Indicus.*

About

- The giant serpant is named **Vasuki** after a myth about a serpent of the same name which rapped itself around the neck of the Hindu deity Lord Shiva.

- This species was found in **Gujarat's Panandhro Lignite Mine** in Kutch.
- The fossilised remains measured 10-15 metres long. It could have weighed almost one metric ton (1000kg or 2,200 pounds).
  - ➤ The only other comparable snake in terms of length is the **extinct Titanoboa**, widely considered the **world's largest snake**, which measured 45 to 50 feet long (around 15 metres) and three feet (0.9 metres) wide.
- Vasuki is specifically from the Indian subcontinent and existed roughly 56 to 34 million years ago.

GOVIND GURU BANJARA (1858–1931)

CONTEXT

Govind Guru was the leader of "one of the most efficient movements against British rule in India".

About

- Govind Guru Banjara, (1858–1931) was a social and religious reformer in the early 1900s in the tribal border areas of present-day Rajasthan and Gujarat states in India.
- He is seen as having popularized the Bhagat movement, which was first started in the 18th century.
- His teachings, Vashishth's work asserts, was based on an appreciation of rationality, a tendency to shun superstition, and monotheism, among other principles.
- Govind Guru preached a religion that involved praying at Dhunis (firepits).
- Followers of this religion wore a rudraksh around their neck and carried iron tongs. Special worship took place on Sundays.

ABDUL RAHIM KHAN-I-KHANAN (1556 – 1627)

CONTEXT

The tomb of the famed poet, Abdul Rahim Khan-i-Khanan has been restored as part of the Union Tourism Ministry's '**Adopt a Heritage' scheme.**

About

- Abdul Rahim Khan-i-Khanan (1556 - 1627), also known as Rahim, was a poet and composer who lived during the rule of Mughal emperor Akbar.
- He was one of the navratnas (nine jewels) of Akbar's court.
- He was the son of Bairam Khan Akbar's trusted guardian and mentor, who was of Turkic extraction.

- Rahim is known for his Hindi dohe (couplets) and his books on astrology.
- He was heavily influenced by the Ramayana and the Mahabharata. His poetry has references to the Hindu deities Krishna, Rama, Vishnu, and Shiva, demonstrating his love to and respect for Hinduism.
- Apart from writing various dohas, Rahim translated Babar's memoirs, Baburnama from Chagatai language to Persian language.
- He had an excellent command over the Sanskrit language. In Sanskrit, he wrote two books on astrology, **Khetakautukam and Dwatrimshadyogavali**.

His tomb was built by him for his wife Mah Banu and is the first Mughal tomb ever constructed for a woman, even before the famous Taj Mahal in Agra.

VAIKOM SATYAGRAHA

CONTEXT

The centennial commemoration of the Vaikom Satyagraha (March 30, 2024), brings attention to a significant chapter in India's history that foregrounded social reform amidst the growing nationalist movement, bringing Gandhian methods of protest to the state of Travancore.

About the Satyagraha:

- Vaikom, a temple town in the princely state of Travancore, saw the start of a **non-violent agitation** on March 30, 1924 — the first among **temple entry movements** that would soon sweep across the country.
- Vaikom Satyagraha lasted for 604 days (20 months) from March 30, 1924 to November 23, 1925.
- It was a mass **Temple entry movement** for lower caste people.
- **Leaders involved:**
  - ➤ **Led by:** TK Madhavan, KP Kesava Menon, K Kelapaan (Congress Leaders)
  - ➤ **Supported by:** Mahatma Gandhi, Periyar, C Rajagopalachari, Chattampi Swamikal, Sree Narayana Guru
- The **nonviolent movement** demanded the **right of members of lower castes to walk on the roads leading to the Vaikom Temple**, now in the district of Kottayam.
- The authorities denied their request, stating that it would lead to social unrest and disturbance.
- This denial was met with widespread protests and demonstrations, which eventually led to the involvement of **Mahatma Gandhi**, who arrived in Vaikom in 1925.
- **Gandhi** was able to iron out a **compromise: three out of the four roads surrounding the temples were opened up** for everyone but the fourth, eastern road was kept reserved for Brahmins.
- **Outcome:** The protests eventually led to the historic **Temple Entry Proclamation** issued by the then **king Chithira Thirunal Balarama Varma** on November

12, 1936. It abolished the ban on **'lower castes'** from entering Hindu temples in the **Princely State of Travancore.**

VOTER VERIFIED PAPER AUDIT TRAIL

CONTEXT

Before the **18th Lok Sabha**, the major concerns of discerning voters are about the **Electronic Voting Machines (EVMs)** and whether their vote is recorded as cast. This concern can be best addressed by a simple solution and that is to present **voters a proof of their vote (VVPAT slip),** so that it becomes a second source of truth of the election process, after the **Electronic Voting Machine.**

About Voter Verified Paper Audit Trail

- Introduced first time in India in the 2014 , Voter Verifiable Paper Audit Trail (VVPAT) is basically a **ballot-less vote verification system** connected with the EVM.
- It is a machine that prints a paper slip of the **candidate's name, serial number and the party's symbol after a voter has cast their vote.**
- To avoid **election fraud**, it displays the paper slip for seven seconds for the voters to check if their vote has been cast for their chosen candidate.
- The paper slip then drops down to a locked compartment that only the polling agent can access.
- The slips are **not handed over to the voters**. The collected slips can be used to **audit voting data stored electronically.**

WOMEN CANDIDATES GREW FROM 1957: ECI

CONTEXT

The number of women candidates grew 16-fold from 1957 to 2019, as per latest ECI data.

Key-highlights of the Data

- In 1957, there were just 45 women candidates contesting the Lok Sabha election; by 2019, this figure had risen to 726.
- The percentage of women in Parliament has increased from 4.5% in 1957 to 14.4% in 2019.
- The number of **male candidates** has grown from 1,474 in 1957 to 7,322 in 2019.
- This means that the number of men contesting has multiplied by five times; for women, the growth has been 16-fold.
- In 1957, a mere 2.9% of candidates were women; in 2019, they make up around 9% of the total pool of candidates.
- However, the number of women candidates has never yet crossed 1,000.

ELECTION SYMBOLS

CONTEXT

The political parties have headed into election mode across the country and all candidates who are in the fray have their own symbols besides the symbol of their respective parties.

Women legislators

The chart shows the share of women in Lok Sabha (left-axis) and the number of women contestants (right-axis) over time

■ % of women in Parliament ━ Women contestants
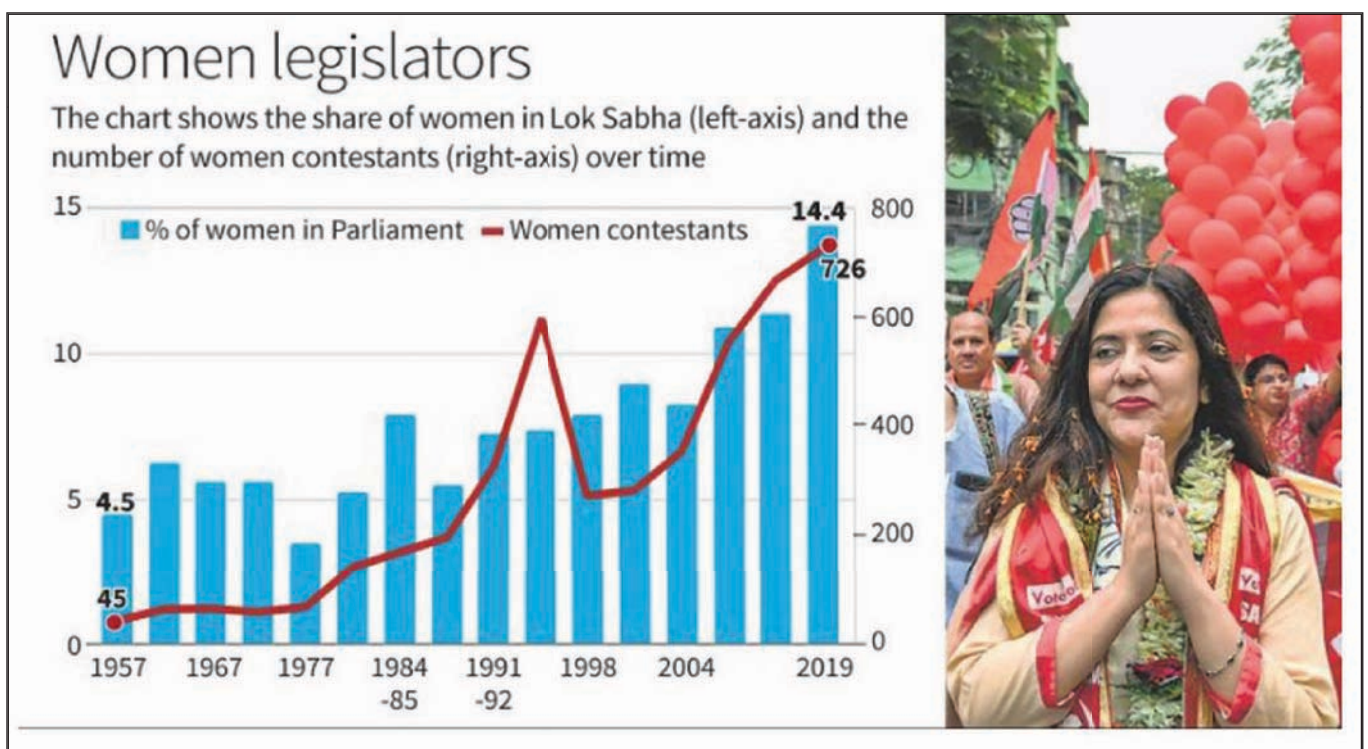
What is election symbol?

