CURRENT AFFAIRS WEEKLY

WEEK 4
DECEMBER 2024

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- 20 YEARS TO 2004 INDIAN OCEAN EARTHQUAKE AND TSUNAMI
- INDIA'S RELIANCE ON CHINA FOR CRITICAL MINERALS

GS-II

- TRUMP-PANAMA TENSION
- INDIA AND KUWAIT ARE 'STRATEGIC PARTNERS' NOW,
- PAKISTAN'S BALLISTIC MISSILE PROGRAM
- INDIA, SAUDI ARABIA COOPERATION IN DEFENCE SECTOR
- RENEWAL OF THE U.S.-CHINA SCIENCE AND TECHNOLOGY AGREEMENT
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- Thanka Anki

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- Siliguri Corridor
- C.S.I. Church and Eleanor's Tomb in Munnar

INTERNATIONAL RELATIONS

- Rooppur Nuclear Power Plant
- UN Internal Justice Council

POLITY & GOVERNANCE

- National Human Rights Commission (NHRC)
- Centre abolishes 'no detention policy'
- Amendment to the Conduct of Election Rules
- SVAMITVA Scheme
- Ministry of Tourism's initiatives to promote Tourism
- World Meditation Day

ECONOMY

- EFTA-India TEPA
- 55th GST Council Meeting

ENVIRONMENT

- Bordoibam-Bilmukh Bird Sanctuary
- Lion Tailed Macaque (Macaca silenus)
- Papier Mâché Dodos (reviving extinct Dodo bird)
- India State of Forest Report 2023 (ISFR 2023)

SCIENCE & TECHNOLOGY

- Mumps Vaccine

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DISCLAIMER

The current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.

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SECTION -A

MAINS ISSUES

20 YEARS TO 2004 INDIAN OCEAN EARTHQUAKE AND TSUNAMI

Context

December 26, 2004 marks the 20th year since the **2004 Indian Ocean earthquake and tsunami**. The **2004 Indian Ocean earthquake and tsunami** was a turning point in our understanding of tsunamis and earthquake risks. It led to significant advancements in **early warning systems**, **scientific research**, and **disaster preparedness**.

What Happened on December 26, 2004 (brief background)?

- On December 26, 2004, a massive earthquake of magnitude **9.1** occurred off the coast of **Sumatra, Indonesia.**
- This earthquake triggered one of the deadliest tsunamis in history, causing widespread destruction across 17 countries bordering the Indian Ocean. The tsunami killed around 227,000 people and displaced 1.7 million more.
- **Tectonic Background:** The earthquake occurred in the **Sunda Trench**, where the **Indo-Australian plate** is being forced beneath the **Burma microplate** (part of the larger **Eurasian plate**).
  - The earthquake involved the rupture of a **1,300 km long fault**, starting from Sumatra in the south to the Coco Islands in the north.
  - The tsunami was triggered by the **longest faultline rupture** from an earthquake ever observed, seconds before 7.59 am on December 26, 2004.
  - The gap between the **India plate and the Burma microplate** was at least **1,200 kilometres (750 miles) long.**
  - It produced **huge waves** that were over 30 metres (100 feet) high, delivering energy equal to 23,000 Hiroshima atomic bombs and wreaking havoc.
    - Indonesia is a vast archipelago nation on the Pacific "Ring of Fire," which is a region of high seismic activity that stretches across the Pacific basin from Japan through Southeast Asia.

Impact of the Tsunami:

- The tsunami waves traveled across the Indian Ocean, affecting countries like **Indonesia, India, Sri Lanka, Thailand, Malaysia, the Maldives, and more**.
- Some places, such as the **Andaman and Nicobar Islands**, saw **90% of the population** wiped out. The disaster caused immense loss of life and property, especially in coastal regions.
- The tsunami generated by this earthquake was **unprecedented in size**. Scientists had not anticipated such a massive event in this region.
- Prior to this, there had been only two recorded tsunamis in the region (**1881 and 1883**), which were much smaller.

Two Decades of Change: Lessons Learned

- **Global coordination:** By 2005, the **Intergovernmental Oceanographic Commission of UNESCO** had been tasked with **coordinating a worldwide tsunami mitigation strategy**. Central to this effort was the creation of the **Indian Ocean Tsunami Warning and Mitigation System (IOTWMS)** — a network of organisations designed to monitor and alert countries at risk.

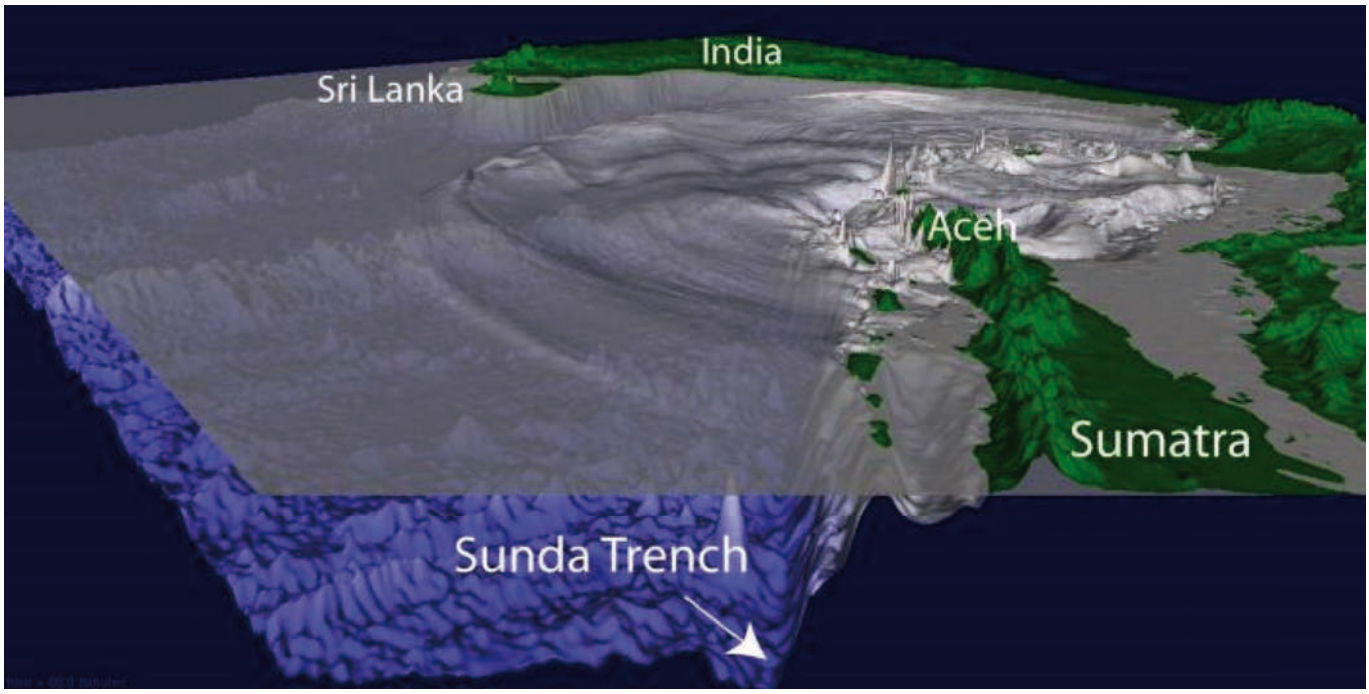

Figure No. 01

- Today, **India, Indonesia, and Australia** serve as the nerve centers for tsunami warnings across 26 nations in the Indian Ocean.

- **Tsunami Early Warning Systems:** In the aftermath of the 2004 disaster, significant steps were taken to improve tsunami preparedness. One of the key developments was the establishment of the **Indian Tsunami Early Warning Centre (ITEWC)** in **2007**, under the Ministry of Earth Sciences. This centre operates advanced systems to monitor earthquakes and tsunamis 24/7.
  - **ITEWC** is a designated **Tsunami Service Provider (TSP)** for the Indian Ocean region under **UNESCO's Intergovernmental Oceanographic Commission (IOC).**
  - The ITEWC uses seismological stations, pressure recorders, and tidal stations placed across the **Indian Ocean**.
  - These devices can detect a tsunami-producing earthquake and issue warnings within about **10 minutes** of detection. This system helps protect countries bordering the Indian Ocean from future tsunamis.
- The **Indian National Centre for Ocean Information Services (INCOIS),** based in Hyderabad, has been at the forefront of ocean-related research and services in India. INCOIS provides tsunami alerts to 28 countries, showcasing its technological and scientific expertise.
  - INCOIS operates a network of more than 300 seismic stations spread across the Indian Ocean, using advanced **Global Seismic Network (GSN) technology.**
  - These stations can detect earthquakes as small as magnitudes are analysed to assess tsunami potential.
- **Scientific Advancements:** The 2004 tsunami spurred research into **tsunami geology** and **earthquake monitoring**. This research uncovered important historical evidence of past tsunamis in the region, including evidence of a **tsunami from a thousand years ago** found in the **Andaman and Nicobar Islands**.
  - **Tsunami Geology:** Scientists found ancient evidence, like **dead roots** of trees exposed by rising and falling tides, which helped date past tsunami events.
  - **GPS and Seismology:** Research institutions have strengthened **seismic observations** and **geodetic studies** along coastal regions, including **the Andaman Islands**. These advances improve our understanding of tsunami risks.
  - **Deep-ocean Assessment and Reporting of Tsunamis (DART):** A network of DART is strategically deployed to monitor minute changes in sea level caused by underwater seismic activity. These buoys relay real-time data to ITEWC via satellite communication. The latest versions of DART buoys are more durable and equipped with advanced sensors for greater accuracy. Besides, supporting systems such as bottom pressure recorders and tide gauges, help track tsunami propagation.
  - **Numerical modelling**: Numerical Modelling recreates tsunami scenarios using equations in mathematics and physics. A **tsunami or tsunamigenic earthquake** can happen due to several different permutations and combinations of seismic parameters. These are simulated as pre-run scenarios and stored in electronic formats.
- **Future Tsunami Risks**: Although the **2004 earthquake** was a huge event, researchers warn that other regions, like the **Makran Coast** (off the coast of Iran and Pakistan), still pose risks. These regions could generate tsunamis that might affect India's **west coast**, including cities like **Mumbai**, which has nuclear power plants.

Figure No. 01

What measures are required?

The world has witnessed a tenfold increase in the number of natural disasters since the 1960s. Data captured between 1900 and 2019 by the Institute for Economics and Peace reveal an increase from 39 incidents in 1960 to 396 in 2019. Given the increasing number of such events, following measures can be adopted:

- **Nature-based solutions:** These solutions involve protecting, restoring, and sustainably managing ecosystems in ways that increase their resiliency and ability to address those societal challenges, while also safeguarding biodiversity and improving human wellbeing.
  - **For example:** Mangrove forests along coastlines are not only important for sustaining fisheries but also for providing protective natural barriers against erosion and strong storms.
- **Better disaster response:** The Wayanad landslide has exposed significant lapses in intergovernmental coordination and communication. The lack of timely warnings and efficient evacuation plans contributed to the high death toll and widespread destruction. This points to a critical need for robust and streamlined communication channels between different government agencies and with the public to ensure timely and effective disaster response.
- **Investment:** There is need to invest in disaster risk reduction, improve communication and preparedness strategies, and hold accountable those responsible for insufficient safeguards.

FACT BOX

Tsunami

- A tsunami is a **series of enormous waves** created by an **underwater disturbance** usually associated with **earthquakes** occurring below or near the ocean.
- **Causes:** They are usually associated with **earthquakes,** however, **volcanic eruptions, submarine landslides, and coastal rock falls** can also generate a tsunami, as can a large asteroid impacting the ocean.
- They originate from a vertical movement of the sea floor with the consequent displacement of water mass.
- Tsunami waves often look like **walls of water** and can attack the shoreline and be dangerous for hours, with waves coming every 5 to 60 minutes.
- The first wave may not be the largest, and often it is the 2nd, 3rd, 4th or even later waves that are the biggest.
  - After one wave inundates, or floods inland, it recedes seaward often as far as a person can see, so the seafloor is exposed.
  - The next wave then rushes ashore within minutes and carries with it many floating debris that were destroyed by previous waves.
- **Tsunami Prone Areas in India:** Puri, Kakinada, Machilipatnam, Nizampatnam-Vetapalem, Chennai, Cuddalore-Pondicherry, Rameshwaram, Thoothukudi, Alappuzha-Chavara, Kochi.

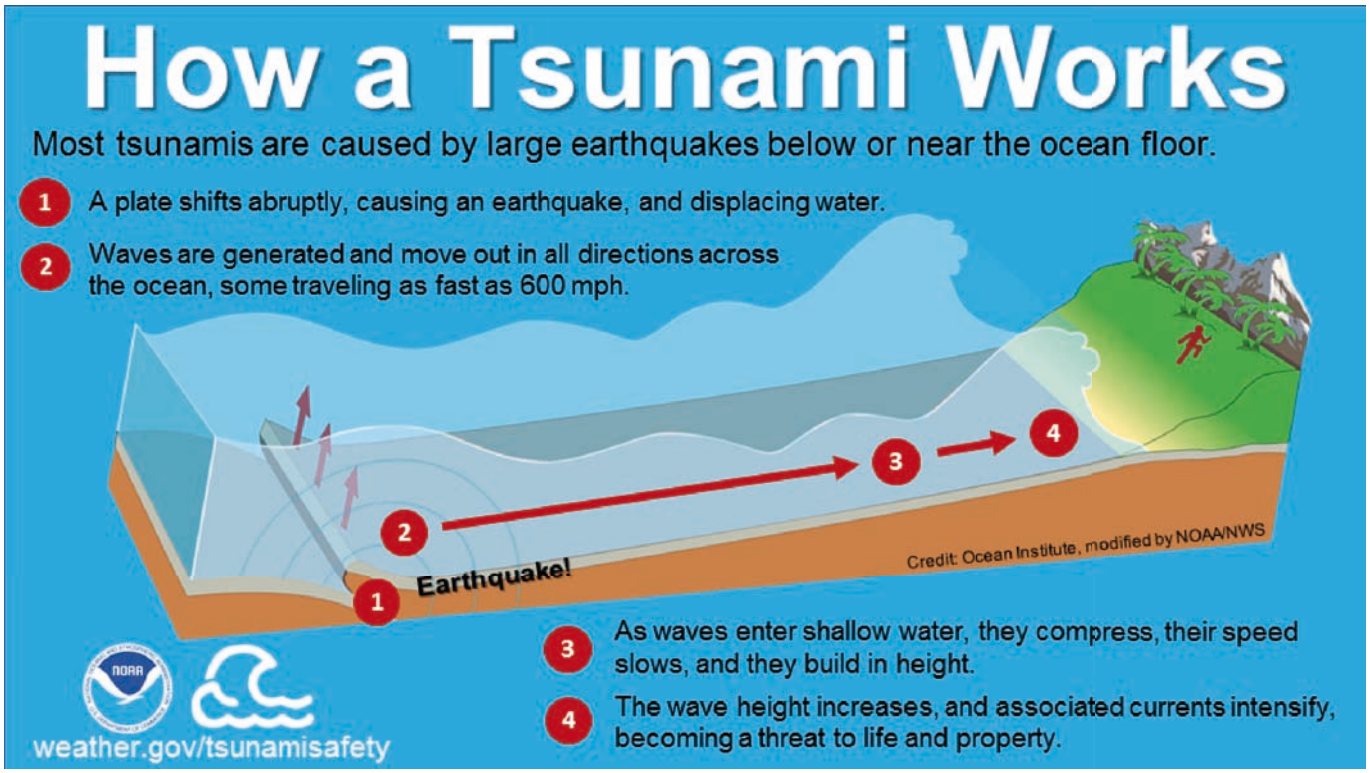

Figure No. 02

UPSC PYQ

Q: The 2004 Tsunami made people realize that mangroves can serve as a reliable safety hedge against coastal calamities. How do mangroves function as a safety hedge? (UPSC 2011)

(a) The mangrove swamps separate the human settlements from the sea by a wide zone in which people neither live nor venture out

(b) The mangroves provide both food and medicines which people are in need of after any natural disaster

(c) The mangrove trees are tall with dense canopies and serve as an excellent shelter during a cyclone or tsunami

(d) The mangrove trees do not get uprooted by storms and tides because of their extensive roots.

Solution: (d)

INDIA'S RELIANCE ON CHINA FOR CRITICAL MINERALS

Context

In 2023, the **Ministry of Mines** identified **30 critical minerals** essential for India's economic development and national security. While the report highlighted India's dependency on imports for 10 of these minerals, it did not adequately address the **growing concern about India's reliance on China**, the dominant player in the global critical mineral market.

China's Dominance in Critical Minerals

China is a major global player in the critical minerals sector, holding unparalleled control over both **mineral reserves** and **processing capabilities**.

- **Mineral Reserves**: China has significant reserves in **copper**, **lead**, **zinc**, **nickel**, **cobalt**, **lithium**, **gallium**, **germanium**, and **graphite**, with an exploration investment of **$19.4 billion** in 2023, leading to the discovery of **132 new deposits**, including **34 large ones**.
- **Processing and Refining Control**: China controls:
  - **87%** of rare earth processing
  - **58%** of lithium refining
  - **68%** of silicon processing
- **Strategic Investments**: China has heavily invested in **overseas mining projects** and developed unmatched **midstream refining capabilities**, which raises **supply chain vulnerabilities** for countries like **India**, the **U.S.**, and the **EU**.

China's Export Control Strategy

China uses its dominance over critical minerals as a strategic tool. This approach includes:

- **Weaponizing Exports**: Beijing targets minerals essential for sectors like **semiconductors**, **batteries**, and **high-tech manufacturing**.
- **Careful Balance**: While China restricts minerals like **rare earths**, **antimony**, **gallium**, and **germanium**, it avoids disrupting its own industries or antagonizing key trade partners, as seen in the **2010 rare earth embargo** against **Japan** and its recent actions in 2023.

India's Dependency on China for Critical Minerals

- India's dependency on China for certain **critical minerals** is alarming. Below are six minerals where India's dependency exceeds **40%**:
- **Bismuth**: **85.6%** (used in pharmaceuticals and chemicals, with few alternative sources).
- **Lithium**: **82%** (critical for EV batteries, with China controlling 58% of global refining).
- **Silicon**: **76%** (important for semiconductors and solar panels, with few countries having advanced processing capabilities).
- **Titanium**: **50.6%** (used in aerospace and defense, though alternatives exist, the costs are high).
- **Tellurium**: **48.8%** (important for solar power and thermoelectric devices, with China controlling 60% of production).
- **Graphite**: **42.4%** (indispensable for EV batteries and steel, with China controlling 67.2% of global production, including battery-grade material).

Why Does India Rely on Imports?

India's reliance on imports is driven by several factors:

- **Mineral Deposits**: While India is rich in mineral resources, many critical minerals are located deep underground, requiring high-risk investments in **exploration** and **mining technologies** that discourage private sector participation.
- **Processing Limitations**: India lacks the technological capability to process certain minerals. For instance, despite the discovery of **5.9 million tonnes of lithium** in **Jammu and Kashmir**, India faces significant challenges in extracting lithium from **clay deposits** due to limited processing capabilities.

