

MONTHLY

# EPIC!

*Supplementary reading material for MGP and Current Affairs classes of  
ForumIAS Academy*

AN EXCLUSIVE CURRENT AFFAIRS MAGAZINE FOR

**PRELIMS + MAINS**

PREPARATION

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**8 Selections**  
in Top 10

**64 Selections**  
in Top 100

I was a part of MGP at Forum IAS. Apart from this I also took Current Affairs classes for mains by Dipin Dandekar Sir. The top notch quality of the content and the versatile perspectives I got from Sir's classes really boosted my score in GS. One on one interaction with Ayush Sir during my interview preparation helped me.

I am really grateful to Forum IAS especially Dipin Sir and Ayush Sir for their valuable inputs.


*Garima Lohia*  
AIR 2

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I enrolled myself in multiple courses at ForumIAS - SFG, ANFG, MGP, current affairs classes and Ethos+ classes. The quality of content, the consistency of classes and availability of mentorship right when I needed it helped me throughout my preparation journey.

A special thanks to Ayush Sir and Dipin Sir for their efforts and constant support, even though I was practically invisible!

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**5 students in Top 5, 8 students in Top 10 and 64 students in Top 100 Ranks List of CSE 2022 are ForumIAS Academy students.**

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## Focus Article

### Prime Minister's State Visit to the US and the Evolving India-US Relationship

**News:** The Prime Minister of India completed a State Visit to the US. Several historic agreements were signed indicating a renewed vigor in the bilateral India-US Relationship.

#### What are the significant outcomes of the visit?

- The visit has been marked by meaningful dialogues and strategic agreements across a wide range of sectors.
- These include Space Technology, Semi-conductors, Quantum Research, Defence Partnership, Clean Energy, along with economic cooperation and deepening of strategic convergence.
- Some developments are significant e.g., the US has agreed for sharing/transfer of certain critical technologies typically restricted only to trusted allies. This shows the importance US is ascribing to its relationship with India.

#### State Visit to the US

State visits are formal visits by the **Head of State** from a country (Head of Government in India's case) to the US. The **President of the United States acts as official host** of the visitor. State visits are considered to be the **highest expression of friendly bilateral relations** between the US and the foreign State. A State visit includes **elaborate ceremonies** like White House Dinner, White House Arrival Ceremony (21-gun salute) and may include address to the US Congress. According to US State Department, President S Radhakrishnan made the first State visit in June 1963. PM Manmohan Singh made an Official State visit in November 2009.

#### What is the Significance of latest developments?

- **Changing Geopolitics:** Analysts argue that the rapid rise of China and its coercive tactics have brought India and US closer. The US is wary of Chinese rising economic and military power and its brazen display by China in the Indo-Pacific. The US is looking for power that can counter-balance China. Possibility of a China-Russia axis is worrisome for US and its western allies. India is concerned with Chinese aggression along the Himalayan border and its rising influence in India's neighbourhood. Hence, both India and US has improved the cooperation.
- **Diversification of Partnership:** The expansion of partnership across sectors like technology, space, health, digital infrastructure, and energy allows both nations to diversify their collaboration beyond traditional domains. This benefits India in terms of infusion of capital, technical know-how, and access to advanced technology. For the US, it means access to India's large market, robust human resources, and a rapidly growing technology sector.
- **Defence and Security Cooperation:** The defence technology transfer signifies the US's recognition of India as a trusted partner. This will bolster India's self-reliance in defence and enhance its military capabilities. For the US, it strengthens a key partnership in a geopolitically sensitive region.
- **Strengthening of Economic Relations:** The resolution of trade disputes signifies a move towards more robust and fair economic relations. It allows both countries to protect their economic interests and ensure healthier trade ties, benefiting businesses and consumers in both nations. Growing Indian economy bodes well for the US economy also, e.g., Air India's order for 500 Aircraft is expected to add 44 million jobs in the US.



- **Collaboration for Global Challenges:** Increased collaboration in the health sector in the wake of COVID-19 pandemic, showcases the shared commitment to **address global health challenges**. Similarly, cooperation in clean energy reflects their responsibility towards global climate issues.
- **Role of the Indian Diaspora:** Deepening people-to-people ties fosters mutual understanding and goodwill. It strengthens the durability of bilateral relations. There are ~130 Indian-Americans at key position in the current US Administration, even though the community is < 1% of the US population.

## PM's State Visit to the US: Outcomes

The State Visit has marked an important milestone in the bilateral relationship with the US.

<p>1</p> <p><b>Space Technology</b></p> <ul style="list-style-type: none"> <li>• Human Spaceflight Cooperation between ISRO and NASA.</li> <li>• Enhanced commercial collaboration in Space Economy.</li> <li>• Signing of Artemis Accords by India.</li> </ul>	<p>2</p> <p><b>Semiconductors</b></p> <ul style="list-style-type: none"> <li>• MoU on Semiconductor Supply Chain and Innovation Partnership.</li> <li>• Proposal by LAM Research to train 60,000 Indian engineers.</li> <li>• Joint Task Forces on Advanced Telecommunications.</li> </ul>	<p>3</p> <p><b>Quantum Research and AI</b></p> <ul style="list-style-type: none"> <li>• Indo-US Quantum Coordination Mechanism for collaboration among Industry, Academia and Governments.</li> <li>• 35 Joint research collaborations between National Science Foundation (US) and Dept. of Sci. &amp; Tech (India).</li> </ul>
<p>4</p> <p><b>Defence</b></p> <ul style="list-style-type: none"> <li>• Defence Industrial Cooperation Roadmap for co-production of advance defense systems.</li> <li>• GE-HAL MoU to manufacture GE F-414 Jet engines in India.</li> <li>• Indo-US Defence Acceleration Ecosystem (INDUS-X)</li> <li>• Plan to procure General Atomic HALE UAVs.</li> </ul>	<p>5</p> <p><b>Clean Energy</b></p> <ul style="list-style-type: none"> <li>• Indo-US Climate and Clean Energy Agenda 2030 to deploy clean energy at scale.</li> <li>• Cooperation in Green Hydrogen, Solar panels, Carbon capture, zero emission vehicles technologies etc.</li> <li>• Creation of Global Biofuels Alliance.</li> <li>• Bilateral collaboration to secure critical minerals supply chain.</li> </ul>	<p>6</p> <p><b>Strategic Convergence</b></p> <ul style="list-style-type: none"> <li>• Support for UN reform and India's permanent membership of the UNSC.</li> <li>• Recommitment to empower Quad for global good and peace in Indo-Pacific.</li> <li>• Resolve to counter global terrorism.</li> <li>• Long-term partnership between I2U2.</li> <li>• Commitment to open, secure Internet and Cooperation on cybersecurity.</li> <li>• Affirmation of shared democratic values.</li> </ul>

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### What are the potential benefits of India?

- **Innovation:** Access to advance technologies in sectors like Artificial Intelligence, Quantum Computing etc. can propel India's domestic technological innovation ecosystem.
- **Defence:** Access to advance technology will enhance India's defense manufacturing ecosystem and realize goal of self-reliance. It will add to India's deterrence capabilities.
- **Clean Energy:** It will add to India's adaptation capabilities, aid India's journey towards Net Zero and help achieve India's Climate Action targets.
- **Trade:** Resolution of trade disputes will help in increasing exports, higher investments, and faster economic growth overall.
- **Geopolitical Standing:** India's diplomatic influence, bargaining power and stature in geopolitics will be enhanced as a significant global player.

### What are the challenges in India-US relationship?

- **Strategic Differences:** India's stance on multiple geopolitical issues is distinct from traditional US allies. India has condemned the Ukraine war, but has been very reserved in criticism of Russia. India has continued imports of Russian oil. India has been resisting pressure from the US and the EU to change its approach towards Russia.
- **Defence Dependence on Russia:** Despite indigenisation and diversification, India continues to be dependent upon Russia for its defence needs. There was vehement opposition within the US against India's decision to buy Russian S-400 missile system.

- **Economic and Policy Issues:** The US criticizes India's trade protectionism, restriction on market access to US goods and services and India's domestic agriculture subsidies. India and US frequently complaint against each other at the WTO. There are differences on climate action commitments as well. The US wants India to take more emission cuts and reduce dependence on coal faster while India criticizes US on H1B visa issue and for lack of climate finance and technology transfer.
- **Democratic Values:** Certain groups within the US are critical of human rights violation within India and raise the bogey of 'democratic backsliding' frequently. Lately, India has also started raising concerns regarding racial and gun violence incidents in the US as a tit-for-tat measure.
- **Trust:** Critics, both in the US and India, warn against too much reliance or trust on the other. Certain elements in the US consider India as an untrustworthy partner as India's and US' interests do not always align (e.g., on Russia or trade issues). Critics in India are sceptical of US' policies of interventions and desertion (like in Afghanistan) when a partner no longer remains strategically significant.

### What should be the course of action for India?

#### • **Strategic Diplomacy:**

Amid the complexities of a multipolar world, India should uphold its principles of strategic autonomy. India should **expand domains of partnership with the US**, while not abandoning its relationship with Russia. India should also be realistic about its engagements with China. At the same time, India should advocate a multi-

polar world with a rules-based international order. In doing so, India will affirm its position as a responsible global player capable of contributing to peaceful conflict resolution.

- **Resolution of Trade Disputes:** India should work more closely with the US to resolve the trade disputes. Some concerns raised by the US may be legitimate which should be addressed appropriately. However, domestic economic interests must be kept in mind to avoid providing any undue concessions to the US.
- **Defence Cooperation:** India can further enhance defence cooperation with the US. This includes broader diversification in defence procurements and a greater integration and interoperability of armed forces through joint exercises.
- **Multilateral Cooperation:** Apart from bilateral relationship, India must utilize multilateral partnerships to secure its strategic interests e.g., countering Chinese aggression through the Quad. India should utilize its G20 Presidency to bridge the gap between the Global South and the developed nations by helping arrive at a common ground on contentious issues like Climate Action.

Experts argue that the **PM's visit to US has opened a new chapter in Indo-US ties**, where both India and the US appear to have **shed their traditional inhibitions** to engage more closely, with the US showing willingness to share cutting-edge technology with India. **India should be ready to grant some concessions to the US**. However, India should remain watchful that in this closer partnership, it **does not sacrifice its strategic autonomy**, nor become embroiled in a **possible US-China Cold War 2.0**.

### Current Status of India-US Relationship

#### 1 Trade and Investment

- Bilateral Trade stood at **US\$ 129 billion** in 2022-23.
- The **US is India's largest trade partner**. India has trade surplus with the US.
- US Investments (FDI) worth **US\$ 60 billion** between April 2000-March 2023 (3rd largest).

#### 2 Bilateral Mechanisms

- **Annual 2+2 Dialogue** between **Defence and External Affairs Ministers** on key bilateral, regional and global issues.

#### 3 Defence

- Defence Technology and Trade Initiative (DTII).
- 3 Foundational Agreements: **Logistics Support Agreement (LSA)**, **Communications Interoperability and Security Memorandum of Agreement (CISMOA)** and **Basic Exchange and Cooperation Agreement for Geo-spatial Cooperation (BECA)**
- Regular exercises between Armed Forces like **Yudh Abhyas**, **Malabar**, **Vajra Prahar** etc.

#### 4 Multilateral Cooperation

- Cooperation through multilateral groupings like Quad, IPEF and I2U2 among others.

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## General Studies Paper I

### 1. 'Sengol' Installed in the New Parliament Building

**News:** 'Sengol' refers to historical sceptre installed in the New Parliament. 'Sengol' is a symbol of India's sovereignty as well as cultural heritage.

#### What is Sengol?

- The word 'Sengol' is derived from Tamil words '**Semmai**', meaning righteousness and '**kol**' meaning sceptre.
- The Sengol is a sacred sceptre that traces its roots to the **Chola dynasty**. Sengol served as a **symbol of transfer of royal power**.
- Its significance extends beyond political authority, representing the ethical-spiritual authority or '**Dharma Danda**' in Indian civilisational tradition

#### Historicity of Sengol

- Tamil texts refer to the Sengol as the **symbol of a just and benevolent ruler** e.g., in **Silapathikaram**, repeated references have been made to the **sceptre of the Pandyas**. According to the text, the Pandya sceptre is so **synonymous with justice that it has never been known to bend**.
- The word '**gol**' refers to the device's staff-like structure. This structure when envisioned as a **Sengol signifies benevolence**. The other side of power is punishment, in which case the sceptre would be referred to as '**Kodungol**'.
- The handing over of a sceptre to a ruler is a practice in monarchies and is **believed to signify just rule**.
- In 1947, Sengol was used as a symbol of transfer of Power from the British on the **suggestion of C. Rajagopalachari to Pt. Nehru** after being asked by Lord Mountbatten. **Thiruvaduthurai Atheenam** Mutt of Tamil Nadu made the Sengol.



- The Sengol was handed over to Pt. Nehru by the seers on August 14, 1947 along with **Pitambaram** (silk cloth), holy water from **Tanjore river**, sacred ash and boiled rice.

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#### What is the significance of Sengol in Indian history?

- **Symbol of Royal Power Transfer:** It in the Chola dynasty, Sengol was **symbolic instrument for the transfer of power from one king to another**. This practice was carried out by the **Rajaguru**, or the Court Priest, **signifying divine approval** for the new monarch. (Refer EPIC April 2023 (click) for About Chola Kingdom).
- **Spiritual Authority:** The Sengol symbolized **Dharma Danda**, to remind the monarchs that **the highest authority was Dharma**, the ethical and spiritual order. During coronation rituals, the priest would use the Sengol to assert that **Dharma, not the king, held the ultimate power to punish**. The **Nandi Bull** at the top of Sengol represents justice and strength.
- **Symbol of Independence:** In 1947, Sengol was used in a ceremony to symbolize the transfer of power from the British to the 1<sup>st</sup> Prime Minister of India. The act signified the **beginning of self-governance** and the **transfer of power to the people of India**.
- **Present-day Significance:** The decision to install the Sengol in the new Parliament underlines its importance as representation of **India's ethical and spiritual governance principles**.
  - It should act as a reminder to India's lawmakers of their **duty to uphold Dharma** and be ethically righteous in their service to the nation.
  - The Sengol's presence in the Parliament would **serve as a link to India's past**, reminding present and future generations of **India's rich cultural and historical heritage**. It represents **historical continuity** and **reaffirmation of national pride**. (Refer EPIC October 2022 (click) for Features of Chola Kingdom).

#### What are the arguments of critics against installation of Sengol in the Parliament?

- Some critics argue that Sengol has religious connotations that **go against the secular ethos established by the Constitution**. They say the religious symbolism can be **misinterpreted** and **misrepresented**.
- Some political parties have **questioned the historicity of the Sengol**. They contend that the historical authenticity of Sengol should have been established before its installation in the new Parliament.

### What should be the approach going ahead?

- **Symbolism to Action:** Sengol represents righteousness. The symbolism associated with it should **act as an inspiration** for the law-makers to **uphold their Dharma**. The same should reflect in the working of the Parliament.
- **Democratic Processes:** The controversy regarding the Sengol was needless. Both the Government and the Opposition need to work together. The objections should have been addressed within a democratic framework.
- **Awareness:** There is a need to create more **awareness about India's ancient traditions and practices**. Such traditions should be **kept free from political ideologies** and should be viewed purely from the **perspective of preservation of our rich collective heritage**.

#### Adheenams

Adheenams are **Shaivite monastic mutts** in Tamil Nadu. There are about 20 main Adheenams. Each Adheenam has a **distinct caste and regional character**. Heads of Adheenams are traditionally from **dominant castes** in the region like Pillai, Mudaliar, Goundar and Chettiar etc. **Chola, Chera and Pandya kings patronised** the major Adheenams. They still administer many centuries old temples. They have promoted **Shaivite philosophy** and **Tamil Literature**.

## 2. Gender Discrimination in the Field of Medicine and Medical Research

**News:** Male centricity in clinical trials and new drug development has impacted women's health.

### How does discrimination against women manifest itself?

- Women differ from men on various aspects like **physiology** and **hormone levels** in addition to **reproductive organs**. Their response to a drug may be very different in women. However, this aspect has largely been neglected in drug development. Often the approach has been to **treat women as 'smaller men'** and prescribe the dosage accordingly.
- Studies have shown that ~20% of medications showed

### The definition of women's health goes beyond reproductive health.

Diagnosis, prevention, and treatment (and related products) for: Nonexhaustive examples

General health conditions	Affect women differently Cardiovascular disease <sup>1</sup>		Sex differences unknown or not sufficiently studied Alzheimer's disease <sup>7</sup>	
	Affect women disproportionately Autoimmune disease, <sup>2</sup> migraines, <sup>3</sup> osteoporosis <sup>4</sup>			
Gender bias in care delivery Pain, <sup>5</sup> mental health <sup>6</sup>				
Largely female-specific conditions	Contraception Oral contraceptive, IUD <sup>8</sup>	Fertility IVF, <sup>9</sup> egg freezing	Maternal health Prenatal care, breastfeeding	Menopause Peri- and post-menopausal symptoms
	Gynecology Endometriosis, pelvic floor, menstruation, sexual health			
	Gynecological infections Bacterial vaginosis, HPV <sup>10</sup>			
	Women's oncology Breast cancer, ovarian cancer, cervical cancer			

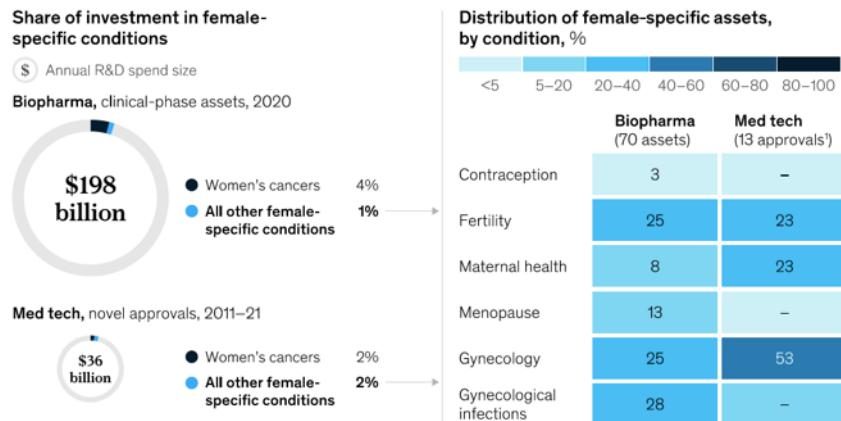
Source: McKinsey. Women-specific healthcare needs that have not received appropriate attention.

- difference in the active dose** between men and women. So **women are either over- or under-dosed**. In testing and diagnosis, specific concerns of women are not addressed or taken care of. Women are more likely to face **side-effects from medications** due to **under-representation in clinical trials**.
- Women, on average, have **higher likelihood of facing anxiety and depression** and are **more susceptible to cardiac diseases**. Yet the response has been not been gender-specific. **Women are less likely to receive appropriate medications**, diagnostic tests and clinical procedures even in developed countries.
- The exclusion of women from clinical trials and research projects has resulted in a **limited understanding of sex-specific symptoms** and responses to treatment. (In 1980s, women activists brought attention of the US Congress towards the discrepancies in medical research and the effect on women's health. Subsequently,

the **US National Institutes of Health (NIH) Revitalization Act (1993)** mandated the inclusion of “women and minorities” in clinical trials to reduce health disparities).

- In sex-specific diseases like breast cancer there are serious gaps and **under-funding in research**. Women-specific diseases are under-studied, under-treated and frequently misdiagnosed or undiagnosed e.g., some critics point to lack of research and available medication to alleviate menstrual cramps and pain. WHO noted that (2017), “Every day about 808 women die due to complications of pregnancy and childbirth” almost all of which are preventable.

**Approximately 1 percent of healthcare research and innovation is invested in female-specific conditions beyond oncology.**



Source: McKinsey. Female conditions outside of oncology (diagnosis/treatment of cancer) comprise less than 2% of the current healthcare expenditure.

### What should be the approach going ahead?

- Pharma Companies have been increasing representation of women in clinical trials, with average women representation crossing 40%. The proportion should be increased to at least 50%.
- **More funding is needed for research in female-specific diseases.** Development of treatments and drugs for women healthcare, specifically pregnancy related complications, safe abortions and menstruation can save a lot of lives.

### 3. The Importance of Census and Consequences of Delay in Census 2021

**News:** The Census 2021 was scheduled to be completed in March 2021, but has been delayed considerably. It can have profound consequences in terms of policy making.

#### What is Census?

- The Census captures the data and provides information on **size, distribution, socio-economic, demographic**, and other related characteristics (gender, age etc.) of the country's population.
- The 1<sup>st</sup> Census of India was held in 1872. Since 1881, censuses have been undertaken **once every ten years** uninterruptedly.
- After Independence, the **Census Act (1948)** was enacted to provide **legal framework for conducting population censuses**. The Act established the **Office of the Registrar General and Census Commissioner** as the authority responsible for conducting the census. It functions

#### Census in the Constitution

**Article 82:** The allocation of seats to States and division of States into constituencies for Lok Sabha to be readjusted after every Census (Frozen till first Census to be taken after 2026, 84<sup>th</sup> Amendment).

**Article 170:** No. of Seats in State Legislative Assembly and division of State into constituencies to be readjusted after every Census (Frozen till first Census to be taken after 2026, 84<sup>th</sup> Amendment).

**Article 246/Seventh Schedule:** Census has been listed as **Item 69 under the Union List**. Only the Parliament can enact laws related to Census.

under the Ministry of Home Affairs. The **Census Act has been amended** from time to time to incorporate changes in **data collection methods, privacy protection, and technological advancements**.

- The Census of India is **one of the largest administrative exercises** undertaken in the world. The last Census was carried out in 2011 when India's population stood at 121 crore.
- In 2019, the Government had announced that the **data of Census 2021 will be stored digitally**. However, the process has been **delayed to multiple waves of COVID-19 pandemic**. Now the Census is expected to be **carried out after the General Elections for the Lok Sabha** in 2024.

### What is the rationale behind Population Census?

#### • Data for Governance:

Census provides **accurate and comprehensive data** on various demographic, social, and economic aspects like age structure, gender, education, occupation, religion, language etc. It serves as a fundamental data source for **evidence-based policymaking, governance, and public administration**. Census data is necessary for policy interventions in the education, healthcare and social welfare sector. It helps in **equitable resource allocation** and distribution.

- **Statistical Foundation:** Census data serves as the foundation for statistical systems and surveys. It provides a benchmark and sampling frame for conducting other surveys and data collection exercises (like the NFHS), enabling **representative and reliable sampling methods**.
- **Trend Analysis:** Comparison of data over successive censuses can help identify trends and effectiveness of policies e.g., fall in Total Fertility Rate can help measure effectiveness of family planning measures. Similarly migration patterns can be analysed and the insights can be used in urban planning.
- **Electoral representation:** Census data is utilized to redraw territorial constituencies and ensuring fair and equitable representation in the Legislatures.
- **National Identity and Documentation:** Census data helps in establishing and maintaining national identity by documenting the characteristics, diversity, and composition of the population. It aids in understanding the nation's social fabric, cultural diversity, and linguistic patterns.

## Challenges in Conducting Census

Conducting the Census poses considerable administrative challenges because of various physical, sociological and economic factors

- 1 **Extent and Diversity:** Huge population in excess of 1.4 billion distributed over vast geographical extent from inaccessible hilly terrain to dense forests poses challenge of coverage and reach.
- 2 **Awareness:** Low awareness among the population regarding importance of census and its accuracy, leads to incomplete and incorrect information sharing with census personnel.
- 3 **Language and Cultural Barriers:** Language and cultural barriers impact effective communication, leading to incorrect interpretation and assessment. It leads to discrepancies in data.
- 4 **Privacy:** Ensuring confidentiality of data is necessary to gain trust. Wrong notions developed due to false information propagated about census discourages certain sections from sharing information.
- 5 **Migration:** Rapid and frequent migration poses challenge with respect to correct enumeration and preventing exclusion, double counting etc.
- 6 **Technology:** Lack of use of technology leads to length data consolidation process. Census 2021 will use digital devices, but connectivity in remote areas will remain a challenge.

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### What are the consequences of delay in Census 2021?

- The biggest impact is on policy-making. The welfare schemes have to rely on 10-years old data which has changed over the decade (e.g., 67% of population entitled to subsidized food grains under the National Food Security Act). In the absence of reliable data, **incorrect prognosis may lead to wrong policy prescriptions** leading to inclusion or exclusion errors, wastage of resources etc.
  - Comparison of 1961 and 1971 Census data had allowed to identify sharp decline in gender ratio (941 to 930). It led to corrective policy measures to check female infanticide. In the absence of data, such corrective steps may not be possible.



- The situation is further compounded by **absence of supplementary data** from other surveys like Household Consumer Expenditure Survey. This has created confusion in estimation of poverty in India. (Refer EPIC May 2023 (click) for The Debate on Poverty Estimation in India).
- Census is much more comprehensive than any other survey. Other surveys **can only complement Census data**, not replace it. Such surveys are based on smaller sample, Census acts as a corrective benchmark on such estimates, and extrapolations.

#### Periodicity of Census

The **Census Act, 1948** does not provide for a fixed duration between two consecutive censuses. **Section 3** of the Act says the Central Government can declare its intention (via Gazette notification) of taking a census in the **whole or any part of territory, whenever it may consider it necessary or desirable to do so.**

#### What should be done going ahead?

- The Government should commence the process of data collection at the earliest (though unlikely before the General Elections 2024).
- **Awareness campaigns and community outreach programmes** can help dispel any misconceptions or fears surrounding sharing of information. Engaging the local leadership and community organizations can promote participation.
- Data collection methods can be improved through the **use of digital technology.**
- Language and cultural barriers should be addressed through **sensitisation of the staff** during training. Providing clear instructions and **utilizing visual aids** can aid in effective communication.
- **Robust data protection measures, ensuring strict protocols** for data storage, access, anonymization etc. can ensure privacy and dispel fears of data leakage.

#### 4. El-Nino and Its Impacts

**News:** The National Oceanic and Atmospheric Administration (NOAA) has announced the return of the El Niño phenomenon to the Pacific Ocean. The IMD has forecasted Monsoon 2023 rainfall to be 96% of Long-Period Average (LPA, 87 cm) with below normal rainfall in June 2023.

#### What is El Niño?

- El Niño is a **climate pattern** that describes the **unusual warming of sea-surface waters in the eastern tropical Pacific Ocean.**
- La Niña is the **abnormal cooling** of the sea-surface waters in the same region.
- In the 3<sup>rd</sup>, neutral phase, the sea surface temperatures **remain roughly in line with long-term averages.**
- The phenomena are accompanied by changes in the atmosphere and air circulation in the region.
- Together, these 3 phases in the Pacific Ocean are referred to as **El Niño Southern Oscillation (ENSO).** El Niño and La Niña are the ocean part of ENSO, while the Southern Oscillation is the atmospheric component. El Niño events occur irregularly at 2- to 7-year intervals.

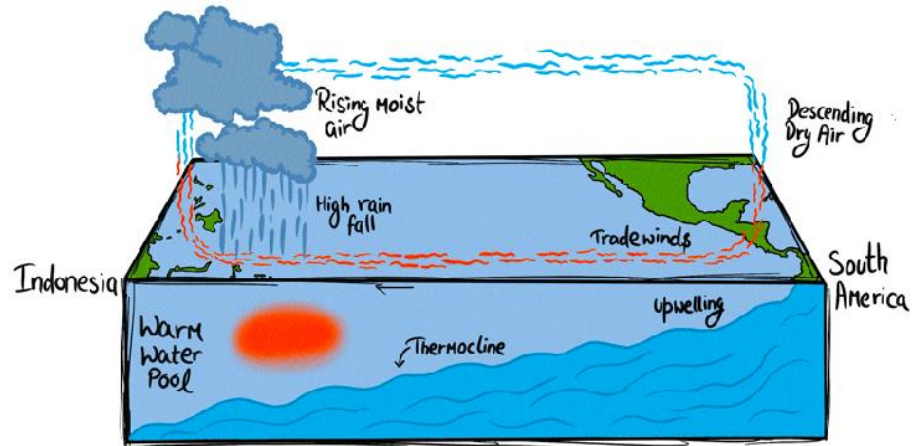
#### How does the El Niño occur?

The formation of El Niño involves a **series of interactions between the ocean and the atmosphere in the tropical Pacific.**

- **Normal Conditions:** Under normal conditions, the trade winds blow across the tropical Pacific from east to west. These winds push warm surface water towards the western Pacific (near Asia and Australasia), piling it up there. This creates room for cold, nutrient-rich water to well up from the depths in the eastern Pacific (near South America). Warm water gets accumulated near Indonesia (Western Pacific Warm Pool) and sea level near Indonesia is ~0.5 m higher than that near Peru.



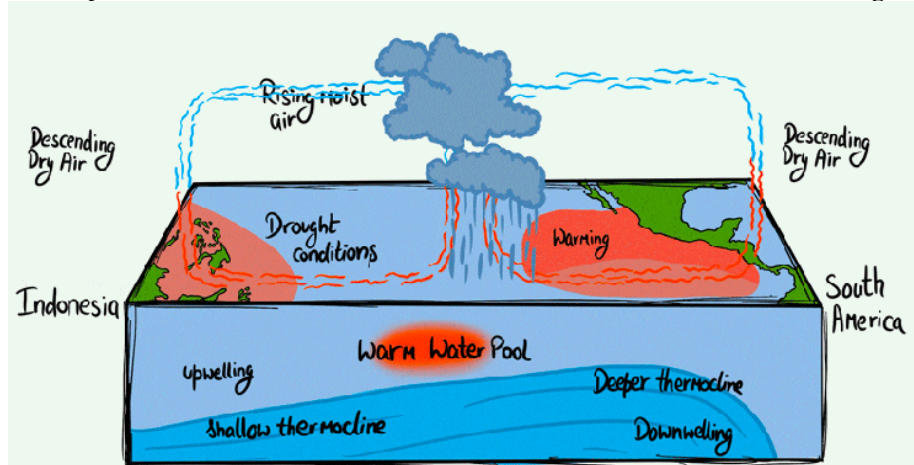
- **Air circulation:** The accumulation of warm water in the west heats the overlying air, making it moist and buoyant. This warm, moist air rises, forming rain clouds. The rising air creates a low-pressure system in the west (near Indonesia). At higher altitudes, the wind moves towards eastern Pacific (opposite to trade winds at lower altitudes) and descends near Peru in



**Normal Conditions.** Trade Winds push warm water to the west (up to Indonesia). Warm water causes the air to rise, leading to cloud formation and rainfall. The dry air moves towards east in the upper atmosphere and descends near Peru, completing the circulation pattern. (Image Source: India Today). (Click on the image to see animation)

the east creating a high-pressure system of cooler, drier air there (Peru). This completes the loop of air circulation (east to west at lower altitudes and west to east at higher altitudes).