- An **electoral or election symbol** is a standardized symbol allocated to a political party.

- **Types of Election Symbol:** As per the **Election Symbols (Reservation and Allotment) (Amendment) Order, 2017,** party symbols are either "reserved" or "free".

  - ➤ **Reserved:** Eight national parties and 64 state parties across the country have "reserved" symbols

  - ➤ **Free:** ECI has a pool of nearly 200 "free" symbols. These symbols are allotted to the thousands of unrecognized regional parties in the country.

- They are used by the parties during their campaigning and are shown on **Electronic Voting Machines (EVMs),** where the voter chooses the symbol and votes for the associated party.

- The symbol of a party is one of **extreme relevance** to political survival.

- For many Indian voters who do not read, the symbol is their association with the party when they exercise their franchise. Hence, importance is given to the symbol of the party.

STAR CAMPAIGNER

CONTEXT

In the wake of Lok Sabha Elections, political parties have started releasing the names of 'star campaigners'.

About Star Campaigner

- A star campaigner is a celebrity vote seeker in an election for a party.

- **Section 77 of the Representation of the People Act, 1951 (RP Act)** provides for law relating to expenditure incurred by 'leaders of a political party'. These 'leaders of a political party' are popularly known as **'star campaigners'.**

- These star campaigners are usually the top leaders of a political party but can include other celebrities as well.

- **Requirement:** The only requirement is that these persons **have to be members of the political party that appoints them.**

- **Numbers:** The RP Act provides that a recognised political party (national or State) can appoint a maximum of 40 star campaigners while a registered unrecognised political party can appoint up to 20.

- The list has to be sent to the **Election Commission of India.**

- **Cost:** ECI has fixed Rs 95 lakh expenses limit for candidates of bigger Lok Sabha constituencies and up to Rs 75 lakh for candidates of smaller constituencies.

  - ➤ Political parties cover all costs of star campaigners under the RP Act. But the star campaigner's expenses are **not deducted from the candidate's expenditure.**

Thus it allows the candidates extra spending opportunity beyond the poll panel's Rs 75 – Rs 95 Lakh limit for Lok Sabha polls.

ECI'S C-VIGIL APP

CONTEXT

The **cVIGIL app** of **Election Commission of India** has become an effective tool in the hands of people to flag election code violations. Since the announcement of General Elections 2024, over 79,000 complaints have been received.

About cVigil

- cVigil is user-friendly and easy to operate application, which connects vigilant citizens with the **District Control Room, Returning Officer and Flying Squads Teams.**

- By using this app, the citizens can **immediately report on incidents of political misconduct** within minutes and without having to rush to the office of the returning officer.

- As soon as the complaint is sent on the cVigil app, the complainant will receive a unique ID through which the person will be able to track the complaint on their mobile.

QS WORLD UNIVERSITY RANKINGS

CONTEXT

Quacquarelli Symonds (QS) World University Rankings by Subject has been released recently.

Key-highlights of the Rankings

- **Indian Institute of Management (IIM) Ahmedabad** has been ranked among the top 25 institutions globally for **business and management studies**.

- **IIM-Bangalore** and **IIM-Calcutta** have been ranked among the top 50.

- **Indian Institute of Technology (IIT) Guwahati** has secured a global ranking of 51-70 in data science, and 51-100 in petroleum engineering.

- **Jawaharlal Nehru University (JNU) in Delhi** is the **highest-ranked university in India**. JNU is in the 20th position globally for **development studies.**

- **Expanding research:** India stands as one of the world's most rapidly expanding research centres. From 2017 to 2022, its research output surged by an impressive 54 per cent.

  - ➤ In terms of volume, India is now the **world's fourth-largest producer of research**, generating 1.3 million academic papers in this period, trailing only behind China's 4.5 million, the United States' 4.4 million, and slightly less than the United Kingdom's 1.4 million.

- **Challenge for India:** Providing high-quality tertiary education in the face of exploding demand. Though this challenge was recognised by **2020's NEP (National Education Policy),** which set the ambitious target of a 50 per cent gross enrolment ratio by 2035.

FACT BOX

QS World University Rankings

- QS World University Ranking is released by **Quacquarelli Symonds (QS)**, the London-based higher education analytics firm.
- Quacquarelli Symonds Limited subject rankings, published annually, are designed to help prospective students find the leading schools in their field of interest.
- Rankings are based on **research quality and accomplishments, academic reputation, and graduate employment.**

PRADHAN MANTRI AWAS YOJANA (PMAY)

CONTEXT

Under the **Pradhan Mantri Awas Yojana (PMAY),** launched in 2015 to facilitate access to affordable housing to those belonging to economically weaker sections of society, the government is close to achieving the target of 30 million houses.

About Pradhan Mantri Awas Yojana (PMAY)

- PMAY is a **centrally sponsored scheme**, however, both the Union and the State governments are supposed to financially contribute to it.
- **Objectives:**
  - Rehabilitation of slum dwellers with private developers' participation
  - Promotion of affordable housing for the weaker sections through Credit Linked Subsidy Schemes (CLSS)
  - Affordable housing in partnership with public and private sectors
  - Subsidy for Beneficiary-led Construction (BLC)
- **Eligibility:** Women and minorities, marginalised groups such as the transgender community, widows, and individuals from lower-income groups.
- **Types of Pradhan Mantri Awas Yojana (PMAY) scheme**
  - **PMAY Gramin (PMAY-G):** Affordable and accessible housing units to eligible beneficiaries residing in rural areas.

- **PMAY Urban (PMAY-U):** Addressing the housing needs of urban areas in India, covering 4,331 towns and cities.
- **Progress so far:** Even though two more years have passed since the supposed completion of the scheme, **Housing For All (HfA)** remains a distant reality. In August 2022, the government approved the continuation of the PMAY-Urban (PMAY-U) up to December 31, 2024, for the completion of already sanctioned houses till March 31, 2022.

FSSAI TO CHECK QUALITY OF SPICES

CONTEXT

The **Food Safety and Standards Authority of India (FSSAI)** has ordered a pan-India sampling and testing drive of spices products of various brands to check on safety and quality parameters after **Hong Kong's Centre for Food Safety** asked consumers not to consume few Indian spice brands allegedly over presence of a **pesticide** called **ethylene oxide.**

About FSSAI

- FSSAI is an **autonomous statutory body** established under the **Food Safety and Standards Act, 2006 (FSS Act).**
- **Ministry of Health & Family Welfare** is the administrative Ministry of FSSAI.
- FSSAI is tasked with enforcement of standards and regulations only in the domestic market.
- **Spice Board of India** evaluates spice products prior to exports and is also expected to look into this issue.

FACT BOX

- Ethylene oxide (EtO) is a **flammable, colorless gas** used to sterilize medical equipment and other plastics that are sensitive to heat or moisture.
- EtO is classified as a **carcinogen**, meaning it is a substance that can cause certain cancers.
- Chronic exposure to EtO through inhalation is associated with the development of cancers of the **white blood cells**, such as **non-Hodgkin lymphoma, myeloma, and lymphocytic leukemia.**
- Use of ethylene oxide is banned in India.

SHOMPEN TRIBE

CONTEXT

For the fIrst time, members of the Shompen, one of the **Particularly Vulnerable Tribal Groups (PVTGs)** took part in the election process by casting their votes in the **Andaman and Nicobar Lok Sabha constituency.**

About

- The Shompen are an **indigenous group of people** who live on **Great Nicobar Island** in the **Andaman and Nicobar Islands.**

- They are **hunter-gatherers** and one of the most populated tribes in the Andaman and Nicobar Islands, with around 200–300 people living mainly on Great Nicobar Island.

- They were first contacted in the **1840s** and are designated as a **Particularly Vulnerable Tribal Group (PVTG).**

- They have nuclear families comprising husband, wife, and their unmarried children. The family is controlled by the eldest male member, who controls all activities of the women and kids.

- **Monogamy is the general rule**, although polygamy is allowed too.

2024 PADMA AWARDS

CONTEXT

The **Padma Awards 2024** have been announced, and the list includes 132 recipients, with 30 of them being women and 8 from the categories of foreign **non-resident Indian (NRI), person of Indian origin (PIO),** and **overseas citizenship of India (OCI).**

About Padma Awards:

- The Padma Awards are one of the **highest civilian honours** only after Bharat Ratna of India announced annually on the eve of Republic Day.

- The Awards are given in three categories**:**

  - **Padma Vibhushan (for exceptional and distinguished service)**

  - **Padma Bhushan (distinguished service of higher order)**

  - **Padma Shri (distinguished service)**

- The Padma Awards are conferred on the recommendations made by the **Padma Awards Committee, which is constituted by the Prime Minister every year**.

- The awards are presented by the **President of India** usually in the **month of March/April every year** where the awardees are presented a Sanad (certificate) signed by the President and a medallion.