India's Efforts to Secure Critical Minerals

India has taken a proactive approach to reduce its dependency on China:

- **KABIL**: It is a joint venture of **three state-owned companies** aimed at securing overseas mineral assets.
- **Strategic Partnerships**: India has joined initiatives like the **Minerals Security Partnership** and the **Critical Raw Materials Club** to diversify supply sources and

strengthen global relationships.

- **Research and Development**: India is investing in research through organizations like the **Geological Survey of India** and the **Council for Scientific and Industrial Research (CSIR)**. The focus is on enhancing **mineral exploration**, improving **processing technologies**, and reducing dependency on virgin minerals through **recycling** and **circular economy practices**.
- **Incentive Programs**: The government is also offering **production-linked incentives** for the extraction and recycling of critical minerals to boost domestic capabilities.

30 Critical Minerals

- Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium, Germanium, Graphite, Hafnium, Indium, Lithium, Molybdenum, Niobium, Nickel, PGE, Phosphorous, Potash, REE, Rhenium, Silicon, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium and Cadmium.
- Ten minerals on the list are 100 per cent import-dependent. These are **lithium cobalt, nickel, vanadium, niobium, germanium, rhenium, beryllium, tantalum, and strontium.**

TRUMP-PANAMA TENSION

Context

Recently, **Donald Trump**, the former U.S. President, expressed concern over Panama's control of the canal, particularly in light of China's growing global influence. Trump is troubled by the idea of any foreign power, especially **China**, gaining control over the canal or its operations, given the canal's importance to U.S. trade and military strategy.

Strategic Importance of the Panama Canal

- The Panama Canal is an 82-km (51-mile) artificial waterway that connects the Pacific and Atlantic Oceans through Panama through the **Isthmus of Panama**.
- It is a man-made water passage.
- It cuts through the **middle of Panama**, a country occupying the strip of land between Central America and South America.
- It provides the **shortest maritime route** between the two oceans, significantly reducing the time and distance ships need to travel compared to the alternative routes around South America.
- This makes it a **critical global trade route**, impacting international commerce and military strategy.
- **Physical features:** The Canal's principal physical features are
  - **Gatun Lake**, and the central man-made lake stretching nearly all the way across the Isthmus;
  - **Gaillard Cut**, the eight-mile-long excavation through the Continental Divide that extends **Gatun Lake to Pedro Miguel Locks**
    - the locks on both sides of the **Isthmus** that raise ships between sea level and the lake (**Gatun Locks** on the Atlantic and **Pedro Miguel** and **Miraflores Locks** on the Pacific)
  - the **ports of Balboa** on the Pacific and **Cristobal on the Atlantic**

Figure No. 03

- The **United States** is its main user, accounting for 74 percent of cargo, followed by China with 21 percent.
- 5 percent of world maritime trade passes through the canal, which connects more than 1,900 ports in 170 countries.

History of the Panama Canal

- **Early Exploration and Challenges**: Before the construction of the Panama Canal, ships had to sail around the southern tip of South America (Cape Horn or the Strait of Magellan), which was both time-consuming and inefficient.
- In the early 20th century, the possibility of creating a shortcut through Panama was realized.
- The canal was built between 1904 and 1914, mostly by the US, with then-President **Theodore Roosevelt** overseeing the construction.
- The canal was operated and controlled by the U.S. until the **Torrijos-Carter Treaty** of **1977**, which set the stage for the handover of control to Panama by **1999**.
- The Panama Canal was officially handed over to Panama on **December 31, 1999**, marking the end of more than 85 years of U.S. control.

INDIA AND KUWAIT ARE 'STRATEGIC PARTNERS' NOW,

Context

During Prime Minister Narendra Modi's recent visit to Kuwait (first visit by an Indian Prime Minister to Kuwait in 43 years**),** India and Kuwait elevated their relationship to a "strategic partnership," focusing on key areas like trade, defence, and regional security.

Key Takeaways of the visit

- **Strategic Partnership**: India and Kuwait upgraded their bilateral ties to a strategic partnership, signaling enhanced cooperation in areas like trade, defence, security, infrastructure, and technology.
- **Defence Cooperation**: A key agreement was signed to institutionalize defence ties, including joint exercises, personnel exchanges, supply of defence equipment, and collaboration in research and development.
- **MoUs Signed**: Four Memoranda of Understanding (MoUs) were signed:
  - Kuwait's membership of **International Solar Alliance (ISA)**
  - Cooperation in the field of **Defence.**
  - Cultural Exchange Programme between India and Kuwait for the years 2025-2029.
  - Executive Programme between India and Kuwait on Cooperation in the field of Sports for 2025-2028 between the **Ministry of Youth Affairs and Sports**, Government of India and Public Authority for Youth and Sports, Government of the State of Kuwait.
- **Economic and Investment Focus**: India invited Kuwaiti investors to explore opportunities in sectors like energy, pharmaceuticals, IT, and defence, with the aim to expand bilateral trade, which reached USD 10.47 billion in 2023-24.
  - Both sides also discussed expediting the **India-GCC Free Trade Agreement.**
- **Regional Security**: Both nations condemned terrorism in all forms, emphasizing the disruption of terrorism financing and dismantling terror infrastructure. They also stressed cooperation in regional stability, particularly in West Asia.
- **Vision 2035**: Modi expressed India's commitment to support **Kuwait's "Vision 2035" development plan**, which focuses on transforming the country's economy.
- **Award**: The Amir of Kuwait honored Modi with the prestigious ***Order of Mubarak Al-Kabeer*** for his role in strengthening bilateral relations.

Impact:

- **Strengthened Bilateral Ties**: The strategic partnership between India and Kuwait will likely lead to more robust cooperation, not just in defence but also in economic and technological sectors.
- **Increased Investment**: The visit could lead to greater Kuwaiti investment in India, especially in the energy, defence, and pharmaceutical sectors, enhancing economic ties between the two nations.
- **Enhanced Regional Stability**: The focus on security and regional cooperation, particularly in countering terrorism, aligns India and Kuwait's interests, strengthening their role in promoting peace and stability in West Asia.

FACT BOX

India-Kuwait Relations

- India is among **Kuwait's top trading partners**, with two-way trade worth USD 10.47 billion during 2023-24.
  - Kuwait is **India's sixth largest crude supplier** and **fourth largest LPG supplier**, meeting 3% of the country's energy needs.
- Kuwait is the **current Chair of the Gulf Cooperation Council (GCC),** it pledged full support for India's engagement with the bloc. India reported trade worth $184.46 billion with Kuwait and other GCC countries, including the UAE, Bahrain, Saudi Arabia, Oman, and Qatar—in 2022-23.
- **Diaspora:** Indians constitute 21 per cent (1 million) of the total population of Kuwait and 30 per cent of its workforce (approximately 9 lakh). Indian workers top the private sector as well as the domestic sector workforce list.

Order of Mubarak Al Kabeer

- The ***Order of Mubarak Al Kabeer*** is a Kuwaiti knighthood awarded to Heads of State, foreign sovereigns, and members of foreign royal families as a symbol of friendship.

International Honour	About	Year
Order of Abdulaziz Al Saud	highest honor of Saudi Arabia awarded to non-muslim dignitaries	2016
State Order of Ghazi Amir Amanullah Khan	highest civilian honor of Afghanistan	2016
Grand Collar of the State of Palestine Award	highest honor of Palestine awarded to foreign dignitaries	2018
Order of Zayed Award	highest civilian honor of the United Arab Emirates	2019
Order of St. Andrew award	highest civilian honor of Russia	2019
Order of the Distinguished Rule of Nishan Izzuddin	Highest honour of the Maldives awarded to foreign dignitaries	2019
King Hamad Order of the Renaissance	this Bahrain Order – First Class is a top honour by the gulf country	2019
Legion of Merit by the US Government	award of the United States Armed Forces that is given for exceptionally meritorious conduct in the performance of outstanding services and achievements	2020
'Ebakl'	By Republic of Palau, a tool of significance in Palauan society as a symbol of leadership and wisdom	2023
Highest honour of Fiji	Companion of the Order of Fiji by Sitiveni Rabuka	2023
Companion of the Order of Logohu	by Papua New Guinea	2023
Order of the Nile	By Arab Republic of Egypt	2023
Grand Cross of the Legion of Honour	conferred by France	2023
Grand Cross of the Order of Honour	given by Greece	2023
Order of the Druk Gyalpo or the Order of the 'Dragon King'	by Bhutan's King	2024
Grand Commander of the Order of Niger	by Nigeria	2024
Dominica Award of Honour	by Dominica	2024
Order of Excellence of Guyana	highest national award of Guyana	2024
Honorary Order of Freedom of Barbados Award	by the country of Barbados	2024
Order of Mubarak the Great-Kuwait	By the Amir of Kuwait	2024

Table No. 01

- The *'Order of Mubarak Al Kabeer'* has been previously awarded to foreign leaders like **Bill Clinton, Prince Charles and George Bush.**
- This is the 20th international honour bestowed on Modi. Below is a list of honours bestowed upon him till date.

See the Table No. 1 above

PAKISTAN'S BALLISTIC MISSILE PROGRAM

Context

The United States sanctioned four Pakistani entities on charges of contributing to nuclear-armed Islamabad's long-range ballistic missile program. A senior White House official recently stated that Pakistan's developing long-range ballistic missile capabilities could eventually allow it to strike targets beyond South Asia, including the United States, making it an "emerging threat" to U.S. national security.

Pakistan's Ballistic Missile Program

- Pakistan, which conducted its **first nuclear test in 1998,** now possesses an estimated 170 nuclear warheads.
- The country has developed a wide array of **ballistic missiles** capable of carrying nuclear payloads, which increases the stakes in the region and raises concerns about missile proliferation.
- **Missile Development:** Pakistan is increasingly developing **long-range ballistic missile systems** with the ability to strike targets much farther than just South Asia. These missiles are being equipped with larger rocket motors, indicating an advancement towards missiles that could potentially reach the U.S.

Impact on U.S.-Pakistan Relations

- **Deteriorating Relations:** The U.S.-Pakistan relationship has worsened significantly after the U.S. withdrawal from Afghanistan. Pakistan's growing ties with China, coupled with the U.S. rapprochement with India, have further strained ties. Pakistan sees the U.S.-India strategic partnership as a challenge to its own regional security interests.
- **U.S. Concerns:** U.S. officials are questioning why Pakistan would seek to develop missile systems that could be used to target countries outside the region, such as the U.S. Pakistan's growing missile capabilities could also undermine global security by contributing to nuclear arms proliferation.

FACT BOX

Current State of Nuclear Warheads (As of 2024)

- **Nuclear-Weapon States (NWS) under the Nuclear Nonproliferation Treaty (NPT):** The five officially recognized nuclear-weapon states under the NPT are: **United States, Russia, China, France, United Kingdom.**
- **Total Nuclear Warheads Worldwide:** Approximately 12,100 nuclear warheads across all states with nuclear capabilities.
- The United States and Russia possess the largest share of global nuclear stockpiles, with ongoing modernization of their nuclear forces
- Other countries like **China, India, and Pakistan** have smaller stockpiles but are actively enhancing their nuclear capabilities, including missile delivery systems.
- **North Korea and Iran** remain significant proliferation concerns due to their ongoing nuclear development activities and potential for expanding their arsenals.

Estimates of Nuclear Stockpiles:

Russia

- **Strategic warheads:** 1,549 warheads deployed on 540 delivery systems (ICBMs, SLBMs, and heavy bombers) as of September 2022 (New START data).

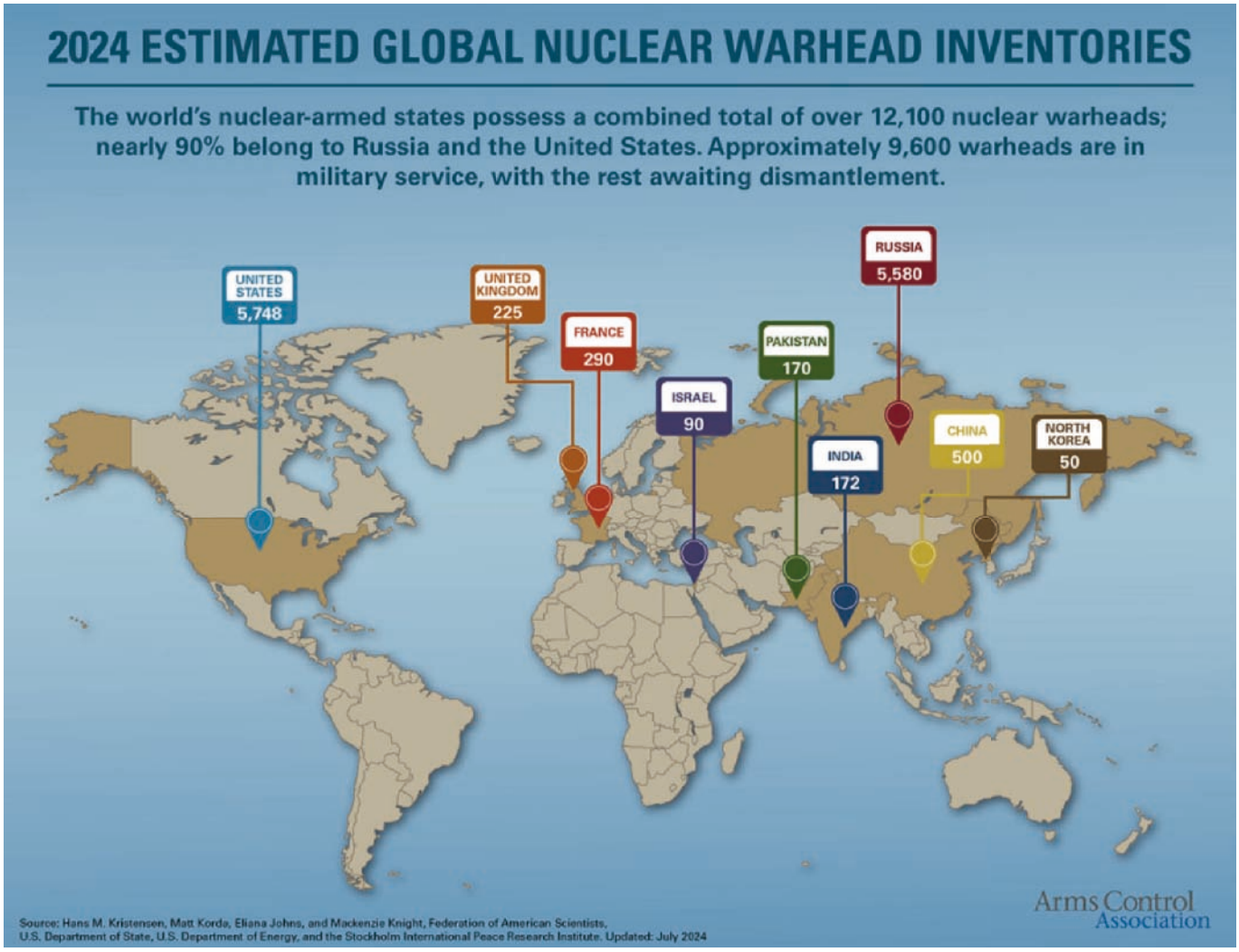

Figure No. 04

- **Non-strategic warheads:** Estimated 1,000–2,000 warheads (not limited by the New START treaty).
- **Total stockpile:** Approximately 4,380 nuclear warheads as of March 2024 (including deployed and retired warheads awaiting dismantlement).

United States

- **Strategic warheads:** 1,419 deployed on 662 delivery systems (ICBMs, SLBMs, and heavy bombers) as of March 2023 (New START data).
- **B-61 gravity bombs:** Estimated 100 forward-deployed bombs at NATO bases across Europe.
- Total stockpile: 3,748 active and inactive warheads as of September 2023 (including 2,000 retired warheads awaiting dismantlement).
- **Total warheads (FAS estimate):** Approximately 5,044 warheads as of May 2024 (including retired warheads).

China

- **Strategic warheads:** 310 warheads deployed on 206 launchers (ICBMs and SLBMs).
- **Total warheads: E**stimated 440 warheads as of 2023 (with projections reaching up to 1,000 by 2030).

France

- **Total stockpile:** Approximately 290 operational warheads, deployed on 98 delivery systems, including submarine-launched ballistic missiles (SLBMs) and air-launched cruise missiles.
- **Modernization:** France continues to modernize its nuclear forces but does not plan to increase the size of its stockpile.

United Kingdom

- **Total stockpile:** Approximately 225 warheads, with 120 operational warheads on 48 SLBMs and 105 in storage.
- **Sea-based deterrent: T**he UK exclusively relies on sea-based nuclear deterrence with its Vanguard-class Trident submarines.

Non-NPT Nuclear Weapons Possessors

These states have developed nuclear weapons outside the NPT framework:

India

- **Total stockpile:** Estimated to have up to 172 nuclear warheads.
- India tested its first nuclear weapon in 1974, sparking a nuclear arms race with Pakistan.

Pakistan

- **Total stockpile:** Estimated to have approximately 170 nuclear warheads.
- Pakistan's nuclear program was a direct response to India's nuclear weapons development.

Israel

- **Total stockpile:** Estimated to have around 90 nuclear warheads, with fissile material for about 200.
- Israel has never officially confirmed or denied possessing nuclear weapons and follows a policy of ambiguity regarding its nuclear arsenal.

INDIA, SAUDI ARABIA COOPERATION IN DEFENCE SECTOR

Context

India and Saudi Arabia are strengthening their defense and industrial cooperation, with a focus on technology transfer, joint ventures, and localized production. This aligns with **Saudi Arabia's Vision 2030** and **India's Make in India initiative,** both of which emphasize reducing dependency on defense imports.

Defence-industrial cooperation between India and Saudi Arabia

- **Mutual Trust in Defense Collaboration**: Defense cooperation is built on a foundation of trust and shared goals, underscored by recent statements emphasizing Saudi Arabia as a **top ally for India in defense technology sharing**. Both nations aim to reduce their reliance on imports by strengthening domestic production capabilities.
- **Investment and Localization**: Saudi Arabia's Vision 2030 aims to localize 50% of its defense spending, complementing India's push for self-reliance through its **Make in India initiative.**
  - Indian defense companies have actively sought partnerships in critical sectors like **shipbuilding, electronics, AI, and cybersecurity,** with Saudi firms showing strong interest.
- **Bilateral Engagements**: Recent high-level visits and defense exhibitions have facilitated discussions on joint training exercises, technology exchange, and co-development of military platforms.
  - Military exercises such as ***'Sada Tanseeq' and 'Al Mohed Al Hindi'*** exemplify the growing operational synergy between the two nations.
- **Trade in Defense Equipment**: Saudi Arabia has signed contracts for Indian defense equipment demonstrating the potential for deeper industrial ties.
  - Saudi Arabia is reported to have procured the **155mm Advanced Towed Artillery Gun System (ATAGS) from Bharat Forge.**
  - Saudi Arabia has in the past evaluated two types of artillery guns manufactured from **Bharat Forge.**

Significance of Saudi Arabia for India

- **Strategic Importance:** Saudi Arabia is a key partner in West Asia, contributing to regional stability and India's energy security. This partnership is critical for India's Look West Policy.
- **Economic Significance**: Saudi Arabia is a significant source of investments in India. There is potential for growth in trade and manufacturing collaboration, particularly in high-tech industries.
- **Geopolitical Relevance:** Strong relationship strengthens India's influence in the Gulf region. Furthermore, it promotes strategic autonomy by diversifying defense partnerships.
- **Energy Security:** Saudi Arabia is a major supplier of crude oil to India, playing a pivotal role in India's energy needs.