- **Weakening Trade Winds:** The onset of El Niño involves a **weakening or reversal of the trade winds**. This can happen for various reasons, such as changes in the sea surface temperature distribution or atmospheric pressure patterns. The weakening of the trade winds is often initiated by an atmospheric phenomenon known as a **westerly wind burst**.
- **Spread of Warm Water:** The weakened trade winds can no longer push the warm water to the west as effectively. As a result, the warm water spreads from the western Pacific (near Indonesia where level is higher due to accumulation of warm water) towards the eastern Pacific (near Peru). This process is known as a **Kelvin wave**. The spread of warm water to the eastern Pacific suppresses the upwelling of cold water near South America.
- **Feedback Loop:** The eastward spread of warm water further weakens the trade winds, creating a feedback loop that **intensifies El Niño**. This is because the warmer water warms the overlying air, which lowers the atmospheric pressure and weakens the trade winds.
- **Establishment of El Niño:** As this feedback loop continues, the warm water in the eastern Pacific gets warmer, and the weakened trade winds get weaker. Eventually, a full-blown El Niño



**El Niño Condition:** El Niño weakens the trade winds, warm water from the western Pacific (near Indonesia) is pushed back towards South America. The upwelling of cooler water near the coast of Peru is stopped. Water temperature near Peru rises. (Image Source: India Today). (Click on the image to see animation).

event is established, characterized by significantly warmer than average sea surface temperatures in the central and eastern Pacific.

Exactly the opposite happens during a La Niña event. The trade winds become stronger than usual, pushing greater amount of warmer waters towards western Pacific, making eastern Pacific Ocean colder than normal.

### What are the impacts of El Niño in India?

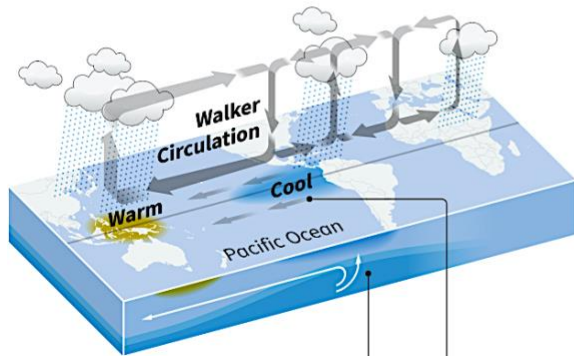
- **Monsoon Rainfall:** El Niño leads to fluctuations in the Monsoon rainfall patterns. During an El Niño year, India often experiences below-average monsoon rains, potentially causing drought conditions.
- **Droughts:** Reduced monsoon rainfall is generally accompanied by droughts in many parts that adversely affect agriculture, crop yields and food security.
- **Forest Fires:** Prevalence of drier conditions and lower soil moisture increase the likelihood of forest fires. Higher frequency of forest fires lead to loss of biodiversity and loss of property.
- **Heat Waves:** Drier conditions and heat waves can increase the risk of heat-related illness.

## El Nino explained

The El Niño–Southern Oscillation (ENSO) is the Earth’s most influential driver of climate variability. El Niño, the warm phase of the ENSO cycle, is marked by warmer-than-average sea surface temperatures across the central and eastern Pacific Ocean.

### NEUTRAL CONDITIONS

The Walker Circulation is an east-west vertical atmospheric circulation above the Equatorial Pacific. Moist air rises over normally warm seas, causing abundant rainfall over Asia and Australia

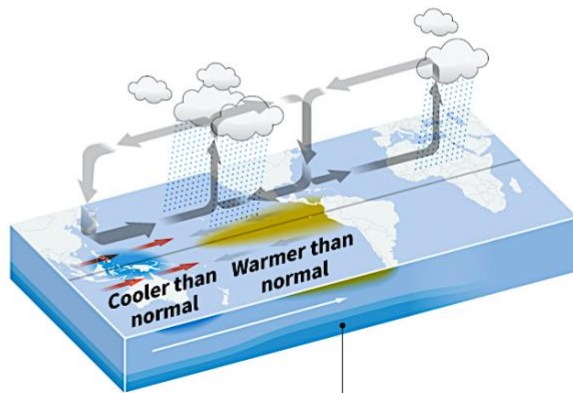


Upwelling of cold water cools the air, giving South America a cooler and drier climate

Easterly trade winds push warm surface waters westward

### EL NINO CONDITIONS

As trade winds weaken or reverse, warm water and rain clouds from the western Pacific Ocean shift eastward towards the Americas.



Surface waters in the central and eastern Pacific Ocean become significantly warmer, reducing the upwelling of cold water

Image Source: Reuters. **Teleconnections** due to atmospheric circulation cause the impact of El Niño to be felt at a global level. **North America:** Suppressed Atlantic hurricane activity. **South America:** Peru, Ecuador experience heavy rainfall. Warm waters reduce marine fisheries production. **Australia and Southeast Asia:** Depressed rainfall, droughts and heightened risk of forest fires. **Africa:** Higher rainfall in eastern Africa, lower rainfall in other parts. **Europe:** Impact uncertain, impacts path of Jet Stream leading to weather anomalies. 2016 was the hottest year on record due to El Niño.

### What steps are needed to mitigate impacts of El Niño?

- **Early Warning Systems:** NOAA (US) has developed monitoring and Early Warning Systems. More investment is required for further research and making the prediction models more robust. It can help Governments to take corrective steps beforehand (e.g., ensure food security in case of drought).

- **Disaster Risk Reduction:** Peru has created dedicated disaster risk reduction fund to prepare for and mitigate the impact of El Niño. Such initiatives should be adopted by all impacted countries.
- **International Collaboration:** Impacts of El Niño may be exacerbated by the climate change and global warming. The issue can be addressed only through international collaboration, under the aegis of UNFCCC and Paris Agreement. **Funding to developing countries** threatened by El Niño under Climate Finance and **Loss and Damage mechanism** can prepare them to withstand the negative fallout.
- **Adaptation and Mitigation:** Adaptation capabilities of developing countries, especially in agriculture, need to be strengthened through Technology transfer and provision of funds. Developed countries should focus more on immediate and substantial reduction in their emissions (mitigation).
- **Strengthen Infrastructure and Disaster Resilience:** Countries should focus on building capabilities to manage and respond to disasters caused by El Niño and associated weather patterns.
- **Conserving Marine Ecosystems:** El Niño has severe impact on marine ecosystems. Marine ecosystems can be conserved by preventing overfishing, reducing pollution and protecting and preserving critical marine habitats like coral reefs. (Refer EPIC October 2022 (click) for Impact of Climate Change on Monsoons).

A study published in journal Nature estimated potential global economic loss due to El Niño this year to be US\$ 3 trillion. All nations must come together to respond effectively to mitigate the potential damages.

## OCEANIC NIÑO INDEX (ONI)

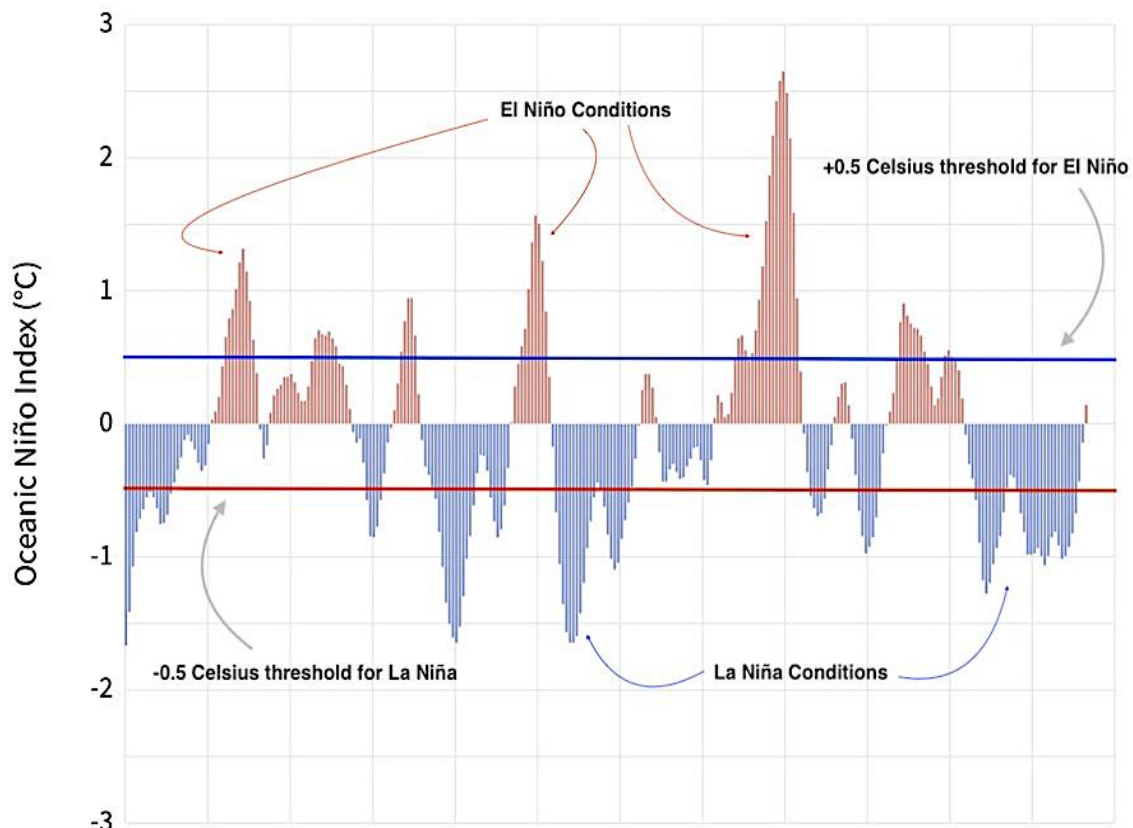


Image Source: NOAA. **Oceanic Niño Index (ONI)** is the primary index for tracking the oceanic part of ENSO. It is the rolling 3-month average **temperature anomaly** (difference from average) in the surface waters of the east-central tropical Pacific, near the International Dateline. **Index values of +0.5 or higher indicate El Niño**. Values of -0.5 or lower indicate La Niña. The **atmospheric component is measured through Southern Oscillation Index** which is based on the observed **sea level pressure (SLP)** differences between **Tahiti** (Pacific Ocean) and **Darwin, Australia**.



## General Studies Paper II

### 1. Inauguration of the New Parliament Building

**News:** The New Parliament Building has been inaugurated. The Monsoon Session (2023) is likely to be held in the new building. The new building is a symbol of India's rising aspirations and commitment to Democracy.

#### What is the need for the New Parliament Building?

- The old Parliament building was commission in 1927 (construction began in 1921). In the absence of detailed drawings of the building, a lot of repair and renovation work had been done in an ad-hoc manner. This had given rise to several concerns.
- **Seating Capacity:** The existing building was not designed to accommodate a bicameral legislature for a full-fledged democracy. The Central Hall has a seating capacity of 440 members and is inadequate to hold joint sessions. The Parliament is expected to undergo expansion in membership post 2031 Census. Limited space of movement poses security risk as well.
- **Distressed Infrastructure:** The existing building is more than 100 years old. Infrastructure of utility systems like water, sewerage, air-conditioning etc. is crumbling. Widespread seepage has destroyed the aesthetics. Fire safety is a concern and the building is susceptible to fire hazard.
- **Obsolete Communication Systems:** The communication systems are old and antiquated. Much more advanced communication systems are available. Acoustics of the halls need major improvement.
- **Hazard of Earthquake:** The old Parliament building was built for Seismic Zone II. Delhi has since been reclassified in Zone IV. There were concerns related to structural safety of the old building.
- **Inadequate Workspace:** The activities and the staff in the Parliament has increased manifold in recent times. The space was not enough for the support staff of the Parliament.

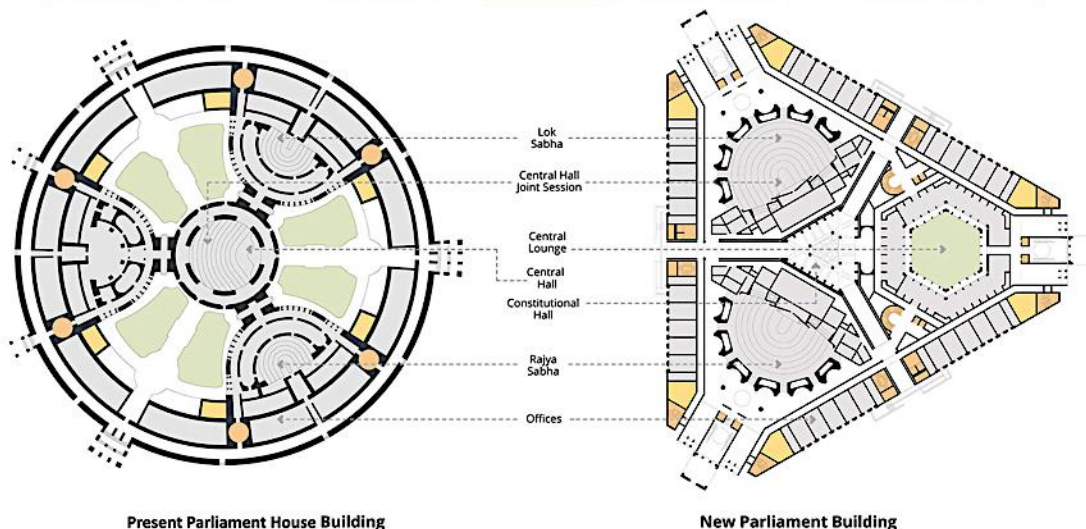


Image Source: Government of India. Plan of the New Parliament Building compared to the Old Building.

#### What are the salient features of the New Parliament building?

- **Size:** The new building is built over an area of 64,500 square meters. It has triangular structure and houses the Lok Sabha, Rajya Sabha, Central Lounge and Offices of Constitutional authorities. The Lok Sabha and Rajya Sabha halls have seating capacity of 888 and 384 members respectively. The Lok Sabha hall can accommodate up to 1272 members for joint sessions. There are 92 rooms for the use of Council of Ministers. The Building has been according to **safety standards of Seismic Zone V**.

- **Symbolism:** The Lok Sabha chamber has been designed in the likeness of Peacock (National Bird) and the Rajya Sabha chamber bears resemblance to Lotus (National Flower).
- **Modern Facilities:** The new building offers secure and efficient office spaces equipped with the latest communication technology. Chambers have **biometrics** and **smart displays**. Offices have **digital language interpretation** and **programmable microphones**. It features large committee rooms with advanced audio-visual equipment and provides an enhanced library experience. The building has **100% UPS power back-up**.
- **Inclusive:** The new Parliament building is completely '**divyang-friendly**' and there are provisions for people with disabilities, ensuring that everyone has easy access to all facilities.
- **Sustainability:** The new building has systems for rainwater harvesting and water recycling. The new Parliament building is designed as a 'Platinum-rated Green Building', demonstrating India's commitment to environmental sustainability.
- **Indian Heritage:** The building showcases the vibrance and diversity of modern India by incorporating cultural and regional arts and crafts, serving as an embodiment of Indian heritage. The 3 galleries: **Sangeet** (musical), **Sthapatya** (architectural) and **Shilp** (handicrafts) showcase India's rich cultural heritage.

#### What are the criticisms of the new Parliament building?

- **Cost:** Some Opposition parties have called the project 'needless' and raised concerns over the cost. The project has cost ~INR 980 crores.
- **Consultation:** Absence of consultation with the opposition as well as general public is being criticized. It is being argued that such broad project should have included opinion of opposition parties who are equal stakeholders in the Parliament.
- **Public Access:** Critics have expressed concerns about limited public access to the new Parliament building and suggest that it could have been inaugurated as an open house, allowing citizens to explore and engage with the democratic institution.
- **Legacy:** Critics emphasize the historical and cultural significance of the old Parliament House and contend that its retirement to secondary functions diminishes its legacy. They say that preserving the old building as a symbol of India's democratic journey would have been a more appropriate approach.

#### What should be done?

- **Consultation:** Consulting all stakeholders can ensure inclusivity of opinions. Views of opposition parties and general public should be suitably incorporated in the other projects under the Central Vista Plan.
- **Preservation:** All necessary steps should be taken to preserve the heritage of the old Parliament House and its suitable renovation.
- **Functioning:** Parliament is more than just a building. It is the temple of India's democracy. The Government and the Opposition must work together to ensure its effective functioning.

## 2. Dilution of Parliamentary Control Over the Executive

**News:** Several Experts argue that the ability of the Parliament to control the Executive has diluted over time, especially when the Government (Executive) has a clear majority in the Parliament. It is not a healthy trend.

#### What are the various modes of Parliamentary Control over the Executive?

- **Budgetary Control:** The Government's Budget must be approved by the Parliament. Funds can be withdrawn from the Consolidated Fund only with Parliament's

#### Article 75(3)

The Council of Ministers shall be collectively responsible to the House of the People.



approval. However, the Government's control of Lok Sabha (majority membership) reduces the degree of control to a great extent.

- **Question Hour:** Members of Parliament can ask questions from the Government/Ministers. Members of ruling party can also ask questions from the Ministers.
- **Control on Legislation:** The Bills are often referred to **Parliamentary Committees** (with representation from the opposition parties) where they are intensely debated. General debate and discussion happen on the floor of the House before voting on the Bills, and they can be suitably amended before passage.
- **Rajya Sabha:** Rajya Sabha acts as a **revision chamber**. Its members are elected by the State Legislative Assemblies and generally, as trends indicate, no single party tends to have complete control of the House. Hence, there is **greater diversity of opinion in the Rajya Sabha**. Barring Money Bills, Rajya Sabha has equal role in the legislative process.
- **Speaker:** The interests of Parliament against the Executive are meant to be **represented by the Speaker**. She is a **neutral and independent authority**. Speaker has several powers like certifying Money Bills, deciding Breach of Privilege of the House, deciding on disqualification of members etc.

**Fewer sittings than 16th Lok Sabha**

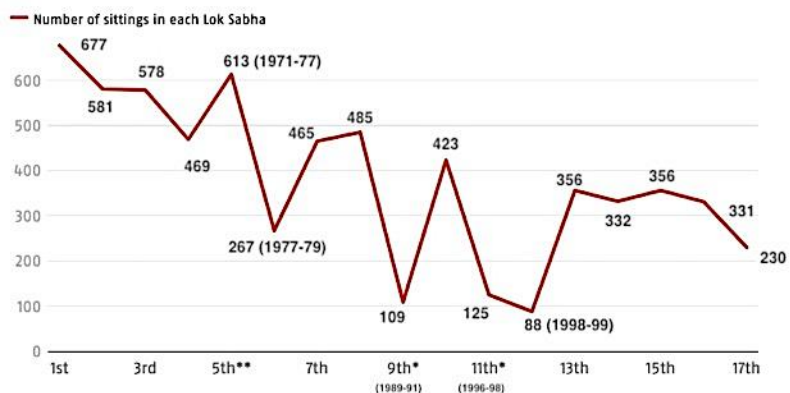


Image Source: PRS. The sittings of the Lok Sabha have consistently come down, from ~550+ in 1950s-60s to ~350 in 2000s. The sittings of 17<sup>th</sup> Lok Sabha may not reach 300 as only 3 more sessions are left. Some Lok Sabhas had extremely low sittings due to shorter duration (like 9<sup>th</sup> Lok Sabha (1990-91) or 12<sup>th</sup> Lok Sabha (1998-99)).

### How are the mechanisms of Parliamentary control becoming ineffective?

- **Anti-defection Act:** Anti-defection Act (Tenth Schedule) has limited the ability of the MPs to question their own Government. They face the risk of disqualification for asking tough questions or for disobedience of party whip. (Refer EPIC July 2022 for Issues with the Working of Anti-Defection Law).
- **Poor Functioning:** The number of sittings of the Parliament has declined significantly in recent times. The level of discussions has gone down considerably. Frequent adjournments have curtailed the ability of the opposition MPs to ask questions, and engage in policy debates. (Refer EPIC April 2023 for Low Number of Sittings in 17<sup>th</sup> Lok Sabha and EPIC December 2021 for Functioning of the Parliament).
- **Role of the Speaker:** The Speaker is not obligated to renounce the membership of the political party after assuming the Office of the Speaker. The Speaker(s) (especially in State Legislative Assemblies) have acted in dubious manner mainly in matters related to disqualification of members of opposition parties.
- **Money Bills:** Some Bills have been controversially classified as Money Bills and thus making the opinion of the Rajya Sabha irrelevant. This has put the neutrality of the Speaker under scrutiny.
- **Bypassing Legislative Process:** The proportion of Bills referred to Standing Committees has declined. The views of many stakeholders is thus not incorporated in the legislation. (Refer EPIC October 2022 (click) for Referral of Bills to Department Related Standing Committees).

### What should be the approach going ahead?

- **Coordination:** The Government must prepare the agenda of Parliamentary sessions in consultation with opposition parties. Opposition parties must also respect the concerns of the Government on certain matters especially national security and foreign affairs. To ensure accountability of the Government, Opposition should focus on issues of national importance rather than trivial matters.
- **Check Unruly Behaviour:** Members of Parliament (both ruling and opposition parties) should maintain decorum, refrain from shouting, or flooding the Well of the House. All parties should together establish the standards to be followed by the MPs when the Parliament is in session.
- **Role of Speaker:** The Speakers should act in an impartial manner free from political bias. The political parties can set a healthy convention to choose the Speaker from the opposition parties.

### 3. Law Commission's Recommendation on Sedition Law

**News:** The 22<sup>nd</sup> Law Commission has recommended certain amendments to the sedition law instead of repeal. This SC had put the law on hold in a 2022 order.

#### What is Sedition Law?

- Section 124A of the Indian Penal Code (IPC) defines sedition as any action that brings or attempts to bring **contempt, hatred or disaffection towards the Government established by law**. The modes of seditious acts include Spoken or Written words, Signs or Visible representation
- Sedition cases are punishable with imprisonment up to 3 years or to a maximum sentence of life imprisonment.
- Sedition is classified as '**cognisable**' (no need of Court warrant to arrest a person) and a '**non-bailable**' and '**non-compoundable**' (no compromise) offence.

#### Sedition Law Under the Colonial Rule

Section 124A was inserted into the IPC in 1870 to check revolutionary activities against the British colonial Government. The famous cases under the law involved **Jogendra Chandra Bose** (1891), **Bal Gangadhar Tilak** (1897), **Vinayak Savarkar** (1909) and **Mahatma Gandhi** (1922). Gandhi had called Sedition, "*the prince among the political sections of the IPC designed to suppress the liberty of the citizen*".

#### What are the Law Commission's recommendations on Sedition?

- **Amendments:** The Law Commission has recommended amending Section 124A, rather than repealing it. The Commission is of the view that removal of the law could pose a threat to the country's security and integrity.
- **Alignment with Kedar Nath Judgment:** The Commission has recommended that amendments should align with the SC's Kedar Nath Judgment (1962). The Judgment stipulates that there must be a '**pernicious tendency to incite violence**' to **invoke the sedition law**, providing a safeguard against its misuse for stifling free speech.
- **'Tendency to Incite':** 'Tendency' means inclination to incite violence or cause public disorder rather than proof of actual violence or imminent threat to violence.
- **Procedural Safeguards:** The Law Commission has suggested addition of procedural safeguards to prevent misuse of the Sedition law. These include a revision to Section 154 of the Criminal Procedure Code stipulating that an FIR under Section 124A can only be registered following a preliminary inquiry by a police officer and subsequent approval by the Union or State Government.
- **Punishment:** The Commission has proposed to increase the jail term to 7 years or life imprisonment. The present provision of imprisonment of 3 years or life imprisonment lead to arbitrariness and subjectivity in the award of punishment.

### What arguments have been put by the Law Commission?

- **Unity and Integrity of India:** There are several threats to India's internal security like Maoist extremism, secessionist activities in the Northeast India and terrorism in J&K that necessitate sedition law.
- **Reasonable Restriction:** The Commission has justified criminalising sedition as it is a reasonable restriction under Article 19(2) of the Constitution.
- **Practice in Foreign Jurisdictions:** Many other countries have outlawed sedition but they have merged the provisions with counter-terror legislation.
- **Coverage:** Existing laws like Unlawful Activities Prevention Act and National Security Act do not cover all elements of the offence envisaged under Section 124A of the IPC. In the absence of this provision, any expression that incites violence against the Government would invariably be tried under counter-terrorism or other special legislation. These laws contain much stringent provisions.
- **Arguments of Repeal Not Valid:** Repealing the Act would essentially be turning a blind eye to the glaring ground realities existing in India.
  - 'Colonial Legacy' is not a valid argument to repeal the provision as the **entire framework of the Indian legal system is a colonial legacy**. 'The Police force and the idea of an All-India Civil Service are also temporal remnants of the British era'.
  - Misuse of Law is, again, a not valid argument as there are plethora of examples of other laws being misused.

### Supreme Court's Judgments Related to the Sedition Law



- **Tara Singh Gopi Chand vs The State (1950):** The Punjab and Haryana High Court declared Section 124A as unconstitutional. The provision violated the fundamental right to freedom of speech and expression.
- **Kedar Nath Singh v State of Bihar (1962):** The Supreme Court upheld the constitutionality of Section 124A.
  - The SC reasoned that State requires this **power to protect itself**.
  - However, every citizen has a right to say or write about the Government by way of criticism or comment.
  - **A citizen can criticize the Government** to the extent it doesn't incite violence or isn't done with the intention of creating public disorder.
- **P. Alavi vs State of Kerala (1982):** The Supreme Court held that sloganeering, criticising Parliament or Judicial setup does not amount to sedition.
- **Balwant Singh v State of Punjab (1995):** The Supreme Court held that mere raising of slogans alone cannot be said as sedition. Further, it is not considered as an attempt aimed to excite hatred or disaffection against the Government.

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### What are the concerns associated with the Law Commission's Recommendations?

- **Misuse of 'Tendency':** The clause of 'tendency' to incite violence will add a new risk of misuse. Sharp criticism of the Government can be construed as 'tendency' to incite violence and attract sedition charges, even if no violence actually takes place.
- **Against the SC Judgment:** Law Commission's recommendation goes against the spirit of the SC Judgment in the Balwant Singh Case (1995).
- A consultation paper by the 21<sup>st</sup> Law Commission (2018) had suggested that every irresponsible exercise of the right to free **speech should not be termed seditious**. The Commission had expressed that the **sedition law should not be misused to suppress free speech**, an essential element of democracy. (Refer EPIC May 2022 (click) for The Supreme Court Puts Sedition Law (Section 124A of the IPC) on Hold).

### What should be done?

- There are **compelling arguments to retain the sedition law**, given security challenges faced by the country. However, the **law is susceptible for misuse** to curb dissent. Hence there is a **need for a delicate balance between the two**. Comprehensive safeguards should be introduced to check misuse of the provision and protect the right to free speech.
- Section 124A has been challenged before the Supreme Court. The SC should expedite the hearings and decide on the matter quickly. **The SC can provide the framework for safeguards in its Judgment.**
- The SC has noted that the sedition law might not be in tune with the current societal context. Hence, a broader dialogue should be undertaken about the role of sedition law in contemporary Indian society. Factors such as changes in communication technology, social media, and evolving norms around free speech and dissent in this respect should be considered.

### 4. Health as a State Subject: Impact on Service Delivery

**News:** Policy Experts suggest that Health as State subject has impacted the quality of delivery of health services and consequently the health outcomes.

### What was the arrangement under colonial rule?

- The Government of India Acts of 1919 and 1935 established health as a Provincial subject.
  - The Government of India Act, 1919 granted autonomy to Provinces over health, and classified it under 'Transferred' subject.
  - The Act of 1935 demarcated subjects into Federal, Provincial, and Concurrent lists. It designated health as a Provincial subject.
- During the Constituent Assembly Debates, there were **arguments against retaining health in the State list**. It was argued that 'national health' had declined under the British rule due to Provincial control. Making health as a Union subject can help protect the nation from diseases and epidemics. But the proposals were rejected and the Constitution retained health as a state subject.

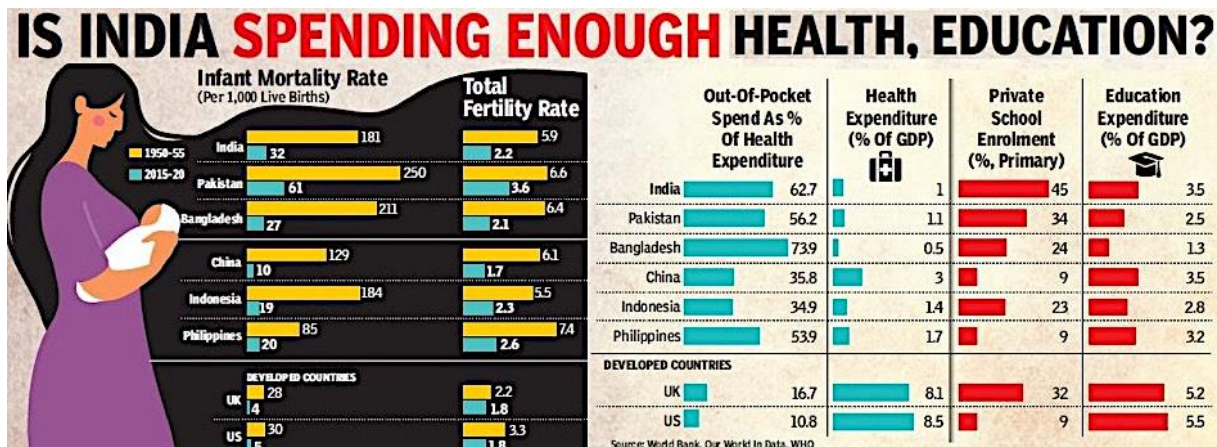


Image Source: Indiatimes. Despite improvements, India is behind its neighbors on several healthcare and education parameters.

### What are the consequences on delivery of healthcare?

A former bureaucrat has pointed out several challenges of present arrangement.

- **Lack of Uniform Standards:** the Constitutional structure hampers nationwide public health strategies. It restricts the ability of the Union Government to **enforce uniform standards and guidelines**.



- **Inter-State Disparities:** This has led to contrasting **disparities in health outcomes** between various States. Health indicators in UP and Bihar are among the worst in the world. Health in states such as Tamil Nadu and Kerala is comparable to upper-middle-income countries.
- **Low Spend on Healthcare:** The Union health budget has remained negligible since Independence, stagnating at ~2% over several 5-Year Plans. As the Constitution did not mandate an equal role for the Union Government, the onus was passed on to the State Governments with limited resources. Consequently, the **health infrastructure gap between States widened**.
- **Regulatory Gaps:** Regulations have been uneven. The Government of India had enacted the **Clinical Establishments Act** in 2010 to improve quality and protect patients' rights. It has largely been ineffective as many States/UTs have not implemented it.
  - State-level drug and device regulations have **obstructed uniform drug regulation**. The **Drugs and Cosmetics Act** has a fragmented regulatory approach..
  - The Centre makes rules for manufacture of drugs but States grant the licences. States have uneven regulatory oversight, variable drug quality, inconsistent standards enforcement, and insufficient protection from unsafe drugs.
  - Some States have lax standards to attract drug manufacturing to their States which leads to sub-standard quality. (Refer EPIC August 2022 (click) for The Draft Drugs, Medical Devices and Cosmetics Bill, 2022).

#### What is the way forward to reduce disparities across States?

- The Supreme Court has held that **denial of emergency care is violation of Article 21** of the Constitution. The Government of **Rajasthan** has passed the **Right to Health Act**, which is a right approach to provision healthcare services. However, the benefit will be **limited to residents of Rajasthan**, again creating disparities. Such a **piecemeal approach will lead to fragmentation**. In fact, some health analysts say that due to expected rise in costs, some private hospitals may shift out of Rajasthan.
- Healthcare sector has witnessed **rapid transformation** with advances in technology, increased role the private sector in provisioning of healthcare services, and increased reliance on third-party payment and insurance systems. **States may lack capacity to manage and regulate all these aspects**.
- Hence, there has been argument of **transferring healthcare to the Concurrent list**. It can help in uniform policy formulation and implementation. A **high-level group (HLG)** formed by the **15<sup>th</sup> Finance Commission** has suggested the same. (Education was moved to the Concurrent list in 1976).
- The union and state governments should undertake discussions in this regard. Concerns of states should be addressed appropriately before any such shift. (Refer EPIC May 2023 (click) for Universal Health Coverage in India).