- The award does not amount to a title and cannot be used as a **suffix or prefix** to the awardees' name.

- The total number of awards to be given in a year (excluding posthumous awards and to NRI/foreigners/OCIs) should not be more than 120.

- **Eligibility:**

  - All persons without distinction of **race, occupation, position or sex** are eligible for these awards.

- Government servants including those working with PSUs, except doctors and scientists, are not eligible for these Awards.

- The award is normally not conferred posthumously. However, in highly deserving cases, the Government could consider giving an award posthumously.

UPSC PYQ

Q: Consider the following statements in respect of the Bharat Ratna and Padma Awards. (2021)

(1) Bharat Ratna and Padma Awards are titled under Article 18(1) of the Constitution of India.

(2) Padma Awards, which were instituted in the year 1954, were suspended only once.

(3) The number of Bharat Ratna Awards is restricted to a maximum of five in a particular year

Which of the above statements is not correct?

(a) 1 and 2 only   (b) 2 and 3 only

(c) 1 and 3 only   (d) 1, 2 and 3

Solution: (d)

ODISHA DAY, OR UTKALA DIBASA

CONTEXT

On April 1, **Odisha Day, or Utkala Dibasa**, is celebrated to commemorate the formation of the state of Odisha.

Utkal Divas History

- Utkal Divas, also known as Odisha Day, is celebrated annually to mark the formation of the state of Odisha on April 1, 1936.

- The new province of Odisha was formed after people's continued struggle, which finally paid off on April 1, 1936.

- This day marks the separation of Odisha from the combined Bihar and Orissa province during British rule in India. **Sir John Hubback** was the first governor of the state.

- The state was originally called Orissa but the **Lok Sabha passed the Orissa Bill**, and **Constitution Bill (113rd amendment),** in March 2011 to rename it Odisha.

🔍 FACT BOX

Formation of States

- Article 3 of the Constitution; explicitly lays down a procedure to alter the area, boundaries, or name of a state.

- Four-step procedure Article 3 provides the following procedure:

➤ Presidential reference is sent to State Assembly

➤ After presidential reference, a resolution is tabled and passed in Assembly

➤ Assembly has to pass a Bill creating the new State/States

➤ A separate Bill has to be ratified by Parliament

RBI MONETARY POLICY

CONTEXT

The **Reserve Bank of India's Monetary Policy Committee** unanimously decided to keep the key interest rates unchanged at 6.50 per cent for the seventh consecutive time. The policy stance is also maintained at **'withdrawal of accommodation'**.

Key-highlights

- **Inflation is moving closer to targets**. Retail inflation is projected for the current year at 4.5%. The RBI has been mandated by the government to maintain retail inflation at 4% with a 2% margin on either side.
- **Core inflation** has declined steadily over the last nine months while fuel component remained in deflation for six straight months.
- **Indian economy is projected to grow 7% this financial year**.
- **Forex Reserve**: India continues to remain the largest receiver of remittances with the country's **foreign portfolio investment** seeing a significant turnaround.
- The global economy has remained resilient and global trade is expected to grow faster in 2024.

Key-terms in the monetary policy review	
Repo rate	⊙ Repo rate is an interest rate at which the RBI provides liquidity under the liquidity adjustment facility (LAF) to banks against the collateral of government and other approved securities. ⊙ Currently, the repo rate is at 6.50 percent.
Standing Deposit Facility (SDF) Rate	⊙ SDF rate is a rate at which the RBI accepts uncollateralised deposits, on an overnight basis, from banks. ⊙ The SDF is also a financial stability tool in addition to its role in liquidity management. The SDF rate is placed at 25 basis points below the policy repo rate. ⊙ **Currently, SDF rate is at 6.25 percent.**

Marginal Standing Facility (MSF) Rate	⊙ The penal rate at which banks can borrow, on an overnight basis, from the central bank by dipping into their Statutory Liquidity Ratio (SLR) portfolio up to a predefined limit (2 per cent). ⊙ MSF rate currently stands at 6.75 percent.
Fine Tuning Operations	⊙ The main liquidity operation is supported by fine-tuning operations, overnight and/ or longer tenor, to tide over any unanticipated liquidity changes during the reserve maintenance period. ⊙ In addition, the RBI conducts, if needed, longer-term variable rate repo/reverse repo auctions of more than 14 days.
Monetary policy stance	There are various stances: ⊙ **Accommodative Stance**, which means the central bank is prepared to expand the money supply to boost economic growth. ⊙ **Neutral stance** suggests that the central bank can either cut rate or increase rate. This stance is typically adopted when the policy priority is equal on both inflation and growth. ⊙ **Hawkish stance** indicates that the central bank's top priority is to keep the inflation low. During such a phase, the central bank is willing to hike interest rates to curb money supply and thus reduce the demand. ⊙ **Calibrated tightening** means during the current rate cycle, a cut in the repo rate is off the table.
CPI Inflation	⊙ Consumer Price Index (CPI) based Inflation is a measure of changes in the price levels of goods and services purchased by households.

🔍 FACT BOX

Monetary Policy

⊙ Monetary policy refers to the policy of the central bank with regard to the use of monetary instruments under its control to achieve the goals specified in the Act.

- **Monetary Policy Committee (MPC):** The MPC's primary responsibility is to set the repo rate, which serves as the key policy instrument for managing inflation.
- **Composition:** The committee comprises six members:
  - ➤ Three officials from the RBI: These internal members bring expertise in monetary matters.
  - ➤ Three external members: Nominated by the Indian government, these experts contribute diverse perspectives.
- **Tools and instruments of monetary policy**: cash reserve ratio, statutory liquidity ratio, bank rate, repo rate, reserve repo rate and open market operations.

UPSC PYQ

Q: With reference to the Indian economy, consider the following (UPSC 2015)

(1) Bank rate

(2) Open market operations

(3) Public debt

(4) Public revenue

Which of the above is/are component/ components of Monetary Policy?

(a) 1 only   (b) 2, 3 and 4

(c) 1 and 2   (d) 1, 3 and 4

Solution: (c)

RBI'S G-SEC APP

CONTEXT

The **Reserve Bank of India (RBI)** has announced the launch of a mobile application, the '**G-sec App',** as part of its **Retail Direct Scheme.** This initiative aims to simplify the process of investing in **government securities (G-Secs)** for retail investors.

About G-sec App

- The G-sec App serves as a one-stop solution for retail investors looking to invest in government bonds and treasury bills.
- It provides a user-friendly interface for buying and selling securities, eliminating the complexities of traditional investment methods.

INDIA'S BUILT-UP AREA

CONTEXT

India's built-up area has steadily increased over the past 17 years from 2005-06 to 2022-23, expanding by almost 2.5 million hectares, a new analysis showed.

Key-highlights

- **Period taken:** 2005-06 and 2022-23.
- The built-up land showed a **modest increase with an overall growth** of around **31 per cent**.
- Around 35 per cent of built up area has been added, with an average increase of around 2.4 per cent annually from **land cover**, which include wasteland and agricultural land cover.
- **Wasteland,** which includes degraded and unproductive land, contributed significantly (12.3 per cent) to built-up area expansion by 12.3.
- A substantial percentage of built-up area expansion originated from **agricultural land covers,** which includes
  - ➤ 6.3 per cent of double / triple / annual crop
  - ➤ 5.3 per cent of **kharif crop**
  - ➤ 3.1 per cent of **rabi crop**
  - ➤ 2.9 per cent of plantation
  - ➤ 5.8 per cent of fallow land

	Plantation	Rabi crop	Kharif crop	Fallow land	Double crop	Wasteland
Percentage	2.9	3.1	5.3	5.8	6.3	12.3
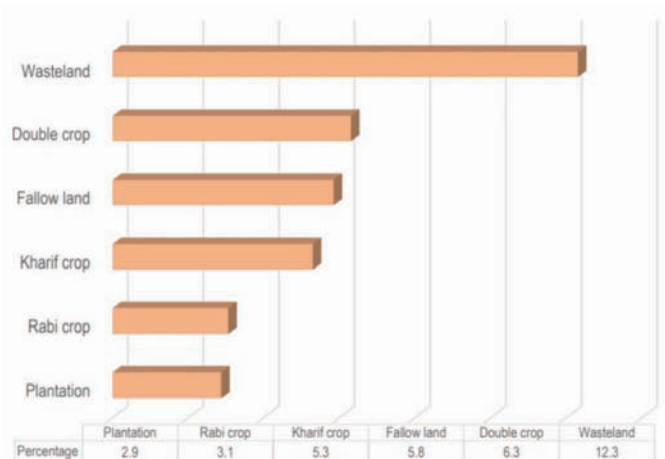
🔍 FACT BOX

Built-up area

- The term 'built-up area' refers to an area with buildings (roofed structures), paved surfaces (roads, parking lots), commercial and industrial sites (ports, landfills, quarries, runways) and urban green areas (parks, gardens).

SICKLE CELL DISEASE

CONTEXT

In India, the treatment and care for **Sickle Cell Disease (SCD)** remains grossly inadequate and inaccessible.

What is Sickle Cell Disease?

- SCD is an **inherited haemoglobin disorder** in which **red blood cells (RBCs)** become crescent- or sickle-shaped due to a genetic mutation.