FACT BOX

India-Saudi Arabia Relations:

- **Economic Ties:** India is Saudi Arabia's second-largest trading partner, while Saudi Arabia is **India's fifth-largest trading partner.**
  - Bilateral trade stood at **USD 52.8 billion in 2022-23**, with significant contributions from crude oil imports and exports of refined petroleum products.
- **Energy Security:** Saudi Arabia is India's second-largest supplier of crude oil and plays a crucial role in India's energy needs, further cementing its strategic importance.
- **Geopolitical Importance:** As a leader in the Gulf region, Saudi Arabia's partnership enhances India's influence in West Asia.
  - The relationship aligns with India's **Look West Policy**, focusing on stability, security, and economic integration in the region.
- **Cultural and Strategic Ties**: The large Indian diaspora in Saudi Arabia, contributing significantly to remittances, adds a people-centric dimension to the relationship.
  - Defense collaboration enhances the strategic depth of the partnership, extending beyond traditional trade and energy linkages.

Current State of India's Defence Sector

- India has achieved record growth in defence production, reaching **₹1.27 lakh crore in FY 2023-24**, a 174% increase since 2014-15.
- **Key Defence Platforms:** Notable indigenous systems include:
  - **Dhanush Artillery Gun System**
  - **Advanced Towed Artillery Gun System (ATAGS)**
  - **LCA Tejas**, MBT Arjun, submarines, and INS Vikrant.
  - Production targets are set to **₹1.75 lakh crore by 2024-25** and **₹3 lakh crore by 2029**.
- **Defence Exports Growth:** Defence exports reached ₹21,083 crore in FY 2023-24, a 30-fold increase from Rs 686 crore in FY 2013-14.
- **Key Policy Reforms**
  - **Liberalized FDI**: Up to 74% (Automatic Route) and 100% (Government Route) allowed.
  - **Positive Indigenization Lists**: Embargo on imports for 5,521 items, boosting domestic manufacturing.
  - **Defence Corridors**: Established in Uttar Pradesh and Tamil Nadu to promote industrial growth.
- **Major Initiatives**
  - **SRIJAN Portal** promotes MSME participation in indigenization.
  - **iDEX Scheme** encourages innovation through startups and MSMEs.
  - **Budget Focus**: 75% of modernization funds allocated for domestic procurement in FY 2024-25

RENEWAL OF THE U.S.-CHINA SCIENCE AND TECHNOLOGY AGREEMENT

Context

The **Agreement on Science and Technology Cooperation** between the **United States and China,** which has been a cornerstone of their bilateral engagements since **1979**, was renewed for another **five years**, effective **August 2024**. This extension, accompanied by amendments, reflects both the enduring significance of the partnership and the complexities that have come to define it in recent years.

Background

- Signed initially in **1979** during a pivotal moment in U.S.-China relations, the Agreement symbolized mutual intent to collaborate on areas like **agriculture and technology**.
- Over the decades, it expanded its scope, incorporating themes like **nuclear fusion, earthquake studies, and health research**.
- Administered by the **U.S.-PRC Joint Commission on Scientific and Technological Cooperation**, it laid the groundwork for collaborative research, researcher exchanges, and the establishment of bilateral research centers.

However, recent geopolitical shifts and technological advancements have brought the Agreement under closer scrutiny, prompting debates about its future utility.

Key Features of the Renewal

- **Restricted Focus Areas:** The renewed Agreement narrows its scope to **basic research** and **intergovernmental collaboration** in specific pre-identified areas, such as earthquake studies and basic health research.
  - Sensitive and emerging technologies have been explicitly excluded to mitigate concerns over their potential misuse.
- **Enhanced Safeguards:** The amendments incorporate measures to address long-standing U.S. concerns regarding **researcher safety**, **data sharing**, and **intellectual property rights**.
- **Geopolitical Underpinnings:** The renewal reflects an effort to strike a balance—preserving cooperation where possible while imposing guardrails to protect national interests.

Challenges and Controversies

- The Agreement has been credited with catalyzing China's scientific transformation, but this success has also fueled concerns:
  - Reports have highlighted instances where China **commercialized U.S.-funded research outputs** without equitable returns.
  - China's R&D spending surged from **$375 million in 1979** to **$442 billion in 2021**, positioning it as a formidable scientific rival to the U.S.
  - The rising number of Chinese students and researchers in the U.S. has significantly boosted collaborations but also raised questions about knowledge transfer and its implications.

These developments prompted debates in the U.S., with stakeholders divided on whether the Agreement continued to serve American interests.

Why the Renewal Matters

- **For the U.S.:** Opting for a renewal with conditions allows the U.S. to maintain oversight over China's scientific trajectory while continuing selective engagement.
  - The Agreement serves as a diplomatic instrument, keeping dialogue open amid broader strategic competition.
- **For China:** Retaining the Agreement ensures avenues for **scientific mobility**, collaborative research, and limited engagement with the U.S., even as geopolitical tensions persist.

AUSTRALIA'S PROPOSED LAW ON SOCIAL MEDIA AGE RESTRICTIONS

Context

Australia's **Online Safety Amendment (Social Media Minimum Age) Bill, 2024**, seeks to address concerns surrounding the online safety of minors by setting the minimum age for creating social media accounts at **16 years**. The legislation amends existing laws, including the **Age Discrimination Act, 2024**, to facilitate its implementation. Once passed, it will mark a significant step in **regulating social media use by minors**, aligning with global discussions on online safety.

Key Features of the Proposed Law

- **Applicability:** The law targets **Age-Restricted Social Media Platforms (ARSMPs)**, which facilitate online interaction and content sharing among users. Platforms such as **TikTok, Instagram, Facebook, Snapchat**, and others are likely to be included under its purview.
  - The **Minister of Communication** retains the discretion to exempt specific platforms from the definition of ARSMPs.
- **Compliance Obligations:** Platforms must take **reasonable steps** to ensure individuals under 16 years do not create accounts. Failure to comply may attract civil penalties of up to **USD 49.5 million**.
  - Guidelines for compliance will be developed by **Australia's eSafety Commissioner**, ensuring clarity on what constitutes "reasonable steps."
- **Timeline and Implementation:** The law's enforcement is set to begin no earlier than **12 months after approval**, allowing time for stakeholder consultations and age-verification trials.
  - Platforms will be required to implement **age-verification mechanisms** for all account holders, ensuring adherence to the minimum age requirement.
- **Data Privacy and Security:** Platforms **must destroy** personal data collected during age verification after its intended use, with penalties under the **Privacy Act, 1988** for misuse or unauthorized disclosure.
  - Privacy obligations aim to mitigate risks associated with sensitive data collection and its potential misuse.

Underlying Concerns and Criticism

- **Challenges of Implementation:** The lack of a universally accepted **age-verification technology** has been highlighted as a hurdle, with Australia's **Age Verification Roadmap** acknowledging the evolving nature of this field.
- **Privacy Risks:** Critics have raised concerns about the extent and type of data required for age verification, noting potential trade-offs between ensuring safety and protecting user privacy.
- **Effectiveness of the Ban:** Research underscores the **dual nature of social media**—while it can offer connectivity and support, it also exposes minors to risks like bullying, self-harm, and disordered eating.
  - Academics and stakeholders argue that blanket bans may oversimplify complex issues, advocating for nuanced solutions that balance risks and benefits.

- **Criticisms from Political Groups:** Critics have described the legislation as "rushed" and questioned its alignment with existing evidence, calling for a more measured approach.
- **Age limits for social media aren't the most effective way** to protect teens from its potential harms. Young people have shown remarkable prowess for finding workarounds — even those under the age of 13 whom most platforms already prohibit. Using social media is not inherently beneficial or harmful to teens, but strict age limits ignore individual differences in adolescents' maturity levels.
  - In other words, turning 16 doesn't instantly make you more competent at navigating the digital world than a mature 14-year-old.

Pros	Cons
• Protects Mental Health: Helps shield children from anxiety, depression, and negative effects of unrealistic social comparisons. • Limits Exposure to Harmful Content: Reduces the risk of cyberbullying, exposure to explicit content, and predatory behavior. • Encourages Age-Appropriate Interactions: Keeps younger users away from content and interactions not suitable for their age. • Promotes Responsible Use: Encourages platforms to adopt stricter guidelines and develop safer environments for younger users. • Supports Parental Control Efforts: Aligns with parental intentions to shield children from negative online experiences. • Reduces Risk of Addiction: May help mitigate excessive screen time and overuse among younger users.	• Privacy Concerns: Age-verification methods (e.g., ID verification, credit card use) can raise significant privacy issues. • False Sense of Security: Banning may lead parents to believe their children are safe, while children may still bypass restrictions. • Push to Unregulated Spaces: Banned users might migrate to unregulated platforms, increasing risks of harmful exposure. • Denies Positive Benefits: Prevents children from accessing social media's educational, social, and creative opportunities. • Technological Limitations: Existing age-verification systems are not foolproof and often easy for tech-savvy children to bypass. • Enforcement Challenges: Difficult to reliably verify users' ages due to loopholes like false birth dates and VPN use.

Global Comparisons

- **United States:** Previous efforts to impose age restrictions through laws like the **Communication Decency Act, 1996**, and the **Children's Online Protection Act, 1998**, were struck down due to constitutional challenges related to free speech.
  - Current U.S. laws, such as the **Children's Internet Protection Act, 2000**, focus on ensuring online safety in schools and libraries through filtering technology.
- **India:** While Indian laws address **online child pornography** and require platforms to exercise **due diligence**, there are no restrictions on minors creating accounts on social media platforms.

KEN-BETWA RIVER LINKING PROJECT

Context

Prime Minister Narendra Modi laid the foundation stone for the **Ken-Betwa River Linking Project (KBLP)** on December 25, 2024, marking the **100th birth anniversary of former PM Atal Bihari Vajpayee**. The project has been criticized for its potential environmental impact, especially on the **Panna Tiger Reserve**.

About the Project

- The KBLP envisages transferring water from the Ken river to the Betwa river, both tributaries of the Yamuna, to address water scarcity in the **Bundelkhand region**.
- The project lies in Bundelkhand, which spreads across 13 districts of Uttar Pradesh and Madhya Pradesh.
- Under the project, a **77-metre high and 2.13 km long Daudhan dam** and **two tunnels** (upper level 1.9 km and lower level 1.1 km) will be constructed on the Ken river in the Panna Tiger Reserve
- It is the **country's first river-linking initiative**, under the **National Perspective Plan for interlinking of rivers**, which was prepared in 1980.
- **Key Features:**
  - **Total canal length:** The Ken-Betwa Link Canal will be 221 km in length, including a 2-km tunnel.
  - **Envisioned to provide:**
    - **10.62 lakh hectares** of irrigation (8.11 lakh ha in Madhya Pradesh and 2.51 lakh ha in Uttar Pradesh).
    - Drinking water for **62 lakh people**.
    - Generation of **103 MW of hydropower** and **27 MW of solar power**.
- **Phases:** The Ken-Betwa Link Project has two phases.
  - **Phase-**I will involve building the **Daudhan Dam complex** and its subsidiary units such as the Low Level Tunnel, High Level Tunnel, Ken-Betwa Link Canal and power houses.
  - **Phase-II** will involve three components — **Lower Orr Dam, Bina Complex Project and Kotha Barrage.**
- **States Involved (Regions benefitting):** Madhya Pradesh and Uttar Pradesh.
  - **Madhya Pradesh:** Panna, Tikamgarh, Chhatarpur, Sagar, Damoh, Datia, Vidisha, Shivpuri, Raisen.
  - **Uttar Pradesh:** Banda, Mahoba, Jhansi, Lalitpur.

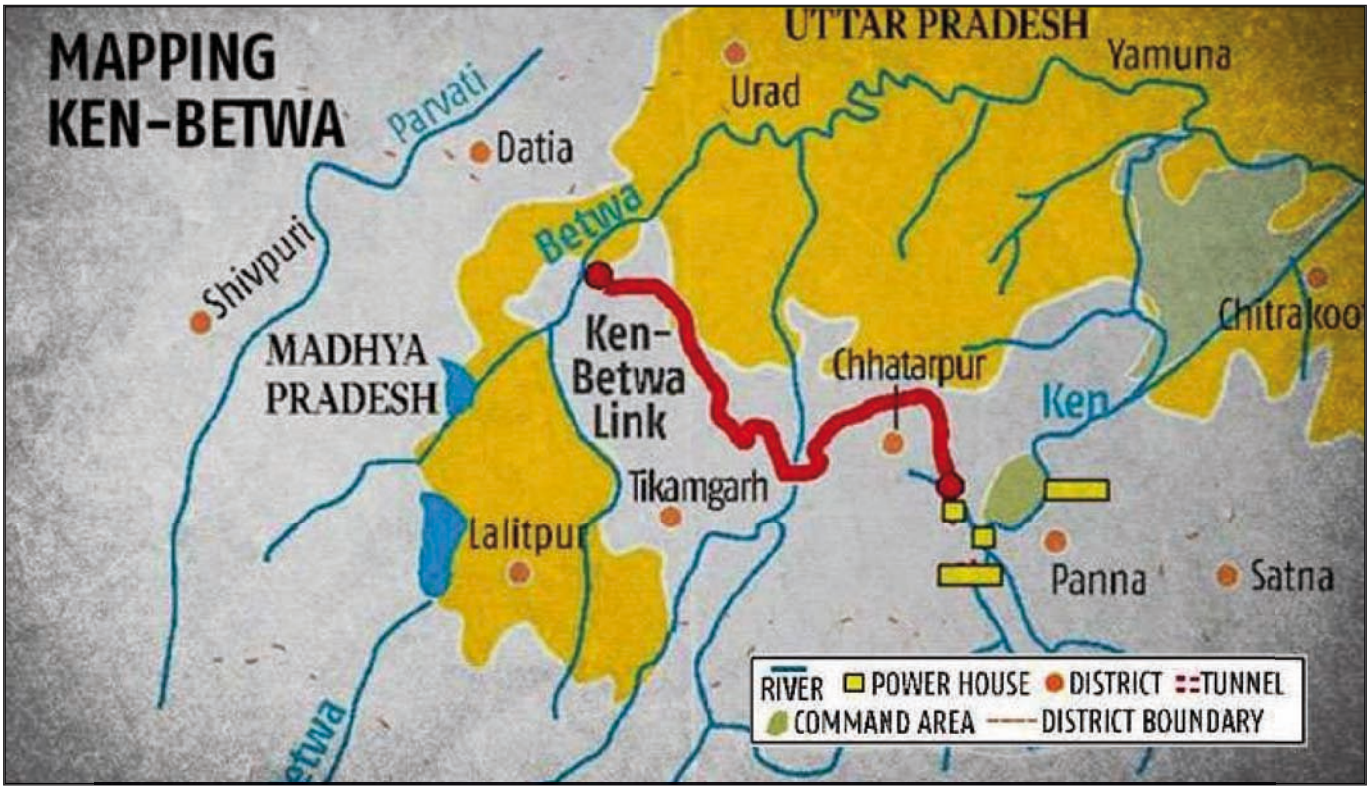

Figure No. 05

Critical Locations:

- **Daudhan Dam:** Situated inside the **Panna Tiger Reserve**, Daudhan dam is 2,031 m long, out of which 1,233 metre will be earthen and the rest 798 m will be of concrete. The height of the dam will be 77 m. The dam will submerge about 9,000 hectares of land, affecting 10 villages.
- **Ken Gharial Sanctuary:** Downstream, likely affected by changes in water flow.

- **Timeline:** The project is expected to be completed in eight years.

Challenges/Concerns

Environmental:

- **Deforestation:** Submergence of **98 sq km** of the **Panna Tiger Reserve**, leading to the loss of **2-3 million trees**.
- **Wildlife Threats:** Tigers, gharials, vultures, and other species are said to be displaced.
- **Ecological Disruption:** There are concerns over hydrological balance and rainfall patterns, with studies indicating potential rainfall deficits.

- **Social:** Approximately **5,228 families** in Chhatarpur and **1,400 families** in Panna will be displaced due to submergence and land acquisition.
- **Economic:** Questions over the economic viability raised by the Supreme Court's Central Empowered Committee (CEC).

Significance

- **Water Scarcity Solution:** It will address acute water shortages in Bundelkhand, a drought-prone region.
- **Agricultural Boost:** It will ensure year-round irrigation for a large area of arable land, promoting agricultural productivity.
- **Energy Generation:** Renewable energy will be provided through hydropower and solar power installations.
- **National Water Strategy:** Paves the way for future river interlinking projects under India's **National Perspective Plan** (1980), which envisions 16 peninsular and 14 Himalayan river links.

What is Inter-linking of rivers?

- River Linking is a **project of linking two or more rivers** by creating a network of manually created reservoirs and canals, and providing land areas that otherwise does not have river water access and reducing the flow of water to sea using this means.
- It is based on the assumptions that surplus water in some rivers can be diverted to deficit-river by creating a network of canals to interconnect the rivers.
- **Uses:**
  - For Irrigation purposes
  - flood control in the region
  - for Livelihood needs of locals
  - Building Dams for water conservation
- The initial plan to interlink India's rivers came in 1858 from a **British irrigation engineer**, **Sir Arthur Thomas Cotton.**

FACT BOX

Panna Tiger Reserve (PTR)

- Panna National Park was created in 1981. It was declared a Project Tiger Reserve by Government of India in 1994.
- Panna Tiger Reserve (PTR) is located in the Vindhyan ranges that extend from south west to north east in the civil districts of Panna, Chattarpur and Damoh.
- The Ken river enters the reserve from the southern end and passes through it for almost 55 km.
- Nestled in northern most areas of Vindhyan range of Central India this is the only Tiger Reserve in the entire Bundhelkhand region.

Ken River

- The Ken is an interstate river between Uttar Pradesh and Madhya Pradesh.
- The Ken river, which flows through the Panna Tiger Reserve (PTR) from south to north, is home for Gharial and Mugger, and other aquatic fauna.
- It is one of the sixteen perennial rivers of Madhya Pradesh and is truly the life line of the Reserve.
- It is bounded by Vindhyan range in the south, Betwa basin on west, free catchment of Yamuna below Ken on east, the river Yamuna on north.
- **Important tributaries of Ken**: Alona, Bearma, Sonar, Mirhasan, Shyamari, Banne, Kutri, Urmil, Kail and Chandrawal.

Betwa river

- The Betwa river originates in the Raisen district of Madhya Pradesh near Barkhera village south-west of Bhopal at an elevation of about 576 metres above mean sea level.
- It is an interstate river between the two states viz. **Madhya Pradesh and Uttar Pradesh**.
- It flows in a northeasterly direction through Madhya Pradesh and enters into Uttar Pradesh near village Bangawan of Jhansi district.
- The total length of the river from its origin to confluence with the Yamuna is 590 km, out of which 232 km lies in Madhya Pradesh and the balance 358 km in Uttar Pradesh.
- **Sub-tributaries:** Bina, Jamini, Dhasan and Birma on the right bank and Kaliasote, Halali, Bah, Saga, Narain and Kaithan on the left bank.