#### Subjects Related to Healthcare

##### State List

**Item 6:** Public health and sanitation, hospitals, and dispensaries.

##### Concurrent List

**Item 16:** Lunacy and mental deficiency.

**Item 19:** Drugs and poisons.

**Item 20A:** Population control and family planning.

**Item 25:** Education including medical education.

**Item 26:** Legal, Medical, and other professions.

#### 5. Issues with the Drug Regulatory System in India

**News:** Incidents of deaths of patients caused by drugs manufactured in India have damaged the reputation of India as the Pharmacy of the World. The incidents indicate regulatory gaps related to Pharma sector.

#### What are the challenges associated with drug regulation in India?

- **Lack of Resources:** The drug regulatory system is overburdened, with shortage of staff, laboratories, and equipment. CDSCO faces resource constraint and limited funding.



- **Corruption:** There have been several instances of drug officials accepting bribes to approve drugs. Ranbaxy scandal (2013) exposed the practice of using falsified data to receive approval for drugs.
- **Delayed Approvals:** The approval process for drugs can be lengthy and cumbersome.
- **Inadequate Monitoring:** The system lacks adequate monitoring capacity to ensure compliance with quality standards. Lack of manpower and corruption are major factors behind inadequate monitoring.

(Refer EPIC August 2022 (click) for The Draft Drugs, Medical Devices and Cosmetics Bill, 2022).

- **Lax Implementation:** Some State Drug Regulators do not implement provisions of Drugs and Cosmetics Act stringently. There is a fear that strict compliance will drive away the pharma manufacturing units to other States with regulation is lenient.
- **Fragmented Regulation:** There are 37 agencies along with the CDSCO, for enforcing drug regulation across India, leading to varying levels of quality supervision and providing arbitrage opportunities.
- **Poor Pharmacovigilance:** It is the process of **monitoring the safety of medicines** once they are on the market. In India, the pharmacovigilance system is still developing, and there is a **lack of awareness** among healthcare professionals and patients about **reporting adverse drug reactions** (ADRs). E.g., adverse reactions to the COVID-19 vaccine have not been adequately investigated.

### What should be done?

- **Single Regulator:** Sector experts suggest that there should be a **single regulator** to check regulatory arbitrage, fragmentation and to ensure uniform standards. The regulatory framework should be suitably amended.
- **Implementation:** Compliance to standards should be improved. Violation of quality standards should be dealt with strictly including permanently debarring the culprit promoters from engaging in the drug manufacturing sector. The inspection and audit system should be strengthened.
- **Adopt Best Practices:** The Good Manufacturing Practices (GMPs) Regulations as established by the USFDA should be implemented in India.

## Drug Regulatory Regime in India

### Domestic Drugs

Drugs and Cosmetics Act, 1940 and Rules provide statutory framework.

- **Central Drugs Standard Control Organization**
  - Primary regulatory body for manufacture, sale, and distribution of drugs.
  - Conducts periodic inspections of drug manufacturing facilities; Ensure compliance with **Good Manufacturing Practices** (GMPs).
- **Drug Controller General of India**
  - Responsible for approving new drugs.
  - Monitoring their safety and efficacy.
- **Drug Price Control Order**
  - Regulates the prices of certain essential drugs to ensure affordability to the public.
- **State Drug Regulatory Authorities**
  - Statutory bodies created under the Drugs and Cosmetics Act, 1940.

### Exported Drugs

Foreign Trade (Development and Regulation) Act, 1992 provides framework along with Drugs Act, 1940.

- **Central Drugs Standard Control Organization**
  - Issues Certificates of Pharmaceutical Products (CPP) to ensure compliance to quality, safety, and efficacy standards of importing country.
  - Regulates the labelling, packaging, and transportation of drugs exported from India.
- **Directorate General of Foreign Trade**
  - Issues guidelines, including the requirement of obtaining necessary licenses, permits, certificates and Import-Export Code (IEC).
- **Export Inspection Council (EIC)**
  - Ensure that products notified under the Export (Quality Control and Inspection) Act 1963 are meet the quality requirements of the importing countries.

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The WHO pre-qualifies drugs manufactured in India that are used in its global health programs. The US Food and Drug Administration (US FDA) and the European Medicines Agency (EMA) monitor and regulate drugs for quality standards that are imported to their respective jurisdictions.

## Instances of Irregularities

- **Quality Control:** Substandard drugs in the market e.g., presence of drug-resistant bacteria in eye drops manufactured by a Chennai-based pharma company.
- **Data Manipulation:** Submission of manipulated data to get approval by a Hyderabad-based pharma company.
- **Non-Compliance:** Non-compliance with Good Manufacturing Practices (GMPs) as found by Haryana Food and Drug Administration in an inspection of facility of cough-syrup manufacturing firm responsible for deaths of children in Gambia.
- **Counterfeit Drugs:** According to a US Trade Representative (USTR) report, nearly 20% of all pharmaceutical goods sold in the Indian market are counterfeit.
- **Price Fixing:** The Competition Commission of India (CCI) imposed penalties on 3 pharmaceutical companies (in 2018) for allegedly fixing the prices of a certain drug.

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- **Transparency and Accountability:** Transparency and accountability should be promoted by making the regulatory process more accessible and understandable to the public and stakeholders. This can be done by improving the dissemination of information and conducting public consultations.
- **Training and Capacity Building:** Regulatory bodies should be adequately staffed to enable frequent inspections and audits. Investments in training and capacity building can enhance skills and knowledge of the staff to maintain high standards of drug quality and safety.
- **International Collaboration:** The Government should collaborate with international bodies like the WHO to regularly update the domestic standards. This will also ensure that Indian pharmaceutical companies are following global safety and quality standards. The authorities should work closely with international bodies to monitor the safety of drugs that are exported from India.
- **Robust Pharmacovigilance System:** The Government should invest in the development of a robust pharmacovigilance system to monitor adverse drug reactions and prevent any potential harm to patients.

### The Drugs and Cosmetics Act, 1940

- The Act established regulatory control over the **import, manufacture, distribution, and sale of drugs and cosmetics** in India.
- It made the **sale of substandard drugs a punishable offence**.
- It established the **Central Drugs Standard Control Organization (CDSCO)** for discharging functions assigned under the Drugs and Cosmetics Act.
- The **State Health Department** has to **regulate the manufacturing, sales, and distribution** of drugs. Drug Inspectors control the implementation at ground level.
- If the drugs are found to be **substandard**, then the drugs can be recalled from the market and the manufacturer has to conduct a root cause analysis.
- The Act has provisions to **compensate the victims of adulteration**. It calls for the penalty to be extracted from a convicted manufacturer and given to families of the victims.

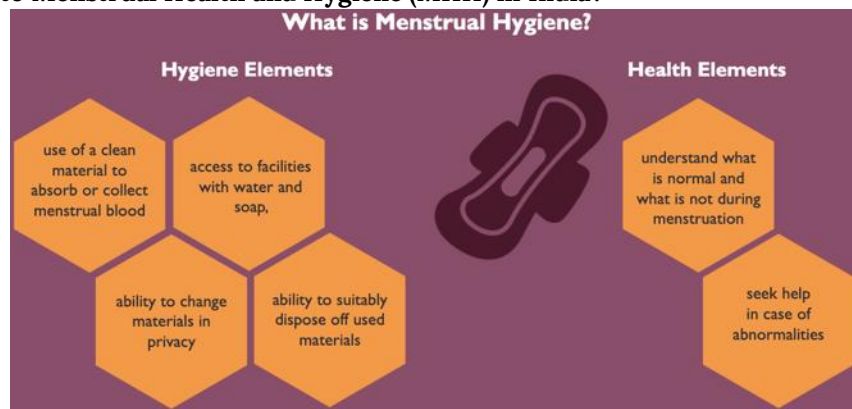
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## 6. Issues Related to Menstrual Health and Hygiene

**News:** A recent survey revealed that ~12% of girls are not aware of cause of menstruation. Lack of awareness about menstrual health and hygiene is a major healthcare challenge in India.

### What are the challenges related to Menstrual Health and Hygiene (MHH) in India?

- **Lack of Awareness:** Most Girls enter puberty with **knowledge gaps and misconceptions** about menstruation. E.g., in a recent survey, 12% of surveyed young girls believed that **menstruation is curse from God** or caused by disease. Another 5% girls had no knowledge about the cause.



- **Taboo:** A major reason for lack of awareness is that **parents and teachers are uncomfortable about discussions** on sexuality, reproduction and menstruation. Adult women themselves are unaware about good hygiene practices. The same survey found that 61.4% of the girls acknowledged the **existence of societal embarrassment** related to menstruation. Awareness is even lower in men. In some areas, women are still segregated and kept in isolation in '**Kurmaghars**' (period huts) during the menstruating periods. (Refer EPIC February 2023 (click) for The Issue of Menstrual Leaves).

- **Lack of Adequate Facilities:** Women lack access to **appropriate sanitation facilities**. There are challenges around availability of suitable private space, water, soap etc. and the dignified and environmentally safe disposal of menstrual waste. Many schools do not have separate wash rooms for girls.

- **Lack of Access to Safe Products:** Poor women and women in rural areas lack access to safe menstrual products. The survey found 44.5% girls using **homemade absorbents** or **cloth instead of sanitary pads**. NFHS-5 had found that 49.3% of girls use cloth and 15.2% use locally produced napkins. Lack of knowledge, hesitation and shyness (to buy), poor availability (rural areas) and difficulty in disposing are the reasons for low use of sanitary pads.

Poor Hygiene results in health effects (infections and even cervical cancer), reduced participation of women in economic activities and dropping-out of adolescent girls from schools. A UN study had estimated that **23% of girls in India drop out of school** due to a lack of menstruation products, inadequate washrooms and absent disposal facilities.

### Period Poverty

It refers to the lack of access to sanitary products, toilets, waste management, handwashing facilities and menstrual hygiene education. Studies show that **period poverty has a ripple effect**: Girl students drop out of school, are pushed into child marriage, and are more like to experience domestic violence, infections, reproductive illnesses, malnourishment and poor mental health.

### What steps have been taken to improve MHH in India?

- The **Menstrual Hygiene Scheme** was launched in 2011 by the **Ministry of Health and Family Welfare** to **promote menstrual hygiene** among adolescent girls. ASHAs have been made responsible for **Menstrual Hygiene Management (MHM)**.

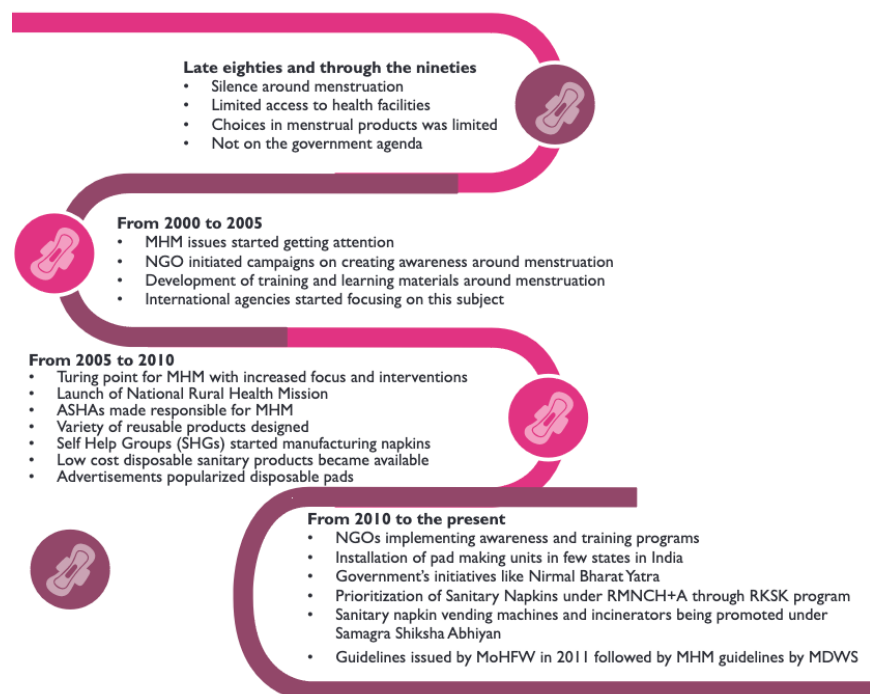
- Swachh Bharat guidelines (2015) have included MHM in schools. The guidelines include provisioning of sanitary pads, disposal mechanisms, and exclusive washrooms for girl students.

- Under the **Pradhan Mantri Bhartiya Janaushdhi Pariyojna Kendras**, sanitary napkins (Suvidha Napkins) are

being provided at INR 1 only by the Union Government. The Governments of Kerala (She Pad), Maharashtra (Asmita), Odisha (Khushi), Rajasthan (Udaan), Chhattisgarh (Suchita), Andhra Pradesh (Swechha) and Sikkim (Bahini), among others, have launched varied schemes to distribute subsidised sanitary pads.

- The Supreme Court has directed the Union Government **to form a uniform national policy** in consultation with the States/UTs to **ensure menstrual hygiene** by providing sanitary pads, vending and disposal mechanisms and exclusive washrooms for girl students in schools.

### Journey of Menstrual Hygiene Management in India





### What should be done going ahead?

- **Social Change:** The stigma around menstruation must be broken through sensitisation and awareness generation. ASHA workers have to play the most constructive role here and act as change agents. Men should also be part of this sensitisation drive and be made equal partners in bringing the change.
- **Education:** Menstrual Health and Hygiene should be part of the school curriculum. Awareness at a younger age will make the girls adjust to the bodily changes during adolescence with confidence rather than fear.
- **Access:** Access to safe hygiene products and infrastructure (washrooms with privacy, water, disposal) etc. should be improved. The implementation of existing initiatives has to be improved e.g., in several schools sanitary pads are not distributed due to associated stigma. Such gaps have to be plugged.

### World Menstrual Hygiene Day

It is celebrated on **May 28** every year. Its purpose is to **raise awareness** and **promote menstrual hygiene management (MHM)** at a global level and **break taboos surrounding menstruation**. It is celebrated on May 28 (28/5) as the average menstrual cycle lasts 28 days and menstruation lasts for 5 days on average. The Theme for 2023 was **“Making menstruation a normal fact of life by 2030”**.

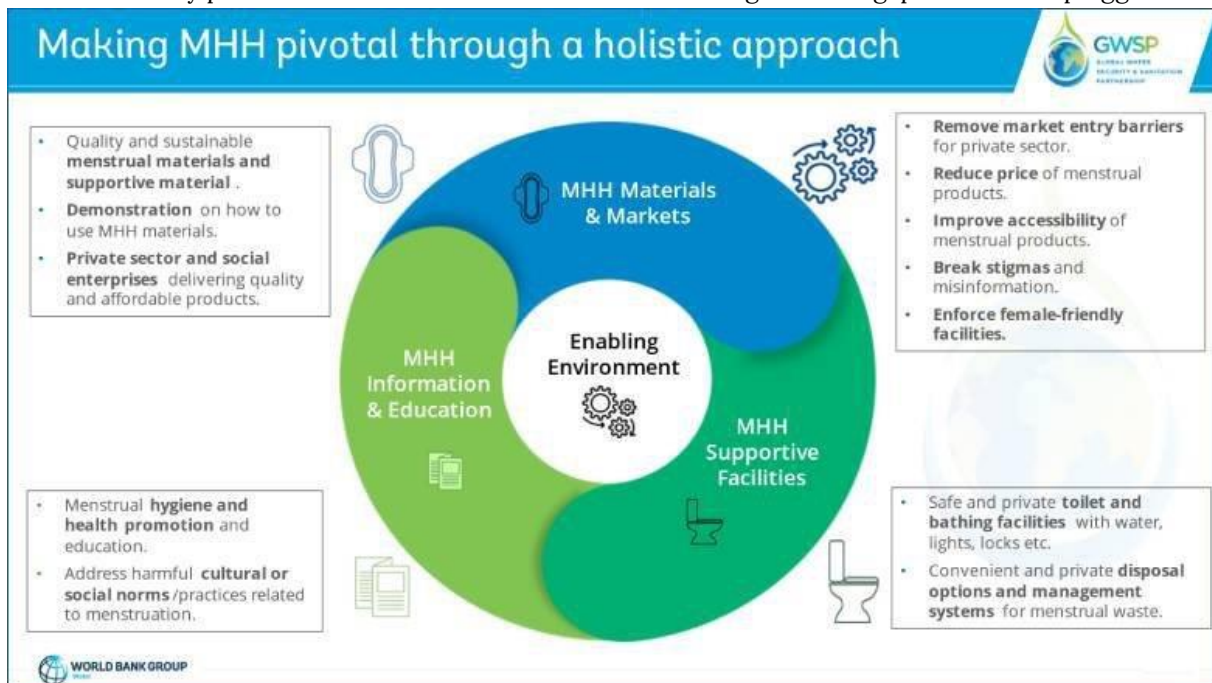


Image Source: World Bank. World Bank has suggested a holistic approach to mainstream Menstrual Health and Hygiene.

## 7. India's Foreign Policy over the Last Decade

**News:** There have been some profound changes in the conduct of India's Foreign Policy over the last decade.

### What are the salient aspects of conduct of India's Foreign Policy?

- **Voice of the Global South:** India has taken various initiatives like Neighbourhood First, SAGAR, and International Solar Alliance. With these initiatives, **India has been perceived as a voice of the Global South**. India has tried to act as the bridge between Global North and South during its ongoing G20 Presidency. India also convened the **Voice of the Global South Summit** (virtually) in January 2023. These initiatives have made India recognisable as a **responsible development partner** globally.



- **De-risking Economy:** The COVID-19 pandemic highlighted the need for de-risking the economy from external dependence. The Government has tried to **promote domestic growth** through initiatives Make in India, PLI Schemes and Gati Shakti. The Foreign Policy has been focused on **exploring global opportunities**, building deeper strengths, absorbing technology and best practices.

#### Panchamrit Guiding Principles of Foreign Policy

**Samman** (Dignity)

**Samvad** (Dialogue)

**Samriddhi** (Shared Prosperity)

**Suraksha** (Regional and Global Security)

**Sanskriti evam Sabhayata** (Cultural and Civilisational Links)

- **Digitization:** The Government has deployed large resources for digitization of economy and service delivery. India has developed indigenous 5G Technology stack. The Government is looking to **export India's digital prowess** demonstrated through technologies like Aadhar, UPI and 5G Tech. Adoption of Indian technologies will add to India's diplomatic heft. (Refer EPIC April 2023 (click) for India's Digital Public Infrastructure, EPIC November 2022 (click) for Direct Benefits Transfer (DBT): Advantages and Challenges and EPIC August 2022 (click) for Unified Payments Interface (UPI) and Digital Payments in India).
- **Diaspora:** India has conducted various mission like Vande Bharat Mission, Operations Ganga and Kaveri to safeguard its professionals and students abroad. (Refer EPIC May 2023 for India's Evacuation (of Citizens) Missions).
- **First Responder:** India has emerged as a **first responder in disaster situations** like earthquakes in Nepal and Türkiye. It shows India's capabilities as well as humanitarian outreach (India reached out to Türkiye despite latter's stand on Kashmir issue and support to Pakistan).
- **Expanding Diplomatic Ties:** India has expanded diplomatic engagements with the countries like Pacific Islands, Caribbean, African and Nordic nations, that were not given prominence earlier.
- **Relations with Neighbours:** India has taken various projects in the neighbourhood like the **development of road, rail and waterway connectivity**, power grids, fuel pipelines and border crossing facilities. The trade in the region has increased. India provided vital financial support to Sri Lanka amidst the economic crisis. India has resolutely defended its territory against Chinese aggression. It has called out Pakistan's support to terrorism at multiple global platforms.
- **Promotion of India's Cultural Heritage:** The Government has made efforts to promote India's ancient cultural heritage globally like the celebration of Yoga (International Yoga Day) and promotion of Ayurveda.
- **Other Initiatives:** India has also taken various initiatives in the field of **climate action, counter-terrorism, connectivity, maritime security, financial inclusion** and food security among others.

The focus of the Government has been to promote India's soft power and secure India's strategic interests through creative diplomacy.

### 8. India's Engagement with Pacific Island States

**News:** The 3<sup>rd</sup> Forum for India-Pacific Islands Cooperation (FIPIC) was held recently in Papua New Guinea. The Pacific Island States have gained strategic importance with China's increasing presence in the region.

#### About the Pacific Island States

- The Pacific Islands Countries (PICs), consist of 14 member nations including Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.
- The PICs are rich in culture and natural beauty but are one of the most vulnerable nations to Climate Change.

- The region has gained strategic importance in the context of rising salience of the Indo-Pacific and the effort by China and the US to gain influence in the region.

### What is the significance of India-Pacific Islands Relationship?

- **Strategic Location:** The strategic location of the islands in the Pacific offers India a unique opportunity to extend its influence beyond the Indian Ocean, deeper into the Pacific region.

- **Development Partner:** India is crucial development partner for PICs most notably in sectors like healthcare and IT. India's approach to cooperation with PICs is in

contract to China and does not involve debt-trap diplomacy. Pacific Islands offer unique opportunity to Indian companies to expand their global presence.

- **Trade:** India's trade with PICs is limited to US\$ 600 million, though there is large potential for expansion. PICs can be a big market for India's pharma, electronics, plastics, IT and Service exports.
- **Counter-balance to China:** India's greater involvement in the region acts as a check and counter-balance to the Chinese presence in the region. It reduces the regions dependence on China for economic cooperation and investment.
- **Shared Concerns:** PICs support India's role as the voice of the Global South. There are common views on issues like Climate Action, Climate Finance and Technology Transfer, although several Pacific Island nations exhort India to do more on Greenhouse Gas (GHG) emissions reduction.

### India-PICs: Historical Relationship

- **Low-key:** The mutual relationship has been relatively low-key, but cordial. There has been little direct interaction due to the **vast geographical distance** and lack of significant strategic or economic interests.
- **Shared Commonwealth History:** Several Pacific Island nations, including Fiji, Papua New Guinea, and the Solomon Islands, share a history with India as **former British colonies**. There are commonalities in governmental, legal, and educational systems, as well as English as a spoken language.
- **Indian Diaspora:** Significant Indian diaspora communities, especially in Fiji, have played a role in **building people-to-people ties**. The Indian community in PICs is largely **descendants of indentured labourers** brought to the islands by the British in the late 19th and early 20th centuries.
- **FIPIC:** It was established in 2014-15 to enhance India's engagement with the PICs.

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### What are the challenges faced in India – Pacific Islands Relationship?

- **Geographical Distance:** Significant geographical distance between India and PICs has hampered connectivity. Consistent engagement has been difficult.

- **China's Influence:** China has rapid increased its presence in the region e.g., it signed bilateral security cooperation agreement with Solomon Islands in 2022. China has much greater financial resources than India and can make significantly higher investments in the region compared to India.

- **Approach of the US:** The Russia-Ukraine war has shifted the attention of the US away from Indo-Pacific to the Atlantic. The US has focused more on cooperating with QUAD rather than engaging with smaller island nations.

### Third FIPIC Summit: 12-Point Action Plan

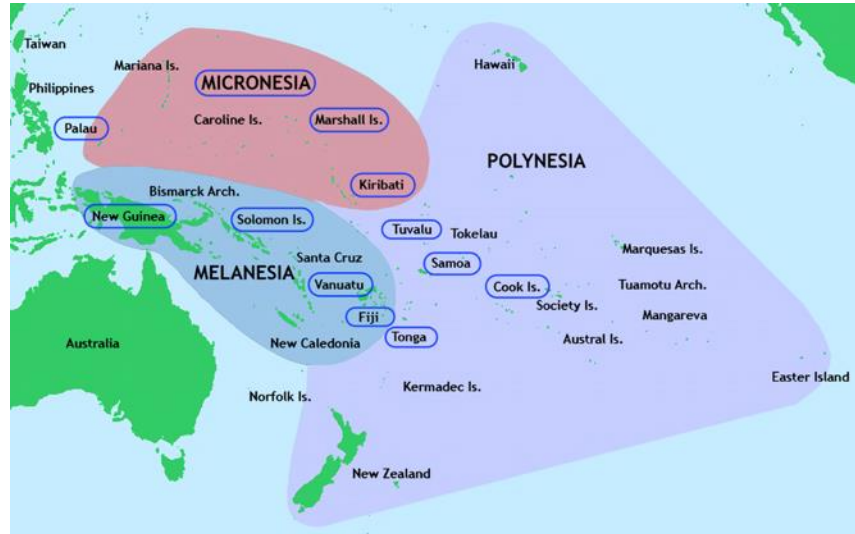
- **Healthcare Infrastructure**
  - Building a **100-bed regional super-speciality hospital** in Fiji.
  - Provision of **sea ambulances** for all 14 PICs to improve emergency medical services.
  - Establish **Dialysis units** to help address kidney-related health issues in the region.
  - Annual **Jaipur Foot Camps** to provide prosthetic limbs to those in need.
- **Regional IT and Cyber-security Training Hub:** Establish the hub in Papua New Guinea to address the growing challenges in the digital realm.
- **Solar Projects:** Implement Solar power projects to realize potential of solar energy and meet energy needs of the islands.
- **Desalination Units:** Provision of desalination units to address water scarcity .
- **Round-the-clock Helpline:** Establish 24/7 helpline service to provide immediate assistance and support.
- India has committed to **human-centric development**, addressing **climate change**, enhancing **trade relations**, and facilitating **capacity building** in these nations.

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- **Sustainability of projects:** PICs are most vulnerable to climate change. India has to ensure all its development activities in the region are sustainable. In addition, remoteness of islands, poor connectivity will pose a challenge with respect to timely completion and long term completion of projects.

#### What should be done to strengthen India – Pacific Islands relations?

- **Consistent Outreach and Engagement:** The first two FIPIC Summits were held in 2014 and 2015 respectively, followed by the 3<sup>rd</sup> in 2023. The Summit frequency should be raised to annual, (or at least, biennial) to increase mutual engagement. There should be regular bilateral and multilateral high-level meetings between ministers and officials.



Source: Wikimedia Commons. The FIPIC Member States (in blue box) are spread over a large swathe of the Pacific Ocean.

- **Implementation:** India should execute the promised projects on priority to strengthen the trust in the relationship.

Ensuring environment sustainability has to be given paramount importance.

- **Trade and Investment:** India should look to expand trade and investment with the PICs.
- **People-to-people Ties:** Exchanges in culture, education, science and technology, sports etc. can strengthen people-to-people ties and the mutual relationship.
- **Maritime Capacity Building:** India should also consider helping PICs build their maritime capacity including assistance in areas like maritime surveillance, disaster management, and protection of Exclusive Economic Zones (EEZs).
- **Cooperation with other major powers:** India could consider collaborating with like-minded countries, like the US, Australia, and Japan, in their engagement with PICs. This can help present a balanced alternative to China's influence in the region. However, this needs to be done carefully, ensuring that the primary interests of PICs are not overshadowed by the strategic interests of these major powers.

### 9. India-China Border Dispute

**News:** 3 years after Galwan clash, the peace along India-China border remains fragile. Last year, India's External Affairs Minister had remarked that India-China ties are 'tense' due to border issue.

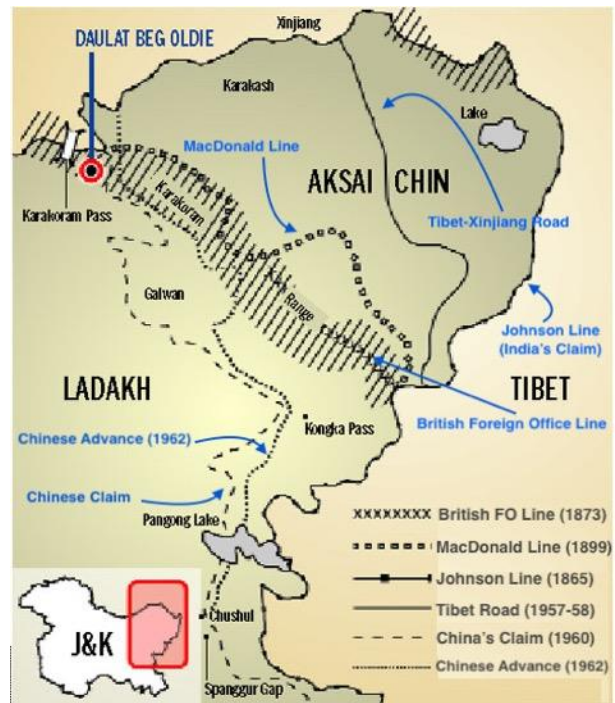
#### What is the present status of the dispute?

- **Ongoing Standoff and Military Preparedness:** The issue remains unresolved. Both sides continue to maintain significant military presence along the disputed Line of Actual Control (LAC). India has significantly enhanced its military infrastructure, surveillance capabilities, and combat readiness, closing the 'infrastructure differential' with China.
- **Diplomatic and Military Talks:** 18 rounds of high-level military talks have been conducted, focusing on **disengagement** and restoring peace along the LAC in eastern Ladakh. There has been disengagement in



several areas following extensive diplomatic and military discussions. However, discussions on many other areas remain inconclusive. China maintains that **Depsang Plains** and **Demchok** areas are 'legacy issues' and resists discussions on these areas.

- **Differences on LAC:** China portrays the situation as gradually shifting to a normalized management phase. India views the border situation as 'very fragile' and 'quite dangerous'. India has demanded the restoration of the status quo of April 2020 at Ladakh, which China has consistently refused.
- **Media Row:** The ongoing dispute between India and China concerning journalists has escalated. The representative from the Press Trust of India (PTI) has been instructed to leave China, effectively erasing any Indian media presence from the country.
- **Future Relations:** India maintains that the normalization of bilateral ties with China is **contingent upon peace in the border areas**. China seeks to put the border issue aside to focus on building a broader relationship. This fundamental disagreement continues to hamper the resolution of the conflict.



Source: Tribune India. The dispute has a historical colonial legacy since mid-19<sup>th</sup> century. The British has proposed several boundaries, but none was agreed upon or demarcated.

### What are the challenges in resolving the India - China border dispute?

- **Historical Disagreements and 'Legacy Issues':** The Border dispute is a colonial legacy.
- **Unilateral Actions:** Under Xi Jinping's leadership, China has made several unilateral attempts to **change the status-quo along the LAC**, including military incursions. This has escalated tensions and impacted the border negotiations.

### Timeline of India-China Border Dispute

<ul style="list-style-type: none"> <li>1865: Officer of Survey of India, WH Johnson visited north of Karakoram range and depicted Aksai Chin as part of Kashmir. This came to be known as the Johnson Line.</li> <li>1873: British Foreign Office drew a different line which was based on watershed (Karakoram Peaks).</li> <li>1899: British Minister in China Sir MacDonald proposed the MacDonald line that fell between the 1865 and 1873 lines.</li> <li>1907: British said that Aksai Chin is part of Tibet.</li> <li>1913-14: Simla Convention reiterated that Aksai Chin part of Tibet, not Xinjiang. China refused to sign and accept the maps.</li> </ul>	<ul style="list-style-type: none"> <li>1962: India-China War.</li> <li>1959-60: China had offered a 'package deal' which recognized India's control over Arunachal Pradesh (McMahon Line) in lieu of Chinese control of Aksai Chin. India rejected this offer.</li> <li>1958: China built a road passing through Aksai Chin, connecting Tibet and Xinjiang.</li> <li>1954: India claimed Aksai Chin as part of Kashmir and depicted Johnson Line as border. China had protested against India's actions.</li> <li>1950: India unilaterally declared McMahon line as boundary.</li> <li>1949: China invades Tibet which was protested by India.</li> </ul>
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The strategic importance of the disputed territory, coupled with nationalistic sentiments on both sides, makes it difficult for both Governments to compromise or concede territory.