- These RBCs are rigid and impair circulation, often leading to **anaemia, organ damage, severe and episodic pain, and premature death.**

- India has the **third highest number of SCD births**, after Nigeria and the Democratic Republic of the Congo.

- SCD is also one of the **21 "specified" disabilities** listed in the **Schedule of the Rights of Persons with Disabilities Act 2016.**

- In 2023, the Government of India launched the **National Sickle Cell Anaemia Elimination Mission**, to eliminate SCD by 2047.

SEMICONDUCTOR CHIP

CONTEXT

Semiconductor chip manufacturing capabilities are currently limited to very few regions in the world. Due to limited manufacturing and threat of supply chain disruptions, India has realised the importance of investing in chip manufacturing infrastructure.

What is a semiconductor?

- Semiconductors are materials that possess properties between those of conductors (such as metals) and insulators (such as glass or plastic).

  ➤ The most commonly used semiconductor material is **silicon (Si).**

- The conductivity component of semiconductors can be altered by introducing impurities through a process called "**doping**." By adding specific impurities, the semiconductor's electrical properties can be controlled.

- **Application:** Microprocessors, memory chips, commodity integrated circuits, microcontrollers, transistors and others.

FACT BOX

Recent Government Initiatives

- Semicon India Programme was approved in 2021 for the development of semiconductors and display manufacturing ecosystems over the next six years.

- India Semiconductor Mission (ISM) was set up within Digital India Corporation to drive India's strategies for developing semiconductors and display ecosystem.

- Plant: The TATA group has partnered with Taiwan's Powerchip Semiconductor Manufacturing Corporation (PSMC) to set-up a 300mm wafer fabrication plant in Gujarat

  ➤ **Two assembly and test plants** in Gujarat and Assam have also been recently approved by the Government of India.

NIRBHAY CRUISE MISSILE

CONTEXT

DRDO successfully test fired indigenous long range **Nirbhay subsonic cruise missile.**

About

- Nirbhay is India's first indigenous cruise missile. It is a long range, all-weather, subsonic cruise missile.

- With its cylindrical fuselage, it is similar in appearance to the US Tomahawk and Russian Club SS-N-27 missiles.

- The missile can be launched from Multiple Platforms and is capable of carrying conventional and nuclear warheads.

- Nirbhay is powered by a solid rocket booster.

- The missile, also known as Indigenous Technology Cruise Missile (ITCM), is equipped with an indigenous propulsion system and the Manik turbofan engine.

- The missile is claimed to have sea-skimming and loitering capability.

- The Nirbhay measures 6 m in length, 0.5 m in diameter and weighs 1,500-1,600 kg at launch.

- It has a range of 800-1,000 km while carrying a 450 kg payload.

- The missile is indigenously developed by Bengaluru-based DRDO laboratory Aeronautical Development Establishment (ADE).

BRAHMOS

CONTEXT

India delivers first batch of **BrahMos supersonic missiles** to Philippines.

About

- The BrahMos **supersonic cruise missile** has a **two-stage solid propellant booster engine** as its first stage which takes it to **supersonic speed.**

- The second stage is the liquid ramjet engine which takes it closer to **Mach 3 (3 times the speed of sound) speed in the cruise phase.**

- The BrahMos missile is universal for multiple platforms and can be launched from air, land, and sea platforms.

- The missile works on the **'Fire and Forget principle'**, meaning it doesn't require further guidance after launch, and it maintains a high supersonic throughout the flight.

Brahmos NG

- The BrahMos-NG (Next Generation) will be a scaled-down variant of the current BrahMos missile.

- Compared to the present BrahMos, it is anticipated to be 50% lighter, three meters smaller, and have the same 290-kilometer range and Mach 3.5 speed.
- It would have advanced next generation stealth.
- Greater effectiveness against ECCM.

PROJECT NIMBUS

CONTEXT

Google has fired some of its employees after they participated in protests against the company's cloud contract with the Israeli government called **Project Nimbus.**

What is Project Nimbus?

- Project Nimbus is a contract awarded to Google and Amazon.com in 2021 to supply the Israeli government with **cloud services.**
- The aim of the project is to provide Israel with public cloud services in order to address challenges in various sectors of the country like healthcare, transportation, and education.
- The execution of this project will allow Israel to perform large-scale data analysis, AI training, database hosting, and other forms of powerful computing using Google's technology.

FACT BOX

About Cloud Services

- Clouds are IT environments that abstract, pool, and share scalable resources across a network.
- The public cloud is defined as **computing services** offered by **third-party providers** over the public Internet, making them available to anyone who wants to use or purchase them.

95MAT5 ANTIBODY FOR VENOM TOXIN

CONTEXT

A group of scientists, using a type of toxin found in many kinds of snakes, synthetically developed a broadly applicable human antibody against the venom toxin.

Key-highlights

- The scientists focused on three-finger toxins (3FTxs) — one of the most abundant and lethal ingredients in elapid venoms.
  - ➤ **Elapids** are a major medically relevant family of snakes that include cobras, kraits, and mambas.

- The scientists narrowed their focus on **α-neurotoxins**, a specific class of 3FTxs that target receptors in human nerve and muscle cells.
- These toxins prevent the receptors from responding to **acetylcholin**e, a neurotransmitter involved in carrying messages from the neurons to the muscles, leading to paralysis, an inability to breathe, and eventually death.
- They then screened billions of human antibodies and selected number of antibodies that an animal's immune system could cook up in response to a venom. After multiple rounds, they had a shortlist of antibodies that broadly reacted with most of the 3FTx variants they used.
- Then an antibody dubbed **95Mat5** was found that worked well against all the snake venoms.

FACT BOX

Devastation caused by Snakebites

- Venom from snake bites leads to more than 100,000 deaths every year, with around 400,000 people left permanently disabled.
- The mortality burden is especially higher in low and middle-income countries in Africa and Asia, with India alone at a staggering average of 58,000 deaths in a year.
- In 2017, WHO classified snakebite envenoming as a highest priority neglected tropical disease.

AVIAN FLU

CONTEXT

Amid fears of avian flu spreading, mass bird deaths have been reported from **Muttar and Ambalappuzha North in Alappuzha district.**

What is bird flu?

- **Avian influenza or Bird Flu** refers to the disease caused by infection with **avian (bird) influenza (flu) Type A viruses.**
- These viruses occur naturally among wild aquatic birds worldwide and can infect domestic poultry and other bird and animal species.
- It is a **zoonotic disease** that affects wild and domestic bird populations.
- **Avian flu viruses** do not normally infect humans.

Spread:

- The disease makes its presence felt particularly during winter in most of India and other parts of the globe.
- This is because, as **wintering, migratory birds arrive** and bring pathogens with them.
- **Temperature is also a factor**: the virus thrives better in cooler climes, thus enabling its spread during winter.

GLYCAEMIC INDEX (GI)

CONTEXT

The findings of an international study suggest that consuming **low glycaemic index and low glycaemic load diets** might prevent the development of **type 2 diabetes**. They also found a strong association between glycaemic index (GI) and the risk of type 2 diabetes among individuals with a higher **Body Mass Index (BMI).**

What is the glycaemic index (GI)?

- GI ranks carbohydrate-containing foods based on the blood glucose response, post-prandial or after a meal. The higher the blood sugar reading, the higher will be the GI.
- **Glycaemic load (GL),** on the other hand, is both the quality and quantity of carbohydrate in a specific food, and is the product of the GI and the amount of carbohydrate available in a serving.
  - **High GI foods:** sugar and sugary foods, sugary soft drinks, white bread, potatoes, white rice
  - **Low and medium GI foods**: some fruit and vegetables, pulses, wholegrain foods, such as porridge oats

FACT BOX

Diabetes

- Diabetes is a **Non-Communicable Disease (NCD)** that occurs either when the pancreas does not produce enough insulin (a hormone that regulates blood sugar, or glucose), or when the body cannot effectively use the insulin, it produces.
- **Insulin** is a peptide hormone produced by beta cells of the pancreatic islets;
- It is considered to be the main **anabolic hormone** of the body.
- **Type 2 diabetes** is age-related; it often develops at the age of 45 and beyond.
- **Type 1 diabetes** is largely genetic in nature, while Type 2 depends on the lifestyle of the individual.

CANCER CAPITAL OF THE WORLD

CONTEXT

In a new report, the Health of Nation Report by Apollo Hospitals unveiled a concerning surge in **non-communicable diseases (NCDs)** across India, with the nation witnessing an alarming rise in cancer cases. India's trajectory in cancer cases, surpassing global rates, has earned it the dubious title of the **"cancer capital of the world."**

Key-highlights of the Report

- The most common cancers in order of occurrence in India are breast cancer, cervix cancer and ovarian cancer among women.
- **The median age for cancer diagnosis in India is lower than in other countries:**
  - 52 years: Average age of breast cancer diagnosis in India versus 63 in the US and Europe
  - 59 years: Average age of lung cancer diagnosis versus 70 years in the West
  - 30%: Share of colon cancer patients aged less than 50 years
- **Despite these trends, cancer screening rates in India remain very low:**
  - 1.9%: Breast cancer screening in India compared to 82% in the US, 70% in the UK, and 23% in China
  - 0.9%: Cervical cancer screening in India compared to 73% in the US, 70% in the UK, and 43% in China.