NEW INTERCEPTION RULES AND SAFEGUARDS

Context

The Union Government notified new **Telecommunications (Procedures and Safeguards for Lawful Interception of Messages) Rules, 2024**. These rules allow certain government agencies to intercept phone messages under specific conditions, replacing the older **Indian Telegraph Rules, 1951** (Rule 419A). The new rules aim to regulate how interception orders are issued and implemented, particularly in emergency situations or in remote areas.

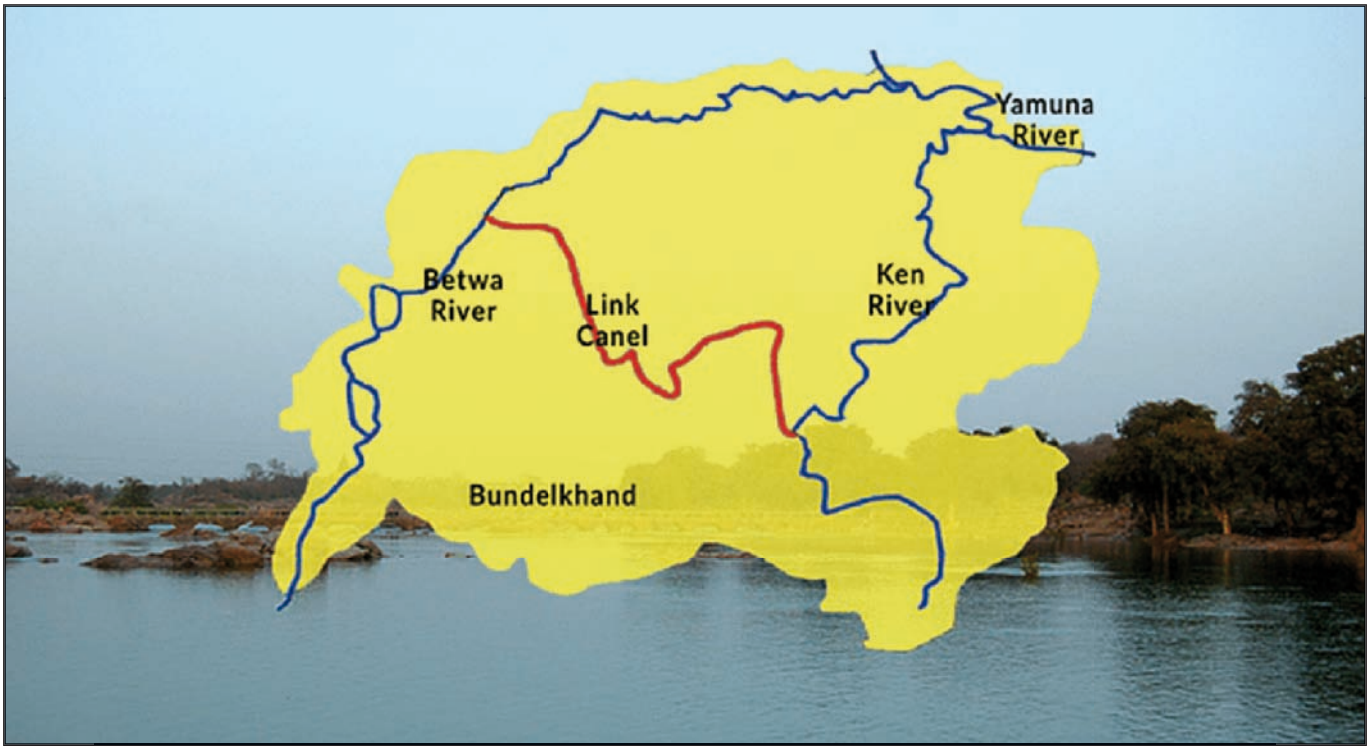

Figure No. 06

Key Takeaways

- These rules, framed under the **Telecommunications Act, 2023**, replaced earlier **Indian Telegraph Rules of 1951** concerning interception.
  - **Interception** refers to the act of secretly accessing and monitoring communication, such as phone calls, text messages, or emails, typically by a government or law enforcement agency, for specific purposes.
- **Competent Authorities for Interception Orders**: The **Union Home Secretary** and the **State Home Department Secretary** can order interception of phone messages. In unavoidable circumstances, a **Joint Secretary** from the Union Government can issue interception orders, though "unavoidable circumstances" are not clearly defined.
- **Interception in Remote Areas or Operational Reasons**: If it's difficult for the competent authority to issue an order due to remote locations or operational needs, the **head** or **second senior most officer** of the concerned agency at the central or state level (at least of **IG Police** rank) can issue an order.
  - Such orders must be confirmed by the competent authority within **7 days**. If not confirmed, interception must cease, and the messages cannot be used for any purpose, including court evidence.
- **Destruction of Interception Records**: Agencies must destroy interception records after **6 months**, unless they are needed for functional purposes or legal requirements (like court orders).
- **Relaxation of Conditions**: The previous requirement that interceptions could only happen in "**emergent cases**" has been relaxed. Now, agencies can act in situations where it is difficult for the competent authority to issue orders due to geographical or operational constraints.
- **Changes in State-Level Interception Authorization**: Earlier, there was no limit on the number of officers (IG rank) who could be authorized for interception at the state level. Now, only the **head** and **second senior most officer** can issue interception orders.
- **Seven-Day Confirmation Requirement**: If an interception order issued by an agency is not confirmed by the competent authority within **7 days**, the interception will be considered invalid, and the messages will not be usable as evidence.

Key Differences from Previous Rules

- **Relaxation on 'Emergent Cases'**: Earlier, interceptions were only allowed in "emergent cases". Now, interception is allowed even in situations where it is not feasible for the competent authority to issue orders in **remote areas** or for **operational reasons**.
- **Limitation on Seniority of Officers**: Under the older rules, multiple IG-level officers could be authorized at the state level for interception. The new rules limit this to the **head** and **second senior most officer**.
- **Time Limit for Interception Confirmation**: If an interception order is not confirmed within **7 days**, it becomes invalid, and any messages intercepted cannot be used, unlike the previous rules, where such a time limit didn't exist.

Concerns About the New Rules

- **Lack of Accountability**: While the new rules expand the conditions under which interception can occur, they do not provide sufficient **accountability** for misuse of interception powers. Specifically, there is no mention of **punitive action** if interception orders are misused, particularly in the **7-day window** before they are confirmed by the competent authority.
- **Relaxation of Safeguards**: The removal of the "**emergent cases**" condition without additional safeguards has raised concerns that the new rules may allow more frequent and potentially unwarranted interception of messages, increasing the risk of **privacy violations**.
- **Privacy Concerns**: The broader conditions under which interceptions can occur raise concerns about the **violation of privacy**, particularly due to the lack of checks and balances regarding misuse of the powers.

NUTRITIONAL CONTENT OF PACKAGED CONVENIENCE FOODS

Context:

A study on 432 convenience food products, including idli mixes, breakfast cereals, porridge mixes, beverage mixes, soup mixes, and extruded snacks (puffed foods), has revealed that most of these products are high in carbohydrates. The study also examined how nutrition information is displayed on food packaging.

Key Findings of the Study:

- **High Carbohydrates:** Most convenience food products were found to provide more than **70% of energy from carbohydrates**. Beverage mixes had the highest carbohydrate content, ranging from **35.5g to 95g per 100g**.
- **Fat Content in Snacks: Extruded snacks** (like puffed foods) had the highest fat content, with **28.3g per 100g** of fat on average, and a high amount of **saturated fat**.
- **Sugar and Sodium Levels: Beverage mixes** were high in sugar, while **soup mixes** contained **high levels of sodium** but had poor protein and dietary fiber content.
- **Healthy Food Claims:** While some foods were classified as **healthy** or **moderately healthy**, the study showed that many foods with health claims (e.g., "whole grains") didn't always include such ingredients in the list. This can mislead consumers.
- **Nutritional Labeling:** Many packaged foods didn't clearly display nutritional information per **serving size**, even though the **FSSAI** (Food Safety and Standards Authority of India) requires it.
  - A **clearer labeling system** is needed to help consumers make healthier choices.

Issues with Current Food Labeling:

- **Confusing Labels:** The current system of labeling is not uniform across all products. Some foods don't clearly mention if they are high in sugar, fat, or sodium. This makes it difficult for consumers to make informed decisions. Some products mislead consumers with claims like "contains whole grains" when the ingredient list doesn't show them.
- **Lack of Warning Labels:** There is a call for more **warning labels** on the front of packages, particularly for foods high in fat, sugar, or sodium. This would help people with specific health conditions, like high blood pressure or diabetes, avoid harmful foods.

Impact on Health:

- **Changing Diet Patterns:** Indians are spending more on **processed and packaged foods**, contributing to a rise in **non-communicable diseases** (like diabetes, heart disease, etc.).
  - The **Economic Survey** highlighted that unhealthy diets contribute to **56.4% of India's disease burden**.
- **Health Risks:** Excess carbohydrates strain the **pancreas**, increasing the risk of type 2 diabetes. Chemicals in processed foods are also linked to diseases like **fatty liver**.

Food Labelling Regulations in India

- The food labeling regulations require all "Prepackaged" or "Pre-packed food" to comply with the labeling regulations in India.
- All food products sold in India that are prepackaged must comply with the **Food Safety and Standards (Packaging and labeling) Regulations, 2011.**
- The Food Safety and Standards Regulation, 2011 is a notification issued by the **Food Safety and Standards Authority of India** under the **Ministry of Health and Family Welfare.**
- **Food Safety and Standards Authority of India (FSSAI)**
  - FSSAI, established in 2006, is the central body responsible for ensuring food safety and regulating the food industry.
  - The FSSAI sets science-based standards for food production, storage, distribution, and sale.
  - It also licenses food businesses and conducts inspections to ensure compliance.

Measures for Food Safety in India

- **World Food Safety Day** is celebrated annually on June 7 to raise awareness about food safety and encourage actions to prevent foodborne illnesses.
- **Safe and Nutritious Food (SNF) initiative** takes a citizen centric approach to transformative social and behavioural change.
- **Eat Right India** is nationwide initiative promoting safe and healthy eating habits among consumers.
- **Eat Right Station** is designed to ensure that railway stations provide safe and nutritious food options for travelers.
- **Eat Right Mela** is a public event that showcases safe and healthy food choices, often featuring workshops and demonstrations.
- **State Food Safety Index** (SFSI) serves as a benchmarking framework, both quantitative and qualitative, to assess the performance of States and Union Territories across various food safety parameters.
- **Kerala, Tamil Nadu, and Jammu & Kashmir** have emerged as the top three performers in **the State Food Safety Index (SFSI) 2024.**
- **RUCO (Repurpose Used Cooking Oil)** is an initiative to promote the safe disposal and repurposing of used cooking oil, reducing health risks and environmental impact.
- **Food Safety Mitra** is a program to support food businesses by providing guidance on food safety regulations and best practices.
- **100 Food Streets** is an initiative to promote hygiene and safety in street food vending, enhancing the quality of food sold in popular areas.

UPSC PYQ

Q: Consider the following Statements: (2018)

(1) The Food Safety and Standard Act, 2006 replaced the prevention of food Adulteration Act, 1954.

(2) The Food Safety and standards Authority of India (FSSAI) is under the charge of Director General of Health Services in the Union Ministry of Health And Family Welfare.

Which Statement given above is/ are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Solution: (a)

TARIFF REFORMS IN INDIA

Context:

Eric Garcetti, the US Ambassador to India, recently spoke at an event organized by the **US-India Business Council (USIBC)**. His comments were aimed at improving trade relations between India and the United States.

Key Points:

- **Call to Lower Tariffs:** Garcetti emphasized the importance of reducing tariffs (taxes on imports) between India and the US. He said, "We need, together, to lower tariffs, not see them go up."
- Lowering tariffs would lead to more balanced and fair trade between the two countries, and also increase trade volume.
- **President Donald Trump's Trade Stance:** Donald Trump, the US President-elect at the time, had previously threatened to impose reciprocal tariffs on India.
  - Reciprocal tariffs mean that if India charges the US high tariffs (like on American goods), the US would charge India the same amount on their goods.
- Trump highlighted this tit-for-tat approach, saying if India imposes a 100% tariff on American products, then the US would impose the same tariff on Indian products. He also mentioned other countries like Brazil who have high tariffs, adding that this policy would be applied to all countries with high tariffs.
- Garcetti stressed the need for collaboration between the US and India, especially in areas like training and talent-sharing. He suggested that both countries should work together to meet the needs of companies in the Indo-Pacific region.

India-US Trade Relations

- The US remains India's largest trade partner, with bilateral trade reaching nearly $120 billion in FY24, slightly surpassing India's trade with China.
- Unlike China, though, India enjoys a favourable trade relationship with the US, making it a critical source of foreign exchange.
- India was the sixth-largest beneficiary of the US-China trade war, with a $36.8 billion increase in exports driven by growth in electronics, pharmaceuticals, and engineering goods.
- Indian companies had invested USD 3.4 billion in the US in the past year.
- India lost duty-free access under the decades-old Generalised System of Preferences (GSP) programme in 2019, during Trump's first presidency. India, previously the largest beneficiary, saw tariff-free benefits on approximately $5.7 billion worth of exports to the US.
- Despite efforts to diversify exports, India's dependence on the US has grown significantly over the past decade.
- According to official 2022–23 data, the US accounted for 18% of India's exports, up from 10 per cent in 2010–11.

FACT BOX

India's Tariff Regime

- The Indian government has consistently raised tariff and non-tariff barriers to protect domestic suppliers across most sectors and to bolster indigenous production.
- India's average tariff rate of 17% is higher than the US's 3.3%, but similar to other major economies like South Korea (13.4%) and China (7.5%).
- However, India has demonstrated its openness to free trade by removing customs duties for imports from **FTA (free trade agreement) partners** such as **ASEAN (Association of South East Asian Nations), Japan, and South Korea.**
  - However, despite India's willingness, the U.S. has been reluctant to reduce tariffs through FTAs.
- Many nations protect domestic industries by imposing significant tariffs on certain items. **World tariff profiles 2023** published by the WTO lists the data on the highest tariff charged by countries.
  - The highest tariffs of some other countries include 457% by Japan, 887% by Korea and 350% by the US.

INDIAN ECONOMY'S GROWTH AND INFLATION CHALLENGES

Context

Weighing in on India's slowing growth and high inflation conundrum, senior Reserve Bank of India (RBI) officials asserted that the "time to act is now to excoriate inflation and revive investment strongly", even as they believed the growth trajectory is poised to lift in the second half of the year.

Key Observations

Economic Growth Trajectory

- **Current Challenges:** India's GDP growth in **Q2 2024-25** slipped to **5.4%**, driven primarily by **private consumption** and **fixed investment**. The momentum, however, was weighed down by inflation-induced pressures.

Signs of Recovery:

- Early indicators for **Q3 2024-25** suggest an upswing:
  - Festival-related economic activity.
  - A noticeable revival in **rural demand**.
- Growth is projected to rebound to **6.8% in Q3** and **6.5% in Q4**.
- **Future Outlook:** GDP growth is forecast to average **6.7% in 2025-26**, underpinned by **resilient private consumption**.

Inflation Dynamics

- **Recent Trends:** Retail inflation eased from **6.2% in October** to **5.5% in November**, aided by declining **food prices**. However, the relief is uneven:
  - **Rice prices** have fallen, but **wheat and atta prices** remain firm.
  - **Edible oil** continues to face upward price pressures.

- Prices of **onions and tomatoes** have dropped, while **potatoes** remain steady.

- **Input Cost Pressures:** Across both manufacturing and services sectors, input costs hardened in November, leading to the steepest price increases in over a decade. Firms, facing rising costs, are increasingly inclined to pass these on to consumers.

Key Challenges

- **Weakening Consumer Demand:** The repeated inflation shocks have significantly eroded purchasing power, reflecting in subdued sales growth for corporations and sluggish demand conditions.
- **Private Investment Hesitation:** A lack of robust private investment is evident, as firms rely on existing capacity rather than committing to capacity expansion amid uncertain demand.
- **Fiscal Constraints:** A slowing nominal GDP growth rate threatens to constrain fiscal spending, including **capital expenditure**, complicating efforts to meet deficit and debt targets.
- **Global Risks:** Geopolitical tensions, rising protectionism, and debt overhangs present risks to **emerging market economies (EMEs)**.
  - Currencies and equity markets in EMEs remain vulnerable to volatility in global trade and capital flows.

Policy Recommendations

- **Target Inflation Aggressively:** Timely interventions are necessary to prevent inflation from undermining industrial and export growth, especially as seasonal relief from food prices sets in.
- **Focus on Investment Revival:** Creating conditions for **capacity expansion** and **fixed asset investment** is critical to stimulate economic activity and enhance long-term growth prospects.
- **Support Private Consumption and Exports:** Measures to accelerate private consumption and bolster exports could reinforce economic resilience.

FACT BOX

Economic Concepts

- **Gross Domestic Product (GDP):** The total monetary value of all final goods and services produced within a country's borders in a specific period, serving as a key indicator of economic performance.
- **Nominal GDP:** GDP measured at current market prices without adjusting for inflation, reflecting the value of goods and services in today's prices.
- **Real GDP:** GDP adjusted for inflation, reflecting the actual value of goods and services in constant prices over time.
- **Inflation:** The rate at which the general price level of goods and services in an economy rises, reducing the purchasing power of money.
- **Disinflation:** A slowdown in the rate of inflation while prices are still rising, indicating controlled inflationary pressures.
- **Retail Inflation (CPI):** Inflation measured using the Consumer Price Index (CPI), which tracks the price changes of a basket of consumer goods and services commonly purchased by households.
- **Headline Inflation:** A measure of total inflation within an economy, including volatile items like food and fuel.
- **Capital Expenditure (Capex):** Long-term investments made by the government or private entities to build infrastructure, acquire assets, or develop new projects.
- **Fiscal Deficit:** The shortfall when a government's total expenditure exceeds its total revenue (excluding borrowings) in a given financial year.

Global Economic Trends

- **Protectionism:** Government policies aimed at restricting imports to protect domestic industries, often through tariffs or quotas.
- **Emerging Market Economies (EMEs):** Economies in developing countries that are in the process of rapid industrialization and integration into global markets.

INDIA'S GROWING UNDERSEA CABLE NETWORK

Context

India's undersea cable network is expanding rapidly, driven by growing data usage and geopolitical considerations. The country is set to launch two new major undersea cable systems, the **India Asia Xpress (IAX) and the India Europe Xpress (IEX)**, which will further bolster India's global internet connectivity and strategic importance in the digital world.

Key Details of the New Cable Systems:

- **India Asia Xpress (IAX):** It will connect Chennai and Mumbai with Singapore, Thailand, and Malaysia in Asia. It is owned by Reliance Jio, with a strategic investment from China Mobile.
- **India Europe Xpress (IEX):** It will connect Chennai and Mumbai with France, Greece, Saudi Arabia, Egypt, and Djibouti. It is aimed at improving India's connectivity with Europe and the Middle East.
- These two systems are 15,000 km long combined, and will add to the dozens of other undersea cables that land in India, mainly in Mumbai and Chennai.
- These expansions are not only about handling growing internet traffic but also reflect India's increasing geopolitical ambition in the realm of undersea cable networks.