- **Military Build-up:** Both sides have been strengthening their military presence and infrastructure along the LAC, signalling preparedness for potential conflict and **reducing the space for a peaceful resolution**.
- **Lack of Trust:** The deadly clashes of 2020 have deeply impacted the level of mutual trust, leading to heightened suspicion and uncertainty. Lack of trust creates a volatile environment that is not conducive to long-term conflict resolution.



### What should be the approach going ahead?

- **Dialogue and Negotiations:** Both nations must continue high-level talks, keeping dialogue channels open to facilitate negotiation and mutual understanding. Military, political, and diplomatic conversations should be maintained to reduce tension along the LAC.
- **Establish Trust:** Both countries, more so for China, should actively avoid actions that could exacerbate the situation, such as unilateral attempts to alter the status quo, and work towards fostering an environment of mutual respect and understanding.
- **Balanced Disengagement:** Future disengagements should aim for a balance, ensuring neither side disproportionately loses territory in the creation of buffer zones. This will help to maintain the equilibrium and contribute to a long-term peaceful resolution.
- **Resolve Legacy Issues:** The legacy issues, should be addressed in the negotiations, without discarding them as matters predating the current conflict. This would ensure a comprehensive solution to the border dispute. (Refer EPIC April 2023 (click) for China Renames 11 Locations in Arunachal Pradesh).
- **Improvement of broader relations:** While addressing the border dispute is essential, it would be beneficial to also focus on improving the broader bilateral relations.

### 10. Reducing Economic Dependence on China: De-risking vs Decoupling

**News:** G7 Countries have said that they'll build economic resilience based on strategy of diversifying and de-risking and decoupling from China.

### What is the meaning of de-risking and decoupling?

- In the present context, de-risking means **reducing economic reliance on China**. It involves China, both as a supplier of raw materials and as market for finished goods. The aim is to reduce potential risks to trade and disruption of supply chains.
- The de-risking strategy has been prompted by:
  - China's high share in global economy and trade.
  - China's **coercive and aggressive policies** e.g., cutting supply of critical minerals to Japan amidst Senkaku Islands dispute.
  - Spying activities at a global level (spy balloons over the US or through IT Hardware equipment).
  - Debt-trap Diplomacy. (Refer EPIC March 2023 for Debt Trap Diplomacy).
- **De-risking is distinct from decoupling.** Decoupling involves **complete dismantling of existing systems** of exchange, supply chains and infrastructure (like Apple's manufacturing units in China). De-risking is targeted towards reducing too much economic reliance on a single country and focuses **more on diversification**.
- Through de-risking, G7 nations do not intend to halt China's economic progress. The G7 Statement notes that, "Our policy approaches are not designed to harm China nor do we seek to thwart China's economic progress and development. A growing China that plays by international rules would be of global interest."
- India too has taken several steps to de-risk. It includes PLI Schemes to build domestic manufacturing capabilities and curb on import of certain items from China. (Refer EPIC January 2023 (click) for India's Trade Deficit with China Crosses US\$ 100 billion and EPIC November 2022 (click) for India's Trade with China).

### China has achieved global scale

China's scale	
Trade	China has been the world's largest goods trading nation since 2013, accounting for 11.4% of global goods trade in 2017
Firms	China has 111 Global Fortune 500 companies, comparable with the United States
Capital	China has a large financial system (the largest banking system, and second- and third-largest stock and bond markets, respectively)
People	China is the world's largest source of outbound students (17% of international tertiary degree students in 2017) and tourists (Chinese tourists made 150 million outbound trips in 2018, the most in the world)
Technology	China has invested heavily in its R&D (the world's second-largest spender with \$293 billion in 2018)
Data	China has the most internet users in the world (more than 800 million), generating huge amounts of data
Environmental impact	China accounts for 45% of global renewables investment
Culture	China has invested heavily in developing global cultural presence (12% of top 50 world movies shot in China in 2017 vs 2% in 2010)

Source: McKinsey. China has improved its global profile across economy, trade, financial and cultural dimensions.

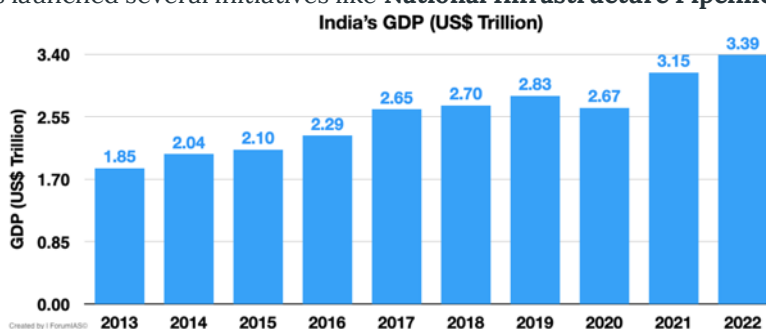
## General Studies Paper III

### 1. India's Economic Growth and Reforms

**News:** India's GDP has risen from US\$ 1.85 trillion in 2013 to US\$ 3.5 trillion in 2022 based on several reforms and initiatives undertaken by the Government.

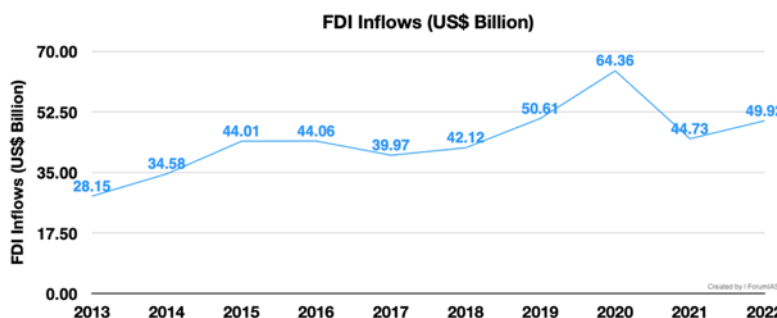
**What steps have aided growth of the Indian economy?**

- **Infrastructure:** The Government has launched several initiatives like **National Infrastructure Pipeline**, **Gati Shakti** and **33% hike in capital expenditure** among others to **strengthen productive infrastructure**. It has helped boost market competitiveness and fortify growth. The **Asset Monetization Programme** and **National Bank for Financing Infrastructure and Development (NaBFID)** will help to unlock capital for financing infrastructure in the coming years.



Data Source: World Bank. India's GDP has risen by ~85% between 2013-22. Barring 2019-20 (onset of COVID-19 pandemic), the GDP has risen consistently over the last decade). India is 5<sup>th</sup> largest economy (nominal GDP).

- **Manufacturing:** The Government has promoted transformation of manufacturing through **Atmanirbhar Bharat** and **PLI Schemes**. Efforts are on to improve ease of doing business, facilitate corporate exits (through **IBC**), reduction in **corporate tax**, **GST reforms**, and skill development to make India a hub of manufacturing and exports. Outcomes are evident through **rise in exports of electronics** (Refer EPIC April 2022 (click) for PLI Schemes: Addressing the Challenges and EPIC April 2023 (click) for Growth in Electronics Exports).



Data Source: World Bank. India has received FDI inflow of US\$ 414 billion between 2014-22 with average US\$ 46 billion FDI every year.

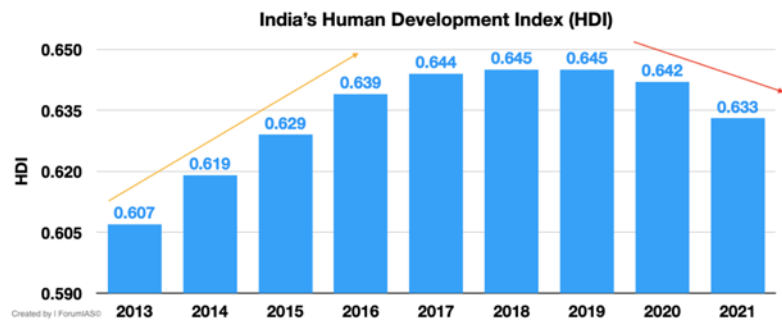
- **Trade and Investments:** The Government has allowed FDI in many sectors like retail, civil aviation, defence equipment, space, insurance among other. India has become a preferred FDI destination. India has also signed economic cooperation and trade agreements with UAE and Australia and negotiations are underway with the UK, the EU and Canada among others. India's trade has grown in both goods and services. (Refer EPIC April 2023 (click) for India's Foreign Trade Policy, 2023 and EPIC April 2022 (click) for India's Merchandise Exports: Opportunities and Challenges).
- **Start-ups:** The Government's Start-up Indian initiative has catalysed a start-up culture and a strong ecosystem is developing in India. India has world's 3<sup>rd</sup>-largest start-up ecosystem now.
- **Digital Ecosystem:** The Government has focused on reaping the benefits of a digital economy. India's Digital public infrastructure is being hailed globally. The Government is making efforts to bridge digital gaps (e.g., vernacular content) to allow the benefits of digital economy to reach all. (Refer EPIC March 2023 (click) for Bridging Gender Digital Divide and EPIC April 2023 (click) for India's Digital Public Infrastructure).
- **Sustainability:** The focus has been to make the economic growth green and reduce impact on the environment. These include **increasing share of renewable energy**, push for green hydrogen and a shift

towards green mobility. India aspires to achieve **Net Zero by 2070**. India has been ranked **8<sup>th</sup> among 59 nations in terms of Climate Action** (Refer EPIC December 2022 (click) for Climate Change Performance Index, 2023).

- **Inclusion and Social Empowerment:** The Government has tried to ensure inclusive growth through various **targeted schemes** like Jan Dhan Yojana, Ujjwala Yojana, PM Awas Yojana, Kisan Samman Nidhi, Ayushman Bharat Yojana among others. The Government provide free COVID-19 vaccines.

### What are the concerns?

- While India has become the 5<sup>th</sup>-largest economy (nominal GDP), India **performs poorly in terms of human development**. An average Indian citizen is 20 times poorer than a British citizen.
- India's Human Development Index (HDI) score was 0.633 in 2021. Very High Human Development requires an HDI score of 0.8. To achieve HDI of 0.8 by 2047, **India's HDI must grow by 0.9% per annum**.



Data Source: World Bank. India's HDI improved at an impressive annual rate of 1.5% between 2013-17 but appeared to stagnate thereafter (2017-19). COVID-19 pandemic has reversed some of the gains made during 2013-19 period.

- India's growth in HDI has been ~1.25% per annum between 1990 and 2021 but only 0.88% per annum between 2010-21.
- India must use its **demographic dividend** much better than it has done so far. The UNDP calculates that **India's HDI score** declines by 24% **due to inequality**. Addressing inequality will remain a top policy concern. (Refer EPIC March 2023 (click) for Pillars Supporting India's Expanding Middle Class).
- To become an advanced economy, India not only needs a more "**Samruddha Bharat**" but also needs to make a more "**Sajit Bharat**" (inclusive). Many countries like Argentina and Brazil remain stuck in **middle-income trap**. The Government should continue the reform process to avoid falling into Middle-income Trap. (Refer EPIC September 2022 (click) for India as a Developed Nation and Middle Income Trap).

### What more measures can be taken to improve economic growth?

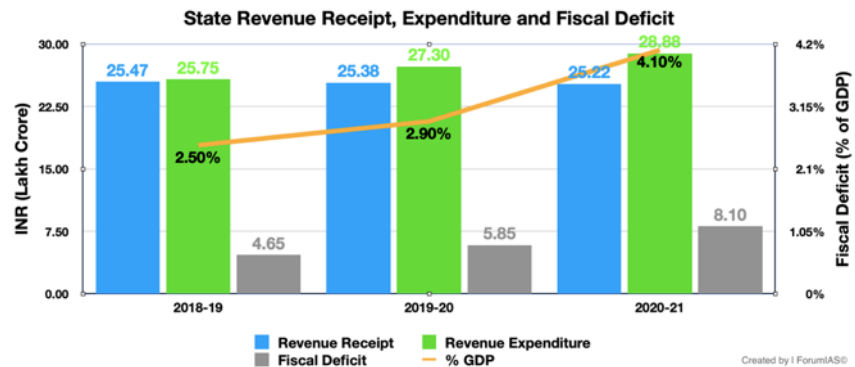
- The focus on infrastructure should continue. The government should facilitate setting up of manufacturing units by improving connectivity, providing uninterrupted access to electricity, faster land acquisition and other clearances.
- **Capabilities of MSME sector** should be enhanced through suitable policy support. MSME sector is crucial in creating larger number of jobs and **enable structural shift in the economy** away from agriculture.
- To ensure inclusive growth, Government should **increase expenditure on health and education**. Use of technology can ensure health and education interventions reach the targeted beneficiaries by minimizing leakages.

## 2. Need for Expenditure Council in India

**News:** The debate regarding Freebies and the importance of fiscal prudence has prompted the Chairperson of Economic Advisory Council to the PM to propose an Expenditure Council that can ensure fiscal responsibility by the Union and State Governments.

### What is the need for Expenditure Council?

- The growing perception that **providing 'freebies' can help in electoral gains** has led many Governments and political parties to offer them. The debate is ongoing and the line separating 'freebies' and 'welfare' is blurred.
- However, the **rising fiscal deficits of State Governments** can have profoundly negative implications for the Indian economy. It can impact long-term macro-economic stability of the economy. (Refer EPIC July 2022 (click) for The State of State Government Finances).
- The **FRBM Act and Fiscal Responsibility Legislations (by States) have had a limited impact on ensuring fiscal prudence**. Debt level of certain States are reaching unsustainable levels, as warned by both the CAG and the RBI. Hence, there is a need for an external mechanism to check profligate tendencies of the Governments. (Refer EPIC August 2022 (click) for The Issue of Freebies).



Data Source: CAG. The gap between Revenue Receipts and Expenditure for States is rising. The Fiscal deficit has risen rapidly to 4.1%. The trend is unsustainable in the long run.

### What should be the role and structure of Expenditure Council (EC)?

- **Expenditure Reforms Commission (2000) and Expenditure Management Commission (2014)** have been established earlier to **examine expenditure patterns** and **suggest spending reforms**. However, there has been little coordination between the Union and State Governments on this issue. Both **Union and State Governments must act in unison** to ensure effectiveness of any prudence measures. Hence, a new body is required with representation from both Union and State Governments.
- **Structure:** The Council should have a composition similar to the **GST Council**, with Union Finance Minister as Chairperson and State/UT Finance Ministers as members. The voting and dispute resolution mechanisms could be same as that of the GST Council.
- **Objective:** The primary goal of the EC should be to **foster financial responsibility** by **establishing guidelines** to **discourage unnecessary expenditures** which lack long-term benefits.
  - It can shift the focus towards prudent, strategic, and sustainable resource allocation and guide the Governments on optimal utilization of funds.
  - **It can help implement schemes that encourage inclusive growth**, promote sustainable development, and maintain fiscal health.
- **Functionality:** The EC could analyse state-level schemes and budgets, identify unnecessary expenses, and recommend strategies for their reduction or alteration.
  - **It could regularly publish reports and guidelines**, providing a roadmap for State Governments to follow. It should encourage dialogue and cooperation among States and the Union Government instead of imposing decisions.

The Union and State Governments have a vital role to play in India's journey to become a developed nation. The focus of the Governments should be on supporting long-term competitiveness of the economy through investments in healthcare and education rather than to reap short-term electoral gains. Hence a mechanism like Expenditure Council can keep the Government stay on the right path.

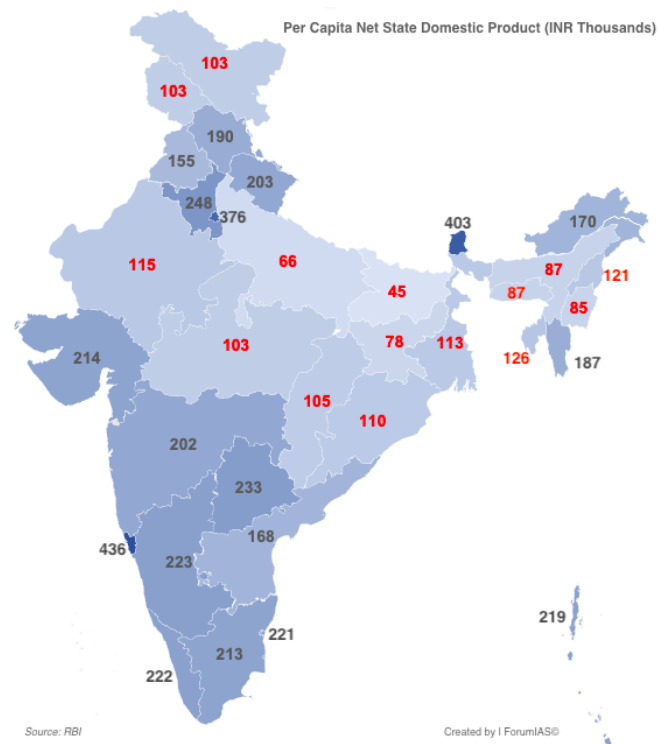


### 3. Issues Before Next Finance Commission

**News:** The 16<sup>th</sup> Finance Commission will be appointed soon. The Commission will face some tough choices regarding horizontal distribution of taxes (among States).

#### What are the issues to be addressed in Horizontal Distribution of Taxes?

- **Population Reference:** The 15<sup>th</sup> Finance Commission had considered Census 2011 data to determine expenditure needs of States. This was a departure from standard practice of referring 1971 Census data. States of Southern India, that had done well to **control their population growth rates**, protested against the move calling it a '**penalty for good performance**'.
- **Revenue Deficit Grants:** The Union Government provides **Post-Devolution Revenue Deficit (PDRD)** Grants to State Governments that run revenue deficits even after devolution.
  - The rationale for PDRD Grants is to enable States to provide a minimum level of services to its residents. It is intended to **support States with very poor revenue base and reduce inter-State disparities** in resources.
  - However, PDRD grants have given **perverse incentives to States** to not take measures to improve their revenue receipts or check revenue expenditure (i.e., **rationalize revenue deficit**). They do so **in order to secure more PDRD Grants**. Finance Commission may have to determine whether a State's deficit is due to **fiscal incapacity** or **fiscal mismanagement** or **irresponsibility**.
- **Disparities Among States:** The fault lines across States have deepened along the economic and fiscal dimensions. Southern States are doing much better in terms of infrastructure, private investments and social indicators. This has widened the **North-South Gap**. Richer States complain that they are compensating poorer States. There is a need to ensure that this compensation happens without deepening the divide. Finance Commission has to suggest a way to ensure this.



**North-South Gap:** The above map depicts the per capita Net State Domestic Product in INR Thousands (2019-20). The All-India average was INR 134,186 (134 thousand). States with NSDP below national level (red data labels) are concentrated in Northern and Eastern India.

#### What other aspects need to be addressed?

- **Cesses and Surcharges:** The proportion of cesses and surcharges in the Union Government's total tax revenue had nearly doubled from 10.4% in 2011-12 to 20.2% in 2019-20. Cess and Surcharge **do not form the part of divisible pool** and hence the **proceeds are not shared with the States** (vertical devolution). States feel they are being **denied their legitimate share of national tax revenue**. The Finance Commission should lay down guidelines regarding the levying of cesses and surcharges. (Refer EPIC September 2022 (click) for Fiscal Centralization in India).

- **Freebies:** The Governments are spending on populist measures and have found ways of **raising debt without it appearing in their budget (Off-budget borrowings)**. They bypass fiscal responsibility legislations. Finance Commission should **lay down guidelines** in this regard after due consultations.

#### Off-Budget Borrowings

These are the loans taken by a public institution (e.g., a PSU), on the directions of Government to **finance Government's expenses**. Such loans are **not included in fiscal deficit** (as not owed by the Government) or **Government Budget. Deferred payments** of loans or bills come under this. In 2020-21 the Union Government halved its food subsidy expense by asking FCI to borrow loan from the National Small Savings fund.

#### 4. Informal Sector and the Middle Class

**News:** The expansion of India's Middle Class has been limited by large size of the informal economy.

##### What is the definition of 'Middle-Class'?

- There is no fixed definition of middle class.
- According to the World Inequality Database, a person with an **annual income of INR 18.6 lakhs or above would be among top 1% Indians**.
- Based on Income Tax Returns data (2017-18), the **annual income bracket of INR 5.5-9.5 lakhs accounted for 28% of the returns filed**, with an average income of INR 7.12 lakhs.
- A research paper (2021) by Pew Research Centre had estimated the size of **India's middle class to be 66 million people with daily per capita income range of US\$ 10-20**. It was 99 million before the onset of the COVID-19 pandemic.
- A survey by think tank People Research on India's Consumer Economy (PRICE) estimated India's middle class to have **risen to 31% of the population (from 14% in 2004-05)** based on **annual income criteria of INR 5-30 lakhs**.
- According to the World Inequality Database, **the net personal wealth of the middle 40% of Indians was just over INR 3 lakh in 2021**. Generally, economists rely on **income criterion** because of scarcity of data related to ownership of wealth.

#### BIGGEST CONTRIBUTOR IN TERMS OF INCOME, SPENDING AND SAVINGS

Category	Household	Population	Income	Expenditure	Saving
Rich (>₹30L)*	3	4	23	17	43
Middle Class (₹5L-30L)	30	31	50	48	56
Aspirers (₹1.25L-₹5L)	52	52	25	32	1
Destitutes (<₹1.25L)	15	13	2	3	0

\*Annual household income at 2020-21 prices | Source: PRICE (figures in %)

Image Source: Indiatimes. PRICE Survey puts India's middle class at 30% households with 31% population. Middle class contributes to 50% of India's income and 56% of savings.

##### What factors limit the growth of Middle Class in India?

- **Informal Sector:** The sector accounts for **90% of employment but only ~33% of the value added in the economy** i.e., the per capita income in the informal sector is very low. The sector is marred by **low efficiency and productivity**.
  - A large number of workers work as individual casual labour or in micro-enterprises with small operations **offering meagre compensation**. They don't have access to **social security**. Instability of employment and income hamper the growth of middle class.
  - Small margins deter the owners from **investing in efficiency enhancing tools and technology**. Workers lack opportunities to **acquire on-the-job skills**.
  - The sector lacks **access to formal credit** and are **unable to scale-up operations**. Hence such enterprises remain in the **low-margin** (profit), **low-volume** (revenue) bracket. India's domestic credit to GDP ratio is far below that of the US and China.

- **Share of Manufacturing:** The stunted middle class in India is linked to the **underdeveloped manufacturing sector**, which consists mostly of small and micro enterprises. SMEs have limited capability to create large number of jobs promising regular and adequate compensation. Modern day developed countries were able to progress because of robust manufacturing sector that aided growth of large middle class and transitioned from low-income to high-income countries.
- **Potential of IT Sector:** IT Sector has contributed to skilled-jobs with high compensation. However, the sector's employment generation potential is limited to skilled workers.

The option before the policy-makers is to take steps that aid the growth of large-scale labour intensive manufacturing sector.

## 5. Bring Urea under the NBS Regime: CACP Recommendation

**News:** The Commission for Agriculture Costs and Prices (CACP) has recommended that Urea should be brought under the Nutrient-Based Subsidy (NBS) regime.

**What is the status of usage of urea as fertilizer?**

- The sale of urea crossed **35.7 million tonnes (MT) in FY 2022-23**. The sale was ~30 MT in 2015-16 and ~26 MT in 2009-10, **indicating a rising trend**.
- The **sale of urea had fallen** after the full enforcement of **neem-coated urea in 2015**, but the trend seems to have reversed from 2018-19.
- All other fertilisers, except single super phosphate (SSP), have registered much lower rise in usage. Some fertilizers have seen a decline.

### Nutrient-based Subsidy

- Under the NBS, a **fixed subsidy, based on the nutrient content**, is provided on each grade of Phosphatic and Potassic (P&K) fertilizer except Urea. Urea is a Nitrogen-based (N) fertilizer.
- The subsidy on P&K fertilizers is announced by the Government on an annual basis. **Subsidy is provided for each nutrient on a per kg basis**. The subsidy is determined by accounting for **international and domestic prices** of P&K fertilizers, **exchange rate, domestic inventory levels** etc.
- NBS policy intended to increase the consumption of P&K fertilizers to achieve **optimum balance of NPK (4:2:1)**. However, the consumption of urea has continued to increase.
- Price of urea (not under NBS) has increased by ~10-15% over the last decade. P&K prices have gone up to 2.5 to 4 times (150% to 300% rise).

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**What is the need for bringing urea under NBS?**

- **Overuse:** The low price of urea, in comparison to other fertilizers) has resulted in overuse of urea. There is inadequate application of other equally essential nutrients. This has an adverse impact on soil health and fertility. According to latest estimates the NPK use ratio is at 13:5:1, instead of the ideal 4:2:1.
- **Increased Fertilizer Requirement:** Due to fall in soil quality, more fertilizer input is required to get same yield. In the long run, this will impact farm productivity and profitability, adding **burden on farmers**. It is estimated that 1 kg of NPK nutrients yielded 12.1 kg of cereal grains in the 1960s, but only 5 kg in the 2010s. A recent research has estimated that the **Nitrogen Use Efficiency** in India has fallen from 48.2% in 1962-63 to 34.7% in 2018. This is below the global average (45.3%).
- **Rising Subsidies:** The fertilizer subsidy has risen to ~INR 2 trillion in 2022-23. Rationalizing use of fertilizers will reduce the burden of subsidies.

### Nitrogen Use Efficiency (NUE)

It refers to the efficiency with which **soil nitrate-N is converted into grain N**. NUE is difficult to measure due to various sources of Nitrogen (nitrate-N) like **fertilisers, crop residues, manures, biological fixation, and soil organic matter**. Efficiency is dependent on **seasonal conditions**, absence of **crop diseases, losses** of N from the soil as gases, N **leaching** or immobilisation of N into organic forms.

- **Imports:** The domestic production of urea faces several constraints like capacity of fertilizer plants and availability of gas. A significant amount of urea is imported, putting burden on foreign exchange.
- **Failure of Initiatives:** The initiatives like neem-coated urea and soil health cards have failed to produce desired results in promoting judicious use of fertilizers.

**Rationalizing prices of urea** is expected to address several of these concerns.

#### What are the other issues related with Fertilizer subsidies?

- **High Expenditure:** High subsidy on fertilizers has led to indiscriminate usage and high subsidy expenditure by the Government.
- **Leakages:** Subsidized urea is diverted to non-farm usage. Subsidized urea is also sold through black market to neighbouring countries like Nepal and Bangladesh.
- **Regional Disparities:** Fertilizer usage is very high in green revolution regions, whereas other regions like east UP, Bihar, West Bengal etc. record lower usage.

#### What are the other recommendations of CACP?

Apart from bringing urea under NBS, CACP has recommended:

- **Cap on Subsidy:** The Government should introduce a cap on the number of subsidized bags per farmer. This will rationalize fertilizer usage and check diversion of urea.
- **Use of Identification Systems:** The cap on subsidized bags can be implemented through use of Aadhar cards, Kisan Credit Cards (KCC) or even voter IDs for identification of beneficiaries.

### 6. World's Largest Grain Storage Plan in Cooperative Sector

**News:** The Government has approved the constitution of an Inter-Ministerial Committee (IMC) for the facilitation of the 'World's Largest Grain Storage Plan in Cooperative Sector'.

#### What is the need for Grain Storage Plan?

- **Population:** India is home to ~18% of world's population, but accounts for only 11% (~180 million hectares) of the arable land in the world. India runs the world's largest food programme under the **National Food Security Act, 2013**, covering ~80 crore people.
- **Capacity Gap:** At present, India's storage capacity is ~145 million metric tonnes (MMT). The total production is ~310 MMT. Thus there is a storage gap of ~160-165 MMT. In the absence of sufficient capacity, the grains are stored in the open, resulting in **damage and wastage**.
- **Fragmented Structure:** Multiple Government agencies like **Food Corporation of India**, Central Warehouse Corporation, **Warehouse Development Regulatory Authority** and **Civil Supply Departments of States** are involved in grain storage and management. This has led to fragmentation and poor management.

### Grain Storage Plan: Salient Features

The Grain Storage Plan is unique in multiple aspects

- 1 **Scale:** It will augment India's grain storage capacity from 145 MMT to 215 MMT.
- 2 **Decentralisation:** Most nations have centralized storage systems. The Government plans to construct facilities in every block with capacities between 500-2000 tonnes.
- 3 **PACS:** The integrated grain storage facilities will be set up through Primary Agriculture Cooperative Societies (PACS). There are more than 1 lakh PACS with 13 crore farmers.
- 4 **IMC:** The Inter-Ministerial Committee will oversee the plan, ensuring seamless coordination between various Government bodies.
- 5 **Climate Consciousness:** The plan seeks to create climate-resilient storage facilities.
- 6 **Financial Commitment:** The Government will commit more than INR 1 lakh crore for the project.

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### What are the expected benefits?

- **Food Wastage:** Government has estimated post-harvest losses in the range of 5-8%. This is huge in absolute terms (e.g., ~20-25 MT grains wasted). Augmented storage capacity will cut the losses.
- **Food Security:** Cutting the wastage will enhance food security.
- **Farm Incomes:** Farmers will get better remuneration for their produce as availability of storage facilities will reduce need for distress sales; and sell when prices are favourable.
- **Cost Savings:** Decentralized local storage will reduce transportation costs, from farms to procurement centres to warehouses and then to fair-price shops.
- **Employment:** Construction and operation of storage facilities will generate local employment and aid rural economy.
- **Strengthen PACS:** PACS will be able to diversify their activities. It will help develop capacities. Incomes of member farmers will improve. PACS can function as fair price shops or setup custom hiring centres.
- **Climate Resilience:** Food systems will be impacted by climate change. A robust decentralized storage system will help build resilience against climate-induced food supply shocks.

### What are the possible challenges?

- **Reviving PACS:** ~63,000 PACS of estimated 1 lakh PACS are operational, rest are dysfunctional. The defunct PACS need to be revived to maximize the potential of the plan.
- **Implementation:** The plan has to be tailor-made for each locality and region. A one-size-fit-all approach may not function well as each region has its own constraints (e.g., connectivity between villages) and peculiarities (e.g., density of villages). A uniform approach may result in failure.
- **Convergence of Schemes:** The plan involves the convergence of several schemes from different Ministries. Coordination will be difficult as each Ministry may have their own priority.
- **Financing Infrastructure:** Creating modern infrastructure with digital solution in remote areas will face connectivity and energy availability challenges and will require larger funding.
- **Skilling:** Employment generation at local level will be constrained by lack of appropriate skills especially with respect to operation of facilities.

### What should be done?

- **Revive PACS:** Defunct PACS should be revived by handholding them through existing successful PACS.
- **Guidelines:** Broad guidelines related to implementation methodology should be developed.
- **Timely Implementation:** Regular monitoring and review can help take corrective steps. This will ensure timely completion of project and avoid unnecessary delays and cost escalations.
- **Technology Integration:** Digital tools and technologies should be employed to make the storage facilities more efficient and to streamline the process of monitoring and management.
- **Climate Preparedness:** Efforts should be made to anticipate and mitigate the potential impact of climate change on food grain storage. Use of technology can ensure that the storage facilities are resistant to extreme weather conditions.