FACT BOX

About Cancer

- Cancer is a disease in which **abnormal cells** divide uncontrollably and destroy body tissue.
- It can start almost anywhere in the human body, which is made up of trillions of cells.
- **Normally,** human cells grow and divide to form new cells as the body needs them. When cells grow old or become damaged, they die and new cells take their place.
- When cancer develops, this orderly process breaks down. As cells become more and more abnormal, old or damaged cells survive when they should die and new cells form when they are not needed.
- These extra cells can divide without stopping and forms **tumors**, which can spread through the **blood or the lymph system** and form **new tumors far from the original tumor.**
- **Causes of Cancer:**
  - **Biological or internal factors**, such as age, gender, inherited genetic defects and skin type
  - **Environmental exposure**, to UV radiation, and fine particulate matter
  - **Occupational risk factors**, like carcinogens such as chemicals, radioactive materials
  - **Lifestyle-related factors**

PROSTATE CANCER

CONTEXT

By 2040, cases of prostate cancer are likely to double worldwide to 2.9 million per year, from 1.4 million per year in 2020, according to a new analysis published in the **Lancet Commission**.

About

- Prostate cancer is cancer that occurs in the prostate.
- Prostate cancer, which accounts for 15 per cent of all male cancers, is already a major cause of death and disability.
- It is the most common form of male cancer in more than half of the world's countries.
- The currently available prostate cancer screening is the PSA test — a blood test that measures protein levels called **prostate-specific antigen (PSA).**

🔍 FACT BOX

Prostate

- The prostate is below the bladder (the hollow organ where urine is stored) and in front of the rectum (the last part of the intestines).
- Behind the prostate are glands called **seminal vesicles,** which make most of the fluid for semen. The **urethra**, which is the tube that carries urine and semen out of the body through the penis, goes through the center of the prostate.

WHO'S 2024 GLOBAL HEPATITIS REPORT

CONTEXT

India accounted for the second-highest number of cases of **hepatitis B and C** in 2022 after China, with 3.5 crore infections, according to a report by the **World Health Organisation (WHO).**

Key-highlights of the Report

- **Report:** *WHO's 2024 Global Hepatitis Report*
- 254 million people lived with hepatitis B and 50 million with hepatitis C in 2022 globally.
- **India,** which was second only to China in the viral hepatitis burden, registered 2.98 crore hepatitis B cases in 2022 while the number of hepatitis C infections stood at 55 lakh.
- China registered 8.3 crore cases of hepatitis B and C, representing 27.5 per cent of the total disease burden.
- With a total of 3.5 crore cases, India accounted for 11.6 per cent of the total disease burden globally that year.

🔍 FACT BOX

About Hepatitis

- Hepatitis is an **inflammation of the liver** that can cause a range of health problems and can be fatal.

- There are five main strains of the hepatitis virus, referred to as types **A, B, C, D and E.**
- While they all cause liver disease, they differ in important ways including modes of transmission, severity of the illness, geographical distribution and prevention methods.
- **Symptoms**: dark urine, yellowing of the eyes and skin, sickness, fatigue, fever, loss of appetite, nausea, vomiting, abdominal pain, light-coloured stools and joint pain.
- **Treatment:** There is no specific treatment for hepatitis but drugs like steroids can help

PSLV ORBITAL EXPERIMENTAL MODULE-3 (POEM-3)

CONTEXT

The Indian Space Research Organisation's **PSLV-C58/XPoSat mission** has practically left **zero debris** in earth's orbit. The last stage of the Polar Satellite Launch vehicle (PSLV) used in the mission was transformed into a kind of **orbital station**- called **the PSLV Orbital Experimental Module-3 (POEM-3)**, before it was left to re-enter the earth's atmosphere instead of floating in orbit once its mission was completed.

What is POEM?

- Developed by the **Vikram Sarabhai Space Centre (VSSC)** as an inexpensive space platform, POEM uses the spent fourth stage of a PSLV rocket as an orbital platform.
- Used for the first time in the **PSLV-C53 mission** in 2022, ISRO had POEM orbit the earth as a stabilised platform to perform in-orbit scientific experiments with various payloads.
- POEM is powered by solar panels mounted on the fuel tank of the **rocket's fourth stage** and a **lithium-ion (Li-ion) battery.**
- It has a dedicated **navigation, guidance, and control (NGC) system** to stabilise its altitude along with helium control thrusters.
- The NGC system has four **Sun sensors, a magnetometer, and gyroscopes, and talks to ISRO's NavIC satellite constellation for navigation.**
- POEM also has a telecommand system to communicate with the ground station.

RICE VAMPIREWEED (RHAMPHICARPA FISTULOSA)

CONTEXT

Rice vampireweed (*Rhamphicarpa fistulosa*) affected more than 140,000 farm households and caused losses worth USD 82 million per year to the continent's economy, a new report showed.

About

◎ *Rhamphicarpa fistulosa* is a **facultative, parasitic weed** that grows on rice in Africa,

◎ It is the most problematic and widespread species among the facultative parasitic weeds in Africa.

◎ *R fistulosa* also affects sorghum and maize and, potentially, other cereal crops. Although infestation in other crops does not seem to be as common as in rice, the total economic losses inflicted by this weed may be higher.

◎ Weeds constitute **important production constraints** to rice in particular in Africa.

◎ As yet, *R fistulosa* is not controlled by fertilisers. **Rice cultivars NERICA-L-40 and -31** were identified as resistant and high yielding under *R fistulosa* infested conditions.

New Rice for Africa (NERICA)

◎ The New Rice for Africa (NERICA) varieties are the first wide-scale success of crossing of the two cultivated species: *Oryza sativa*, known as 'Asian rice', and *O glaberrima*, often called **'African rice'** and found *only in Africa.*

LAVENDER AI

CONTEXT

An AI program known as **"Lavender"** has been used by the **Israeli Defense Force** to identify targets in Gaza since the start of the war. Though Israel has rejected the claims.

About

◎ According to the investigation, Lavender used **broad parameters** to identify **potential targets**, designating about 37,000 people for potential air strikes.

◎ It reportedly used **machine learning** to identify characteristics of militants and assigned people a score of 1-100, based on factors including association with suspected militants and frequently changing their phone.

◎ Lavender marks people — and puts them on a kill list.

◎ The program was developed, as per the joint investigation, by Israel Defense Forces' elite intelligence division, Unit 8200. This is similar to **America's National Security Agency or UK's GCHQ.**

TRAI RECOMMENDS ESIM FOR M2M COMMUNICATIONS

CONTEXT

Telecom Regulatory Authority of India (TRAI) has today released recommendations on 'Usage of **Embedded SIM for Machine-to-Machine (M2M) Communications'.**

About

◎ **eSIM (embedded-SIM):** An eSIM is a form of SIM card that is embedded directly into a device. **Traditional SIM cards** are made so that they can easily be swapped out of a phone, so that core service information can get ported from one physical device to another.

   ▸ M2M eSIM is designed for **IoT sensors, meters, trackers, and devices** that often operate with minimal onsite human interaction.

◎ **Machine-to-machine (M2M)** Machine-to-machine, or M2M is a more advanced form of the Internet where **many devices connect with each other.**

◎ Artificial intelligence (AI**) and machine learning (ML)** facilitate the communication between systems, allowing them to make their own autonomous choices

VIKRAM-1 SPACE LAUNCH VEHICLE

CONTEXT

In a significant development towards its upcoming orbital space launch, **Skyroot Aerospace**, a Hyderabad based space-tech company, has successfully test-fired the Stage-2 of **Vikram-1 space launch vehicle**, called **Kalam-250**, at the **Satish Dhawan Space Centre (SDSC)** in Sriharikota.

About Vikram-1:

◎ 'Vikram-1' is a **multi-stage launch vehicle.**

◎ This launch vehicle has a capacity to place 300 kg payloads in the **Low Earth Orbit.**

◎ The rocket is an all-carbon-bodied vehicle capable of placing multiple satellites into orbit; it also features 3D-printed liquid engines.

◎ Globally, Vikram-1 is among 'elite few' rockets with the capability to deploy orbital satellites, says Skyroot.

◎ The 'Vikram' in the launch vehicles' name is a tribute to **Vikram Sarabhai, the father of India's space programme.**

◎ **Significance of Satge-2:** Stage-2 is a critical stage in the ascent of the launch vehicle, as it propels it from atmospheric phase to the deep vacuum of outer-space.

KODAIKANAL SOLAR OBSERVATORY

CONTEXT

The Kodaikanal Solar Observatory (KSO) turned 125 this year.

About

◎ The Kodaikanal Solar Observatory (KSO) is a **solar observatory** owned and operated by the **Indian**

Institute of Astrophysics, located in Kodaikanal, Tamil Nadu.

- The Kodaikanal Solar Observatory is a pioneering institution for solar physics.

- **Evershed Effect**: Its earliest claim to fame lies, in part, with the late **John Evershed**, an English astronomer who first observed the **flow of gases** across sunspots from here in 1909. This phenomenon was christened the **Evershed Effect.**

- The sun has been studied over the last few centuries for various reasons, including

  ➤ Solar eclipses

  ➤ Sunspots –cooler regions on the sun's surface that emit electromagnetic radiation

  ➤ Solar flares, which affect the earth's atmosphere

FACT BOX

- **Sunspots** are areas that appear dark on the surface of the Sun. They appear dark because they are cooler than other parts of the Sun's surface.