Significance of the undersea cable network

- A subsea or submarine cable is a fiber-optic cable laid in the ocean, connecting two or more landing points.
- The expansion of India's undersea cable network comes at a time when submarine cable security is becoming a global concern.
- The new cables will help strengthen India's defense strategy by ensuring the resilience of these cables against:
  - Physical damage (e.g., natural disasters, sabotage).
  - Cyberattacks from state or non-state actors.
- India's growing role as a maritime cable network player is expected to focus on key areas like the **Bay of Bengal and the South China Sea**, where cable networks are vulnerable. India's proactive involvement in these regions is anticipated to have significant geopolitical implications.
- Given India's growing dependence on digital connectivity, submarine cables have become indispensable for its international communications.
- The country is connected globally through multiple submarine cable systems, such as the **Southeast Asia-Middle East-Western Europe (SEA-ME-WE) system, the Bay of Bengal Gateway (BBG) system, and the India-Middle East-Western Europe (IMEWE) system.**
- **Choke Points and Vulnerabilities:** The issue of choke points in global submarine cable networks is another concern.
  - **For example**, all cables from Mumbai and Chennai to Singapore pass through the **Malacca Strait,** which poses a risk if there were to be a major incident there, potentially disrupting all four cables simultaneously.
  - To mitigate this, there are discussions around exploring alternative routes, like connecting **India and Singapore** by passing the **Malacca Strait.** However, such a solution is still in development.

STARLINK USAGE BY MILITANTS IN MANIPUR

Context

Billionaire **Elon Musk** has recently denied claims that his space company **SpaceX's Starlink** satellite internet technology is being used by militants in **Manipur**, following the discovery of Starlink devices seized by the **Indian Army** and police.

What is Starlink?

- Starlink is a satellite internet system launched by **SpaceX**.
- It uses a **constellation of low Earth orbit satellites** to provide high-speed, low-latency broadband internet to users, especially in remote or underserved areas.
- The system is designed to allow activities such as **streaming**, **video calls**, **gaming**, and other data-heavy services.
- **How it works**: Starlink satellites orbit at **around 550 km** above the Earth and provide global coverage, but the company **restricts service** in certain countries and regions, where it does not have regulatory approval.
- **Geographical restrictions**: If Starlink is not authorized in a specific country, the satellites will **block communication** with devices within those regions.

Can Militants Use Starlink in India?

The primary question is whether **militants in Manipur** can effectively use **Starlink** in India, given that the service is not officially authorized there. Several factors affect this:

- **Starlink's Geographical Restrictions**: Starlink devices are programmed to **not function** in areas where the service is not allowed, based on **geographic location data** from the terminal.
- **Possibility of Using Foreign Devices**: **If a Starlink terminal is bought abroad**, for example from a country where the service is authorized, it could potentially be used in India.
  - However, the device has a built-in **geographic location identifier**, which could prevent it from operating in restricted regions if the system detects it's in an unauthorized country.
- **Use of VPNs**: Starlink supports the use of **VPNs** (Virtual Private Networks) to access the internet, which could potentially allow users to **bypass regional restrictions**. However, using a VPN can **impact performance** and might not guarantee seamless access.
- **Enabling Service Despite Restrictions**: The possibility that Starlink devices can be **bought outside India** and used within the country raises concerns about the control over satellite signals. **Musk** himself has claimed that Starlink **deactivates devices** used by unauthorized parties after an investigation.

Regulatory and Legal Concerns:

India has strict regulations around satellite-based communication systems. For instance:

- Under the **Indian Wireless Act** and **Indian Telegraph Act**, the use of satellite phones and services like Starlink without proper authorization is **illegal**.
- Devices like **Iridium satellite phones** have been **seized in India** when used illegally, particularly in conflict zones such as **Kashmir**.

The Indian government is also wary about the potential misuse of Starlink by **non-state actors** or **militants**, especially in sensitive regions like Manipur.

CEPHALOPOD COGNITION

Context

In recent years, there has been growing interest in the **intelligence of cephalopods**—octopuses, squid, and cuttlefish—due to their remarkable **cognitive abilities**. As more is discovered about their brain structures, learning capacities, and behaviors, there are increasing calls for better treatment of these highly intelligent animals, especially in captivity.

About Cephalopods:

- Cephalopods are marine animals that belong to the **mollusk group** and include **octopuses, squid, cuttlefish, and the chambered nautilus**.
- These animals vary widely in size and behavior, from tiny squid only a few millimeters long to massive species like the giant and colossal squid, which can grow over 40 feet long and weigh up to 450 kg.
- While cephalopods live in diverse environments—from the deep ocean to vibrant coral reefs—they all share some remarkable features, including:
  - advanced hunting skills
  - excellent vision
  - highly developed nervous systems
- These creatures are famous for their ability to change color and texture, communicate, and exhibit complex learning behaviors, all of which hint at their intelligence.
- **Intelligence of cephalopods:** The intelligence of cephalopods is still being studied, but some interesting facts have emerged:
  - **Brain Size and Neurons**: Octopuses, especially the common **octopus (*Octopus vulgaris*),** have around 500 million neurons, which is relatively large for their small body size. This is similar to the number of neurons in a rabbit or turkey. What's unique about octopuses is that over half of their neurons are not located in their central brain but in their arms, allowing them to perform complex tasks like opening jars and solving puzzles independently.
  - **Behavioral Evidence**: Cephalopods are known for their learning abilities. For instance, the common **cuttlefish (*Sepia officinalis*)** can form associations, learning to predict when food will appear based on visual cues. They can also perform more complex tasks like reversal learning, where they change their behavior in response to different rewards. This type of learning is seen in vertebrates like birds and mammals.
  - **Camouflage and Communication**: Many cephalopods, including **cuttlefish**, use camouflage to blend into their environment or to communicate with each other. Their ability to control hundreds of tiny pigment sacs, or **chromatophores,** in their skin allows them to create intricate patterns. Some cephalopods even use these patterns to attract mates or warn off predators.

The Science Behind Cephalopod Intelligence

While it is difficult to measure intelligence across species, scientists have developed some methods to understand cephalopod cognitive abilities:

- **Brain-to-Body Ratio:** Octopuses, with their large number of neurons relative to their size, show cognitive abilities similar to those of vertebrates like birds and rabbits. However, their brains are structured differently from mammals, with many of their neurons located in the arms rather than in the central brain.
- **Learning and Memory:** Cephalopods are not only capable of forming associations (like learning when food will appear after seeing a certain image), but they can also learn to inhibit their impulses. In a study with cuttlefish, many chose to wait for a more preferred food (live shrimp) rather than eat a less desirable snack (crab) immediately. This kind of self-control and delayed gratification is a sign of advanced cognitive abilities.

NATIONAL QUANTUM MISSION (NQM)

Context

The **Union Cabinet** approved the **National Quantum Mission (NQM)** in **2023**, and the mission is set to be implemented from **2023 to 2031**. As part of the mission, India also plans to launch a **quantum satellite** in the next **2-3 years** to experiment with **quantum communications**.

What is the National Quantum Mission (NQM)?

- The **National Quantum Mission (NQM)** is an initiative by the **Department of Science & Technology** to boost India's development and use of quantum physics.
- The mission aims to revolutionize various sectors, particularly **communications and sensing systems**, by leveraging the principles of quantum physics, which can provide enhanced abilities beyond classical physics.
- **India's Quantum Satellite:** A **quantum satellite** is a spacecraft that uses **quantum physics** for **secure communications**. Unlike traditional communication technologies, quantum physics can make messages much harder to intercept, providing a higher level of security, which is crucial in the modern age of cyber threats and eavesdropping.
- The **quantum satellite** will be an essential part of India's push to explore **quantum key distribution (QKD)**, a technique in **quantum cryptography** that secures the transmission of information.
- The satellite's purpose is to facilitate long-distance, tamper-proof communication by detecting eavesdropping attempts during the transmission of quantum keys.

Why is Quantum Communication Important?

- In the world of traditional **cryptographic security**, such as **end-to-end encryption**, messages are coded and only

the recipient has the decryption key. However, **quantum computers** pose a risk as they may eventually be able to crack many of the encryption systems currently in use.

- In contrast, **quantum cryptography**, especially **Quantum Key Distribution (QKD)**, is considered much more secure because it exploits the principles of quantum mechanics to detect if someone is trying to intercept the communication.

Quantum Key Distribution (QKD):

- QKD uses **quantum physics principles**, such as **quantum measurement** and **quantum entanglement**, to secure information. In quantum communication, if someone tries to measure the quantum system (like photons), it will change the system's state, and the parties involved in the communication will be alerted that the message has been compromised.
- **Quantum measurement**: If an eavesdropper tries to intercept quantum information (e.g., photons), it alters the photons' state, signaling that the communication has been compromised.
- **Quantum entanglement**: When two quantum particles (like photons) are entangled, any change in one will immediately affect the other. This property makes the communication tamper-proof.
- These principles ensure that if an eavesdropper tries to intercept the key, they will be detected, making QKD a very secure method of transmission.

Global Implementation of QKD

- **China** currently operates the world's largest **QKD network** with **three quantum satellites** and **four ground stations**. Their experiments in quantum communication have proven successful in transmitting secure data over long distances, including demonstrations between ground stations and airborne platforms like balloons.
- In **India**, researchers from the **Raman Research Institute** in Bengaluru have identified **Hanle in Ladakh** as an ideal location for conducting QKD experiments due to its optimal atmospheric conditions for quantum communications.

Challenges in Quantum Key Distribution (QKD)

While QKD has great potential, it is still facing some challenges:

- **Hardware limitations**: QKD is heavily dependent on specialized hardware, which can be costly and difficult to upgrade.
- **Authentication issues**: Unlike traditional cryptographic systems, QKD does not inherently authenticate the source of the transmitted key, leaving room for potential vulnerabilities.
- **Infrastructure cost**: The implementation of QKD networks can be expensive, requiring substantial investments in both hardware and infrastructure.
- **Denial-of-service attacks**: If eavesdroppers detect a transmission, they can stop the message from being received, leading to interruptions in communication.
- Despite these challenges, **quantum cryptography** is seen as a step forward in securing communications, especially in the face of threats posed by **quantum computing**.

DARK MATTER AND ITS PARTICLES

Context

Physicists revised the minimum mass of dark matter particles from **10^-31** proton masses to **2.3 × 10^-30** proton masses. This change, based on **new simulations of a dwarf galaxy**, provides deeper insights into the behavior and distribution of dark matter in the universe.

What is Dark Matter?

- **Dark Matter** is an invisible substance that accounts for about **five-sixths of the total matter** in the universe.
- Though it cannot be directly observed, its presence is inferred from its gravitational effects on visible matter, such as stars and galaxies.
- Unlike ordinary matter, dark matter ***does not*** emit, absorb, or reflect light, making it extremely difficult to detect.
- **Minimum mass:** For decades, scientists have been trying to understand the properties of dark matter, particularly the **mass of its particles**. These particles are believed to be **non-zero mass** to enable the formation of large-scale structures in the universe, such as galaxies and clusters of galaxies.

The Distribution of Dark Matter

- Dark matter is thought to be **uniformly spread** across the universe, but its **distribution** on smaller scales remains uncertain.
- Early estimates, like those made by **Jacobus Kapteyn** in 1922, suggested that dark matter exists at a low density of about **0.0003 solar masses per cubic light-year**. This would mean that even in your house, there could be dark matter, with a mass equivalent to a trillion protons.
- However, this only applies on **large scales (millions of light years**), and doesn't necessarily hold **at smaller scales (e.g., inside a room or your body)**, where dark matter may be **unevenly distributed**.
- Dark matter might be spread uniformly or could exist in **clumps** (lumps). If it is spread uniformly like flour, it would be found all around us, though in very low densities.
- However, if dark matter is clumpy, there could be large regions without dark matter, with the spacing between clumps potentially spanning light years.

The Size and Nature of Dark Matter Particles

The mass of dark matter particles plays a critical role in how they interact and how they are distributed. Here's a breakdown of the behavior based on different particle masses:

- **Heavy Particles (100 proton masses or more)**: If dark matter particles had a mass of around 100 times that of a proton, the separation between them would be about **7 cm**. At this scale, dark matter particles would be present not only in your house but in your body as well.
  - The density of dark matter would be high, with particles frequently interacting with each other.
- **Moderate Mass Particles (around 10^19 proton masses)**: If dark matter particles had a mass of about 10^19 times that of a proton, the separation between them would be around **30 km**, making dark matter particles rare in everyday life. They would **occasionally visit** your house, moving at speeds around **300 km/s**.
- **Light Particles (10^-11 to 10^-31 proton masses)**: **Very light dark matter particles** (like those with 10^-11 proton masses) would have very large wavelengths and be spread out more like a **fluid** rather than discrete particles. If these particles were lighter than this, their wavelengths would be incredibly large (for example, 200 light years for particles with masses of 10^-31 proton masses).
  - As the particles become lighter, the concept of individual particles becomes less meaningful, and they behave more like a collective wave of matter. This explains why smaller masses are associated with the large-scale distribution of dark matter in galaxies and clusters.

New Insights from Computational Physics

- The most recent advances in understanding dark matter come from **numerical simulations**.
- Theoretical physicists used data from the **Leo II dwarf galaxy** (a galaxy orbiting the Milky Way) to estimate the density of dark matter within it.
- By solving the **modified Schrödinger equation** for dark matter particles, they found that the **inner regions of galaxies**, like Leo II, require **heavier dark matter particles** than previously thought.
- Particles with masses around **10^-31 proton masses** could not account for the amount of invisible mass observed in these inner regions.
- This finding suggests that the mass of dark matter particles is likely **heavier than the earlier theoretical lower bound**.
- The increased mass helps explain the **crowding of dark matter** in the inner parts of galaxies, where densities are higher.

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SECTION -B

QUICK BYTES

THANKA ANKI

Context

The annual ceremonial procession carrying the **'Thanka Anki,'** the sacred golden attire of **Lord Ayyappa**, began its journey to the **Sabarimala temple from Aranmula**. This event marks the start of the **'mandalam-makaravilakku' pilgrimage season,** a significant period for devotees of **Lord Ayyappa**.

About

- The 'Thanka Anki' is a gold garment weighing 453 sovereigns, presented to Lord Ayyappa by the Travancore royal family in the 1970s.
- The sacred attire is kept at the Aranmula Parthasarathy temple and is transported to the Sabarimala temple every year during the pilgrimage season.
- The procession carries this precious attire in a grand ceremony that has become an essential part of the annual pilgrimage.
- During the Mandala Puja, the **'Thanka Anki'** is placed on the idol of Lord Ayyappa.
  - **Mandala Pooja** at **Sabarimala Ayyappa Temple** is observed on 11th or 12th day during **Dhanu Masam**.
- Mandala Pooja is the last day of 41 days long austerity observed by devotees of **Lord Ayyappa**. The fasting begins 41 days before Mandala Puja i.e. on the first day of **Vrishchikam Masam** according to Malayalam Calendar.
- Mandala Puja is considered to be an important ritual which is observed at the Sabarimala Ayyappa Temple in Kerala.

About Sabarimala Sree Dharma Sastha Temple

- The Sabarimala Temple in Kerala is a world famous **Swamy Ayyappan temple.**
- It is located in the **western ghats** at a height of 914 m above sea level and is accessible only via foot (4 km).
- The temple is situated amidst 18 hills of the Western Ghats. It is surrounded by mountains and dense forests that are a part of the **Periyar Tiger Reserve.**
- It is dedicated to Lord Ayappa (also known as Hariharputra) who is said to be born from the union of the female avatar of Lord Vishnu (Mohini) and Lord Shiva.
  - **Naming:** During the period of Ramayana, an ascetic woman name 'Shabri' was living in this region of 18 hills. She was doing a strict penance only to meet Lord Ayappa. The temple got its name 'Sabarimala' from the woman's name.

SILIGURI CORRIDOR

Context

Union Home Minister Amit Shah highlighted the significance of the Siliguri corridor as a crucial link to Northeast India and said that the presence of Sashastra Seema Bal (SSB) in the area comes as an assurance to the entire country.

About Siliguri Corridor

- The Siliguri Corridor, also known as the Chicken's Neck, is a narrow stretch of land in West Bengal that serves as

the crucial land link between India's northeastern states and the rest of the country.

- At its narrowest, it is only 17 km wide, making it a strategically sensitive region.

Geographical Location

- **Borders:** The Siliguri Corridor is bordered by Nepal, Bangladesh, and Bhutan.
- **Route:** It stretches from the Darjeeling, Jalpaiguri, and Terai areas of West Bengal towards India's northeastern states like Assam, Sikkim, Nagaland, Arunachal Pradesh, and others.

Why is it Called the 'Chicken's Neck'?

- The corridor is called the Chicken's Neck due to its narrow width and its significance as the only land route connecting India's northeastern states with the rest of the country. The name evokes an image of a vulnerable point, much like the neck of a chicken, where any disruption could cut off access to the northeastern region.

Strategic Importance of the Siliguri Corridor

- **Geopolitical Importance:** The Siliguri Corridor is the only bridge connecting India's northeastern states to the mainland. It is critical for both military and civilian access. It is the gateway for India's movement of troops, supplies, and other military logistics to the eastern border areas, including those near China and Bangladesh.
- **Economic and Commercial Importance:** The Siliguri Corridor is a hub for trade, commerce, and tourism for several regions, including West Bengal, Sikkim, Assam, Nepal, Bhutan, and Bangladesh.
- **Connectivity for Rail and Road Networks:** The Siliguri Corridor hosts a significant rail and road network connecting West Bengal to the northeastern states, including Assam, Nagaland, and Sikkim.
- **Military Significance:**
  - The corridor is strategically important for military purposes as well. It connects military formations along the Line of Actual Control (LAC), especially those opposite China.
  - From New Jalpaiguri (NJP) Railway Station, multiple rail links extend towards important military locations. One of the critical routes moves towards Guwahati in Assam, and from there, a road network continues to the strategically important town of Tawang in Arunachal Pradesh.
  - This connectivity is essential for moving defense personnel and supplies to regions along the LAC and other sensitive borders.

C.S.I. CHURCH AND ELEANOR'S TOMB IN MUNNAR

Context

The C.S.I. Church and Eleanor Isabel May's tomb, located in Old Munnar, Idukki, Kerala, hold both historical and cultural significance, representing a key aspect of the colonial-era tea plantation industry and the enduring legacy of British influence in the region.

About

- The British began establishing tea plantations in Munnar over 125 years ago, which contributed to the development of the region as a key economic hub.
- Henry Mansfield Knight, the General Manager of the British Tea Planting Company, was one of the key figures in Munnar's early tea industry.
- **Death and Burial of Eleanor Isabel May**:
  - Eleanor Isabel May, wife of Henry Mansfield Knight, tragically died in 1894 at the age of 24 from cholera.
  - In accordance with her last wish, Henry Knight buried her on a hilltop in Old Munnar. The tomb, built to honor her, remains an iconic historical site in the region.
  - In memory of Eleanor, Henry Knight and his friends built the C.S.I. Church in Old Munnar, which was completed in 1911.
- **Architectural style**: The church was constructed in a **Scottish Gothic architectural style** using materials imported from England, including rough-hewn granite and the church bell.
  - The church's architecture reflects British influence, particularly in its use of rough-hewn granite and Scottish-style Gothic design.
- The church's location offers a scenic view of the surrounding hills, making it not only a religious site but also a significant tourist attraction in Munnar.
- Initially, services were held in English and Tamil, but today, Malayalam services are also conducted, reflecting the integration of the local culture into the church's practice.