## 7. The Issue of Railways Safety in India

**News:** The Balasore (Odisha) train accident resulted in deaths of over 290 people. It has raised concerns regarding safety in the operations of railways.

### What is the importance of ensuring safety in Railways?

- **High Volume of Passengers:** India has 4<sup>th</sup>-largest railway network and ~3.5 billion people travel on this network annually. Ensuring safety of passengers is of paramount importance.

- **Economic Impact:** Railways have a vital role to play in **logistics and freight transport**. Any disruption in operations, due to accidents or otherwise, add to **economy-wide costs** through its impact on industries and other businesses.

- **Public Trust:** Railways are **lifeline** for bulk of India's poor **economic migrants**. They undertake long journeys multiple times a year. A **safe railway network** builds trust.

Frequent **accidents and deaths may deter people** from travelling via rail and impact their **mobility**.

- **Global Standing:** The railways has improved its international reputation in terms of safety, however it is yet to catchup with developed nations. The railways can align its safety protocols with global best practices.

## Major Reasons for Train Accidents

A number of factors contribute to train accidents

- 1 **Derailments:** Lapses in safety protocols, track maintenance, and failure to identify and rectify track defects.
- 2 **Collisions:** Lapses in signalling systems, human errors, and failure to maintain safe distances between trains.
- 3 **Level Crossings:** Lapses in ensuring the safety of level crossings, failure to eliminate manned level crossings, inadequate warning systems, and negligence in adhering to safety procedures.
- 4 **Signal Failures:** Malfunctioning or improper signalling systems, inadequate maintenance, faulty equipment, and human errors in signalling operations.
- 5 **Over-speeding:** Overcrowding of trains beyond their capacity, over-speeding, lack of proper crowd management and failure to enforce speed limits.

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### What are the major challenges in ensuring safety of Railway operations?

- **Human Errors:** Human error, such as incorrect setting of points, mistakes in shunting operations, and overs-speeding, have been identified as a significant factor in causing accidents.
- **Technical Glitches:** With the advancement of systems and increased automation, failure of signals or instrumentation or any other device can lead to derailments or collisions.
- **Prioritization:** Several experts have criticized the focus of successive Governments on increasing the number of trains, neglecting the aspect of safety. There has been less investments in creating safety related infrastructure.
- **Maintenance:** The CAG has highlighted shortcomings in maintenance of tracks and equipment, inspections and track renewal.
- **Compliance:** Shortage of staff, over-burdened staff and time constraints often force the staff members to bypass safety protocols. Although the probe into the Balasore incident is ongoing, Officials suspect bypass of signalling system protocol had led to the accident.
- **Congestion:** The number of trains and passengers has risen rapidly. However, the track network hasn't expanded commensurately. Hence, there is crowding of trains on the tracks. Due to overcrowding, the time window to correct an error is small.
- **Training:** The staff are not adequately trained. Many maintenance workers are unaware of the consequences of their actions on the safety and consequently people's lives. E.g., it is suspected that in the Balasore incident, the safety protocol was overridden and due procedures were not followed.

### Train accidents across India are broadly in decline

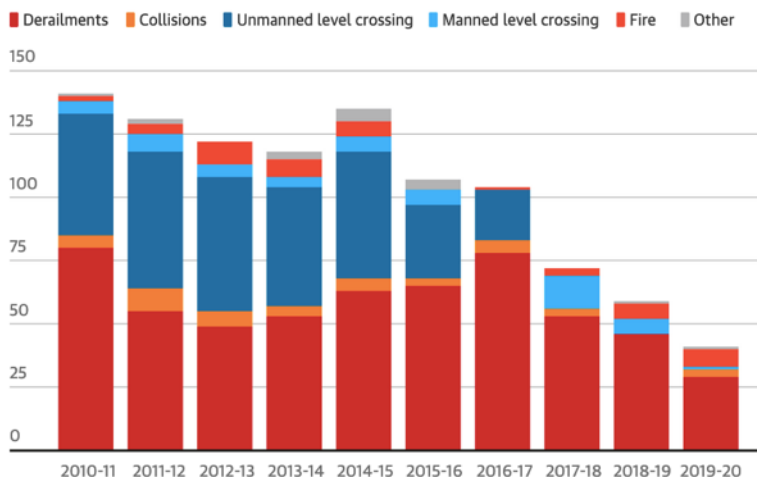


Image Source: The Guardian. The number of train accidents has shown a decreasing trend over the decade. Derailments has the highest share.

### What should be the approach going ahead?

- **Strengthen Maintenance Protocols:** Track maintenance, inspections, infrastructure upgrades should be accorded top priority. Use of technology and mechanized methods of track maintenance can improve efficiency of maintenance works and make them more effective.
- **Funding:** Funding for safety-related aspects should be increased. Proper utilization of funds from initiatives like the **Rashtriya Rail Sanraksha Kosh (RRSK)** should be ensured. Installation of collision avoidance systems should be scaled-up.
- **Staff and Training:** There should be adequate staffing, especially the positions that have safety implications. The staff should be regularly trained and upskilled. Any safety lapse should be taken seriously and appropriate action should be taken against errant staff. A Safety Culture should be fostered by emphasizing safety at all levels. Top Management of Railways should make safety its top priority.
- **Corrective Actions Post-Investigations:** All safety related lapses/incidents should be thoroughly investigated to identify root causes. Corrective steps should be taken based on learnings.
- **Use of Technology:** Advanced safety technologies should be adopted, to enhance monitoring, early detection of faults and real-time decision-making.

### Initiatives for Railway Safety

- **KAVACH:** It is an indigenously developed Automatic Train Protection (ATP) System. It is a Traffic collision Avoidance System.
- **Rashtriya Rail Sanraksha Kosh (RRSK):** It is a dedicated fund aimed at carrying out safety-related work in a systematic manner.
- **Project Mission Raftar:** Its goal is to double the average speed of freight trains and increase passenger train speed by 50%, while ensuring safety. Faster journeys can reduce travel time and reduce crowding on the network.
- **Safety Measures:** Enhancement of safety measures include the installation of fire and smoke detection systems in coaches, the provision of fire extinguishers etc. Operating procedures with respect to safety are constantly reviewed and upgraded.
- **Elimination of Level Crossings:** Between 2014-19, an average 1884 level-crossings were eliminated annually. All unmanned level crossings on the Broad Gauge Network have been eliminated.
- **CAG Audits:** The CAG periodically conducts audits of Indian Railways, identifying shortcomings and making recommendations to address safety concerns.

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## 8. Regulation of Artificial Intelligence (AI)

**News:** The G7 countries have initiated the Hiroshima AI Process (HAP) to determine a way forward to regulate the Artificial Intelligence (AI).

### What is the Hiroshima AI Process?

- It is an effort by G7 nations to regulate the AI. It recognizes the need to immediately take stock of the **opportunities and challenges of Generative AI**. (Refer EPIC February 2023 (click) for Generative Artificial Intelligence (AI): Benefits and Concerns).
- HAP will also work in cooperation with the OECD and Global Partnership on Artificial Intelligence (GPAI).
- The discussions could include aspects such as **governance**, safeguarding of **intellectual property rights** (IPR) including copyrights, promotion of **transparency**, response to **foreign information manipulation**, including **disinformation** and **responsible utilization** of these technologies.

### What is the need to regulate AI?

- **Bias and Discrimination:** AI systems can inherit biases from the data they are trained on, leading to discriminatory outcomes. The bias has been documented in facial recognition algorithms and multiple other applications.
- **Transparency:** Most AI algorithms operate as black boxes, making it difficult to understand how they reach their decisions. It is difficult to control bias in the AI Systems without transparency about algorithms and database.

- **Malicious Content:** Generative AI systems can be used to spread disinformation, spreading fake news and racial hatred. There are apprehensions that AI can be misused to manipulate public opinion by propagating false information, videos etc. on social media platforms. Anonymity over internet makes it easy to spread false information or hatred.

## Approaches to Regulating AI

1 Soft Law	2 Graduated Regulation	3 Regulatory Sandbox	4 Collaboration
<ul style="list-style-type: none"> <li>Guidelines, best practices, industry standards, etc.</li> <li>Flexible and adaptable to the rapidly evolving AI landscape.</li> <li>Provide initial guidance without imposing rigid regulations.</li> </ul>	<ul style="list-style-type: none"> <li>Differentiate between large firms and smaller start-ups.</li> <li>Apply stringent regulations on large firms.</li> <li>Allow flexibility to start-ups to encourage innovation.</li> </ul>	<ul style="list-style-type: none"> <li>Controlled environments for start-ups/small firms to experiment with AI technologies under supervision.</li> <li>Allows for innovation and ensure compliance with ethical and safety standards.</li> </ul>	<ul style="list-style-type: none"> <li>Engage with the tech community, seek feedback to understand challenges.</li> <li>Ensure regulations are practical and effective.</li> <li>International cooperation to create a unified global regulatory framework.</li> <li>Develop universal guidelines, principles, and standards.</li> </ul>

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- **Accountability:** It is not clear if use of AI programme leads to loss of life or financial losses, the owners or publishers of algorithms/programmes can be held accountable or made to pay damages.
- **IP Rights:** There is lack of clarity about claim of IP Rights over the content created by Generative AI systems e.g., if copyright data have been used to train AI systems, whether copyright holders of original content can claim right over content generated by the AI or the right will belong to the System/Algorithm developers.
- **Privacy and Data Protection:** AI systems are based on large amount of data. There are concerns related to privacy in handling sensitive data like healthcare details. Improper data handling can lead to unauthorized access and misuse.
- **Security:** AI systems are susceptible to hacking, cyber-attacks etc. There are possibilities of manipulation of AI Systems through hacking to generate false outputs posing risks in domains like healthcare or autonomous vehicles.
- **Ethical Considerations:** AI systems can lead to loss of jobs and can worsen social inequalities. People lacking resources to upskill and reskill to keep pace with AI revolution will be the worst affected. Biases in AI systems can reinforce existing stereotypes and hamper decision making e.g., critics say that use of AI systems for hiring/shortlisting resumes can harm minorities, people of colour etc.
- **Regulatory Gap:** AI is developing in a largely unregulated ecosystem, some developers have scant regard for the concerns listed above. Status quo with respect to regulation vis-à-vis development of AI can have large negative consequences in the long run.

Regulations addressing these concerns can ensure ethical use of AI, ensuring accountability, fairness and non-discrimination, protecting consumer rights and building public trust in the AI systems.

### What are the challenges in regulating AI?

- **Rapid Advancement:** AI is evolving at a rapid pace, making it challenging for regulators to keep up with the latest developments and effectively regulate the technology.
- **Complexity:** It is difficult to fully anticipate the possible implications of AI on multiple aspects like economy, politics, environment, social relationships, cybersecurity etc., creating a gap in effective understanding and regulation.
- **Regulatory Balance:** Strict regulations may **restrict innovation and development of technology**. It may disproportionately hamper small firms. Lax regulations may **prove to be ineffective in achieving desired outcomes**. It is difficult to achieve 'Regulatory Sweet Spot'.
- **Accountability:** There are tough legal and ethical questions to be answered in developing a robust accountability framework.



- **International Cooperation:** All Nations want to get ahead of each other in developing AI systems, as the **AI Technology will determine the economic and global power status in future**. Countries will be **reluctant to impose strict regulations** that hamper their domestic AI ecosystem, as it may allow other nations to get ahead. Hence **consensus will be difficult to reach to establish uniform global standards**.

## AI Regulation: Global Initiatives

- **European Union:** The EU is working on the draft **Artificial Intelligence Act** to regulate AI. The dialogues with the European Parliament are expected to begin.
- **United States:** The White House Office of Science and Technology Policy has published a non-binding **Blueprint for the Development, Use, and Deployment of Automated Systems**, listing principles to **minimize potential harm from AI**.
  - The National Institute of Standards and Technology (NIST) has released a non-binding **AI Risk Management Framework** to help companies assess and manage risks associated with AI systems.
- **Japan:** The Integrated Innovation Strategy Promotion Council has published **social principles for human-centric AI** and **guidelines for AI developers**.
  - The Governance Guidelines for Implementation of AI Principles provide action goals and implementation examples for AI companies.
- **China:** It has established the '**Next Generation Artificial Intelligence Development Plan**' and **published ethical guidelines for AI**. It has introduced specific laws related to AI applications, such as management of algorithmic recommendations.

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The Government of India is developing a comprehensive **Digital India Framework** that will include provisions for regulating AI.

### What should be the approach going ahead?

- **Consultation and Collaboration:** The Governments need to work closely with the technology firms. The regulatory framework should ensure not to restrict the innovation ecosystem, but should also keep the public interest paramount. A gradual regulation, balancing both hard and soft approach should be adopted.
- **Global Standards:** Groups like G20 should be utilized to foster international cooperation to develop universal standards. This can also ensure that no single country attains a position of disproportionate advantage with respect to AI Technologies.
- **Self-Regulation:** The technology firms should be more open about the sources of data, parameters considered in algorithms (while not disclosing proprietary information), limitations of algorithms etc. to build more trust in the process. It can help address accusations of biases.
- **Investments and Skilling:** Governments, academic institutions, and industry stakeholders should allocate resources to research, development, and education in the field of AI. This will help create a well-informed workforce capable of addressing regulatory challenges and ensuring the safe and responsible deployment of AI technologies.

## 9. Carbon Border Adjustment Mechanism (CBAM): Provisions and Implications

**News:** The EU has given approval for the implementation of Carbon Border Adjustment Mechanism. It can impact competitiveness of India's exports to the EU.

### What is CBAM?

- CBAM or **Carbon Border Tax** mechanism of the EU **imposes tax/duties on import of carbon-intensive goods** like steel, aluminium, cement, fertilizers etc.
- It is part of EU's efforts to **achieve its climate targets** under the **European Green Deal**. It will help slash the EU's overall greenhouse gas emissions 55% below 1990 levels by 2030.
- CBAM would **require importers to pay for the carbon emissions embodied in the products they import** into the EU, just as EU-based producers pay for their own emissions through the **EU Emissions Trading System** (EU ETS).
- CBAM will enter into force in transitional phase from October 1, 2023 and as a permanent system from January 1, 2026.

## What is the rationale for CBAM?

### • Competitiveness of EU Goods:

EU has strict emission standards. Companies that fail to meet emission targets have to buy carbon credits through the ETS. It **increases the cost of carbon-intensive goods made in the EU** and may force the companies to relocate their units to countries with weak emission standards. Imposition of **duties on imported goods brings their price at par** with EU goods. CBAM is thus **a way to protect EU-based manufacturing industry from external competition.**

### • Carbon Leakage:

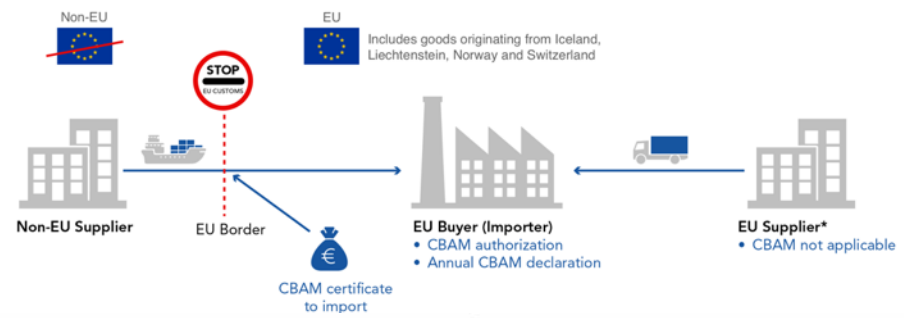
Preventing the relocation of industries

from the EU to countries with lax regulation will **check 'carbon leakage'**.

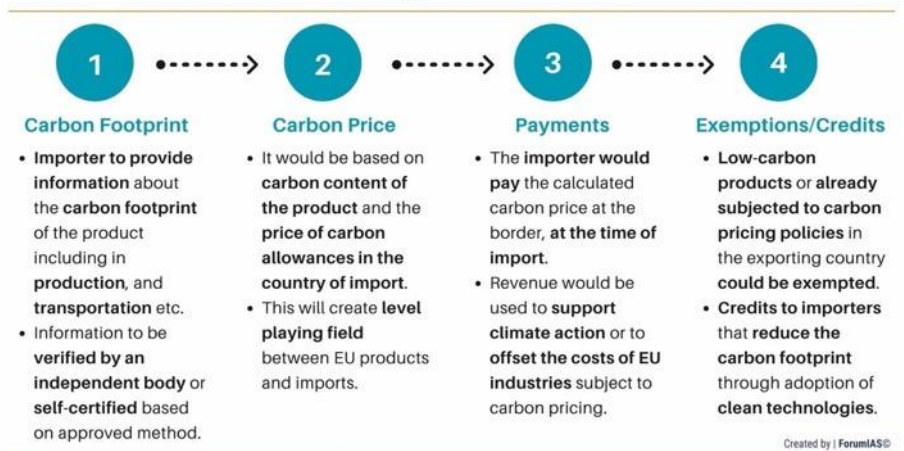
• **Incentivize Green Manufacturing:** CBAM will force other countries to bring their emission standards to those prescribed by the EU and adopt cleaner manufacturing practices e.g., use of non-fossil fuel based energy. It can **increase adoption of green technologies** at a global level.

• **Carbon Pricing:** Imposition of CBAM can force other countries to adopt more stringent emission norms. They may adopt carbon pricing models similar to the EU (like ETS).

EU Carbon Border Adjustment Mechanism simplified illustration



## Working of CBAM



## What are the issues associated with CBAM?

- **Discriminatory:** CBAM is discriminatory against industries of developing nations that lack the technology and finance to adopt cleaner manufacturing practices.
- **Climate Justice:** The mechanism overturns the basic principle of climate agreements, Common but Differentiated Responsibilities and Respected Capabilities and imposes costs on developing nations. The EU also reneges on its responsibility for historic emissions that have majorly contributed to climate change.
- **Violates WTO Principles:** It violates WTO principles of Most Favored Nation and National Treatment.
- **Implementation:** Implementation will require accurate information about carbon footprints to precisely calculate the amount of tariff. The process will become more complex if the product is manufactured in multiple countries. It will be difficult to ascertain carbon footprint based on origin.
- **Questionable Justification:** Critics have questioned the 'carbon leakage' argument. The decision to relocate an industry is based on larger cost factors like labour, and other aspects like regulatory

transparency and political stability etc. Environment regulations carry much less weight in company's decision making process.

- **Impact on Trade:** If other countries too opt for such discriminatory measures and impose tariffs on EU goods, it can lead to broader trade wars, trade distortions and reduce global trade.
- **Carbon Pricing:** CBAM can undermine carbon pricing mechanisms of other nations and forcing its ETS as a global carbon price standard.
- **Questioning "Equivalence":** Countries that have opted for different forms of climate regulation under their Nationally Determined Contributions (NDCs) may struggle to ensure "equivalence" in terms of carbon pricing. It will **create trade inequities**.

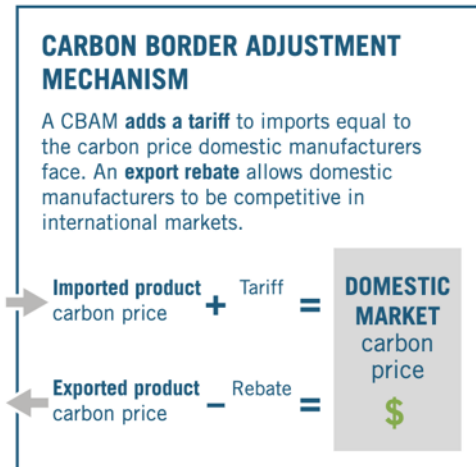


Image Source: Journal of World Trade. An **export rebate** is also being proposed to aid EU based manufacturers to compensate for ETS costs. It will further **distort global trade**.

### How is India planning to tackle CBAM?

India is a major producer of steel, aluminium and cement. CBAM can have an impact on India's exports.

- **Sectoral Analysis:** The Government plans to undertake a sector-by-sector analysis to assess the impact of the CBAM on domestic industries. This detailed examination will aid in making targeted action plans for each potentially affected sector.
- **FTA Negotiations:** India is considering including CBAM discussions in the ongoing negotiations for FTA with the EU. The Government aims to ensure that the CBAM doesn't pose additional barriers to trade.
- **Demanding Transparency:** India is keen to ensure that the EU provides transparency on how the carbon tax under the CBAM is calculated for different sectors. It insists that factors like per capita pollution, forest cover, and sustainable living practices should also be considered in the assessment.
- **Cooperation with Developing Nations:** India is planning to join forces with other developing nations, such as South Africa. This collective approach will help present a united front in discussions and negotiations with the EU, strengthening their stance and addressing common concerns effectively.

### What should be done?

- **Uniform Carbon Pricing:** To avoid the complexities related to the CBAM, countries should work towards a global agreement on uniform carbon pricing.
- **Capacity Building:** The EU should adhere to the principles of Climate Justice. The EU should focus on providing climate finance and technology transfer to developing and least developed countries to build their capacity to adapt to climate change.
- **Clear Rules of Origin:** If carbon border adjustments become widespread, there will be a need for fair, and transparent rules of origin to account for the carbon content of goods in complex global value chains.

## 10. Cyclone Disaster Management in India

**News:** The handling of Cyclone Biparjoy by the Government and its agencies shows that India has come far from the 1999 Odisha Super Cyclone that had caused more than 10,000 deaths.

### About Cyclones in India: Recent Trend

- **Bay of Bengal:** It has experienced an 8% decrease in cyclonic storms between 2001-2019, compared to 1982-2000. However, it still dominates in terms of cyclone frequency and intensity compared to the Arabian Sea.



- **Arabian Sea:** Cyclones in the Arabian Sea are less frequent. There has been a 52% increase in the number of cyclonic storms over the Arabian Sea (2001-2019), compared to the previous period (1982-2000).

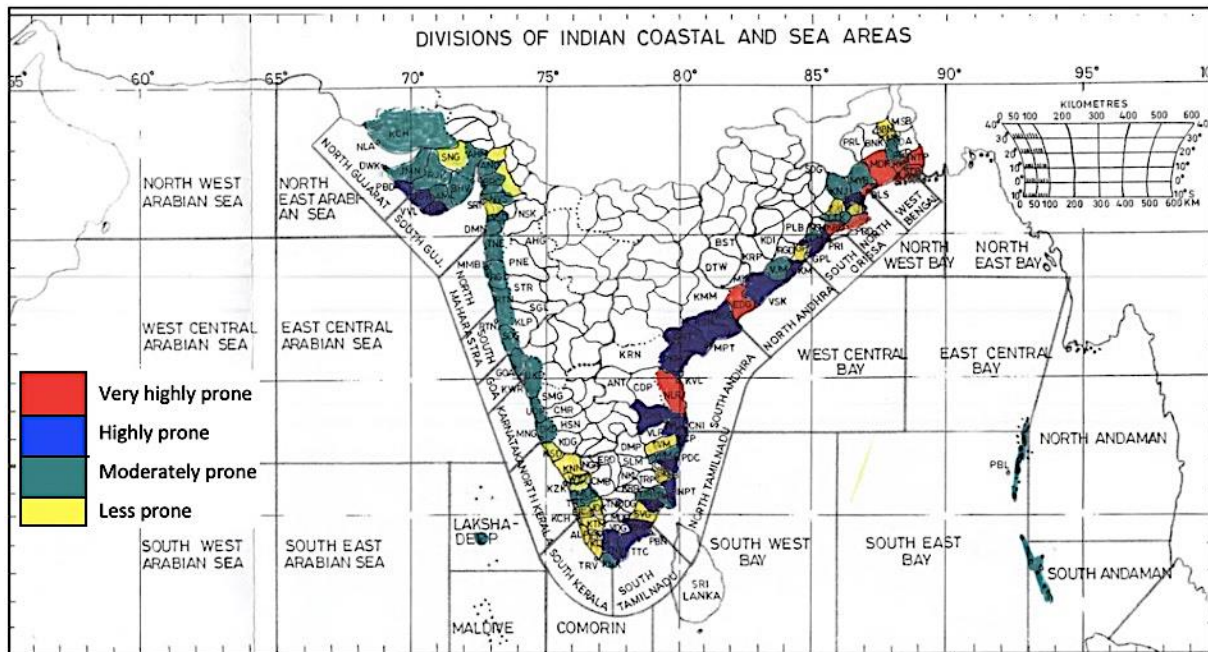


Image Source: NDMA. Cyclone hazard prone districts of India based on frequency of total cyclones, total severe cyclones, actual/estimated maximum wind and PMSS (Probable Maximum Storm Surge) associated with the cyclones.

### What are the socio-economic impacts of Cyclones?

Severe Cyclones often have a catastrophic socio-economic impacts.

- **Disruption and Loss of Life:** The 1999 Odisha Super Cyclone had caused ~10,000 deaths. Human casualties have been brought down with robust disaster management processes. Still, cyclones result in mass evacuations which cause disruption in daily life.
- **Loss of Infrastructure:** High wind speeds cause major damage to infrastructure like transportation, communication, electricity and water supply, domestic and commercial buildings etc. Cyclone Fani is expected to have caused a damage of INR 9,400 crores in Odisha in 2019.
- **Impact on Economy:** Loss of infrastructure, disruption of communication, closure of commercial establishments result in significant costs to the economy. Post-disaster reconstruction leads to diversion of funds from other development and welfare activities.
- **Coastal Communities:** Fishermen and farmers face biggest disruption due to cyclones. Fishermen often lose their livelihoods as their boats are destroyed or lost at sea. Farmers suffer from loss of crops and livestock.
- **Public Health:** Post-cyclone conditions often lead to spread of water-borne diseases. Limited access to clean water in the immediate aftermath can exacerbate health issues.

### What are the various aspects of Cyclone Disaster Management in India?

- **Early Warning Systems:** The IMD (India Meteorological Department) has developed **advanced climate models** which can **accurately predict** the **severity**, **lifecycle** and **path of a cyclone**, including the **time of landfall**. IMD issues warnings well in advance so that all protective steps can be taken to minimize loss of life and property. The IMD has developed **4-stage warning system**: Pre-cyclone Watch, Cyclone Alert (**Yellow**), Cyclone Warning (**Orange**) and Post-landfall Outlook (**Red**).



- **Evacuation Planning:** Comprehensive evacuation plans have been developed for vulnerable regions e.g., ~ 2 million people were evacuated in West Bengal before Cyclone Amphan (2020). Shifting people to safer places minimizes the loss of human life.

- **National Cyclone Risk Mitigation Project:** It is supported by the World Bank to enhance the preparedness and resilience of coastal communities in 8 cyclone-prone coastal States. It

has 4 components: **Early Warning Dissemination System**, **Cyclone Risk Mitigation Infrastructure** (like cyclone shelters), **Capacity Building on Disaster Risk Management**, and Project Management.

- **Coastal Protection Initiatives:** Measures to strengthen coastal regions include the creation of natural barriers like mangrove plantations and artificial barriers like embankments to reduce the impact.

- **Infrastructure Retrofitting:** The Government undertakes retrofitting measures in old vulnerable buildings to make them cyclone resistant, during rebuilding (post-cyclone) the phase. It is part of the structural mitigation measures.

- **ICZM - Integrated Coastal Zone Management Project:** The initiative is designed to enhance resilience of coastal areas through **sustainable environmental practices**. It includes mapping vulnerable zones, promoting conservation, and implementing sustainable livelihood strategies for local communities.

#### IMD Classification of Cyclones

**8 categories based on Maximum Sustained Wind Speeds.**

- **Low Pressure Area:** Less than 17 knots (<31 kmph).
- **Depression:** 17-27 knots (31-49 kmph).
- **Deep Depression:** 28-33 Knots (50-61 kmph).
- **Cyclonic Storm:** 34-47 Knots (62-88 kmph).
- **Severe Cyclonic Storm:** 48-63 Knots (89-117 kmph).
- **Very Severe Cyclonic Storm:** 64-90 Knots (118-167 kmph).
- **Extremely Severe Cyclonic Storm:** 91-119 Knots (168-221 kmph).
- **Super Cyclonic Storm:** Exceeds 120 Knots ( $\geq 222$  kmph).

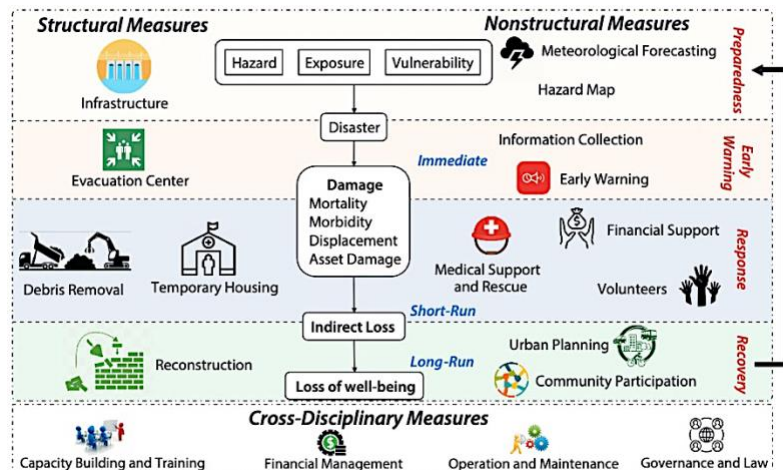


Image Source: ADB Institute. Disaster Risk Management involves combination of both structural and non-structural measures.

- **Community-based Disaster Management:** Programs are being implemented to raise awareness and train communities for cyclone preparedness.
- **Technology:** IMD uses INSAT satellites to regularly monitor the developments. Geographic Information Systems (GIS) maps are used to identify vulnerable zones and plan evacuation routes etc.
- **Inter-Agency Coordination:** Cyclone disaster management includes close coordination between IMD, NDMA, State Disaster Management Authorities and the local administration.

#### What is the scope of improvement in India's Cyclone Disaster Management?

- **Evacuation-Centric Approach:** The focus on other longer-term measures like structural mitigation, regulation of coastal infrastructure etc. are accorded relatively less importance.
- **Infrastructure:** Lack of sturdy cyclone-resistant infrastructure leads to considerable loss of property.
- **Community Participation:** Poor socio-economic conditions create over-dependence on Government authorities. Fishermen are forced to venture into seas, overlooking the warnings, because of their conditions. There is low awareness about repercussions leading to ignorance of warnings.

- **Post-Disaster Response:** Aspects like rebuilding, compensation for crop damages etc. can be improved.
- **State Preparedness:** There is scope of improvement in the working of State Disaster Response Forces, in terms of their resources, preparedness, and funding.

#### What should be the response going ahead?

- **Strengthen Early Warning Systems:** IMD should further refine its climate models based on new available data. It can make the predictions about cyclones, and their track, more precise and accurate. Further investments should be made in **advanced weather radar systems** and satellites.
- **Communication:** Communication systems should be made more robust to expand reach of information, especially among vulnerable communities.
- **Strengthen Infrastructure:** Investment in construction, retrofitting of cyclone-resistant infrastructure, cyclone shelters, embankments and resilient housing should be improved. Construction in vulnerable zones should be stringently regulated with **strict adherence to building codes**.
- **Sustainable Measures:** **Mangrove restoration** and beach nourishment can mitigate the impact of storm surges and erosion.
- **Capacity Building:** Community participation and awareness should be enhanced. Regular conduct of training programs and workshops can help build the capacity of communities, local leaders, and volunteers in disaster management techniques, evacuation procedures, and first aid.
- **Strengthen Stakeholder Coordination:** Closer collaboration among all stakeholders can ensure coordinated approach. Measures should be taken to facilitate seamless sharing of information, resource mobilization and joint planning of operations.
- **Post-Disaster Measures:** Comprehensive strategies for post-cyclone recovery and rehabilitation, including infrastructure reconstruction, livelihood restoration should be developed.
- **Regular Drills:** The Cyclone Preparedness Plans should be updated based on learnings from handling of each cyclone. Regular drills and exercises should be conducted to test the effectiveness of response mechanisms and keeping preparedness levels high.