- **Solar eclipse** happens when, at just the right moment, the Moon passes between the Sun and Earth.

- **Solar storms** are magnetic plasma ejected at great speed from the solar surface.

JUICE-JACKING ALERT

CONTEXT

To combat cyber scams, like juice jacking, **targeting public USB charging stations**, citizens are advised to prioritize safety measures like using personal charging cables, implementing device security.

What is juice jacking scam?

- Termed "juice-jacking," is a type of cyberattack where cybercriminals use public charging stations or compromised USB ports to install malware or steal data from smartphones, tablets, or other electronic devices while they are being charged.

- This insidious technique enables hackers to clandestinely pilfer sensitive data or implant malicious software onto the devices of unsuspecting users.

DEVIKA

CONTEXT

In a significant development, Mufeed VH, an Indian developer, has introduced Devika, an **open-source AI software engineer,** challenging the position of **Devin**, hailed as the **world's first fully autonomous AI software engineer.**

About Devika

- Devika is an **Agentic AI Software Engineer** who can understand high-level human instructions, break them down into steps, research relevant information, and write code to achieve the given objective.

- Devika aims to be a competitive open-source alternative to Devin by **Cognition AI.**

About Devin

- Devin is the world's first **fully autonomous AI software engineer**.

- Devin, which according to the start-up, is "a tireless, skilled teammate," is trained to perform a number of tasks, including building and deploying apps and finding and fixing bugs in codebases.

INDIA'S CORE SECTORS GROWTH

CONTEXT

India's eight core sectors posted a 6.7 percent growth in February against 4.1% last month. It was 7.4 percent in February 2023.

What are Core Sectors?

- **Eight Core Sectors:** Coal, Crude Oil, Natural Gas, Refinery Products, Fertilizer, Steel, Cement, and Electricity.

- These comprise **27% of the weight** of items included in the Index of Industrial Production (IIP).

- **The eight core sector industries in decreasing order of their weightage:**

- Refinery Products> Electricity> Steel> Coal> Crude Oil> Natural Gas> Cement> Fertilizers**.**

- **Index of Industrial Production:** IIP is an indicator that measures the **changes in the volume of production** of industrial products during a given period.

  ➤ It is compiled and published monthly by the **Central Statistical Organization (CSO),** Ministry of Statistics, and Programme Implementation.

  ➤ **The base year for IIP is 2011-2012.**

FACT BOX

Government Initiatives for Growth of the Industrial Sector in India

- **Production-Linked Incentive (PLI)** - To scale up domestic manufacturing capability.

- **PM Gati Shakti- National Master Plan** - Multimodal connectivity infrastructure project.

- **Bharatmala Project -** To Improve connectivity in North East India

- **Start-up India** - To catalyze Startup culture in India

- **Make in India 2.0** - To transform India into a global design and manufacturing hub.

- **Atmanirbhar Bharat Campaign** - To cut down import dependence

- **Disinvestment Plans** - To support India's economic recovery

- **Special Economic Zones**- To create additional economic activity and boost the export of goods and services.

- **MSME Innovative Scheme**- To promote the complete value chain from developing ideas into innovation through incubation and design interventions

EXCHANGE TRADED CURRENCY DERIVATIVE

CONTEXT

A notification from the RBI on hedging of **foreign currency risk** caused a stir among market as it restricted the use of **exchange traded currency derivative**.

What is ETD?

- An Exchange Traded Derivative is a **standardised financial contract** that is traded on stock exchanges in a regulated manner.

- They are subject to the rules drafted by market regulators such as the **Securities and Exchange Board of India (SEBI).**

🔍 FACT BOX

Derivatives

- Derivatives are financial contracts that derive their values from the price fluctuations of their underlying assets such as stocks, currency, bonds, commodities etc.

- Essentially, there are two types of derivatives;

  - **Exchange Traded Derivatives (ETDs):** It is subject to standardised terms and conditions, hence, traded in the stock exchanges.

  - **Over the Counter (OTC) derivative**: It is traded between private counter-parties, in the absence of a formal intermediary

REITS & INVITS

CONTEXT

Real estate investment trusts (REITs) and **infrastructure investment trusts (InvITs)** have garnered Rs 1.3 lakh crore in the past four years till March-end, and are expected to facilitate more pooled funds, as per the Reserve Bank.

About

- **Real Estate Investment Trusts (REITs)** are the companies that finance, purchase, or manage commercial spaces that have the potential to generate an income. It is a legitimate way of investing in the real estate sector.

  - **Example:** Mall, shopping complexes, hotels, co-working spaces, and hospitals

- **Infrastructure Investment Trusts (InvITs)** are vehicles that allow the investors to pool their capitals in the infrastructure sector and hold income-generating assets. IndiGrid and IRB are some of the registered InvITs.

  - **Example:** Roads, highways, power, gas pipelines, energy projects, etc. are some of the major examples of InvITs.

BASMATI RICE (ORYZA SATIVA)

CONTEXT

India is gearing up to challenge Pakistan's attempts to broaden the geographical indication (GI) tag for its Basmati rice.

About

- Basmati rice is cultivated in the Himalayan foothills of the Indian subcontinent.

- The specific agro-climatic conditions, processing techniques such as harvesting and ageing are said to make this rice unique.

- Basmati rice is grown in 81 districts in India, spanning **Jammu & Kashmir, Himachal Pradesh, Haryana, Delhi, Uttarakhand, Punjab, and western Uttar Pradesh.**

- 34 varieties of Basmati are officially recognized under **Seeds Act of 1966.**

ONION EXPORTS

CONTEXT

India has allowed onion exports to a few countries on priority in response to diplomatic requests, but it will continue to ban overseas shipments amid projections of **lower output** for two years in a row.

🔍 FACT BOX

- **Rabi crops-** wheat, barley, oats, gram, mustard, linseed.

⊙ **Kharif crops**- rice, maize, millet, ragi, pulses, soybean, groundnut.

Onion Production in India

⊙ Rabi or winter-harvested onion is critical for country's availability as it contributes **72-75% of India's annual production.**

⊙ It is also crucial for ensuring year-round availability as it has a better shelf life compared to kharif or summer onion, and therefore can be stored for supplies till November-December.

⊙ India is the **world's largest exporter of onion**.

⊙ **Projection of lower output:** India is expected to harvest 19.3 million tonnes of rabi or winter-grown onions during 2023-24, which is about 18% lower than the production of 23.6 million tonnes in the previous season.

UPSC PYQ

Q: Consider the following crops: (UPSC 2013)

(1) Coconut

(2) Groundnut

(3) Rice

(4) Wheat

Which of these are Kharif crops?

(a) 1 and 4   (b) 2 and 3

(c) 1,2 and 3   (d) 2, 3 and 4

Solution: (c)

INDIA'S FIRST COMMERCIAL CRUDE OIL STRATEGIC STORAGE

CONTEXT

India, the **world's third biggest oil consumer and importer**, plans to build its first commercial crude oil strategic storage as part of efforts to shore up stockpiles as insurance against any supply disruption.

About

⊙ India, which meets over **85 per cent of its oil needs through imports**, will use the strategic reserves in any emergency situation like supply disruption or war.

⊙ This approach mirrors the models adopted by countries like Japan and South Korea, allowing private lessees, predominantly oil majors, to engage in crude oil trading.

⊙ The expansion of oil storage capacity also aligns with India's aspiration to become a member of the **International Energy Agency (IEA),** necessitating members to maintain a minimum of 90 days of oil consumption.

FACT BOX

International Energy Agency (IEA)

⊙ **Established in:** 1974

⊙ The International Energy Agency is a **Paris-based autonomous intergovernmental organisation** that provides policy recommendations, analysis and data on the global energy sector.

⊙ The 31 member countries and 13 association countries of the IEA represent 75% of global energy demand.

54TH EARTH DAY

CONTEXT

The planet Earth commemorated the **54th Earth Day on April 22, 2024,** at a time when pollution is at never-before-seen levels and temperatures on are breaking records every year.

About Earth Day

⊙ Earth Day is celebrated on April 22 every year. The day is also known as **International Mother Earth Day.**

⊙ 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 2024:** "Planet vs. Plastics"

FACT BOX

Paris Accord

⊙ In 2016 the United Nations selected April 22 as the date for the **Paris Accord.**

⊙ Leaders from 196 nations came together on April 22 that year to adopt a legally binding treaty against global warming.

⊙ Countries are expected to try and limit global warming to 1.5°C under the Accord while **greenhouse gas emissions** must peak before 2025 at the latest and decline 43% by 2030.

INFECTIOUS RESPIRATORY PARTICLES (IRPS)

CONTEXT

The World Health Organization (WHO) announced updated terminology for pathogens that transmit through the air, doing away with terms like "aerosols" and "droplets" in favour of **"infectious respiratory particles (IRPs)."**

About

- There was a lack of a common terminology to describe the transmission of these pathogens, which was particularly challenging during the global COVID-19 pandemic.

- Varying terminologies highlighted gaps in common understanding and contributed to challenges in public communication and efforts to curb the transmission of the pathogen.