About Munnar

- Munnar is a town in Kerala, India, in the **Western Ghats.**
- Situated at 1,500 and 2,695 meters above sea level, the British formerly used this region as their summer capital in **South India.**
- It is located at the confluence of three rivers (the **Muthirapuzha, Nallathanni, and Kundala Rivers**).
- The Munnar area is most famous for its proximity to several tea plantations.
- The ***Neelakurinji flower*** that blooms once every twelve years, plays a significant role in attracting visitors to this remarkable area.

- Another endemic plant species is the ***Strobilanthes kunthianus***, a shrub that blooms once in 18 years.

- **Forest:** Munnar's forests are categorised into three types – tropical evergreen, semi-evergreen, and shola forests.
- **National Park:** The **Eravikulam National Park** in Munnar is a protected area home to several endemic species.
- **Wildlife Sanctuary:** Munnar has several wildlife sanctuaries – the **Chinnar Wildlife Sanctuary and the Thattekad Bird Sanctuary**

UPSC PYQ

Q: Consider the following States: (UPSC 2022)

(1) Andhra Pradesh
(2) Kerala
(3) Himachal Pradesh
(4) Tripura

How many of the above are generally known as tea-producing States?

(a) Only one State
(b) Only two States
(c) Only three States
(d) All four States

Solution: (c)

ROOPPUR NUCLEAR POWER PLANT

Context

An anti-corruption outfit in Bangladesh has initiated investigation into the **USD 12.65 billion Rooppur nuclear powerplant** that is being constructed with Russian assistance.

About Rooppur nuclear power plant

- The under construction Rooppur nuclear power plant is located 160 km from Dhaka and is one of the largest nuclear projects that Russsian nuclear major Rosatom has been building.
- The deal to build the power plant was initiated in February 2011 which led to an initial contract between **Rosatomm and Bangladesh Atomic Energy Commission** in December 2015.
- Subsequently the Bangladesh Atomic Regulatory Authority issued the first site licence for the plant in June 2016. The project has been under construction since 2017 and the first unit of the nuclear power project is expected to be completed in 2025. Once fully operational the power plant will generate 2400 megawatt electricity.
- Rooppur power project led to a **trilateral agreement** among **India, Bangladesh and Russia** in 2018 when **India's nuclear players** such as NPCIL began to assist the construction of the units.

FACT BOX

India's Nuclear Power Capacity

- India has a largely indigenous nuclear power programme.
- India is committed to achieve the **Net Zero emissions target by 2070** (announced by PM Modi at the 26th session of the **Conference of the Parties (COP26)** to the **United Nations Framework Convention on Climate Change (UNFCCC)** in November 2021).
  - In this regard, India has initiated steps to increase the **share of nuclear power capacity.**
- Currently, 24 reactors supply India's **8,180 MW** of nuclear energy, with an additional 21 reactors totalling 15,300 MW under various stages of development by NPCIL.
- There has been more than a 70 percent surge in India's nuclear power capacity in the last 10 years, increasing from 4,780 MW in 2013-14 to 8,180 MW at present.
- The **annual electricity generation** from nuclear power plants has also increased from 34,228 million units in 2013-14 to 47,971 million units in 2023-24.
- India plans to add 18 reactors with a combined capacity of 13,800 MW, bringing total nuclear capacity to 22,480 MW by 2031-32.
- Major projects include four 1,000 MW plants at Kudankulam (Tamil Nadu) with Russian collaboration and four 700 MW PHWRs in Rajasthan and Haryana.
- **Three-stage nuclear power programme:** India has adopted a three-stage nuclear power programme, with the long-term goal of deploying a thorium-based closed nuclear fuel cycle.
  - **The first stage** involves the use of pressurised heavy water reactors (PHWRs), fuelled by natural uranium, and light water reactors.
  - **The second stage** involves reprocessing used fuel from the first stage to recover the plutonium to fuel FBRs.
  - **In stage 3**, Advanced Heavy Water Reactors (AHWRs) will burn thorium-plutonium fuels and breed fissile uranium-233.
- The PFBR will initially use a core of **uranium-plutoniummixed oxide (MOX) fuel**, surrounded by a **uranium-238 'blanket'**, with plans to use a blanket of uranium and thorium to "breed" plutonium and U-233 for use as driver fuels for AHWRs.

UN INTERNAL JUSTICE COUNCIL

Context

Former **Supreme Court Justice Madan B Lokur** has been appointed as **chairperson of the Internal Justice Council (IJC) by the United Nations**. He has been appointed for a 4-year tenure, which will end on 12 November 2028.

About

- The **General Assembly of UN** established the **Internal Justice Council (IJC)** as part of the new internal justice system in order to help ensure independence, professionalism and accountability in the administration of justice system of the United Nations.
- **The IJC consists of five members:** a staff representative, a management representative, and two distinguished external jurists, one nominated by the staff and one by management.
- The chair is a **distinguished jurist** chosen by consensus by the four other members.
- The IJC members are appointed by the Secretary-General.

NATIONAL HUMAN RIGHTS COMMISSION (NHRC)

Context

Retired **Supreme Court judge V Ramasubramanian** has been appointed the **new chairman of the National Human Rights Commission (NHRC)**, the nodal body which can inquire into violations of human rights by government or a public servant.

About NHRC

- NHRC is a **statutory body** tasked with safeguarding the fundamental human rights of all citizens.
- The National Human Rights Commission (NHRC) was established on October 12, 1993.
- Its statute is contained in the **Protection of Human Rights Act, 1993**, and is in conformity with the **Paris Principles** adopted at the first international workshop on national institutions for the promotion and protection of human rights held in Paris in October, 1991, and endorsed by the **General Assembly of the United Nations in Resolution 48/134 of December 20, 1993.**
- The Commission is an embodiment of India's concern for the **promotion and protection of human rights.**
- NHRC is committed to provide independent views on issues within the parlance of the Constitution or in law for the time being enforced for the protection of human rights. The Commission takes **independent stand.**
- NHRC has the **powers of a civil court** trying a suit under the **Code of Civil Procedure, 1908** in respect of summoning and enforcing the attendance of witnesses; discovery and production of any document; receiving evidence on affidavits; requisitioning any public record or copy thereof from any court or office; issuing commissions for the examination of witnesses or documents and request of public record as listed under **Section 13 of the Act.**
- **Composition:** The Commission consists of a Chairperson, five full-time Members and seven deemed Members.
- **Appointment:** The Chairperson and the members of the National Human Rights Commission are appointed by the President on the recommendations of a six-member committee consisting of:
  - The Prime Minister as its head
  - The Speaker of the Lok Sabha
  - The Deputy Chairman of the Rajya Sabha
  - The Leader of the Opposition in the Lok Sabha
  - The Leader of the Opposition in the Rajya Sabha
  - The Union Home Minister

Human Rights

- **Section 2 (d)** of the **Protection of Human Rights Act, 1993** defines human rights as rights relating to **life, liberty, equality and dignity** of the individual, guaranteed by the Constitution, or embodied in the International Covenants and enforceable by courts in India.

CENTRE ABOLISHES 'NO DETENTION POLICY'

Context

The central government has abolished the **no-detention policy** for students in classes 5 and 8, allowing schools to hold back students who fail annual examinations. The change affects more than 3,000 central government schools, including **Kendriya Vidyalayas, Jawahar Navodaya Vidyalayas and Sainik Schools.**

About the Policy change

- The policy was initially introduced as part of the **2009 Right to Education (RTE) Act** that **made free and compulsory education** a **fundamental right** for children aged 6-14 years.
- The policy change, notified on December 16 through amendments to the Right of Children to Free and Compulsory Education Rules, 2010, introduces what it calls a balanced approach to student assessment.
- While allowing schools to hold back students, it mandates remedial instruction and re-examination opportunities.
- Under the newly notified Rules, schools must provide failed students with additional instruction and a chance to retake examinations within two months.
- These assessments must be "competency-based examinations to achieve the holistic development of the child and not be based on memorisation and procedural skills."

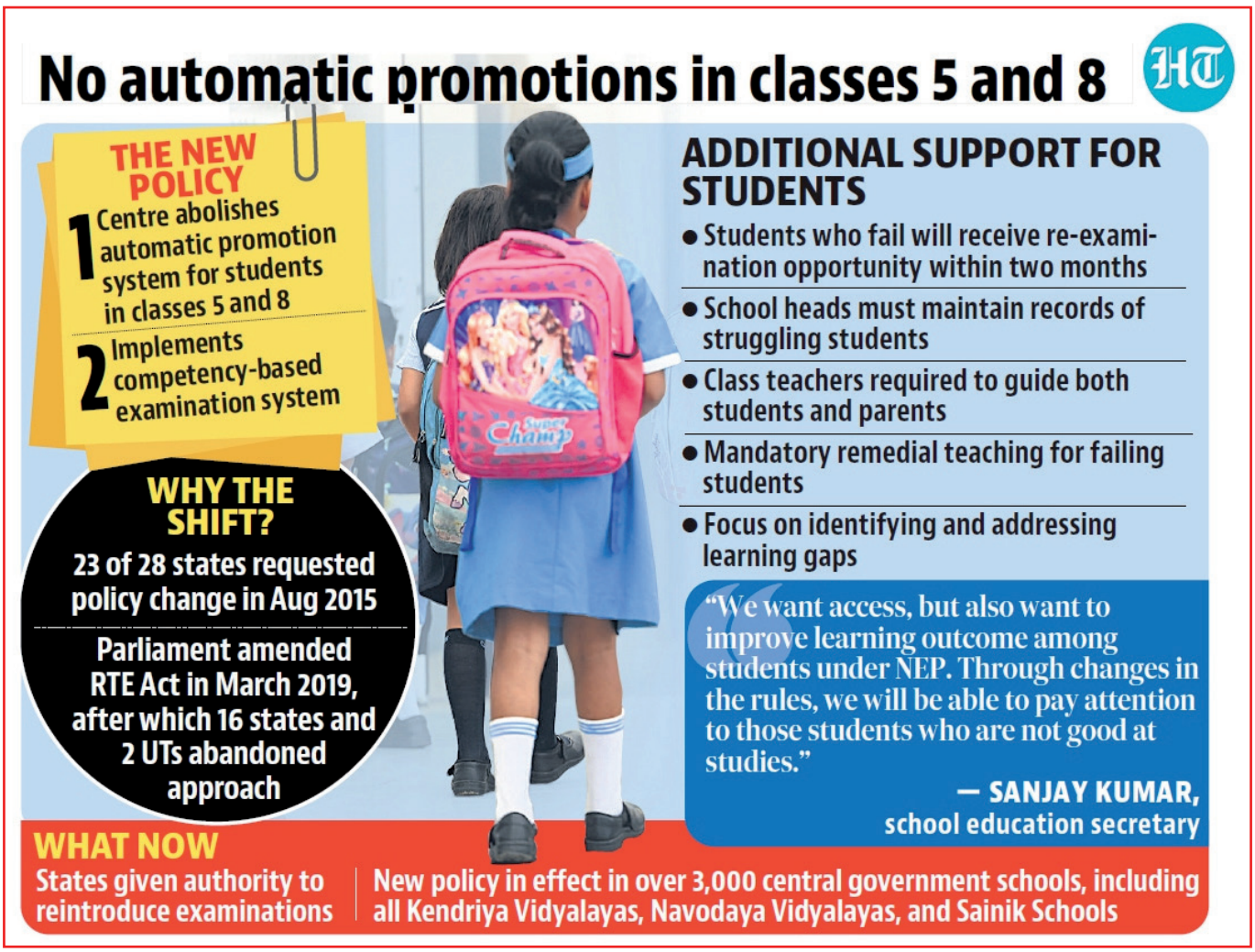

Figure No. 01

- Following the amendment to the Right to Education Act (RTE) in 2019, at least 18 states and Union Territories have already done away with the 'no-detention policy' for the two classes.

AMENDMENT TO THE CONDUCT OF ELECTION RULES

Context

The Union Government amended the **Conduct of Election Rules**, specifically changing **Rule 93 (2) (a).** This amendment limits the scope of public inspection of election documents. It effectively excludes electronic footage, such as CCTV recordings and videography of the polling process, from being **open to public scrutiny.**

Key Changes in the Amendment:

- **Old Rule:** The previous version **of Rule 93 (2) (a)** stated that **"all other papers relating to the election shall be open to public inspection."** This meant that any document related to the election could be accessed by the public.
- **New Rule:** The new version specifies that **"all other papers as specified in these rules relating to the election shall be open to public inspection."** This effectively limits the documents available for public inspection to those specifically mentioned in the rules, excluding electronic records like CCTV footage of the polling process.
- The amendment limits public inspection to only specified election documents, such as nomination forms, and excludes CCTV footage and electronic records from public view.
- While this change restricts access to video footage, it does not affect candidates who continue to have access to all election documents.

SVAMITVA SCHEME

Context

Four years after launching the Svamitva scheme to digitize property records in rural India, Prime Minister Narendra Modi is set to hand over 5.8 million property cards to their owners in over 50,000 villages across 12 states.

What is the Svamitva scheme?

- SVAMITVA (Survey of Villages and Mapping with Improvised Technology in Village Areas) is a **Central Sector Scheme** launched by the **Ministry of Panchayati Raj**.

- It was launched in 2020 to provide rural property owners with official "Records of Rights," granting them access to bank loans, reducing disputes, and improving village-level planning.
- **Progress so far:**
  - Currently, it has been implemented across 31 states and Union territories.
  - A total of 20.19 million property cards have been issued under the Panchayati Raj scheme so far.
  - 92 per cent of drone mapping has been completed in 317,000 villages. The scheme is on track to meet its targets by 2026.

Significance of the initiative

- Banks are increasingly accepting these property cards, which have helped many women establish legal rights over land.
- In essence, the scheme has facilitated the identification of open spaces and contributed to enhanced community development.

Ministry of Tourism has sanctioned a total of 76 projects for an amount of Rs.5287.90 Crore under the Swadesh Darshan Scheme, out of which 75 projects are physically complete.

MINISTRY OF TOURISM'S INITIATIVES TO PROMOTE TOURISM

Context

The Ministry of Tourism in 2024 focused on **infrastructure development**, **sustainable tourism**, **global promotion**, and **skill development**, with initiatives under schemes like **Swadesh Darshan 2.0**, **PRASHAD**, and **SASCI**.

Major Initiatives and Achievements of the Ministry of Tourism in 2024

- **Swadesh Darshan Scheme:** Ministry of Tourism has sanctioned a total of 76 projects for an amount of Rs.5287.90 Crore under the Swadesh Darshan Scheme, out of which 75 projects are physically complete.
  - The scheme has been revamped as **Swadesh Darshan 2.0 (SD2.0)** to focus on sustainable and responsible tourism.
  - **34 projects sanctioned** under SD2.0 worth **₹793.20 crore**.
  - Introduced a **Challenge-Based Destination Development** initiative with four thematic categories:
    - **Spiritual Tourism**, **Culture & Heritage**, **Vibrant Villages**, and **Ecotourism**.
    - **42 destinations** identified for development under these themes.
- **PRASHAD Scheme (Pilgrimage Rejuvenation and Spiritual Augmentation Drive): 48 projects sanctioned** worth **₹1646.99 crore**; **23 projects completed**.
- **Assistance to Central Agencies Scheme: 65 projects sanctioned** worth **₹937.56 crore**; **38 projects completed**.
- **Special Assistance to States for Capital Investment (SASCI): 40 projects sanctioned** across **23 states** for **₹3295.76 crore** to develop **iconic tourist centers** with interest-free loans for 50 years.
- **Tourism Statistics (2023)**
  - International Tourist Arrivals (ITAs): 18.89 million.
  - Foreign Tourist Arrivals (FTAs): 9.52 million.
  - Domestic Tourist Visits (DTVs): 2509 million.
  - Foreign Exchange Earnings (FEEs): ₹231,927 crore.

Swadesh Darshan Scheme

- Swadesh Darshan is a **Central Sector Scheme.**
- The scheme was launched in 2014-15 for the integrated development of theme-based tourist circuits.
- Under the scheme, the Ministry of Tourism provides financial assistance to State governments, Union Territory Administrations, or Central Agencies for the development of tourism infrastructure in the country.
- The Ministry of Tourism has now revamped its **Swadesh Darshan scheme as SD2.0** with the objective to develop sustainable and responsible destinations following a tourist & destination centric approach.

PRASHAD Scheme

- Ministry of Tourism under its **'Pilgrimage Rejuvenation and Spiritual Heritage Augmentation Drive' (PRASHAD) Scheme** provides **Financial Assistance** to the State Governments and Union Territories Administration for development of Tourism Infrastructure at the Pre-Identified Pilgrimage destinations/Heritage Cities.
- Under this Scheme, infrastructure interventions are carried out in consultation with the State Governments/UTs.
- Ministry of Tourism, from time to time receives proposals from various sources regarding development of infrastructure under PRASHAD Scheme and these proposals are evaluated as per scheme guidelines and established procedures.

WORLD MEDITATION DAY

Context

On 21st December 2024, the world observed its first-ever **World Meditation Day,** a significant milestone following the **United Nations General Assembly's resolution**.

What is Meditation?

- According to the United Nations, meditation is an **ancient practice** that focuses on the present moment,

and is deeply rooted in **religious, yogic, and secular traditions across cultures.**

- It has been practiced for thousands of years and, today, it is widely embraced as a powerful tool for mental health and personal well-being.
- Meditation is most commonly defined as a practice where an individual uses techniques like mindfulness, focused attention, or concentration to train the mind.
- The goal is to reach a state of mental clarity, emotional calmness, and physical relaxation.
- Meditation has various forms, each designed to cultivate calm, clarity, and balance.

EFTA-INDIA TEPA

Context

The Swiss government recently announced its decision to suspend the **Most Favoured Nation (MFN)** clause in the **Double Taxation Avoidance Agreement (DTAA)** with India. However, the decision will not delay the ratification and implementation of EFTA-India TEPA.

What is EFTA-India TEPA?

- India and the four-nation **European Free Trade Association (EFTA)** signed the pact, officially dubbed as **TEPA (Trade and Economic Partnership Agreement),** in March.
- Its members are **Iceland, Liechtenstein, Norway, and Switzerland.**
- This trade agreement is expected to enhance trade relations between India and the EFTA bloc, including Switzerland, **irrespective of the MFN issue**.
- The agreement is yet to be implemented.

India-Switzerland Trade

- In 2023-24, India's imports from Switzerland stood at USD 21.24 billion, in stark contrast to its exports of USD 1.52 billion, leading to a substantial trade deficit of USD 19.72 billion.
- India received about USD 10.72 billion in foreign direct investments from Switzerland between April 2000 and September 2024.