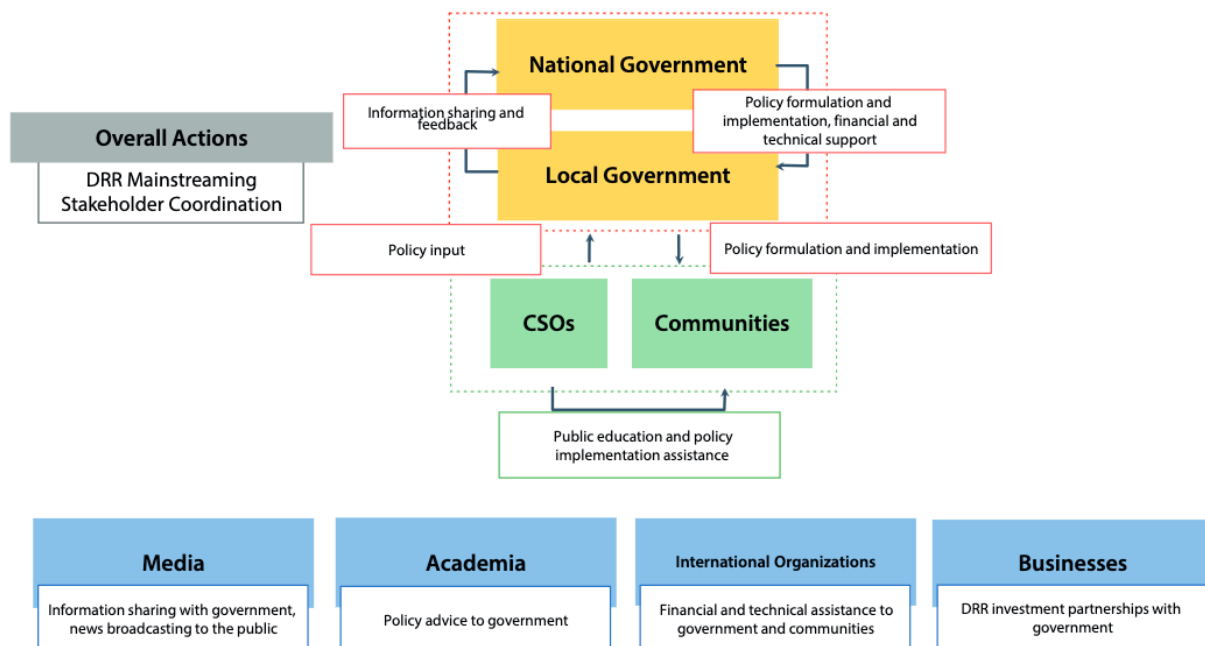


Image Source: ADB Institute. Disaster Risk Reduction (DRR) requires coordination among various stakeholders including Businesses, Media apart from Government agencies.

## Polity

### 1. Functioning of the Parliament

**News:** The functioning of the Parliament during the duration of 17<sup>th</sup> Lok Sabha has been one of the poorest since Independence.

#### About the Working of the Parliament

##### Bills Referred to Parliamentary Standing Committees (PSCs)

PSCs were created in 1993 to assist Parliament in its legislative and financial business. Since 2004, only 45% of the Bills introduced in the Parliament have been referred to Committees. The decline has been sharper in recent times.

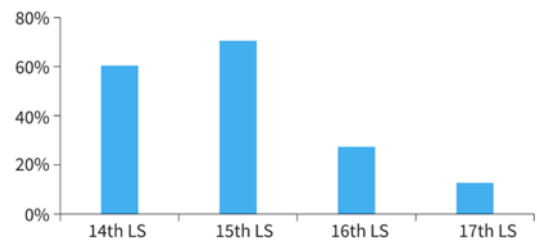
**Application of Accountability Provisions:** Application of provisions to draw the attention of the Government towards important matters and hold it responsible (like the half-an-hour discussions, short-duration discussions, and adjournment motions) has been declining. In the 17<sup>th</sup> Lok Sabha, only 11 short-duration discussions and 1 (one) half-an-hour discussion have been held so far. None were held in the latest session (Budget Session 2023).

**Legislation:** In the 17<sup>th</sup> Lok Sabha, so far, 150 Bills have been introduced and 131 have been passed (excluding Finance and Appropriation Bills). Fewer than 10 Bills have been introduced or passed in each of the last 4 consecutive sessions.

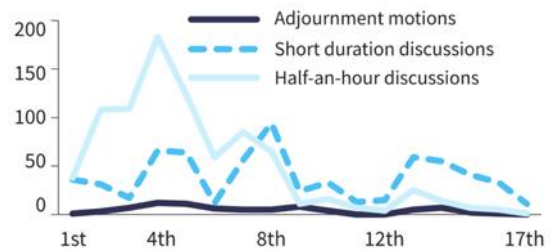
**Sittings:** Sitting days of the 17<sup>th</sup> Lok Sabha may end up being the shortest. This could make it the shortest full-term Lok Sabha since 1952.

**Budget Sessions of 17<sup>th</sup> Lok Sabha:** The latest Budget session was the 6<sup>th</sup>-shortest Budget session since 1952. The Lok Sabha spent 18 hours on financial business, of which 16 hours were spent discussing the Budget. In the previous Budget sessions of the 17<sup>th</sup> Lok Sabha, financial business was discussed for 55 hours on average.

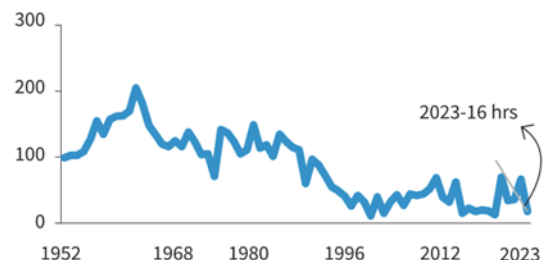
**Deputy Speaker:** Article 93 of the Constitution states that the Lok Sabha will choose two Members of the House to be Speaker and Deputy Speaker, as soon as possible. The 17<sup>th</sup> Lok Sabha has not chosen a Deputy Speaker even after 4 years.



Source: The Hindu. % of Bills referred to PSCs has fallen < 20% in the 17<sup>th</sup> Lok Sabha.



Source: The Hindu. The number of debates has consistently fallen. The Motion of Thanks on the President's Address was the only item discussed in Budget Session 2023.



Source: The Hindu. The time spend on Budget discussions averaged > 120 hours in 1960s (~200 hours in 1964 Budget Session).

### 2. Government's Immunity from Legal Provision Under Article 299: SC Judgment

**News:** The SC has held that the Government can't claim immunity from the legal provisions of a contract entered under the President's name under Article 299 of the Constitution.

### About Articles 298 and 299

- **Article 298** grants the Union and State Governments the power to carry on trade or business, acquire, hold, and dispose of property, and make contracts for any purpose.

#### Article 299(2)

**Article 299(2)** says that neither the President nor the Governor can be personally held liable for contracts made under Article 299(1).

- **Article 299** provides that all contracts made in the exercise of the executive power of the Union (or State) shall be expressed to be made by the President (or the Governor) and all such contracts shall be executed on behalf of the President (or the Governor) by persons in a manner as authorized by them.

### Objective of Article 299

- In **Chatturbhuj Vithaldas Jasani v. Moreshwar Parashram & Ors (1954)**, the SC held that the objective of Article 299 is to provide a definite procedure according to which contracts must be made by agents acting on the government's behalf; else public funds may be depleted by unauthorized or illegitimate contracts. Contracts not adhering to the manner given in Article 299 cannot be enforced by any contracting party.
- In **K.P. Chowdhry v. State of Madhya Pradesh. And Others (1966)**, the SC had laid down 3 essential requirements for Government contracts under Article 299: **(a)** The contract must be expressed to be made by the Governor or the President; **(b)** It must be executed in writing; **(c)** The execution should be by such persons and in such a manner as the Governor or the President might direct or authorize.

### Present Case and the SC Judgment

- The petitioner (Glock-Asia Pacific Limited) had entered into a contract with the Government for the supply of pistols. However a dispute arose between the two parties.
- The company invoked arbitration and nominated a retired Delhi High Court judge as the sole arbitrator.
- The Union Government cited a condition in the tender which mandated that the **dispute had to be referred to the sole arbitration of an officer from the Ministry of Law**.
- The petitioner challenged the provision. They cited the **Arbitration and Conciliation Act, 1996** which states that a person who is an employee, consultant, advisor, or has any other past or present business relationship with a party; is ineligible to be appointed as an arbiter.
- The SC held that a person chosen by the State as an arbitrator must be **'impartial and independent'** with no past or present professional ties with the Government. It said that the contracts made under Article 299 of the Constitution **do not give the Government power to break statutory laws**.
- The SC appointed former SC judge, Justice Indu Malhotra, as the sole arbitrator.

### 3. Independence of District Judiciary part of Basic Structure: SC Judgment

**News:** The SC has held that the independence of district judiciary is part of the Basic Structure. Judicial Independence from Executive/Legislature requires Judiciary to have a say in matters of finances.

### About the Judgment

- The SC Judgment gave a series of directions to **amend the service rules of the district judiciary** and for payment of arrears of pension, additional pension, gratuity and other retiral benefits.
- The directions given by SC were based on the recommendations made by the SC-appointed **Second National Judicial Pay Commission**.
- The Judgment observed the critical role played by district judiciary in the justice system saying that the **district judiciary is the most accessible to the litigants**. For efficient functioning of judicial system, it



is necessary that **judges of calibre and capacity are provided with the right incentives and promotion opportunities** to maintain the high level of functioning of the Judiciary.

- A unified judiciary necessarily entails that the service conditions of judges of different State are equivalent. This will ensure that the judicial system is uniform, effective and efficient in its functioning.
- The judgment highlighted the doctrine that the “Judiciary must possess the inherent power to compel payment of those sums of money **which are reasonable and necessary to carry out its mandated responsibilities**”. To secure their impartiality, it is important to **ensure their financial security and economic independence**.
- The SC said, “This doctrine is only the logical conclusion of **separation of powers and ensures that the independence of the judiciary is secured**”.

#### 4. Forum Shopping

**News:** The Chief Justice of India has condemned the practice of Forum Shopping.

##### About Forum Shopping

- It refers to the practice of deliberately **choosing a specific Court or Judge** for a legal case in the hope of **getting a favourable outcome**. Litigants and lawyers often consider this strategy as part of their litigation plan.
- ‘Bench Hunting’ refers to petitioners managing to get their cases **heard by a particular Judge or Bench** to ensure a favourable order.

##### Issues with Forum Shopping

- It can lead to injustice for the other party and **create an imbalance in the workload** of different courts. Some Courts, Benches or Judges may be overburdened
- It can **undermine the authority and legitimacy of courts and judges** by creating perceptions of bias or favouritism.
- It can increase the costs and complexity of litigation.

##### Judicial View on Forum Shopping



- **Chetak Construction Ltd. vs. Om Prakash (1988)**: The SC held that “A litigant cannot be permitted choice of the forum” and that every attempt at forum shopping “must be crushed with a heavy hand”.
- **Union of India & Ors. vs. Cipla Ltd case (2017)**: The SC laid down a “functional test” to be adopted for Forum Shopping. This is to determine whether a litigant is genuinely seeking justice or engaging in manipulative tactics through forum shopping.
- **Vijay Kumar Ghai vs. State of West Bengal (2022)**: The SC termed forum shopping as a “disreputable practice by the courts” that “has no sanction and paramountcy in law”.
- **Dr. Khair-Un-Nisa and Ors vs. UT of Jammu and Kashmir and Ors (2023)**: The J&K and Ladakh High Court imposed penalties as petitioners indulged in forum shopping.

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##### Practice in Other Countries

- The Courts in the US and UK have criticised the practice as something to be avoided or prohibited.
- Most common law countries use the “**Forum non-conveniens**” Principle (an Inconvenient Forum) to prevent forum shopping. This **gives the court discretionary powers** to refuse to exercise its jurisdiction over a matter where another court, or forum, may more conveniently hear a case and transfers it.

#### 5. Andhra Pradesh-Telangana Water Dispute

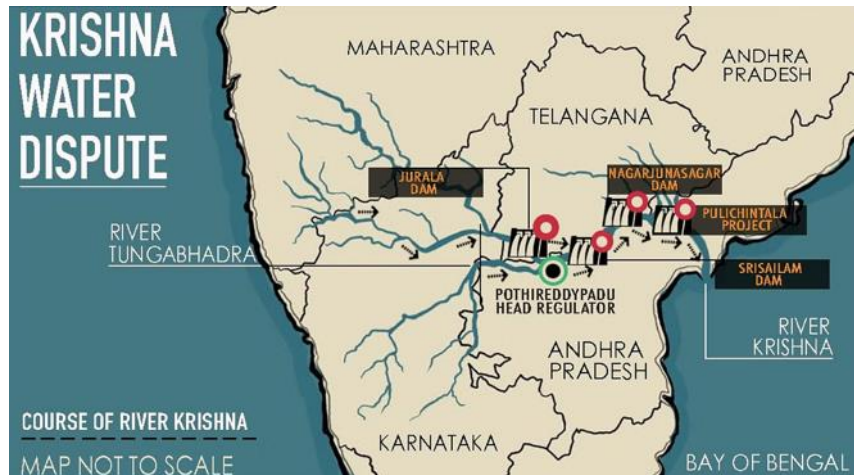
**News:** The dispute over water sharing of Krishna River between AP-Telangana has lingered for 9 years.

##### Origin of the Dispute

- Krishna Water Dispute dates back to the formation of Andhra Pradesh in November 1956.

- The principle dispute was between **Andhra Pradesh, Maharashtra and Karnataka**. The **Krishna Water Disputes Tribunal (KWDT-1)** was created in 1969 and gave its verdict in 1976. The Tribunal allocated 811 tmcft (thousand million cubic feet or billion cubic feet) to AP.

- There were **differences within regional leadership of (united) Andhra Pradesh** (Telangana, Rayalaseema, Coastal Andhra) **regarding equitable distribution of**



Source: The Print. The utilization of waters of major reservoir dams along the river, including for electricity generation, is also disputed by both States.

- **river waters within the sub-regions of Andhra State.** In 1956, senior leadership from different regions of Andhra Pradesh had signed a **Gentlemen's Agreement** which included a **provision of protection of Telangana's interests** and needs with respect to the utilization of water resources.
- However, the focus of successive State Governments remained on **irrigation facilities in coastal Andhra region** (which already had systems developed by the British), at the cost of in-basin drought-prone areas in Telangana. The AP Government had apportioned the KWDT-I Award in the **512:299 tmcft ratio between Andhra** (63%, including parts of Rayalaseema which comprise the Krishna Basin) **and Telangana** (37%) respectively based on the command area developed and utilization mechanism established by then.

#### Arrangement at Bifurcation and Dispute

- There is no mention of water shares in the **Andhra Pradesh Reorganisation Act, 2014**, since the KWDT-I Award which was still in force, had not made any region-wise allocation. An ad hoc decision was made (in 2014) to divide the water in the ratio of **66:34 between Andhra Pradesh (bifurcated) and Telangana**. **Krishna River Management Board (KRMB**, autonomous body under the Union Government) was set up at the time of split to regulate the Krishna basin water supply to projects in both states.
- Telangana has been asking the Union Government to finalize water shares. Citing treaties and agreements followed globally in sharing river waters, **Telangana has been arguing that** as per the basin parameters, **it is entitled to at least a 70% share** in the allocation of the 811 tmcft. It has highlighted diversion of ~300 tmcft of water by AP to the areas outside the basin from fluoride-affected and drought-prone areas within the basin in Telangana.
- Andhra Pradesh has been staking a claim for a higher share of water to protect the interests of command areas already developed. Andhra Pradesh has also called for inclusion of Telangana as a separate party under KWDT and the water should be divided according to the needs of 4 States, instead of 3.

#### 6. Law Commission Seeks Views on Uniform Civil Code (UCC)

**News:** The 22<sup>nd</sup> Law Commission has sought fresh views on implementing Uniform Civil Code in India.

#### About Uniform Civil Code

- At present, several aspects of personal lives like **marriage, divorce, inheritance, adoption and maintenance** are governed by the **personal laws**.

- The personal laws are **based on scriptures** and **customs of the religions** and are separate for different religious communities.
- Uniform Civil Code (UCC) will replace these personal laws and will **bring in a uniform civil law**. The uniform law will be **applicable to all the citizens** irrespective of the religion.
- The demand for a Uniform Civil Code was first put forward by women activists in the beginning of the 20<sup>th</sup>-century, with the objective of **women's rights, equality** and **secularism**. The Constituent Assembly had put the UCC under the Directive Principles of State Policy (DPSP, Article 44) having considered the **UCC as desirable but voluntary**. (Refer EPIC May 2022 (click) for The Issue of Uniform Civil Code).

#### Article 44

The State shall endeavour to secure for the citizens a uniform civil code throughout the territory of India

### 7. Reforms Needed in Legal System in India

**News:** A senior Supreme Court Advocate has suggested certain reforms in the legal system in India.

#### About Legal Reforms

- **Government Litigation:** The Government remains the biggest litigant. In 2022, the then Chief Justice had remarked that the Government litigation accounted for ~50% of pending cases.
  - The Government hasn't adhered to the **National Litigation Policy, 2010** that had aimed to cut down litigation by the Government. The Government should review the Policy and take steps to reduce litigation. (Refer EPIC January 2023 (click) for Reducing Pendency of Cases in Judiciary).
  - The Government can consider adoption of some practices of Crown Prosecution Service (UK) that allows for **independent assessment whether a case is fit for appeal**.
  - The Government can encourage **alternate measures like mediation** and plea bargaining.
- **Bail Provisions:** The Government should consider introduction of a bail law. The Supreme Court has repeatedly said that 'Bail, not jail, should be the norm'. However, in the absence of a comprehensive law, grant of bail has remained dependent on subjective view of individual Judge. (Refer EPIC February 2023 (click) for Issues Related to Prisons and Prison Reforms, EPIC December 2022 (click) for The Issue of Undertrials in India and EPIC July 2022 (click) for The Supreme Court's Observations Regarding Provisions of Bail).
- **Use of Technology:** The Government, in close cooperation with the Supreme Court, should scale-up the initiatives to enhance use of technology in courts.
- **Regulations for Lawyers:** There is a lack of proper regulatory body for lawyers. Bar Council of India has not been very effective in enforcing high ethical and professional standards. Few lawyers charge exorbitant fee (10-15 lakhs for 1 appearance in the Court) which has remain unchecked. There is need to introduce an ethical code of conduct for the lawyers.

#### Top 5 central govt litigants

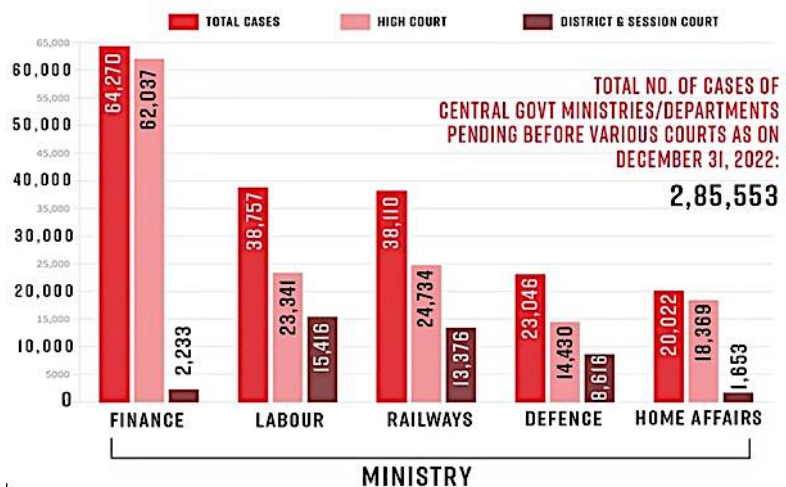


Image Source: The Print. More than 285,000 cases involving Union Government are pending in High Courts and lower courts. The Union Government has spent INR 500 crore on litigation between 2012-13 to January 2023.

## 8. Law Commission on Adverse Possession Laws

**News:** The 22<sup>nd</sup> Law Commission has recommended against any changes to the laws on adverse possession.

### About Adverse Possession

- Adverse possession refers to the occupation of land that one does not own. The hostile occupation should be **continuous, uninterrupted, and peaceful** to be declared as adverse possession.
- It is based on the premises that the land must not be left vacant but put to judicious use. Society will benefit from someone making use of land the owner leaves idle. The maxim that the **law does not help those who sleep over their rights is invoked in support of adverse possession**.
- The trespasser has to fulfil certain conditions before their claim can be accepted, including the **continuous occupation of land for a certain duration**.
- Adverse possession laws have their roots in the Hammurabi Code of 2000 BC. The **Property Limitation Act, 1874** put set the period of limitation at **12 years** (i.e., 12 years of continuous possession, without the original owner taking any action).
- The **Limitation Act, 1963** shifted the **burden of proof to the person claiming adverse possession**. Under this act, any person in possession of **private land for over 12 years** or **Government land for over 30 years** can become the owner of that property. The original title holder must claim the land within the mentioned time period, else the claim of trespasser/occupant will be valid.

#### Judicial View on Adverse Possession



- **Karnataka Board of Wakf v Government of India (2004):** The SC defined the conditions for claiming Adverse Possession:
  - Date of possession.
  - Nature of possession.
  - Whether the fact of possession was known to the other party.
  - How long the possession continued.
  - The possession was open and undisturbed.
- **Hemaji Waghaji Jat v. Bhikhabhai Khengarbhai Harijan and Others (2008):** The SC observed that the law of adverse possession:
  - "...ousts an owner on the basis of inaction within limitation" and is "irrational, illogical, and wholly disproportionate".
  - "The law as it exists is extremely harsh for the true owner and a windfall for a dishonest person who has illegally taken possession of the property".
  - "The law places a premium on dishonesty".

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### About Law Commission's Views

- After the 2008 SC Judgment, a reference was made to the Law Commission.
- The 19<sup>th</sup> Law Commission had concluded that the present provisions **afforded sufficient protection to the land's true owner** and **there was no need to amend the law**. However, the Commission didn't file a final report.
- The 22<sup>nd</sup> Law Commission has reiterated the view (law should stay the same). The Report noted that "the original title holder who neglected to enforce his rights over the land **cannot be permitted to re-enter the land after a long passage of time**".
- However, 2 members filed a dissent note arguing:
  - Courts have rarely ruled in favour of adverse possession owing to its **contradictory requirement** that the nature of possession is "**peaceful as well as hostile**".
  - It leads to 'avoidable and expensive' litigation further burdening the Judiciary and causing misery to rightful owners.

## 9. Gender Parity in Civil Services

**News:** A record number of women aspirants were recommended by the UPSC through CSE 2022. However, as shown by an India Spend Report, women are still underrepresented in the Services.

### Manifestation of Gender Disparity in Civil Services



Out of 933 candidates recommended by the UPSC through CSE 2022, 320 (34.3%) are women. This is the highest number ever, both in absolute and proportional terms. The trend has improved in recent years. However, women are far from achieving gender parity in Services.

- Of 11,569 IAS officers who entered the civil services between 1951 and 2020, only 1,527 (13.2%) have been women. At present, ~21% serving IAS officers are women.
- At the State level, the proportion of women officers is highest in Telangana (31.1%) and Karnataka (30.2%), only States where the proportion is > 30%. The lowest share is in J&K (11.9%).
- In terms of selections, 41% of the officers selected from Chandigarh (domicile) between 1970-2020 were women. Tripura (domicile) had only 3%.
- Women are **under-represented at the senior bureaucratic levels**. As of January 2022, of the 92 Secretaries to the Government of India, **only 13 (14%) were women**.
- The Government of India has **never had a woman Cabinet Secretary, Home or Defence Secretary** till date. India's first woman Foreign Secretary (Chokila Iyer) was appointed in 2001 and Finance Secretary in 2011 (Sushma Nath). As of December 2021, there were **only 2 women Chief Secretaries** among all States/UTs.
- The proportion of women officers is higher in departments like Education, Women and Child Development and Cultural Affairs. **Their proportion is relatively lower in Finance and Law and Order related fields.**
- Women officers have to **balance their professional responsibilities with domestic duties** as well, adding to pressure. The PC Hota Committee, recognizing the additional burden, had recommended an **additional 4 years of leave with full pay for women** in their entire service career over and above the leaves applicable for all, in order to bring up children. (Refer EPIC July 2022 (click) for Gender Pay Gap).

## Women Officers More Likely To Seek Voluntary Retirement Than Men

Retirement reason	Women (%)	Men (%)
Superannuated	81.3	87.8
<b>Retired voluntarily</b>	<b>6.6</b>	<b>5.1</b>
<b>Resigned/Deemed Resigned</b>	<b>6.1</b>	<b>1.6</b>
Retired compulsorily/Deemed Retired/After extension	2.9	1.9
Expired	2.0	3.0
Termination of Service/Contract	0.6	0.2
Re-employed/extension of service	0.6	0.4

Image Source: IndiaSpend. Women officers are more likely to seek voluntary retirement or resign. Family responsibility and care work may be one of the reasons.

## Policy

### 1. Government's Performance in Education Sector

**News:** The Government has undertaken several successful initiatives in the Education sector. There are several gaps, however, that need to be addressed.

#### About the Initiatives and Outcomes

- **NEP 2020:** Notable progress has been made in terms of common entrance test for Central Universities, more autonomy to Universities to collaborate with foreign institutions among others. NIPUN Bharat scheme was launched in 2021.
- **National Curriculum Framework:** It provides guideline for syllabus, textbooks and teaching practices for the education

#### GER IN SCHOOL EDUCATION (IN%)

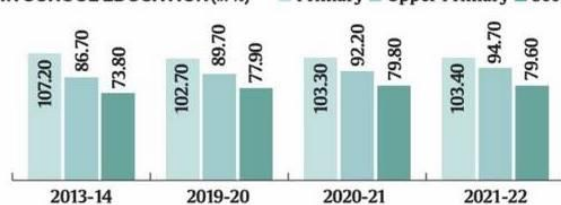


Image Source: Indian Express. GER in Upper-Primary and Secondary schools has gradually increased, indicating fall in drop out. GER > 100% indicates overaged children.

system. It is nearing completion stage. (Refer EPIC April 2023 for Pre-Draft of National Curriculum Framework (NCF) for School Education Released).

- **Textbooks:** The NCERT has undertaken **3 rounds of revisions** in school textbooks. The revision is aimed at reducing the burden of curriculum. (Refer EPIC April 2023 (click) for Revision of NCERT Books and Associated Issues).
- **Foreign Universities:** The UGC is finalizing regulations to allow foreign universities to establish campuses in India. The draft regulations have proposed to allow the universities to have their own admission process, fee structure, recruit faculty from India and abroad among other measures. (Refer EPIC January 2023 (click) for Establishing Campuses of Foreign Universities in India: Benefits and Challenges).
- **New Institutions and Enhanced Capacity:** Over the past 9 years, several new centrally run educational institutions have been established. Existing institutions have undergone significant capacity enhancement through the implementation of the EWS quota. This has increased the intake capacity. GER in higher education has increased from 24.3% in 2014-15 to 27.3% in 2020-21.
- **Female Representation:** Various initiatives have been taken to **increase female representation** in male-dominated educational institutions. The supernumerary seats (over and above approved) were introduced for women at IITs and NITs in 2018. This resulted in a rise in female representation from 9% in 2017 to 20% in 2022 at IITs. According to AISHE data, there has been a reduction in gender disparity in higher education enrolment since 2014. (Refer EPIC March 2023 (click) for All India Survey on Higher Education (AISHE) 2020-21 and EPIC September 2022 (click) for Breaking the 'Glass Ceiling': Rising Number of Women in STEM).
- **Other Initiatives:** The no-detention policy under the RTE Act, 2009 has been scrapped.
- National Testing Agency was established in 2017 to conduct all entrance tests to higher education.
- National Medical Commission was established after dismantling the Medical Commission of India in 2020, in order to end 'lobbies' and 'inspector raj'.
- Higher Education Financing Agency was established in 2017 to leverage funds from the market to finance infrastructure development in educational institutions through long-term loans.

### GENDER PARITY INDEX (GPI) IN HIGHER EDUCATION

YEAR	GPI
2013-14	0.92
2014-15	0.92
2015-16	0.92
2016-17	0.94
2017-18	0.97
2018-19	1
2019-20	1.01
2020-21	1.05

Image Source: Indian Express.  
Women outnumber men in PG and M.Phil Courses.

### Issues to Address

- **Autonomy:** IIMs have been granted greater autonomy through the IIM Act, 2017. However, other Central Universities and IITs have not been granted similar freedom.
- **Shortage of Faculty:** The Central Universities and institutions continue to face shortage of faculty.
- **Funding:** The public expenditure (combined Union and State) has remained low ~2.9% of the GDP.
- **Shortcomings in Schemes:** Some schemes have been renamed but have not been revamped in terms of funding or implementation standards e.g., Mid-day Meal Scheme to PM POSHAN.
  - Samagra Shiksha Abhiyan has also received lower funding.
  - NEP had proposed to include breakfast as part of Mid-day Meal, it hasn't been implemented.

## 2. WHO Report on Har Ghar Jal Programme

**News:** The WHO has highlighted the substantial health benefits of the 'Har Ghar Jal' Programme and its impact on improving the lives of individuals and families.

### About Performance of the Har Ghar Jal Programme

- A fully functional tap water connection is defined as a household getting at least **55 litres of per capita per day of potable water all throughout the year**.
- At present, ~12.3 crore (62%) rural households have piped water connections up from 3.2 crore (~16.6%) from 2019. The Union Government has claimed that it will achieve 100% coverage by 2024.
- 5 States (Gujarat, Telangana, Goa, Haryana, and Punjab) and 3 UTs (Andaman & Nicobar Islands, Daman Diu & Dadra Nagar Haveli and Puducherry) have reported 100% coverage. Himachal Pradesh at 98.87%, followed by Bihar at 96.30%, are also poised to achieve saturation in near future. (Refer EPIC March 2023 (click) for Status of Jal Jeevan Mission).