- Individuals infected with a respiratory pathogen can **generate and expel infectious particles containing the pathogen through their mouth or nose** by breathing, talking, singing, spitting, coughing, or sneezing, and these particles should be described with the term IRPs.

- IRPs exist on a continuous spectrum of sizes, and no single cut-off points should be applied to distinguish smaller from larger particles.

- Under the umbrella of 'through the air transmission', two descriptors can be used:

  - **Airborne transmission or inhalation**, for cases when IRPs are expelled into the air and inhaled by another person.

  - **Direct deposition**, for cases when IRPs are expelled into the air from an infectious person, and are then directly deposited on the exposed mouth, nose or eyes of another person nearby, then entering the human respiratory system and potentially causing infection.

ASIAN TIGER

CONTEXT

In a significant development, 10 Asian countries, including India, have pledged USD 1 billion over the next decade towards protecting and expanding **vital tiger habitats** across the continent.

About Tiger (*Panthera Tigris*)

- Tiger, (Panthera tigris) is the **largest member** of the cat family (Felidae) and also the **earliest Panthera member to exist.**

- Primarily a forest animal, they range from the Siberian taiga to the Sunderban delta.

- In the wild, tigers are found in India, Nepal, China, Russia, Bhutan, Myanmar, Cambodia, Laos, Vietnam, Thailand, Sumatra (Indonesia) and Malaysia.

- It is the **national animal of India, Bangladesh, Malaysia, and South Korea.**

- **Status: Endangered**

- Since 2015, the global tiger population has increased from 3,200 in 2015 to approximately 4,500 in 2022.

- **The five surviving sub species of tiger are**

  - **Indian Tiger or Royal Bengal Tiger**(Panthera tigris tigris) found in India, Nepal, Bhutan and Bangladesh;

  - **Indo-Chinese tiger**(Panthera tigris corbetti) mainly found in Thailand and Peninsular Malaysia but are also found in Myanmar, Southern China, Cambodia, Laos and Vietnam;

  - **Siberian or Amur Tiger**(Panthera tigris altaica) found in far east Russia;

  - **Sumatran Tiger**(Panthera tigris sumatrae) found in the Indonesian island of Sumatra;

  - **South China Tiger** (Panthera tigris amoyensis) found in China. The population found in Peninsular Malaysia has been given a status of separate sub species Panthera tigris jacksoni.

STELLARIA MCCLINTOCKIAE

CONTEXT

Researchers have discovered a new species of plant from the **Nelliyampathy hills** in the **Stellaria (Caryophyllaceae species)** group.

About

- **Name:** Stellaria mcclintockiae (in honour of the renowned geneticist Barbara McClintock)

- This is the first plant in this species to be found in the southern regions of India. This plant species has several unique characteristics compared to others found in the wild.

- **Group:** It belongs to the Stellaria media group.

GREATER ADJUTANT (LEPTOPTILOS DUBIUS)

CONTEXT

Greater adjutant is facing threats due to garbage mountains of Guwahati and habitat destruction.

About

- It is a member of the stork family, **Ciconiidae**. Its genus includes the lesser adjutant of Asia and the marabou stork of Africa.

- There are only three known breeding grounds – one in Cambodia and two in India (Assam and Bihar).

- **IUCN Status:** Endangered

LEATHERBACK TURTLE (DERMOCHELYS CORIACEA)

CONTEXT

The proposed development of transshipment terminal at **Galathia bay** has threatened the nesting ground of **leatherback turtle.**

About

- It is the largest of all living turtles and the **heaviest non-crocodilian reptile,** reaching lengths of up to 2.7 metres (8 ft 10 in) and weights of 500 kilograms.
- They are one of the **most migratory turtles**, crossing both the **Atlantic and Pacific Oceans.**
- They swim over 10,000 miles a year to reach their nesting grounds.
- They routinely dive to depths of several hundred meters, and are occasionally known to plunge as deep as 1250 meters.
- They feed mainly on pelagic (open ocean) soft-bodied invertebrates such as jellyfish and tunicates.
- Their diet may also include **squid, fish, crustaceans, algae, and floating seaweed.**
- **IUCN Status:** Vulnerable

OBELISKS

CONTEXT

Newfound '**obelisks**' join viruses, viroids as third unusual life form.

About

- They are **circular bits of genetic material** that contain one or two genes and self-organise into a rod-like shape.
- Like **viroids**, obelisks have a **circular single-stranded RNA genome** and no protein coat but, like viruses, their genomes contain genes that are predicted to code for proteins.
- All obelisks so far described encode a single major protein known as **obulin**, and many encode a second, smaller **obulin.**
- Obelisks probably rely on microbial host cells to replicate, including those that live inside humans to replicate.
- **Bacteria or fungi** are likely hosts, but it is not known which exact species harbour these elements.

CICADA (CICADOIDEA)

CONTEXT

In a rare double-emergence of cicada broods, **Brood 13**, which emerges every 17 years, and **Brood 19,** which emerges every 13, are going to join together for the first time since 1803, in eastern United States.

What is a cicada?

- Cicadas are large, robust insects, with transparent wings and large compound eyes.
- They are known for their **loud chirping** and tendency to leave behind mounds of exoskeleton

- They have a distinctive corrugated exoskeletal structure on the sides of their abdomen called a **'tymbal',** and it's this organ that produces the **loud buzzing sound.**
- There are more than 3,000 species of cicada worldwide, which fall into roughly two categories:
  - ➤ **Annual cicadas**, which are spotted every year
  - ➤ **Periodical cicadas**, which spend most of their lives underground and only emerge once every decade or two.

PRESERVATION OF BAOBABS

CONTEXT

In a groundbreaking conservation endeavour, the **Global Society for the Preservation of Baobabs and Mangroves (GSPBM**) has initiated a mission to rejuvenate the iconic baobab trees through **seedling transplantation.**

About

- Baobab tree (*Adansonia digitata*) is native to the **African savannah** where the climate is extremely dry and arid.
- Ecologically, baobabs are **keystone species** in Madagascar's unique landscapes.
- Their massive trunks and extensive root systems are vital for **storing water in arid environments**, providing a critical resource for both the trees and the surrounding ecosystem during drought periods.
- It is a **succulent**, which means that during the rainy season it absorbs and stores water.
- Baobab trees grow in **32 African countries**. They can live for up to **5,000 years,** reach up to 30 metres high and up to an enormous 50 metres in circumference.
- It has a fruit that is one of the **most nutrient-dense foods in the world**. Baobab is the only fruit in the world that dries naturally on its branch.

MEGHALAYA'S NETWORK OF ANCIENT CAVES

CONTEXT

Meghalaya's network of ancient caves is facing environmental threats.

Important Caves in Meghalaya

- Meghalaya is called the **Abode of the Clouds or Scotland of the East.**
- Meghalaya has the highest number of caves in India, there are more 1,700 registered caves including:
  - ➤ **Krem Puri,** the world's longest sandstone cave.
  - ➤ **Krem Um Ladaw**, which has the deepest shaft of any cave in the world.

➤ **Neolissochilus Pnar**, discovered recently, is the **world's largest cave fish.**

➤ **Liat Prah limestone cave**, the longest cave

➤ **Mawmluh Cave**, locally known as **Krem Mawmluh**, is located in the **Cherrapunji-Mawsynram area**, known as the world's wettest region.

  ● It is part of the region's extensive network of limestone and rare sandstone caves, which are vital components of the eco-sensitive **Hindu Kush Himalaya (HKH) region.**

◉ Mawmluh Cave is identified as a geological heritage site by the **International Union of Geological Sciences**, a council that works closely with **UNESCO.**

◉ **Favourable conditions:** The state has all the ideal conditions for such formations to thrive: High-grade limestone, rainfall, and elevation, complete with a hot and humid climate.

🔍 FACT BOX

Meghalayan Age

◉ The **International Commission on Stratigraphy** termed the present age in the planet's 4.54 billion-year history as the '**Meghalayan Age'**.

◉ The Meghalayan Age is the scientific term for the **current geological age**, which started around 4,200 years ago.

◉ It is named after Meghalaya because a stalagmite found in **Mawmluh Cave** provided evidence of a sudden, severe drought that affected many ancient civilisations across the world.

◉ That drought is what geologists use to mark the beginning of the **Meghalayan Age.**

ECOCIDE IN GAZA

CONTEXT

Satellite analysis shows Gaza's farms devastated and nearly half of the territory's trees razed. The war has made the area unlivable.

What is Ecocide?

◉ Ecocide is the destruction of the environment by humans.

◉ Ecocide is broadly understood to mean mass damage and destruction of ecosystems – severe harm to nature which is widespread or long-term.

◉ **Impact on Gaza:** Before the war, farms and orchards covered about 170 sq km (65 sq miles), or 47% of Gaza's total land area. By the end of February, more than 65 sq km, or 38% of that land has been destroyed.

KATCHATHEEVU ISLAND & WADGE BANK

CONTEXT

Documents obtained through an RTI application has shed light on India's wavering approach to the **Katchatheevu island dispute with Sri Lanka**. Colombo later recognized the resource-rich, deep-sea fishing grounds of **Wadge Bank** as Indian Territory in 1976.