European Free Trade Association (EFTA)

- EFTA is an important regional group, with several growing opportunities for enhancing international trade in goods and services.
- EFTA is one important economic block out of the three (other two - EU &UK) in Europe.
- Among EFTA countries, Switzerland is the largest trading partner of India followed by Norway.

55TH GST COUNCIL MEETING

Context

The **55th meeting of India's Goods and Services Tax (GST) Council**, was held in Jaisalmer, Rajasthan, significant attention was given to addressing pressing economic issues such as food inflation, unemployment, rural job creation, and maintaining capital expenditure momentum.

Key takeaways from the 55th GST Council meeting:

- **Increase in GST for used electric vehicles (EVs):** The Council approved raising the GST rate on old and used electric vehicles from **12 per cent to 18 per cent**.
  - This move aims to align the tax structure of used EVs with that of new EVs, which are currently taxed at 5 per cent.
- **Hike in GST for small petrol and diesel cars:** A decision was made to increase the GST rate on small petrol and diesel cars from 12 per cent to 18 per cent. This adjustment is intended to standardise tax rates across different vehicle categories.
- **Tax relief on health and life insurance premiums:** The Council granted full GST exemptions on term life insurance premiums and health insurance premiums for senior citizens. Additionally, health insurance policies with coverage up to Rs 5 lakh for other individuals will also enjoy tax relief. This measure is expected to make insurance more affordable and accessible.
- **GST rate adjustments on luxury goods**: To boost revenue, the Council decided to increase GST rates on luxury items such as high-end wristwatches and shoes. This change is projected to generate an additional Rs 22,000 crore annually.
- **Reduction in GST on essential items:** In an effort to reduce household expenses, the Council lowered GST rates on essential goods, including bicycles, exercise books, and large packs of packaged drinking water. This move is aimed at providing relief to consumers.

GST Rate Changes

- **GST Rate Reduction on Fortified Rice Kernel (FRK):** The GST rate on Fortified Rice Kernel (FRK), classifiable under HSN 1904, reduced to 5% from existing GST rate of 18%.
- **GST Exemption on Gene Therapy:** To exempt GST on gene therapy.
- **IGST Exemption on Long Range Surface to Air Missile System (LRSAM):** To extend IGST exemption to systems, sub-systems, equipment, parts, sub-parts, tools, test equipment, and software meant for the assembly/manufacture of LRSAM system under Notification 19/2019- Customs.
- **Compensation Cess Reduction for Merchant Exporters:** Rate of compensation cess to be reduced to 0.1% on supplies to merchant exporters. Reduction recommended to bring the compensation cess rate at par with the GST rate.

FACT BOX

GST Council

- In order to implement GST, the **Constitution (One Hundred and First Amendment) Act, 2016** was enacted.
  - Since then the **GST council** and been notified bringing into existence the Constitutional body to decide issues relating to GST.
- As per **Article 279A (1)** of the amended Constitution, the GST Council has to be constituted by the President within 60 days of the commencement of Article 279A.
- The GST Council is a **constitutional body** responsible for making recommendations on issues related to the implementation of the Goods and Services Tax (GST) in India.
- **Composition:** The GST Council shall consist of the following members:
  - The Union Finance Minister
  - The Union Minister of State in charge of Revenue or Finance
  - The Minister in charge of Finance or Taxation or any other Minister nominated by each State Government
  - Any person nominated by the Governor of the State where there is a proclamation of emergency under Article 356 of the Constitution of India
- The GST Council decides tax rates, tax exemptions, the GST return due dates, tax laws, and other compliance deadlines, keeping in mind special rates and provisions for some states.
- **Current GST Rate Structure**: Currently, GST is applicable in 5 slabs, including 0% or nil tax. They are 0% (Nil tax), 5%, 12%, 18% and 28%.
- **Essential commodities** primarily belong to 0% and 5% tax slabs, while semi-essential items are taxed at 12% and 18% slabs. Luxury items attract the highest GST rate of 28%.

UPSC PYQ

Q: What is/are the most likely advantages of implementing 'Goods and Services Tax (GST)'? (UPSC 2017)

(1) It will replace multiple taxes collected by multiple authorities and will thus create a single market in India.

(2) It will drastically reduce the 'Current Account Deficit' of India and will enable it to increase its foreign exchange reserves.

(3) It will enormously increase the growth and size of the economy of India and will enable it to overtake China in the near future.

Select the correct answer using the code given below:

(a) 1 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

Solution: (a)

Q: Consider the following items: (UPSC 2018)

(1) Cereal grains hulled

(2) Chicken eggs cooked

(3) Fish processed and canned

(4) Newspapers containing advertising material

Which of the above items is/are exempted under GST (Good and Services Tax)?

(a) 1 only

(b) 2 and 3 only

(c) 1, 2 and 4 only

(d) 1, 2, 3 and 4

Solution: (c)

BORDOIBAM-BILMUKH BIRD SANCTUARY

Context

A recent study on avian diversity at **Bordoibam-Bilmukh Bird Sanctuary (BBBS)** in northeastern Assam has revealed a significant decline in bird species over the past 27 years. The study, published in the **Journal of Threatened Taxa**, highlights a **72% decrease** in the number of bird species in the sanctuary since 1997.

Key-Findings

- **Decline in Bird Species:**
  - In **1997**, **167 avian species** were recorded in the sanctuary.
  - In the recent survey (2022-2024), only **47 species** across **16 orders** and **29 families** were observed, marking a **71.85% decline**.
  - This decline has been especially sharp since **2018**, according to the study.
  - A 2011 survey recorded **133 species**, including **86 resident species**, **23 migratory species**, and **24 local migrants**.
- **Anthropogenic Causes:** The study cites several human activities contributing to the decline in bird species:

- **Overfishing** and excessive harvesting of aquatic plants.
- **Poaching of birds** such as the **lesser whistling duck**, **fulvous whistling duck**, **white-breasted waterhen**, and **yellow-footed green pigeon**.
- **Bird egg collection**.
- **High-decibel machinery** used for agriculture near water bodies, disturbing the birds' natural habitats.
- The sanctuary is also being used as a **pasture area**, further disturbing the local bird populations.

- **Impact of Habitat Degradation:** The **degradation of wetland habitats** leads to:
  - **Decline in the water table**.
  - **Disruption of the food chain** and nutrient cycles.
  - A negative impact on the **migratory bird populations**.
    - This not only harms the bird species but also disrupts the entire ecosystem, affecting human populations too.

Bordoibam-Bilmukh Bird Sanctuary (BBBS)

- Bordoibam-Bilmukh is a **small wetland** that provides shelter and breeding ground to many resident and migratory birds.
- This wetland originated from the **River Subansiri.** A major earthquake created this wetland in 1950.
- The sanctuary is located in Dhemaji and Lakhimpur districts, covering an area of 11.25 sq. km at an elevation of 90-95 meters above sea level.
- A large number of migratory waterfowl are seen in winter while some globally threatened species such as the *Spot-billed Pelican Pelecanus philippensis* and *Lesser Adjutant Leptoptilos javanicus* are seen all over the year.
- The wetland is fringed by tall emergent vegetation, mainly *Arundo donax*, where the *Swamp Francolin Francolinus gularis* was not uncommon some years ago.

Assam's Biodiversity:

- Assam is one of the most **biodiversity-rich states** in India, home to about **950 bird species**, including **17 endemic species**.
- The state has **55 Important Bird and Biodiversity Areas (IBAs)**, which are crucial for the conservation of various avian species.
  - Panidihing Bird Sanctuary of Sivasagar district; Jhanjimuk-Kokilamuk IBA complex of Jorhat district; Orang National Park; Raimona National Park; Bornodi Wildlife Sanctuary; Loharghat forest range of Kamrup district

LION TAILED MACAQUE (*MACACA SILENUS*)

Context

A recent study highlights the growing threats to the **critically endangered lion-tailed macaque**, endemic to the **Western Ghats of India**, due to increasing human-wildlife interactions.

About the Lion-Tailed Macaque

- The Lion Tailed Macaque (*Macaca silenus*) is an old world monkey.
- It is a relatively small-sized macaque with a furless black face and a white 'mane'.
- Covered in a thick coat of black fur, its short tail ends in a tuft, which is why it is known as the Lion-tailed Macaque.
- **Conservation Status:**
  - **IUCN Red List:** Endangered.
  - **CITES:** Listed under Appendix I, providing the highest level of protection.
- **Habitat:** They are found exclusively in the **Western Ghats**, across fragmented forests in areas such as **Anamalai Hills, Nelliyampathy, Nilambur Ghats, Sholayar, Sabarimala, Agumbe**, and others.
- **Population:** Approximately **4,200 individuals** remain in the wild.

UPSC PYQ

Q: Consider the following fauna: (UPSC 2023)

(1) Lion-tailed Macaque
(2) Malabar Civet
(3) Sambar Deer

How many of the above are generally nocturnal or most active after sunset?

(a) Only one (b) Only two
(c) All three (d) None

Solution: (c)

PAPIER MÂCHÉ DODOS (REVIVING EXTINCT DODO BIRD)

Context

This Christmas, artisans in Srinagar have breathed new life into the **extinct dodo bird**, which disappeared from the world in 1681, using the age-old craft of **papier mâché**. These colorful, symbolic creations serve not only as artistic expressions but also as poignant reminders of the bird's tragic extinction and its connection to the environment.

About

- Kashmiri papier mâché dodos are not merely replicas; they are **vibrantly colored** and adorned with **floral and forest motifs**.
- These prints symbolize the connection between the bird and the forests, which were largely responsible for its extinction due to habitat loss.
- While the real dodo was known for its **grey or brown plumage**, the papier mâché versions are embellished with bright and symbolic patterns, making them a striking blend of tradition and environmental advocacy.
- **Kashmir's Papier Mâché Craft:** Kashmir's papier mâché craft has a rich history of over **600 years**, with its roots deeply embedded in **Persian art**.
  - Traditionally, artisans would create items such as **decorative bowls**, **plates**, and **figurines**, often influenced by Persian designs. The introduction of the dodo to this craft scene is a **recent development**.

About Dodo (*Raphus cucullatus*)

- The dodo (*Raphus cucullatus*) is an extinct flightless bird that was endemic to the island of Mauritius, which is east of Madagascar in the Indian Ocean.
- The dodo was a flightless relative of pigeons and doves.
- Dodo is the national emblem of Mauritius.
- **Appearance:** Dodos were large birds, approximately three-feet tall, with downy grey feathers and a white plume for a tail. The Dodo had tiny wings and its sternum – an area with strong wing muscles for flying birds – was correspondingly small.
- Its closest living relative is the Nicobar pigeon, a much smaller flying bird that ranges across the southern Pacific.
- The Dodo became extinct because of deforestation, hunting, and destruction of their nests by animals brought to the island by the Dutch.

INDIA STATE OF FOREST REPORT 2023 (ISFR 2023)

Context

India's forest and tree cover has shown positive growth, according to the **India State of Forest Report (ISFR) 2023**, which highlights significant increases in forest area and carbon sequestration efforts.

Forest and Tree Cover Statistics:

- **Total Forest and Tree Cover:** As of 2023, India's total forest and tree cover stands at 827,357 sq km, or 25.17% of the total geographical area, marking a net increase of 1,445 sq km from 2021.
- **Forest Cover**: The forest cover alone has grown from 713,789 sq km in 2021 to 715,343 sq km in 2023, now covering 21.76% of the geographical area.
- **Tree Cover:** India's tree cover increased by 1,289 sq km, reaching 3.41% of the total geographical area.

Carbon Stock and Sequestration:

- **Carbon Sink:** India has created an additional 2.29 billion tonnes of carbon sink compared to 2005 levels, contributing significantly to its climate goals.
- **Carbon Stock:** The total carbon stock in India's forests and tree cover in 2023 is estimated at 7,285.5 million tonnes, an increase of 81.5 million tonnes since 2021.
- By 2030, India aims to increase its carbon stock to 31.71 billion tonnes through enhanced forest and tree cover as part of its **Nationally Determined Contributions (NDCs)** under the **Paris Agreement.**

- **Bamboo and Forest Cover Details**: India's bamboo-bearing area is now estimated at 154,670 sq km, marking a 5,227 sq km increase from 2021.
  - **State-wise Performance:**
    - Chhattisgarh (+684 sq km), Uttar Pradesh (+559 sq km), Odisha (+559 sq km), and Rajasthan (+394 sq km) saw the largest increases in combined forest and tree cover.
    - Mizoram, Gujarat, and Odisha recorded the highest gains in forest cover.

Forest Cover in Hill and Northeastern Regions:

- **Hill Districts**: India's hill districts have a total forest cover of 283,713 sq km, which constitutes 40% of the geographical area in these regions. The forest cover in these districts increased by 234.14 sq km.
- **Northeast Region**: The northeastern region, which has a total forest and tree cover of 174,394.7 sq km (67% of the region's geographical area), saw a decrease of 327.3 sq km in forest cover.

Other Key Findings:

- **Mangrove Cover**: India's total mangrove cover stands at 4,991.68 sq km, with a slight decrease of 7.43 sq km since 2021.
- **Western Ghats and Eastern States**: An analysis of forest cover changes over the last decade shows an overall loss of 58.22 sq km in the Western Ghats and Eastern States Area (WGESA), despite gains in very dense forests.

- While the overall area of very dense forests increased by 3,465.12 sq km, moderately dense and open forests saw a decline of 1,043.23 sq km and 2,480.11 sq km, respectively, over the past decade.

India State of Forest Report (ISFR)

- India State of Forest Report (ISFR) is brought out by the **Forest Survey of India (FSI)** on a biennial basis since 1987.
- FSI carries out in-depth assessment of the forest and tree resources of the country based on interpretation of Remote Sensing satellite data and field based National Forest Inventory (NFI), and the results are published in the ISFR.
- The India State of Forest Report 2023 is 18th such report in the series.

MUMPS VACCINE

Context

Tamil Nadu has requested the Government of India (GoI) to include the **mumps vaccine** in the **Universal Immunisation Programme (UIP)**, following a significant rise in mumps cases across the state.

Need for Mumps Vaccine Inclusion:

- The **Measles, Mumps, and Rubella (MMR) vaccine** only offers 78% protection against mumps, although offering 93% protection against measles and 97% protection against rubella.
- The Union Health Ministry excluded the vaccination in 2016, citing its limited efficacy and the belief that mumps would not become serious.
- According to the **Tamil Nadu Journal of Public Health and Medical Research**, mumps cases have been steadily increasing, with a sharp rise in 2024. The number of cases surged from **129 in 2022-23** to **1,091 in 2023-24**.
- The **Measles, Mumps, and Rubella (MMR) vaccine** to the routine immunisation schedule, which currently covers 12 vaccine-preventable diseases under the UIP.
- Tamil Nadu's UIP currently includes vaccines for diseases such as tuberculosis, diphtheria, pertussis, hepatitis B, and measles (the **Measles-Rubella** vaccine was added in 2017). However, the mumps vaccine is not part of this programme, despite rising cases.

FACT BOX

About Mumps

- Mumps is an **acute viral illness** caused by a ***paramyxovirus*** called the mumps virus.
- It is a **contagious viral illness** that causes swelling in the salivary glands, usually in the cheek and jaw area.
- Mumps is typically spread through direct contact with saliva or respiratory droplets from an infected person and is said to be as contagious as the flu.
- **Incubation period:** The average incubation period is 16 to 18 days, but it can also range from 12 to 25 days.
- Virus is acquired by **respiratory droplet transmission.** It replicates in the **nasopharynx and regional lymph nodes**.
- Associated complications
  - Orchitis (swelling of testicles)
  - Oophoritis (swelling of ovaries)
  - Encephalitis (swelling or inflammation in the brain)
  - Meningitis (swelling or inflammation of the membranes around the brain and spinal cord)
  - Loss of hearing
  - Pancreatitis (swelling of the pancreas)

Universal Immunisation Programme (UIP)

- The **Universal Immunization Programme (UIP)** is one of India's most comprehensive public health initiatives, aiming to provide life-saving vaccines to millions of newborns and pregnant women each year.
- Initially launched in 1978 as the **Expanded Programme on Immunization**, it was rebranded as the UIP in 1985 when its coverage was extended beyond urban centres to rural areas, addressing disparities in healthcare access.
- In 1992, the UIP was incorporated into the **Child Survival and Safe Motherhood Programme** and later, in 1997, into the **National Reproductive and Child Health Programme**.
- Since 2005, under the **National Rural Health Mission**, the UIP has become a central component of India's public health efforts, focusing on ensuring that vaccines reach every child, even in the most remote parts of the country.
- **Diseases Covered Under UIP:** Currently, the program provides free immunization against 12 diseases, including nine nationwide, such as Diphtheria, Tetanus, Polio, Measles, and Hepatitis B.
  - Additionally, it offers vaccines against Rotavirus diarrhoea, Pneumococcal Pneumonia, and Japanese Encephalitis in specific regions.
- Notable milestones include India's elimination of polio in 2014 and maternal and neonatal tetanus in 2015, achievements that underscore the impact of the UIP in protecting public health.

- **Exemption for International Atomic Energy Agency (IAEA) Imports:** IGST to be exempted on import of all equipment and consumable samples by the inspection team of the IAEA subject to specified conditions.
- **Concessional GST on Food Preparations for Government Programs:** Concessional 5% GST rate

to be extended to food inputs of food preparation for free distribution to economically weaker sections under government programmes subject to the existing conditions.

- **Increase in GST Rate on sale of old and used vehicles:** GST rate on the margin on the sale of all old and used vehicles, including electric vehicles, to be increased from 12% to 18%.
- **No GST applicable on 'penal charges'** levied by banks and s (NBFCs) for non-compliance with loan terms.
- **Pepper and raisins** supplied by agriculturists **not to be liable to GST**.
- Specific Commodity Clarifications:
  - **Autoclaved Aerated Concrete Blocks (ACC):** Blocks with over 50% fly ash content will attract 12% GST under HSN 6815.
  - **Pepper and Raisins:** Fresh or dried pepper and raisins supplied by agriculturists will not attract GST.
  - **Ready-to-Eat Popcorn**: Popcorn mixed with salt and spices attracts 5% GST if not pre-packaged and labelled, and 12% GST if it is pre-packaged. Popcorn mixed with sugar (e.g., caramel popcorn) falls under confectionery (HSN 1704) and attracts 18% GST.
- **Pre-Packaged and Labelled Goods**: The definition has been revised to include all commodities intended for retail sale, containing up to 25 kg or 25 litres, and bearing labels under the Legal Metrology Act.

FACT BOX

GST Council

- In order to implement GST, the **Constitution (One Hundred and First Amendment) Act, 2016** was enacted.
  - Since then the **GST council** and been notified bringing into existence the Constitutional body to decide issues relating to GST.
- As per **Article 279A (1)** of the amended Constitution, the GST Council has to be constituted by the President within 60 days of the commencement of Article 279A.
- The GST Council is a **constitutional body** responsible for making recommendations on issues related to the implementation of the Goods and Services Tax (GST) in India.
- **Composition:** The GST Council shall consist of the following members:
  - The Union Finance Minister
  - The Union Minister of State in charge of Revenue or Finance
  - The Minister in charge of Finance or Taxation or any other Minister nominated by each State Government
  - Any person nominated by the Governor of the State where there is a proclamation of emergency under Article 356 of the Constitution of India
- The GST Council decides tax rates, tax exemptions, the GST return due dates, tax laws, and other compliance deadlines, keeping in mind special rates and provisions for some states.
- **Current GST Rate Structure**: Currently, GST is applicable in 5 slabs, including 0% or nil tax. They are 0% (Nil tax), 5%, 12%, 18% and 28%.
  - **Essential commodities** primarily belong to 0% and 5% tax slabs, while semi-essential items are taxed at 12% and 18% slabs. Luxury items attract the highest GST rate of 28%.