### Key Findings of the WHO Report

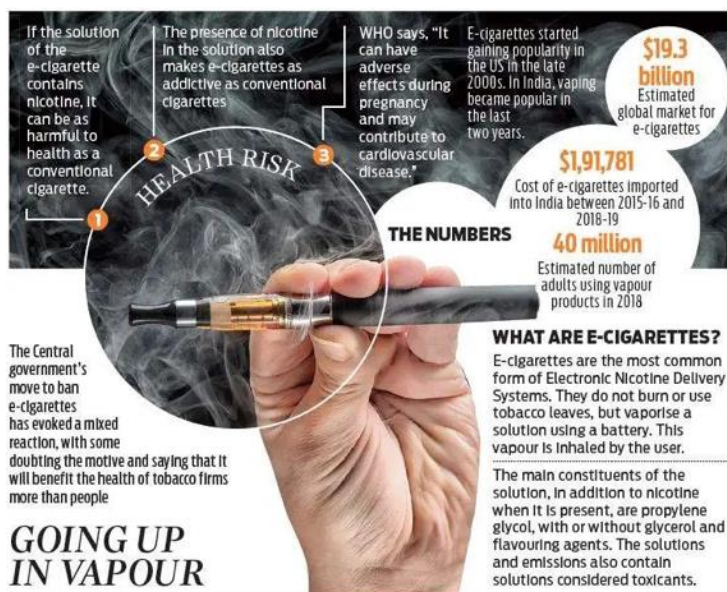
- **Health Impacts of Har Ghar Jal program:** The report focuses on diarrheal diseases as they contribute significantly to the overall disease burden related to water, sanitation, and hygiene (WASH) issues.
  - Safely managed drinking water for all households could **avert ~400,000 deaths caused by diarrheal diseases** and prevent ~14 million Disability Adjusted Life Years (DALYs) related to these diseases.
  - This will result in estimated **cost savings of up to US\$ 101 billion**. Every dollar invested in sanitation interventions gives a US\$ 4.3 return in the form of **reduced healthcare costs**.
- **Safe Water Supply:** The report reveals that in 2018, 36% of India's total population (44% rural), lacked access to improved drinking-water sources.
  - The analysis indicates that in 2019, unsafe drinking water, along with inadequate sanitation and hygiene, **contributed to 1.4 million deaths** and 74 million DALYs globally.
- **Impact on Women:** In 2018, households without on-premises water spent a staggering 66.6 million hours each day collecting water, with the majority (55.8 million hours) occurring in rural areas. Universal coverage will result in substantial saving of time and effort spent by women on water collection.

### 3. Implementation of Prohibition of e-Cigarette Act, 2019

**News:** The Union Health Ministry has issued a public notice for stricter implementation of Prohibition of Electronic Cigarettes Act, 2019.

#### About the Act

- The Prohibition of Electronic Cigarettes (Production, Manufacture, Import, Export, Transport, Sale, Distribution, Storage and Advertisement) Act came into force in 2019.
- **Definition:** The Act defines electronic cigarettes (e-cigarettes) as electronic devices that heat a substance, which may **contain nicotine** and other chemicals, to **create vapour for inhalation**.
  - These e-cigarettes can also contain **different flavours** and include all forms of electronic nicotine delivery systems, heat-not-burn products, e-hookahs, and other similar devices.



- **Banning of e-cigarettes:** The Act prohibits the production, manufacture, import, export, transport, sale, distribution and advertisement of e-cigarettes in India.
  - Any person who contravenes these provision will be punishable with **imprisonment of up to 1 year**, (3 years for repeat offence) or a **fine of up to INR 1 lakh**, (INR 5 lakhs for repeat offence) or both.
- **Storage of e-cigarettes:** Under the Act, no person is allowed to use any place for the storage of any stock of e-cigarettes. Stocking of e-cigarettes will be punishable with an imprisonment of up to 6 months, or a fine up to INR 50,000 or both.
- **Powers of Authorized Officers:** Authorized officers can search any place where trade, production, storage or advertising of e-cigarettes is being undertaken. The Officer can seize any record or property connected to e-cigarettes found during a search and take persons connected with an offence into custody.

#### 4. OTT Platforms Mandated to Show Anti-tobacco Warnings

**News:** The Union Health Ministry has amended the rules under the Cigarettes and Other Tobacco Products Act (COTPA), 2004 to make it mandatory for OTT platforms to display anti-tobacco warnings.

#### Recent Amendments to Rules under the Act

- Publishers of online curated content **displaying tobacco products**, or **their use** will be required to **display anti-tobacco health spots at the beginning and middle of the programme**.
- They shall also be required to exhibit an anti-tobacco health warning as a **prominent static message** at the bottom of the screen **when tobacco products or their use are displayed during the programme**.
- The rules also specify that the message should be clear, legible and readable with **font in black colour on white background** and with the warnings **‘Tobacco causes cancer’** or **‘Tobacco kills’**.
- Health spots and audio-visual disclaimers will have to be in the **same language as used in the show**.
- If the publisher of online curated content fails to comply with the provisions, then an **inter-ministerial committee shall issue notice to the OTT platforms**.

#### 5. Rising Burden of Non-Communicable Diseases (NCDs) in India

**News:** The new national estimates for diabetes and other NCDs show that 31 million more Indians become diabetic in the last 4 years.

#### About the NCD Burden in India

- A study was conducted by the Madras Diabetes Research Foundation in collaboration with the Indian Council of Medical Research (ICMR) and the Union Health Ministry to estimate the people with diabetes and other non-communicable diseases (NCD) in India. The study found that:
  - India has **101 million people with diabetes** and **136 million people with pre-diabetes**.
  - 315 million people had **high blood pressure**; 254 million had **generalized obesity**, and 351 million had **abdominal obesity**.

Non-communicable diseases (NCDs)	National prevalence	Estimated number of people in India, in millions (Burden)	State with highest prevalence	State with lowest prevalence
Diabetes	11.4%	101.3	Goa (26.4%)	Uttar Pradesh (4.8%)
Pre-diabetes	15.3%	136.0	Sikkim (31.3%)	Mizoram (6.8%)
Hypertension	35.5%	315.5	Punjab (51.8%)	Meghalaya (24.3%)
Generalized Obesity	28.6%	254.2	Puducherry (53.3%)	Jharkhand (11.6%)
Abdominal Obesity	39.5%	351.1	Puducherry (61.2%)	Jharkhand (18.4%)
Hypercholesterolemia	24.0%	213.3	Kerala (50.3%)	Jharkhand (4.6%)
High LDL cholesterol	20.9%	185.7	Kerala (52.1%)	Jharkhand (3.2%)



- 213 million people had **hypercholesterolaemia** (fat collects in arteries and puts individuals at greater risk of heart attack and strokes) and 185 million had high low-density lipoprotein (LDL) cholesterol.

### Significance of the Study

- Diabetes and other metabolic non-communicable diseases, such as hypertension, obesity and dyslipidemia are much more common than estimated previously in India.
- At present, urban regions have higher rates of NCDs than rural areas, with the exception of prediabetes. The study estimates that **rural India will see a diabetes explosion in the next 5 years if left unregulated.**
- The study has highlighted **interstate and inter-regional variations** with the highest diabetes prevalence found in Goa, Puducherry and Kerala. Hypertension was highest in Punjab. The lowest prevalence of NCDs was found in U.P., Mizoram, Meghalaya and Jharkhand.

### Steps Being Taken

- The Union Ministry of Health has identified the **4 major NCDs**: Cardiovascular diseases, Cancers, Chronic Respiratory Diseases and Diabetes. They all share **4 behavioural risk factors**: Unhealthy diet, Lack of physical activity, Use of tobacco and alcohol.
- Programmes have been brought in to **strengthen health infrastructure, human resource development, health promotion and awareness-generation** for prevention, early diagnosis and ensuring referrals to appropriate healthcare facilities for NCDs.

## 6. Status of Manual Scavenging

**News:** The Union Ministry of Social Justice and Empowerment has said that only 508 of the 766 districts in the country have been declared free of manual scavenging.

### About the Official Data

- The Government has said that only 508 out of 766 districts in India (66.3%) have declared themselves as manual scavenging-free.
- Earlier, the Government had maintained that there have been no deaths in the country due to manual scavenging. The Government had earlier distinguished manual cleaning of sewers and septic tanks separate from manual scavenging.
- The various data on absolute numbers of manual scavengers vary widely:
  - States and municipal bodies have collectively identified over 58,000 manual scavengers in India.
  - Socio-Economic Caste Census (2011) had identified 1.82 lakh manual scavengers in rural India.
  - The *Safai Karmachari Andolan* (SKA) estimates the number of manual scavengers to be ~1.2 million.

### Steps Taken

- The practice has been banned under the Prohibition of Employment of Manual Scavengers Act, 2013.
- The Supreme Court via its order in 2014 had made it mandatory for the Government to identify all those who died in sewage work since 1993 and provide INR 10 lakh each as compensation to their families.
- **Scheme for Rehabilitation of Manual Scavengers:** Under this, the 58,000 identified sewer workers have been given a one-time cash pay-out of INR 40,000 each. In addition, around 22,000 of them have been connected to **skills training programmes**. Subsidies and loans are also available to them if they want to set up their own business.
- **NAMASTE (National Action Plan for Mechanized Sanitation Ecosystem) Scheme:** The scheme for rehabilitation of manual scavengers has been merged with NAMASTE scheme. The scheme aims for

**100% mechanisation of sewer work.** The Union Budget for 2023-24 has allocated INR 100 crore for the NAMASTE scheme. (Refer EPIC February 2023 (click) for Budget Allocation for Mechanised Cleaning of Septic Tanks).

- The scheme will require over 4,800 urban local bodies across the country to identify and profile all septic tank/sewer workers in their respective areas, provide them occupational training and safety equipment, and sign them up for health insurance under the Ayushman Bharat scheme, among other interventions.
- It is a joint project of the Ministry of Social Justice and Empowerment and the Ministry of Housing and Urban Affairs.

## 7. Missing (Abducted) Girls in India

**News:** The film *Kathal*, released on Netflix, has raised the issue of hundreds of missing children, especially girls, that routinely disappear from various parts of the country.

### Data on Missing Girls

- In 2021, 69,014 cases of kidnapping and abduction of children (below 18 years) were registered across the country, of which 55,120 pertained to girls aged 12-18.
- Missing Girls accounted for 84% of the cases.

Age Group	Female	Male	Total
Below 6 Years	484	418	902
6-12 Years	2,454	1,711	4,165
12-16 Years	21,389	4,425	25,814
16-18 Years	33,731	4,402	38,133
Total	58,058	10,956	69,014

### Reasons behind High Number of Missing Girls

- Marriage, sexual abuse, domestic servitude, and **forced labour**/slavery remain the main motives behind the kidnapping and abduction of children.
  - The **abysmal sex ratio in several states** has resulted in a '**bride crisis**'. Girls, as young as 12 years old, are sold for marriage to elderly unmarried men.
- **False promises:** In most cases, seemingly trustworthy extended family members or neighbours lure a girl away with the promise of a city life, a plush job or a husband of choice.
- **Delayed Response:** Many times police officers believe the girl may have voluntarily eloped with someone. This presumption delays response and loss of 'golden hours' to trace the victim.

### Steps Taken

- **Prompt FIRs and Police Action:** The activism of the Courts, Women/Child Commissions and civil society organizations have led to prompt filing of FIRs. Strict supervision of courts and senior police leadership has resulted in improved recoveries.
- **Anti-human Trafficking Units (AHTU):** They have been established under the aegis of the Ministry of Home Affairs and are **functional in every district**. AHTUs have played a remarkable role in helping trace missing children from faraway places.
- **Promotion Incentives:** In 2021, the Delhi police announced an out-of-turn promotion incentive for constables and head constables, who would trace more than 50 children below the age of 14 in a year. The number of children recovered by the Delhi police in 2021 exceeded the number reported missing.

### Steps Required

- **CCTVs:** Coverage of more public areas like Railway stations, bus stands, roads etc. can improve surveillance, and help trace abducted victims quickly.
- **Quick Action:** The police staff should be quick to register FIR and initiate action immediately on receipt of complaint. Quick mobile surveillance of victim and abductors (if known) phone locations can help in quick recovery of victims.
- **Link Child Records:** Young children may not be able to provide useful information related to their home or parents or person that can be contacted. The Government should link records of all orphanages, child shelter homes, and Nari Niketans in the country. The District Probation Officers or the **District Social Welfare Officers** should be made overall supervisors and custodians of such data centres.

### 8. Gauhati HC Judgment Regarding Government of Nagaland Order Prohibiting Dog Meat

**News:** The Gauhati High Court has quashed a 2020 order by the Nagaland government banning the trade and commercial sale of dog meat in markets and dine-in restaurants.

#### About the Issue

- In 2020, the Government of Nagaland issued an order banning dog markets, the commercial import and trading of dogs, as well as the commercial sale of dog meat in markets and in dine-in restaurants.
- In 2014, the Food Safety and Standard Authority of India (FSSAI) had issued a circular stating that the slaughter of any species other than the ones listed in the **Food Safety and Standards (Food Products Standards and Food Additives) Regulation, 2011** is not permissible.
- A petition was filed against this order in the High Court stating that it is the “*culture and custom of the Nagas*” to eat dog meat and that they had been earning their livelihood for many years through the supply and sale of dog meat.

#### High Court’s Observations

- The HC said that dog meat appears to be an accepted norm and food amongst the Nagas. Dog meat is absent from the list issued by the FSSAI because its consumption is limited to some parts of the North-east and is alien to the rest of India.
- The HC observed that the FSSAI has been **delegated power to ensure the availability of safe and wholesome food for human consumption** by making regulations consistent with the FSS Act. The duties and functions of the authority listed in the Act **do not mention the power to issue prohibition orders**. It stated that the **FSSAI appeared to have acted beyond its duties**.

## Economy

### 1. Reserve Currency

**News:** The Ukraine war and the subsequent sanctions on Russia had led to debate on the role of US Dollar (US\$) as the reserve currency.

#### About Reserve Currency

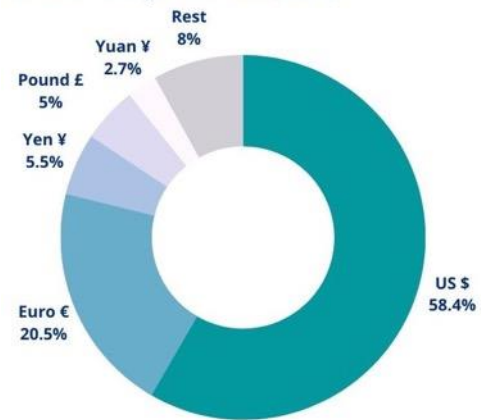
- It is the currency held by countries as **foreign exchange reserves**.
- The exchange reserves are required to meet the gap between a country’s **international payments and receipts**. They also help meet any contingency like sudden large outflow of capital from the country.
- Reserves can be held in gold or a foreign currency (like US\$) that can be freely used and is fully convertible.

### Characteristics of Reserve Currency

- **Free Flow:** It should **not be subject to any restrictive controls by the country that issues it**. In this context, the US\$ has high credibility. Chinese Renminbi has lower credibility. The US sanctions on Russia (prohibiting Russia from using US\$ and settlement systems) has put question marks over the trust, and many countries are now looking for an alternate. (Refer EPIC April 2023 (click) for De-Dollarisation of International Trade).
- **Availability:** Reserve Currency should be available widely. The issuing country should be willing to expand the currency (i.e., print more currency) as the demand for reserves rises. This means **running current account deficit** on a sustained basis (Triffin's Paradox).
- **Liquidity:** Reserve currency should be liquid (i.e., readily accepted). This requires well developed debt and equity markets in that currency. **A large number of countries should be ready to accept the currency.**

### Foreign Reserves

Share of Currencies in globally disclosed Official Foreign Reserves (2022)



Source: IMF

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### History of Reserve Currencies

- Historically, **gold served as reserve currency**. However, the **supply of gold was not enough** to meet the demands of growing global trade and investments.
- During the colonial era, **Great Britain's Pound Sterling (GBP, GB£) served as reserves**. The GB£ could be converted into gold by the Bank of England. However, **Britain abandoned gold standard** during the Great Depression (1930s) and GB£ lost its status.
- The US dominated the global trade in the Post-WWII era and US\$ gained the status of reserve currency. US\$ has remained the reserve currency even as the **US abandoned gold standard in 1971**.
- Today most countries adopt 'free' or 'fixed' exchanged rate of their currencies with the US\$. Euro € has emerged as the most trusted alternate the US\$ as a reserve currency.

### Replacement of US\$ as Reserve Currency

- As China's share in trade has risen, demand for settlement of trade (exchange of payment for goods by exporters and importers) in Renminbi has increased. However, **strict control by the Chinese Government on convertibility of Renminbi** has limited its potential to become reserve currency.
- RBI has introduced **Special Vostro accounts** to allow settlement of trade in Indian Rupee. However, **India's share in global trade is too small** for INR to become a viable reserve currency option. Rupee's demand is too low. Besides **India does not allow full Capital Account Convertibility**. (Refer EPIC March 2023 (click) for Vostro Accounts and EPIC November 2022 (click) for Trade Settlement in Rupee).
- A **currency used for trade settlement may not necessarily become a reserve currency**. Alternate trade settlement arrangements (in Renminbi, Rupee or Rouble) may not be able to replace US\$ (or EUR€) as reserves currency, at least in the near future.

### Capital Account Convertibility (CAC)

It means the domestic currency is **fully convertible in the Capital Account**. Full CAC allows **freedom to conduct cross-border investments without any constraints** i.e., an Indian can convert any amount of INR into US\$ and invest in the US or US citizens can freely acquire assets in India. There are many restrictions on CAC in India e.g., on the amount of money Indian firms can borrow from abroad (overseas borrowing cap of \$750 million (annual)).



## 2. Expected Fall in Remittances

**News:** According to World Bank's Migration and Development Brief, the remittance inflows to India are expected to grow by only 0.2% in 2023.

### Current Status of Remittances

- In 2022, the inward remittances rose by 24% to reach **US\$ 111 billion**. Remittances were equivalent to ~3.3% of India's GDP.
- ~36% of India's remittances are from the **high-skilled** and largely **high-tech Indian migrants** in 3 high-income destinations: the US, the UK, and Singapore. Remittances from Gulf Cooperation Countries account for about 28% of India's total remittance inflows.
- According to the World Bank, India has **reduced the transaction cost of receiving remittances** to 4.6%, compared to global average of 6.3% per transaction
- Rise in remittances was supported by:
  - Surge in oil revenues of GCC countries which increased migrants' incomes.
  - A strong labour market in the US and the OECD countries.

### WHERE DOES REMITTANCES TO INDIA COME FROM?

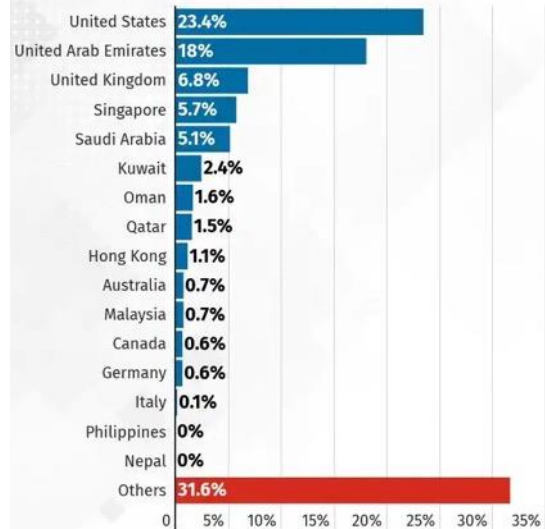


Image Source: Money Control. Majority of India's remittances are from the US, the UK, Singapore, and the Middle East (UAE, Saudi Arabia, Kuwait, Oman, Qatar).

### Importance of Remittances

- Remittances provide crucial foreign exchange reserve.
- Remittances are highly **complementary to government cash transfers** and essential to households during times of need.
- Remittances **increase disposable income of recipient families**. This increases domestic demand and provide boost to economic growth.
- Economies of some countries are dependent on remittances e.g., Remittance inflows represented very large shares of GDP in countries such as Tajikistan (51% of GDP), Tonga (44%), Lebanon (35%), Samoa (34%), and the Kyrgyz Republic (31%).

### Slowdown in Growth

- **Global Slowdown:** Slower growth in OECD economies especially in the high-tech sector in the US has affected the demand for IT workers. The growth of the Gulf region is expected to slow down to 3% in 2023 (5.3% in 2022).
- **Base Effect:** The remittances in 2022 reached record level. The growth next year will be lower due to large base effect.

## 3. World Energy Investment Report, 2023

**News:** The International Energy Agency has released the World Energy Investment Report, 2023.

### Key Findings of the Report

- Investments in clean energy have surpassed investments in fossil fuels by 70% with the transition mainly fuelled by renewable power and Electric Vehicles (EVs). For every dollar spent on fossil fuels, US\$ 1.7 is now allocated to clean energy, a significant increase from the 1:1 ratio observed 5 years ago.

- The report highlights the influence of **recent geopolitical events on the energy market**. Russia's invasion of Ukraine has led to **substantial instability in the fossil fuel markets** and has **accelerated the deployment of renewable energy technologies**.
- Over 90% of the surge in clean energy investment since 2021 has been concentrated in **China, EU, the US, Japan and India**. The increases in clean energy investment in these regions since 2021 have outstripped the total clean energy investment in the rest of the world combined. India has also performed well, especially with investments in solar energy.
- There are **many hurdles in transitioning towards clean energy** such as higher interest rates, ambiguous policy frameworks, market designs, financially constrained utilities and a high cost of capital. These factors slowdown the increase in investments.

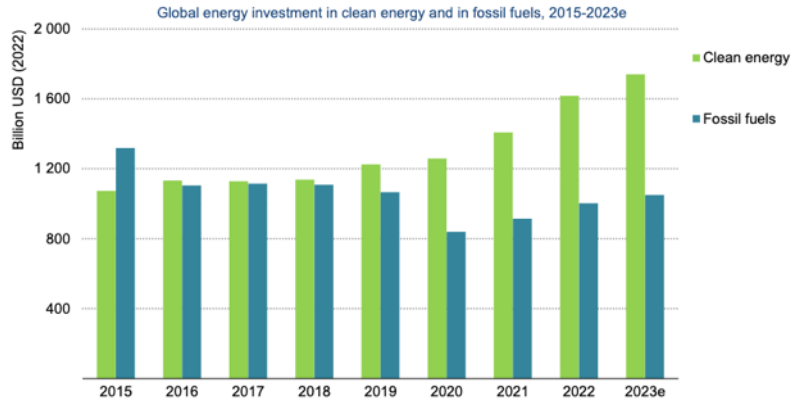


Image Source: IEA. Investment in clean energy has consistently outpaced those in fossil fuels since 2015.

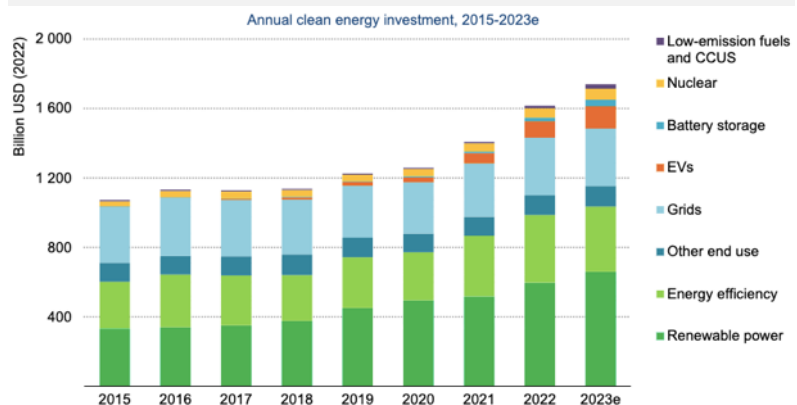


Image Source: IEA. Renewable Power has consistently received the largest share of investment. Investments in EVs has risen rapidly since 2020.

#### 4. Strategic Oil Reserves in Salt Caverns

**News:** Engineers India (EIL) is studying the prospects and feasibility of developing salt cavern-based strategic oil reserves in Rajasthan.

#### About India's Strategic Petroleum Reserves (SPRs)

- India has an SPR capacity of 5.33 million tonnes, or ~39 million barrels of crude. This can meet around 9.5 days of demand.
- India's strategic oil reserves come under the Ministry of Petroleum's Special Purpose Vehicle **Indian Strategic Petroleum Reserve (ISPRL)**.
- India 3 existing strategic oil storage facilities at **Mangaluru** and **Padur** in Karnataka, and Visakhapatnam in Andhra Pradesh. These reserves are made up of **excavated rock caverns**.

#### About Salt Caverns

- Salt caverns are formed out of **existing salt bed deposits**.
- A cavern is made by **drilling a well** down into the formation, and **pumping water through the completed well**. The salt is dissolved in water and comes to the surface as brine.
- Oil can be stored in the cavern. The walls of the cavern are **very resilient** against reservoir degradation.

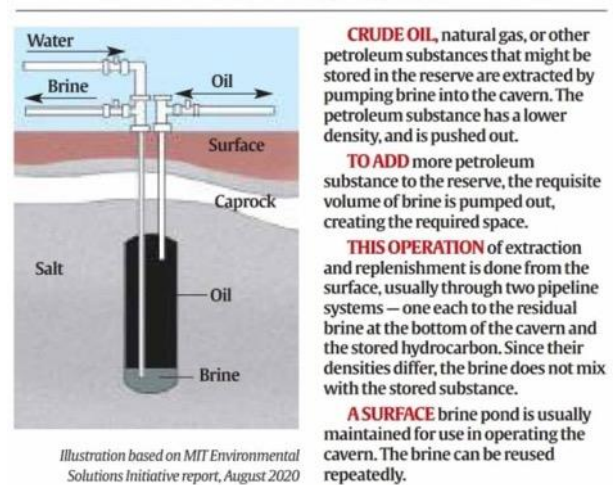
## Comparison between Rock and Salt Cavern-based Reserves

Criteria	Rock Cavern-based Reserves	Salt Cavern-based Reserves
<b>Process</b>	Excavation by drilling, blasting, and removing rock layers.	Solution mining ( <i>pumping water into geological formations with large salt deposits to dissolve the salt</i> ).
<b>Complexity</b>	Complex, labour and cost-intensive	Cheaper and less labour- and cost-intensive
<b>Other Characteristics</b>	<ul style="list-style-type: none"> <li>• High oil absorbent</li> <li>• Cannot be created and operated entirely from the surface.</li> </ul>	<ul style="list-style-type: none"> <li>• Extremely low oil absorption</li> <li>• Can be created and operated almost entirely from the surface.</li> <li>• Suitable for storing natural gas, compressed air and hydrogen.</li> </ul>

### Global Usage

- The entire **Strategic Petroleum Reserve programme of the US** has so far been **based on salt cavern-based storage facilities**.
- The US SPR is the world's largest emergency oil storage. The US strategic oil reserves have a cumulative capacity of around 727 million barrels. It consists of 4 sites along the Gulf of Mexico coast in Texas and Louisiana.
- Indian companies do not have technical competence with regards to the salt cavern mining technology. They may have to collaborate with global technology leaders to develop domestic capabilities.

### OPERATING A SALT CAVERN



Source: Indian Express. Operating method of salt cavern.

## 5. Suspicious Trading Activities

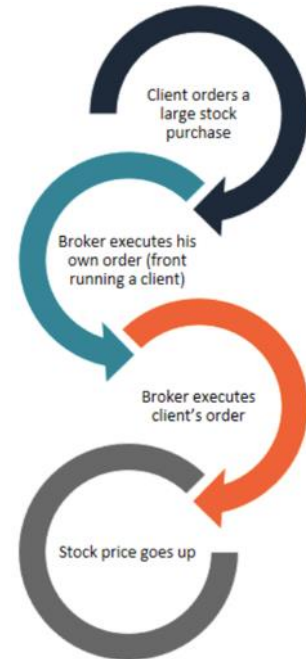
**News:** SEBI has released a consultation paper on 'Prohibition of Unexplained Suspicious Trading Activities'. It proposes regulations to tackle issues like insider trading, front-running etc.

### About the Suspicious Trading Activities (STAs)

- SEBI has defined STAs as trading activities where a person is found to be exhibiting **unusual trading pattern** in a security (like share of a company) where the **pattern coincides with Material Non-Public Information (MNPI)** related to that security.
- **MNPI:** It refers to information about a company that is **not generally available to the common public**, and **upon availability is likely to have a reasonable impact on the price of security** e.g., information related to possible merger of two companies before it is made public, or a large undergoing trade deal negotiation like an airline planning to buy large number of airplanes from an airplane manufacturer.
- **Insider Trading:** It refers to practice of entering into a trade of a security based on **advance information that is not yet available in the public domain** (Unpublished Price Sensitive Information (UPSI)) e.g., An Airline operator will soon finalize a deal of 500 airplanes with an airplane manufacturer. After announcement, the share price of airplane manufacturer will rise (huge jump in revenue and profits due to large order). An employee working with the Airline operator knows this and buys large number of shares of the Airplane manufacturer before the deal is made public. The employee was privy to MNPI

and has exploited his position to place the trade. Once the price of shares rise, the employee can sell the shares to make large profits.

- **Front Running:** Front running is the illegal practice of purchasing a security based on advance **non-public information** regarding an **expected large transaction** that will **affect the price of a security**. However, some forms of the front running, such as index front running, are not illegal.
- **Pump and Dump:** It involves buying a stock and then spread rumours about positive developments about the company. Once the prices rise (pumped up), the person involved sells the shares (dump) at a profit.
- Regulators face **difficulty in proving guilt of the perpetrators of STAs**, due to **evasive tactics** such as mule accounts, layering funds, and sharing transfers through a complex web of entities. Mule accounts are used to earn profits. There is no apparent connection between the owner of the account and the perpetrators. Coordination is carried out through encrypted services such as WhatsApp.
  - In 2022, around 5,000 suspicious trading alerts were generated, involving 3,588 unique entities, but SEBI could not find conclusive proof of communication of UPSI or MNPI in most instances.
- Putting burden of proof on accused can lead to other problems. SEBI has to strengthen surveillance and evidence collection methods.



Source: CFA Institute.

## 6. IRDAI's Initiatives to Improve Insurance Cover

**News:** IRDAI is taking multiple steps to improve insurance coverage in India.

### About Insurance Cover in India

- India's insurance penetration (the ratio of premium payments to GDP) has risen from 2.7% in 2001-02 to 4.2% in 2021-22. The highest penetration (5.2%) was achieved in 2009-10. The global average is ~6.8%. Taiwan has highest penetration of ~15%.
- Non-life insurance policies are yet to surpass 1% of the total mark.

### About IRDAI's Initiative

- Insurance Regulatory and Development Authority of India (IRDAI) is striving to **create a "UPI-like moment" in insurance** through a plan worked out with insurance firms that has been termed as **"Bima Trinity"**.
- Aims of 'All in One' insurance policy:
  - Give citizens **protection against multiple risks**, and **expedite claim settlements** by linking death registries onto a common industry platform.
  - Make insurance **'available, affordable and accessible'** to all citizens with a Gram Panchayat to District to State level approach.
- **Bima Trinity**
  - **Bima Sugam:** The platform will integrate insurers and distributors

### Cover drive for the uninsured

The Insurance Regulatory and Development Authority is driving multi-pronged changes to expand citizens' safety nets



■ A new bundled insurance product Bima Vistar to provide life, health, accident and property cover through a single, simple policy



■ A Bima Sugam platform as a one-stop shop for customers, integrating insurers and distributors



■ Linking digital death registries to platform so claims can be settled within hours or a day



■ Permitting insurers to sell value-added services with policies; for example, a yoga class bundled with a health scheme



■ Women to lead campaign to spur insurance penetration in each Gram Sabha



■ Roping in States to form insurance committees and expand coverage across districts

■ Move will also allow smaller, micro and regional insurers to reach different strata of society



**onto one platform** to make it a one-stop shop for customers. At a later stage customers can pursue service requests and settlement of claims through the same portal. Many States digitising their birth and death registries. The IRDA aims to provide benefits faster (settle claims as fast as 6 to 8 hours or a day at the most) by integrating those registries.