About Katchatheevu Island

◉ Located in the **Palk Strait**, which separates India and Sri Lanka, lies the small, deserted island of **Katchatheevu.**

◉ Fisherman from Sri Lanka and India rely heavily on the waters surrounding Katchatheevu as their fishing grounds.

◉ Originally, under the Madras Presidency of British India, Katchatheevu was a princely kingdom that was a component of the **Ramnad Kingdom.**

● The island was incorporated into the Indian state of Tamil Nadu following **India's independence in 1947.**

About Wadge Bank

◉ Wadge Bank is a 10,000 square kilometre submarine plateau, of the sea south of **Kanyakumari** that is rich in biodiversity and considered India's richest fishery resource.

◉ Wadge Bank, located near **Cape Comorin**, is home to more than 60 species of ornamental fish and other oceanic animals.

CARLSBERG RIDGE & AFANASY-NIKITIN SEAMOUNT

CONTEXT

Carlsberg Ridge & Afanasy-Nikitin Seamount in Indian Ocean are of India's interest for which it has submitted applications for exploration to **International Seabed Authority.**

Carlsberg Ridge:

◉ It is the northern part of the **Central Indian Ridge**, a **tectonic plate** boundary between the African and Indian plates, running along the ocean between **India and Africa.**

◉ It was formed nearly 30 million years ago, and has been **seismically active** with major earthquakes.

◉ Running along Seychelles and spanning 3,00,000 sq kms, the Carlsberg Ridge is rich in **polymetallic nodules** — meaning, it contains mineral deposits with commercially viable quantities of at least 3 metals. The ridge is thought to contain trace elements of copper, lead, and zinc.

The Afanasy-Nikitin Seamount (ANS) seabed

- The ANS is a major structural feature in the Indian Ocean, rising up above the sea bed but below the surface, and forming a seamount.

- It is 400 km long and 150 km wide, and is located in the **Central Indian Basin** — southeast to Sri Lanka, right below the equator, to the west of Singapore — and it was formed about 80 million years ago, while dinosaurs still roamed the Earth.

- The Seamount is named after **Afanasy Nikitin**, a 15th century Russian merchant who was one of the first to document his travels to India.

- The ANS seamount is about 3,000 km from India's coast, and is rich in **cobalt, copper, manganese, and nickel.**

LESOTHO HIGHLANDS WATER PROJECT

CONTEXT

The main water supply to **South Africa's economic hub**, greater Johannesburg in the Gauteng province, and to the country's breadbasket in the Free State, is scheduled to be cut off for six months.

What is the Lesotho Highlands Water Project?

- It is a **large-scale water supply scheme** in which water is diverted from the highlands of Lesotho to **South Africa's Free State** and the greater **Johannesburg area.**

- The project is designed to transfer over 1.27 billion cubic metres of water annually from Lesotho to South Africa, providing a vital water supply to the **Gauteng region**'s cities and industries.

- Launched in 1998, it was developed in partnership with the governments of Lesotho and South Africa. It involved the construction of a series of dams, reservoirs and tunnels throughout Lesotho.

- These all deliver water to the **Vaal River system** in South Africa.
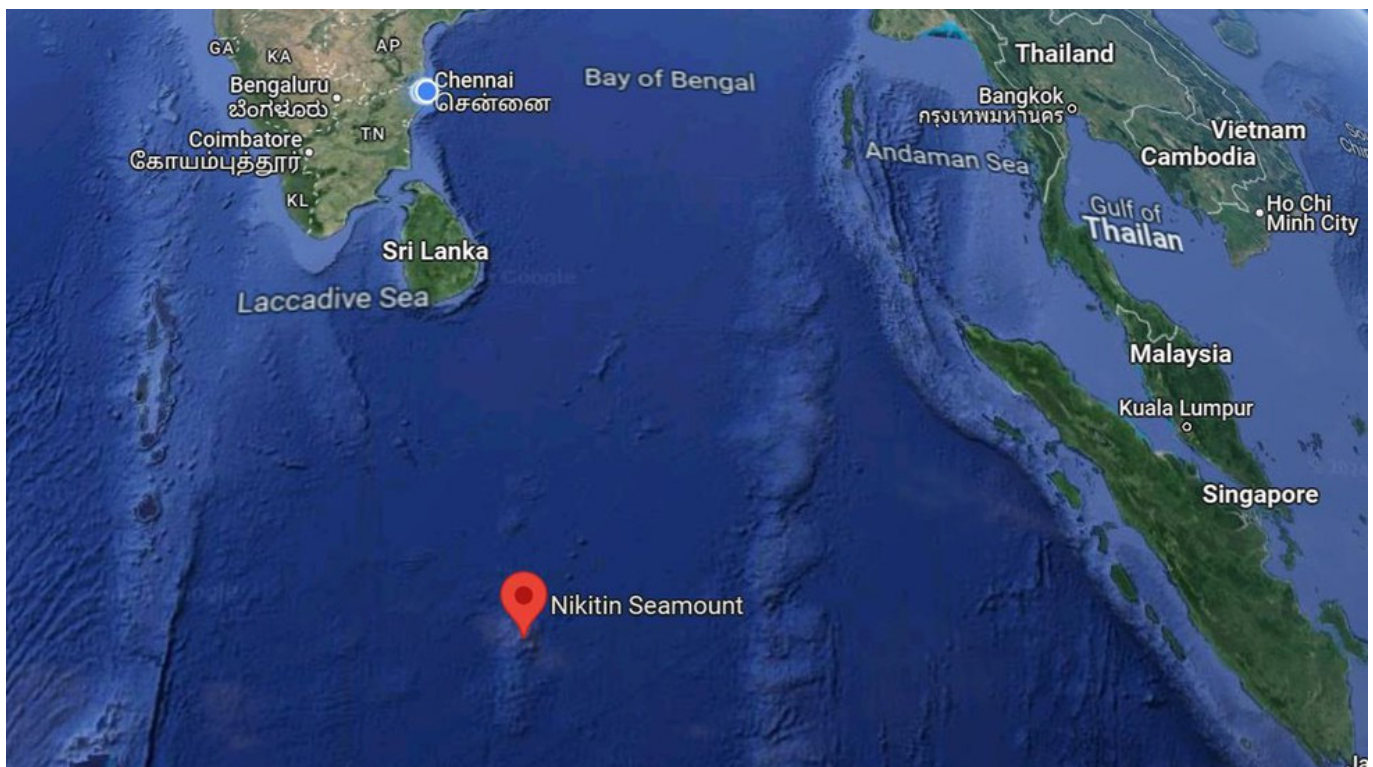
ANDAMAN AND NICOBAR ISLANDS

CONTEXT

With revamped airfields and jetties to additional logistics and storage facilities, habitat for troops to a robust surveillance infrastructure, the strategic **Andaman and Nicobar Islands** are in the middle of a major military infrastructure upgrade.

About Andaman and Nicobar Islands

- The ANI are two groups of islands—the Andaman Islands and the Nicobar Islands, covering an area of **8,249 sq km.**
- The entire island chain consists of **836 islands** including islets and rocky outcrops, of which some **38** are permanently inhabited by a population of over 430,000.
- The islands are governed as a **single Union Territory** by the Central Government of India, through the **Andaman Nicobar Administration.**
- The **capital city of Port Blair** is the seat of the Administration, headed by the Lieutenant Governor, who serves as direct link with the Central Government.
- The ANI are also home to **India's only integrated tri-service** command of the armed forces—the **Andaman and Nicobar Command** for maritime surveillance and enhancing India's strategic presence in the eastern Indian Ocean as it merges into the Pacific.

🔍 FACT BOX

Coco Islands

- The Coco Islands are a part of **Yangon region of Myanmar**. It is a small, remote island in the **Bay of Bengal.**
- Great Coco is small at **11km in length**, but its location is **strategically important.**
- It is not only close to the **Strait of Malacca**, one of the **world's busiest shipping lanes,** it also lies 55km from India's Andaman and Nicobar Islands, which host **Indian navy and air force bases.**

GUKESH D BECOMES YOUNGEST CHALLENGER FOR WORLD CHESS TITLE

CONTEXT

Teenage Indian chess prodigy **Gukesh Dommaraju**, better known as **Gukesh D,** became the youngest player to claim the **men's Candidates Tournament in Toronto, Canada.**

About

- Gukesh is ranked 16th in the world by the **International Chess Federation (FIDE).**
- Gukesh is set to become the **youngest player** ever to challenge for a world chess title.
- The previous youngest winner of a Candidates tournament was Russian prodigy Kasparov, then 20, in 1984.
- Joining Gukesh in the men's Candidates tournament was **Rameshbabu Praggnanandhaa (R Praggnanandhaa), 18,** who famously stunned the chess world by beating Carlsen in 2022.
  - **"Pragg",** as he is known to fans, became the youngest international chess master at the age of 10 and the second-youngest grandmaster in the world at 12.
  - Last year, he and his sister, **22-year-old Rameshbabu Vaishali (R Vaishali),** became the first-ever brother and sister duo to obtain grandmaster titles.
- Gukesh is the second Indian to play in a world championship after legendary Indian player **Viswanathan "Vishy" Anand.**

UPSC PYQ (Related)

Q: Parimarjan Negi has excelled in which one of the following games? (2007)

(a) Billiards   (b) Swimming

(c) Chess   (d) Weightlifting

Solution: (c)

****

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