UPSC PYQ

Q: What is/are the most likely advantages of implementing 'Goods and Services Tax (GST)'? (UPSC 2017)

(1) It will replace multiple taxes collected by multiple authorities and will thus create a single market in India.

(2) It will drastically reduce the 'Current Account Deficit' of India and will enable it to increase its foreign exchange reserves.

(3) It will enormously increase the growth and size of the economy of India and will enable it to overtake China in the near future.

Select the correct answer using the code given below:

(a) 1 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

Solution: (a)

Q: Consider the following items: (UPSC 2018)

(1) Cereal grains hulled

(2) Chicken eggs cooked

(3) Fish processed and canned

(4) Newspapers containing advertising material

Which of the above items is/are exempted under GST (Good and Services Tax)?

(a) 1 only

(b) 2 and 3 only

(c) 1, 2 and 4 only

(d) 1, 2, 3 and 4

Solution: (c)

BORDOIBAM-BILMUKH BIRD SANCTUARY

Context

A recent study on avian diversity at **Bordoibam-Bilmukh Bird Sanctuary (BBBS)** in northeastern Assam has revealed a significant decline in bird species over the past 27 years. The study, published in the **Journal of Threatened Taxa**, highlights a **72% decrease** in the number of bird species in the sanctuary since 1997.

Key-Findings

Decline in Bird Species:

- In **1997**, **167 avian species** were recorded in the sanctuary.
- In the recent survey (2022-2024), only **47 species** across **16 orders** and **29 families** were observed, marking a **71.85% decline**.
- This decline has been especially sharp since **2018**, according to the study.
- A 2011 survey recorded **133 species**, including **86 resident species**, **23 migratory species**, and **24 local migrants**.

- **Anthropogenic Causes:** The study cites several human activities contributing to the decline in bird species:
  - **Overfishing** and excessive harvesting of aquatic plants.
  - **Poaching of birds** such as the **lesser whistling duck**, **fulvous whistling duck**, **white-breasted waterhen**, and **yellow-footed green pigeon**.
  - **Bird egg collection**.
  - **High-decibel machinery** used for agriculture near water bodies, disturbing the birds' natural habitats.
  - The sanctuary is also being used as a **pasture area**, further disturbing the local bird populations.
- **Impact of Habitat Degradation:** The **degradation of wetland habitats** leads to:
  - **Decline in the water table**.
  - **Disruption of the food chain** and nutrient cycles.
  - A negative impact on the **migratory bird populations**.
    - This not only harms the bird species but also disrupts the entire ecosystem, affecting human populations too.

Bordoibam-Bilmukh Bird Sanctuary (BBBS)

- Bordoibam-Bilmukh is a **small wetland** that provides shelter and breeding ground to many resident and migratory birds.
- This wetland originated from the **River Subansiri.** A major earthquake created this wetland in 1950.
- The sanctuary is located in Dhemaji and Lakhimpur districts, covering an area of 11.25 sq. km at an elevation of 90-95 meters above sea level.
- A large number of migratory waterfowl are seen in winter while some globally threatened species such as the *Spot-billed Pelican Pelecanus philippensis* and *Lesser Adjutant Leptoptilos javanicus* are seen all over the year.
- The wetland is fringed by tall emergent vegetation, mainly *Arundo donax*, where the *Swamp Francolin Francolinus gularis* was not uncommon some years ago.

Assam's Biodiversity:

- Assam is one of the most **biodiversity-rich states** in India, home to about **950 bird species**, including **17 endemic species**.
- The state has **55 Important Bird and Biodiversity Areas (IBAs)**, which are crucial for the conservation of various avian species.
  - Panidihing Bird Sanctuary of Sivasagar district; Jhanjimuk-Kokilamuk IBA complex of Jorhat district; Orang National Park; Raimona National Park; Bornodi Wildlife Sanctuary; Loharghat forest range of Kamrup district

LION TAILED MACAQUE (*MACACA SILENUS*)

Context

A recent study highlights the growing threats to the **critically endangered lion-tailed macaque**, endemic to the **Western Ghats of India**, due to increasing human-wildlife interactions.

About the Lion-Tailed Macaque

- The Lion Tailed Macaque (*Macaca silenus*) is an old world monkey.
- It is a relatively small-sized macaque with a furless black face and a white 'mane'.
- Covered in a thick coat of black fur, its short tail ends in a tuft, which is why it is known as the Lion-tailed Macaque.
- **Conservation Status:**
  - **IUCN Red List:** Endangered.
  - **CITES:** Listed under Appendix I, providing the highest level of protection.
- **Habitat:** They are found exclusively in the **Western Ghats**, across fragmented forests in areas such as **Anamalai Hills, Nelliyampathy, Nilambur Ghats, Sholayar, Sabarimala, Agumbe**, and others.
- **Population:** Approximately **4,200 individuals** remain in the wild.

UPSC PYQ

Q: Consider the following fauna: (UPSC 2023)

(1) Lion-tailed Macaque

(2) Malabar Civet

(3) Sambar Deer

How many of the above are generally nocturnal or most active after sunset?

(a) a) Only one

(b) b) Only two

(c) c) All three

(d) d) None

Solution: (c)

PAPIER MÂCHÉ DODOS (REVIVING EXTINCT DODO BIRD)

Context

This Christmas, artisans in Srinagar have breathed new life into the **extinct dodo bird**, which disappeared from the world in 1681, using the age-old craft of **papier mâché**. These colorful, symbolic creations serve not only as artistic expressions but also as poignant reminders of the bird's tragic extinction and its connection to the environment.

About

- Kashmiri papier mâché dodos are not merely replicas; they are **vibrantly colored** and adorned with **floral and forest motifs**.
- These prints symbolize the connection between the bird and the forests, which were largely responsible for its extinction due to habitat loss.
- While the real dodo was known for its **grey or brown plumage**, the papier mâché versions are embellished with bright and symbolic patterns, making them a striking blend of tradition and environmental advocacy.
- **Kashmir's Papier Mâché Craft:** Kashmir's papier mâché craft has a rich history of over **600 years**, with its roots deeply embedded in **Persian art**.
  - Traditionally, artisans would create items such as **decorative bowls**, **plates**, and **figurines**, often influenced by Persian designs. The introduction of the dodo to this craft scene is a **recent development**.

About Dodo (*Raphus cucullatus*)

- The dodo (*Raphus cucullatus*) is an extinct flightless bird that was endemic to the island of Mauritius, which is east of Madagascar in the Indian Ocean.
- The dodo was a flightless relative of pigeons and doves.
- Dodo is the national emblem of Mauritius.
- **Appearance:** Dodos were large birds, approximately three-feet tall, with downy grey feathers and a white plume for a tail. The Dodo had tiny wings and its sternum – an area with strong wing muscles for flying birds – was correspondingly small.
- Its closest living relative is the Nicobar pigeon, a much smaller flying bird that ranges across the southern Pacific.
- The Dodo became extinct because of deforestation, hunting, and destruction of their nests by animals brought to the island by the Dutch.

INDIA STATE OF FOREST REPORT 2023 (ISFR 2023)

Context

India's forest and tree cover has shown positive growth, according to the **India State of Forest Report (ISFR) 2023**, which highlights significant increases in forest area and carbon sequestration efforts.

Forest and Tree Cover Statistics:

- **Total Forest and Tree Cover:** As of 2023, India's total forest and tree cover stands at 827,357 sq km, or 25.17% of the total geographical area, marking a net increase of 1,445 sq km from 2021.
- **Forest Cover**: The forest cover alone has grown from 713,789 sq km in 2021 to 715,343 sq km in 2023, now covering 21.76% of the geographical area.
- **Tree Cover:** India's tree cover increased by 1,289 sq km, reaching 3.41% of the total geographical area.
- **Carbon Stock and Sequestration:**
  - **Carbon Sink:** India has created an additional 2.29 billion tonnes of carbon sink compared to 2005 levels, contributing significantly to its climate goals.
  - **Carbon Stock:** The total carbon stock in India's forests and tree cover in 2023 is estimated at 7,285.5 million tonnes, an increase of 81.5 million tonnes since 2021.
  - By 2030, India aims to increase its carbon stock to 31.71 billion tonnes through enhanced forest and tree cover as part of its **Nationally Determined Contributions (NDCs)** under the **Paris Agreement.**
- **Bamboo and Forest Cover Details**: India's bamboo-bearing area is now estimated at 154,670 sq km, marking a 5,227 sq km increase from 2021.
  - **State-wise Performance:**
    - Chhattisgarh (+684 sq km), Uttar Pradesh (+559 sq km), Odisha (+559 sq km), and Rajasthan (+394 sq km) saw the largest increases in combined forest and tree cover.
    - Mizoram, Gujarat, and Odisha recorded the highest gains in forest cover.

- **Forest Cover in Hill and Northeastern Regions:**
  - **Hill Districts**: India's hill districts have a total forest cover of 283,713 sq km, which constitutes 40% of the geographical area in these regions. The forest cover in these districts increased by 234.14 sq km.
  - **Northeast Region**: The northeastern region, which has a total forest and tree cover of 174,394.7 sq km (67% of the region's geographical area), saw a decrease of 327.3 sq km in forest cover.
- **Other Key Findings:**
  - **Mangrove Cover**: India's total mangrove cover stands at 4,991.68 sq km, with a slight decrease of 7.43 sq km since 2021.
  - **Western Ghats and Eastern States**: An analysis of forest cover changes over the last decade shows an overall loss of 58.22 sq km in the Western Ghats and Eastern States Area (WGESA), despite gains in very dense forests.
- While the overall area of very dense forests increased by 3,465.12 sq km, moderately dense and open forests saw a decline of 1,043.23 sq km and 2,480.11 sq km, respectively, over the past decade.

India State of Forest Report (ISFR)

- India State of Forest Report (ISFR) is brought out by the **Forest Survey of India (FSI)** on a biennial basis since 1987.
- FSI carries out in-depth assessment of the forest and tree resources of the country based on interpretation of Remote Sensing satellite data and field based National Forest Inventory (NFI), and the results are published in the ISFR.
- The India State of Forest Report 2023 is 18th such report in the series.

MUMPS VACCINE

Context

Tamil Nadu has requested the Government of India (GoI) to include the **mumps vaccine** in the **Universal Immunisation Programme (UIP)**, following a significant rise in mumps cases across the state.

Need for Mumps Vaccine Inclusion:

- The **Measles, Mumps, and Rubella (MMR) vaccine** only offers 78% protection against mumps, although offering 93% protection against measles and 97% protection against rubella.
- The Union Health Ministry excluded the vaccination in 2016, citing its limited efficacy and the belief that mumps would not become serious.
- According to the **Tamil Nadu Journal of Public Health and Medical Research**, mumps cases have been steadily increasing, with a sharp rise in 2024. The number of cases surged from **129 in 2022-23** to **1,091 in 2023-24**.
- The **Measles, Mumps, and Rubella (MMR) vaccine** to the routine immunisation schedule, which currently covers 12 vaccine-preventable diseases under the UIP.
- Tamil Nadu's UIP currently includes vaccines for diseases such as tuberculosis, diphtheria, pertussis, hepatitis B, and measles (the **Measles-Rubella** vaccine was added in 2017). However, the mumps vaccine is not part of this programme, despite rising cases.

FACT BOX

About Mumps

- Mumps is an **acute viral illness** caused by a ***paramyxovirus*** called the mumps virus.
- It is a **contagious viral illness** that causes swelling in the salivary glands, usually in the cheek and jaw area.
- Mumps is typically spread through direct contact with saliva or respiratory droplets from an infected person and is said to be as contagious as the flu.
- **Incubation period:** The average incubation period is 16 to 18 days, but it can also range from 12 to 25 days.
- Virus is acquired by **respiratory droplet transmission.** It replicates in the **nasopharynx and regional lymph nodes**.

Associated complications

- Orchitis (swelling of testicles)
- Oophoritis (swelling of ovaries)
- Encephalitis (swelling or inflammation in the brain)
- Meningitis (swelling or inflammation of the membranes around the brain and spinal cord)
- Loss of hearing
- Pancreatitis (swelling of the pancreas)

Universal Immunisation Programme (UIP)

- The **Universal Immunization Programme (UIP)** is one of India's most comprehensive public health initiatives, aiming to provide life-saving vaccines to millions of newborns and pregnant women each year.
- Initially launched in 1978 as the **Expanded Programme on Immunization**, it was rebranded as the UIP in 1985 when its coverage was extended beyond urban centres to rural areas, addressing disparities in healthcare access.
- In 1992, the UIP was incorporated into the **Child Survival and Safe Motherhood Programme** and later, in 1997, into the **National Reproductive and Child Health Programme**.

- Since 2005, under the **National Rural Health Mission**, the UIP has become a central component of India's public health efforts, focusing on ensuring that vaccines reach every child, even in the most remote parts of the country.
- **Diseases Covered Under UIP:** Currently, the program provides free immunization against 12 diseases, including nine nationwide, such as Diphtheria, Tetanus, Polio, Measles, and Hepatitis B.
  - Additionally, it offers vaccines against Rotavirus diarrhoea, Pneumococcal Pneumonia, and Japanese Encephalitis in specific regions.
- Notable milestones include India's elimination of polio in 2014 and maternal and neonatal tetanus in 2015, achievements that underscore the impact of the UIP in protecting public health.

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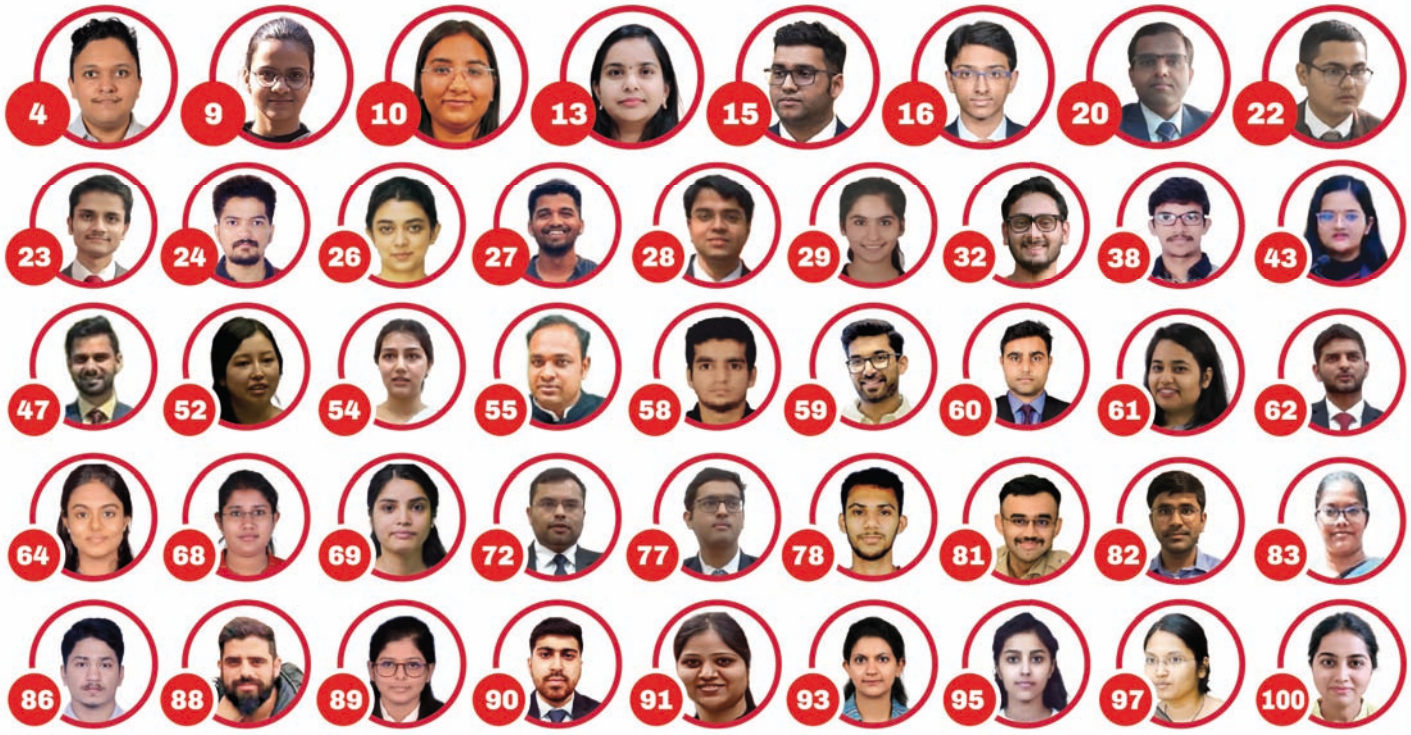

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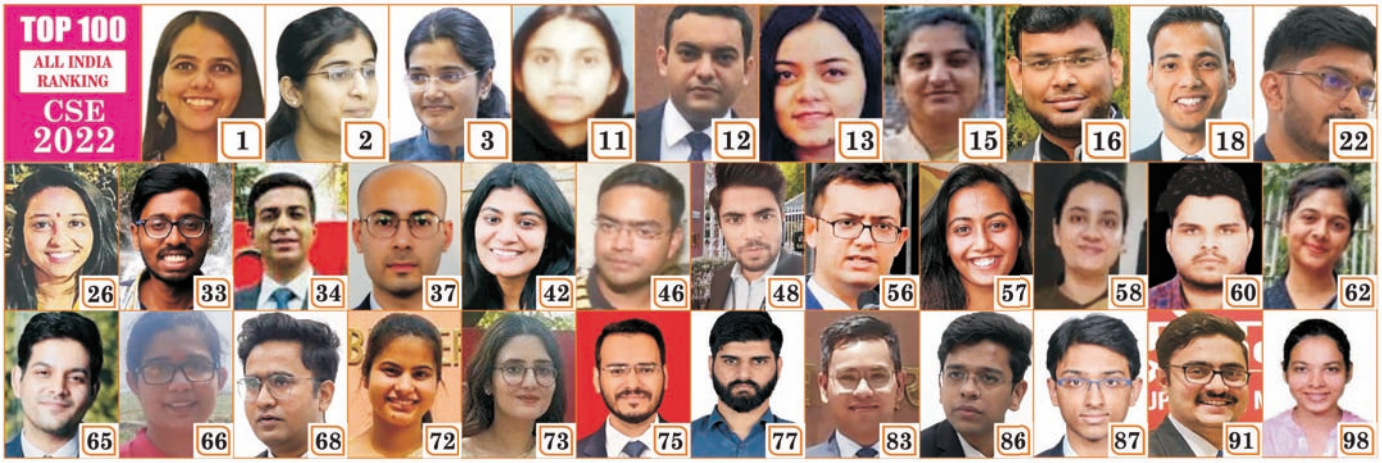

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