- **Bima Vistar**: It will be a **bundled risk cover** for **life, health, property** and **casualties** or **accidents**, with defined benefits for each risk that can be paid out faster than usual without the need for surveyors.
- **Bima Vaahaks**: It is a women-centric workforce in each Gram Sabha that will meet the women heads of each household to convince them about a composite insurance product like Bima Vistar.
- Banks can possibly be given an auto debit authority for the premium payments.
- To meet the target of providing insurance cover for all by 2047, the IRDA is also looking to **form State-level insurance committees** similar to the ones prevalent in the banking sector. IRDA will include State governments to formulate district-level plans.

### Expected Benefits

The scheme will provide benefits like:

- An affordable single policy that covers health, life, property and accident.
- Faster settlement of claims.
- Secure value-added services at the time of buying a policy.
- The plan could double the number of jobs in the insurance sector to 1.2 crore.

## 7. Evergreening of Loans

**News:** The Governor of the RBI has raised red flags over the practice of ‘Evergreening’ of loans by banks to conceal their NPAs.

### About Evergreening of Loans

- Evergreening loans is a practice of **extending new or additional loans** to a borrower who is **unable to repay the existing loans**. Through evergreening, banks try to revive a loan that is on the verge of default (i.e., becoming an NPA) by granting further loans to the same borrower.
- It is a form of **zombie lending**. Zombie lending refers to the practice of providing credit to entities that do not have the capability to repay. Through evergreening, **banks conceal the true status of the NPAs**.
- Evergreening falls in the domain of misgovernance. Some banks have extended loans to wilful defaulters to keep them out of the defaulters’ books. (Refer EPIC January 2023 (click) for Status of Non-Performing Assets (NPAs)).

### Methods to ‘Evergreen’ the Loans

- Bringing two lenders (banks) together to evergreen each other’s loans by sale and buyback of loans.
- Good borrowers being persuaded to enter into deals with a stressed borrower to conceal stressed loans.
- Use of internal or office accounts to adjust borrower’s repayment obligations.
- Renewal of loans or disbursement of new/additional loans to the stressed borrower or related entities closer to the repayment date of the earlier loans.

### Impact of Evergreening

- Evergreening loans can **create a false impression** of the asset quality and profitability of banks and **delay the recognition and resolution of stressed assets**.
- Evergreening loans can **undermine credit discipline**, cause **moral hazard among borrowers**, and **erode the trust and confidence of depositors**, investors and regulators.

## Stopping Evergreening of Loans

The recommendations of the **P J Nayak Committee** included:

- Levying penalties through cancellations of unvested stock options.
- Stopping monetary bonuses of officers concerned.
- All whole-time directors, and the Chairman of the Audit Committee should be asked to step down from the board.

## 8. RBI's Framework for Compromise Settlements and Technical Write-offs

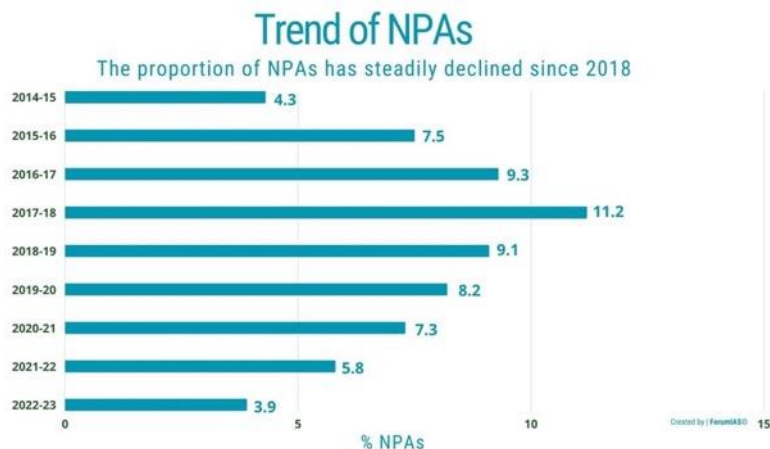
**News:** The Reserve Bank of India has set out a framework for compromise settlements with defaulters.

### About the Framework

- The Framework is aimed at reducing stressed assets (NPAs) from the banks' balance sheets. RBI's 2019 **Prudential Framework** had recognised **compromise settlements** as a valid resolution plan for NPAs.
- RBI has now build on that provision to aid the resolution and recovery process and to harmonize instructions across all regulated entities (Banks, NBFCs etc.).

### Key Aspects of the Framework

- According to the Framework, regulated entities are expected to put in place **board-approved policies** for making compromise settlements with debtors as well as for technical write-offs.
- **Compromise settlement** would mean a **negotiated arrangement** with the borrower to settle the claims of the lender (bank) in full, which may lead to **sacrifice of some amount due from the borrower** (e.g., Bank may agree to recover only 70% of the loan amount).
- The beneficiary borrowers will have to agree to a cooling off period, i.e., no fresh loan will be issued to the borrower for some period of time.
- The Boards of respective banks are expected to **put in place an accountability framework** for the staff negotiating compromise settlement. An official who was involved in sanctioning the loan as an individual or as a member of a committee will not be part of this process.
- Settlement for wilful defaulters will **require board approval in all cases**.
- The compromise settlement does not absolve the wilful defaulters. Banks can file cases against wilful defaulters in their discretion.



### Concerns

- Critics argue that the settlement process can be misused to favour politically connected defaulters. RBI must ensure that settlements are commercially prudent, not politically motivated.
- There is also an argument of **compromise settlement promoting moral hazard**. Settlement with wilful defaulters will encourage other borrowers to default and then offer settlement. Banks have to tread carefully here, As notified in the circular, they can still file cases against wilful defaulters as a deterrent.

### Further Steps Required

- The banks should proceed with **wilful defaulters** with **care and transparency**. Lenders must use all avenues made available to them for recovering as much as possible from **non-performing accounts**.
- Lending standards are critical for preserving banking-sector stability. So, the banks must **constantly monitor loan accounts** and report the true picture to all stakeholders.
- Banks should be **more transparent in declaring the NPAs**. They should avoid practices like ever-greening of loans that conceal NPAs, and take corrective steps instead.

### 9. Growth in India's Internet/Digital Economy

**News:** According to report 'e-Conomy India 2023' published by Google, Bain and Temasek, India's internet economy will touch US\$ 1 trillion by 2030 (US\$ 175 billion in 2022) and contribute ~12% to the GDP.

### About Internet Economy

- The Digital Economy refers to use of digital computing technologies in economic activities. It is also referred to as the **New Economy**, **Internet Economy** or **Web Economy**.
- It comprises of B2C e-commerce firms, online service providers, ed-tech companies, and so on.

**Phenomenal rise of online usage has put India well ahead of the world's largest digital economies**

#### Time spent online

Average hours/day spent online per internet user



#### Social media hours

Average hours/day spent on social networks per internet user



#### Online video hours

Average hours/day spent watching online videos per online video user<sup>1</sup>



#### Digital payments

Number of real-time<sup>2</sup> transactions per capita per year



Source: e-Conomy India 2023. India is way ahead of global average in digital payments. Indian's spend a large amount of time in online activities (watching videos) which has given rise to Creator/Influences Economy.

### Key Findings of the Report

- The growth would be driven by more Indians **starting to transact online** and the overall expansion of digital businesses. The time spent by Indian users on 'online' activities has risen phenomenally.
- The key thrust would come from '**Tier 2+ locations**', smaller towns and rural areas in terms of impact on the value of the Internet economy.
- Enablers like the **Aadhaar**, the **Unified Payments Interface (UPI)**, and **Digilocker** have laid the foundations for the **Open Network for Digital Commerce (ONDC)**, **Open Credit Enablement Network (OCEN)**, **Unified Health Interface** and the rapid development of the **India Stack**, or rather stacks.
- Software as a service is expected to be a big export-growth area e.g., India is already looking to set up **RuPay** and **UPI-style networks abroad**. 6 nations are already using the India Stack, and many more have expressed their interest in it.

- HealthTech and InsurTech, both sized at ~US\$ 2 billion today, will demonstrate the largest expansion.
- B2C e-commerce (business to consumer) will contribute ~33% to the online economy's value by 2030.
- Per capita income will rise from US\$ 2,500 (2022) to US\$ 5,500 (2030), thereby doubling consumption
  - Per capita income in Tier-II cities and rural households (referred to as TII+) will grow 430% between 2019 and 2030..
- Many Indian Unicorn start-ups will leverage their domestic experience to make a mark overseas.
- The report shows the amount of trust consumers placed in **local non-celebrity influencers**. As their trust has **led to a shift in marketing spend**, giving India's 80 million-plus content creators **new revenue streams**.

### Leveraging India's Internet Economy Further

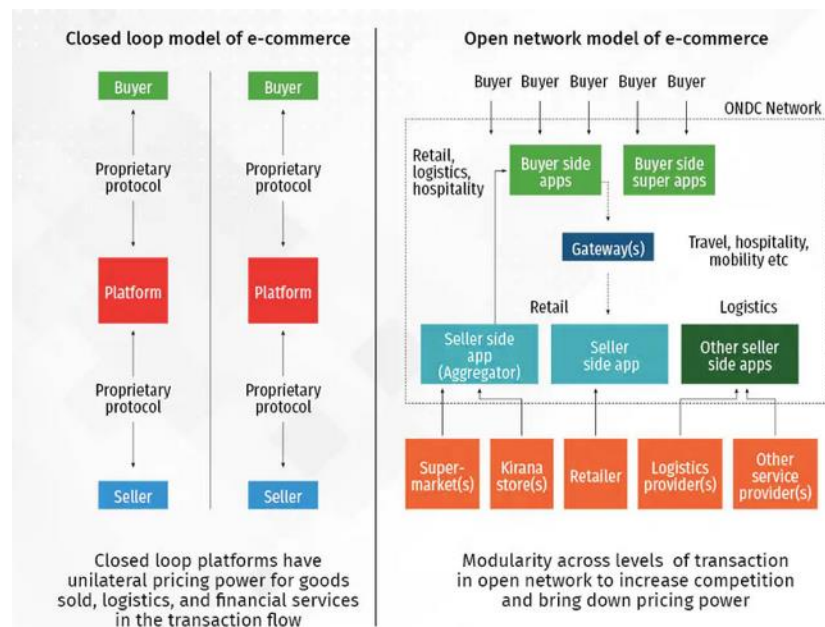
- The emergence of India's Internet economy will also lead to concerns related to trust, security and responsibility. The instances of online frauds is rising rapidly.
- To combat these, collaborative efforts from the Government and the private sector is necessary. It will need more awareness generation around safe usage and robust safety and security measures in digital systems and products. (Refer EPIC March 2023 (click) for Bridging Gender Digital Divide).

## 10. Challenges Before ONDC

**News:** ONDC is being considered as a 'UPI for e-Commerce'. However, ONDC faces several challenges which may limit its ability to play the same role as UPI did for digital transactions.

### About ONDC

- ONDC aspires to displace the prevalent '**platform-centric**' model with an '**open network**' model that relies on non-proprietary protocols.
- ONDC will allow sellers and buyers to engage in transactions independently and **switch among platforms** that are compatible with each other.
- It will integrate approximately 13 million small local stores and 42.5 million Micro, Small, and Medium Enterprises (MSMEs), which are **digitally marginalized** at present.
- The potential of the ONDC's success lies in widespread adoption of internet and smartphones in the last decade and the effective implementation of large-scale initiatives like Aadhaar, the Unified Payment Interface (UPI), Goods and Services Tax Network, and CoWin vaccination apps.



Source: MoneyControl. Platforms have developed their own proprietary solutions for e-Commerce value chain (search to delivery) and have unilateral control over features (like displaying products, search results etc.). ONDC will have an open protocol and will integrate all service providers including logistics.



## Challenges to be addressed

- **Services Offered:** e-Commerce giants like Amazon and Flipkart are not just platforms. They function as full stack 'operators' providing services like last-mile physical delivery and completion of online transactions etc. Success of ONDC will depend on its ability to provide end-to-end solutions including payments and logistics. ONDC has to integrate logistics service providers with its network.
- **Profitability:** It is being argued that ONDC will ensure competition and check monopoly of e-commerce giants. However, even large companies are barely making profits. It will be difficult to ensure profits for smaller players through ONDC.
- **Standardization:** ONDC will have to standardize all aspects of the complete e-commerce chain from listing of products, pricing, payment terms, logistics, packaging, delivery, return policy, resolution of customer complaints etc.
- **Existing Offerings:** Critics say that sellers already have a flexibility to list their products across various e-commerce platforms. Buyers too visit multiple e-commerce sites. Many private website offer services that offer comparison of prices across different platforms and bridge information gap. ONDC has little new to offer. (Refer EPIC June 2022 (click) for Open Network for Digital Commerce (ONDC)).

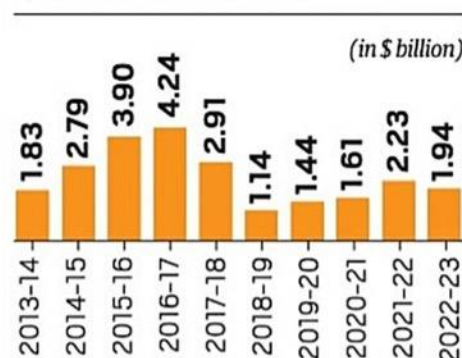
## 11. Fall in Imports of Pulses

**News:** Initiatives by Government have led to reduction in imports of some pulses.

### About India's Imports of Pulses

- India hasn't been able to reduce import dependence of edible oils. At present, India imports ~60% (15 million tonnes) of domestic edible oil requirements (~25 million tonnes). (Refer EPIC May 2022 (click) for Palm Oil Crisis and its Implications for India).
- The value of imports of pulses has risen marginally over the last 10 years, on account of big rise in domestic production of pulses. India's output increased from 19.26 million tonnes in 2013-14 to 27.50 million tonnes in 2022-23 (~43% rise). Yellow/White peas (*matar*) and Chickpea (*chana*) have recorded dramatic import reduction.

### IMPORTS OF PULSES



Source: Indian Express. India's pulses exports rose between 2013-14 to 2016-17 but has decreased since then.

### Decrease in Imports

- **Import levies:** The Government has levied a 60% import duty on chana since March 2018. From 2019, the Government has levied 50% duty and a minimum import price of INR 200/kg for yellow/white peas. This has nearly halted the imports.
- **Minimum Support Price:** MSP of chana has been raised from INR 3,100 to INR 5,335/quintal between 2013-14 and 2022-23.
- Government has incentivized farmers to expand areas under pulses. (Refer EPIC August 2022 (click) for Cultivation of Pulses in India).

### IMPORTS OF MAJOR PULSES (in thousand tonnes)

	Peas (Matar)	Chickpea (Chana)	Lentil (Masoor)	Pigeonpea (Tur/Arhar)	Urad & Moong
2014-15	1951.97	418.88	816.47	575.22	622.89
2015-16	2245.39	1031.49	1260.19	462.71	581.6
2016-17	3172.76	1080.63	829.44	703.54	574.52
2017-18	2877.03	981.32	796.62	412.95	346.97
2018-19	851.41	185.95	248.97	530.67	574.24
2019-20	666.7	370.67	854.46	449.78	381.52
2020-21	46.33	294.53	1116.17	442.62	416.63
2021-22	0.85	202.1	667.43	840.46	807.17
2022-23	0.86	62.92	858.44	894.42	556.71

Source: Indian Express. Imports have reduced drastically for peas and chickpea and increased for tur.

### Concern Areas

- Chana's success has not been replicated for other pulses, particularly *arhar*/tur and *urad*.
- Masoor (red lentil) imports from Canada and Australia have crossed 1.1-1.2 million tonnes in some years. There is currently no duty on imports of *masoor*, *arhar* or *urad*.

## International Relations

### 1. Nepal Prime Minister's Visit to India

**News:** The Prime Minister of Nepal visited India in June 2023.

#### Key Discussions and Agreements

- **Bilateral Relations:** India would take forward the 2022 **India-Nepal Vision Document** for cooperation in the power sector that sets an ambitious goal in India-Nepal power trade and transmission.
- **Power Trade Agreement:** A long-term Power Trade Agreement has been signed between India and Nepal. Under this agreement, a target has been set for importing 10,000 MW of electricity from Nepal in the coming years.
- **Energy Cooperation:** A new petroleum pipeline will be constructed from Siliguri to Jhapa in eastern Nepal.
- **Other Key Agreements**
  - An MoU for the development of Phukot Karnali Hydroelectric Project.
  - A Project Development Agreement for the Lower Arun Hydroelectric Project.
  - The revised **Treaty of Transit** under which Nepal will get to access to India's inland waterways. This is described as "once in a generation" pact by Nepal.
  - Agreement for the export of Nepal's hydropower to Bangladesh through Indian territory.
- **Other Key Developments**
  - Inauguration of Integrated Check Posts (ICPs) at Nepalgunj (Nepal) and Rupaidiha (India).
  - Inauguration of a cargo train from Bathnaha in India to Nepal Customs Yard. The rail link has been built with an Indian grant.
  - Both nations also agreed to achieve tangible and time-bound progress on the **Pancheshwar** multipurpose project. (Refer EPIC January 2023 (click) for India-Nepal Relationship).

### 2. Chinese Villages Along the LAC

**News:** China has continued to expand the network of model villages, Xiaokang, opposite the Line of Actual Control (LAC) in the Middle and Eastern Sectors of Indo-China Border.

#### About Chinese Activities Along the Border

- Since the beginning of the standoff with China in eastern Ladakh in 2020, China has increased the build-up of People's Liberation Army (PLA) forces along the LAC.
- Numerous Xiaokang villages are under construction all along the LAC, including at the **Chumbi Valley** facing the strategically crucial Siliguri corridor. New posts are coming up 6-7 km from the LAC in the Middle Sector.
- In some areas, the **frequency of patrolling has gone up** from once a season to **every 15 days**.
- In some areas, the Chinese are building villages at a rapid pace, sometimes 300 to 400 houses within 90 to 100 days. A military complex is under construction in a place.
- In Arunachal Pradesh, opposite the Kameng area, two villages have come up in Cuna country consisting of 41 dwelling units and there are about 200 inhabitants from the Menba ethnic community.
- The PLA has deployed **Unmanned Aerial Vehicles** (UAVs) or helicopter drones in the Middle sector. China also has AR500C unmanned plateau helicopter. It is meant for surveillance and can take off at an

#### India-China Border

The 3,488 km long LAC is divided into the Western (Ladakh), Middle (Himachal Pradesh and Uttarakhand) and Eastern (Sikkim and Arunachal Pradesh) sectors.

altitude of 5,000 metres. It has an endurance of 5 hours and a maximum take-off weight of 500 kg. (Refer EPIC April 2023 (click) for China Renames 11 Locations in Arunachal Pradesh).

### 3. UN Peacekeeping Missions and India's Contribution

**News:** The UN has observed the 75<sup>th</sup> anniversary of its peacekeeping missions.

#### Loss of Life Among UNPKF Troops

- The first military observers were sent by the UN Security Council to oversee the **Israeli-Arab Armistice Agreement** in May 1948.
- 71 operations have been conducted by the UNPKF till date. 2 million peacekeepers from 125 nations have participated in the missions.
- In total, more than 4,298 peacekeepers have died: 1,481 due to illness, 1,386 due to accidents, 316 due to other causes, and **1,115 to malicious acts**. Of these 1,115 soldiers, **69 were Indians**.
  - The **United Nations Operation in the Congo (ONUC)** between July 1960 and June 1964 proved to be the deadliest for Indian troops, with 36 Indian armed force personnel were killed and 15 dying due to malicious acts.
  - The **United Nations Operation in Somalia II (UNOSOM)** between March 1993 and 1995 resulted in the loss of 12 Indian troops and experts due to malicious acts.
  - Among ongoing missions, the **UN Mission in South Sudan (UNMISS)** recorded the deaths of 7 Indian troops.
- In the ongoing missions, most Indians (2,426) are part of the UNMISS. This is followed by the UN stabilisation mission in Congo (MONUSCO) and United Nations Interim Force In Lebanon (UNFIL).
- At present, UN peacekeeping missions involve **6,097 Indian personnel**. This is the 3<sup>rd</sup> highest after Bangladesh (7,237) and Nepal (6,264).
- 4 of the top 5 contributions come from the Indian subcontinent. Most of the troop and expert contributions to the UNPKF have come from **poor- or middle-income countries**.

#### UN Peacekeeping Forces (UNPKF)

- **Origin:** UN Peacekeeping Forces were created in 1948. They are often referred to as **Blue Berets** or **Blue Helmets**.
- **Purpose:** UNPKF provide security, political, and peace building support to countries under conflicts. They help countries make the transition from conflict to peace.
- **Principles:** They are guided by 3 basic principles:
  - Consent of the Parties.
  - Impartiality.
  - Non-use of force except in self-defense and defense of the mandate.
- **Authorisation:** Every peacekeeping mission is authorized by the **UN Security Council**.
- **Contributions**
  - **Manpower:** Member States contribute manpower on a **voluntary basis**.
  - **Funding:** Funding is the collective responsibility of UN Member States. Every Member State is legally obligated to pay their respective share for peacekeeping.

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### 4. India Vietnam Military Cooperation

**News:** The Defence Ministers of India and Vietnam have agreed to enhance industry cooperation and maritime security.

#### Key Highlights from Defence Ministers' Meeting

- **India gifts INS Kirpan:** India has gifted the indigenously-built in-service missile corvette INS Kirpan to Vietnam to enhance its naval capabilities.
- **Brahmos Missile:** Vietnam has shown interest in BrahMos supersonic cruise missile to augment its air defence systems and the talks are in early stages.

#### INS Kirpan

It is a Khukri class **missile corvette** and was commissioned into the Navy in 1991. It has a displacement of close to 1,400 tonnes, a length of 91 metres, and is capable of speed in excess of 25 knots. The ship is fitted with a medium-range gun, 30 mm close-range guns, chaff launchers and **surface-to-surface missiles**.

- During the 2022 visit of India's Defence Minister to Vietnam, India handed over to Vietnam **12 high-speed guard boats** built under a US\$ 100 million Line of Credit granted to it by India.
- Defence collaboration between India and Vietnam has grown steadily since the signing of **Defence Protocol in 2000**. There is extensive collaboration between Indian and Vietnamese navies in the maritime domain. The India-Vietnam Defence Partnership towards 2030 was signed in 2022. (Refer EPIC July 2022 (click) for India-Vietnam Defence Partnership towards 2030).

## 5. US China Differences in the Indo-Pacific

**News:** The 20<sup>th</sup> edition of annual Shangri-La Dialogue was held in Singapore. The event highlighted the differences between the US and China regarding regional security in the Indo-Pacific Security.

### Rising Differences between the US and China

- This year's dialogue highlighted the **deepening tensions between the US and China**.
- The US and China have expressed willingness to engage in dialogue. However, China is unwilling to accept the terms of engagement proposed by the US.
- Both US and China have **a competing vision of regional security**. The US has said that it doesn't seek confrontation, but it **will not tolerate coercive tactics of China**. China has blamed the US for rising regional tensions and condemned US 'cold war mentality'.
- Leaders of Asian have been reluctant to criticize Chinese actions in order to avoid jeopardising the economic relationships with China.

### Shangri-La Dialogue

**IISS Asia Security Summit: The Shangri-La Dialogue (SLD)** is an **inter-governmental security conference** held annually at **Shangri-La hotel in Singapore**. It is organized by an independent **think tank**, the **International Institute for Strategic Studies (IISS)**. The dialogue is attended by the Defence Ministers, Military and Intelligence Chiefs of participating nations and focused primarily on the Indo-Pacific.

### US' Approach to the Indo-Pacific

- Many Asian nations have stepped up **political and military engagement** with the US. China has warned against increasing cooperation with the US, but this has not deterred its neighbouring countries. US officials have increased engagement in the region to **rebuild old alliances** and **develop new coalitions**. It has **enhanced military support to Taiwan**.
- The US is also taking measures to control technology exports to China.
- The US has elevated the **Quad to the summit level**. It has unveiled the **AUKUS alliance** and has launched **trilateral coordination** with Seoul and Tokyo encouraging them to raise their military capabilities. It has also unveiled 'Local Quad' with Japan, Australia and Philippines to counter Chinese military pressure against Philippines.
- The US has enhanced its cooperation with India, especially in the defence sector, with an eye on countering China in the Indo-Pacific.

## 6. Russia Belarus Nuclear Deal

**News:** Russia and Belarus have signed a deal to deploy Russia's tactical nuclear weapons on Belarussian territory.

### About Russia – Belarus Deal

- The arrangement was first announced in March 2023, but the deal has been formalized now. The control of deployed weapons will remain with Russia. Belarus has already served as a launchpad for Russian troops.

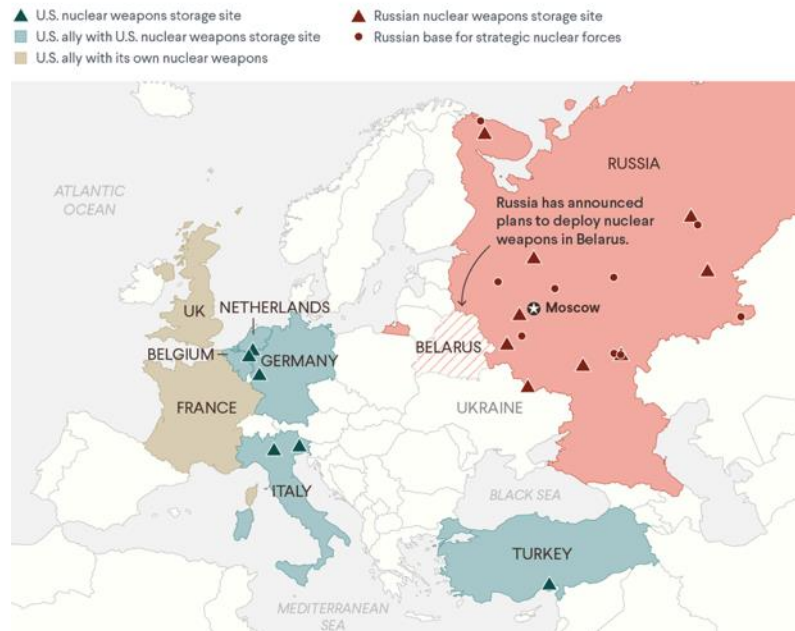


- This would be the first time since collapse of the USSR, that Russia has deployed nuclear weapons beyond its borders. (Refer EPIC May 2023 (click) for India's Nuclear Doctrine).
- The deal is being seen as a signal to the NATO nations in response to their enhanced support to Ukraine.
- Tactical nuclear weapons are intended to destroy enemy troops and weapons on the battlefield. They have a relatively short range and a much lower yield than strategic nuclear warheads.
- The deal might lead to the deployment of US nuclear weapons across NATO bases in Europe since the 1950s.

### About US Nuclear Warheads in Europe

- As of 2021, it has been estimated that there are 100 US-owned nuclear weapons stored in 5 NATO member States across 6 bases in Belgium, Germany, Italy, the Netherlands, and Turkey.
- The weapons are **not armed** or deployed on aircraft; they are kept in WS3 **underground vaults** in the airbases, and the **Permissive Action Link (PAL) codes used to arm them remain with the US.**
- These deployments are considered a legacy of the Cold War and represent no change in the security posture of the host nations.

#### Nuclear Weapons in Europe



Source: CFR. In 1971, the number of nuclear weapons based in Europe peaked at 7,300. 98% reduction since then shows end of Cold War and shifting US priorities. The deal may change the status.

### Concerns Raised by the Deal

- Although (according to the deal) Russia will have control over the weapons, the ground reality may be different with Belarus gaining control of the weapons.
- Belarus is an autocratic State and may have greater 'eagerness' to use the weapons.
- This has pushed the nuclear threshold, and may lead to escalation of the conflict.

The world should preserve the post-Cold War nuclear arms control architecture. India and China have disapproved the use of nuclear weapons in Ukraine and should ask Russia to stop the transfer of nukes.

## Science and Technology

### 1. Foucault Pendulum

**News:** A Foucault Pendulum has been installed in the New Parliament Building in the 'Constitutional Gallery' area. It has been designed and installed by the National Council of Science Museums, Kolkata.

#### About Foucault Pendulum

- It is a device used to **illustrate earth's rotation.**
- It is named after French physicist **Léon Foucault** (1819-1868), who developed it in the 19<sup>th</sup> century.
- The pendulum consists of a bob suspended at the end of a long, strong wire from a fixed point in the ceiling, and is **free to swing in any direction.**

- Once set in to-and-fro motion, the pendulum is seen to **change its orientation slowly over time** e.g., if the initial motion imparted to it was in the north-south direction, after a few hours it could be seen moving in the east-west direction. This change happens **due to rotation of earth** (pendulum does not change its plane of rotation). **Observers standing on the ground do not notice the earth's rotation, because they too are rotating with the earth, but can notice the change in orientation of the pendulum.**

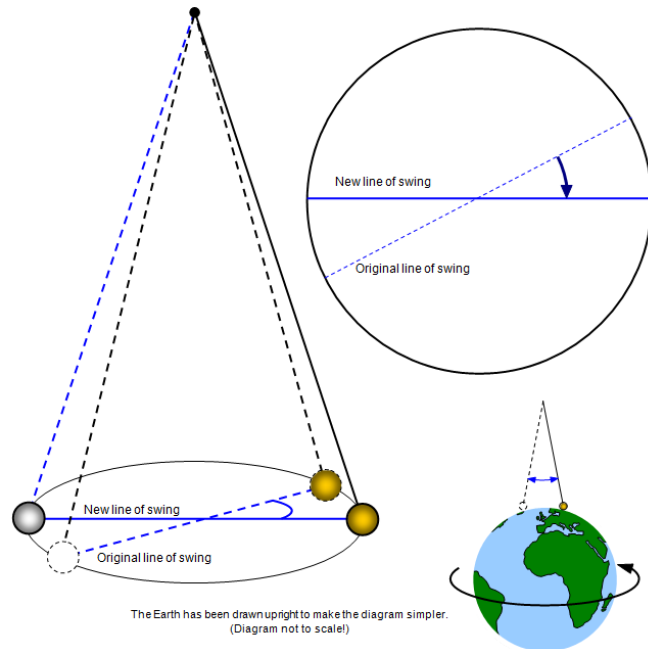


Image Source: Wikimedia Commons. As the earth rotates, the plane of the swing of the pendulum changes its direction. The change in the plane completes full rotation (360°) in a fixed time period depending upon the latitude (24 hours at Poles).

- At the Poles (North and South), the Pendulum is aligned with the axis of earth. The pendulum's back-and-forth motion **comes back to its original plane in exactly 24 hours.**
- At other latitudes, it takes longer for the pendulum to return to its original orientation of swinging.
- At the equator, the **pendulum is perpendicular to the earth's axis of rotation.** Here, it **never changes its orientation of the swing.**
- India's first Foucault Pendulum was installed at the Inter-University Centre for Astronomy and Astrophysics in Pune in 1991.
- The Pendulum has been installed in the Parliament keeping in with the spirit of Article 51A of the Constitution that enshrines every citizen to develop 'the scientific temper, humanism, and the spirit of inquiry and reform'.

## 2. Decay of Higgs Boson Particles

**News:** Physicists, working with the Large Hadron Collider (LHC) at CERN, have reported detecting a rare decay process where a Higgs Boson decayed into a Z Boson and a photon.

### About Higgs Boson

- The Higgs boson is a **subatomic particle** in the **Standard Model of Particle Physics** that is said to **give mass to all elementary particles**. The strength of a particle's interaction with the Higgs boson determines its (particle's) mass. (Refer EPIC May 2022 (click) for Standard Model of Physics).
- The LHC creates Higgs bosons by **accelerating protons into a high-energy collision**, resulting in a release of energy that forms different particles.
- According to Standard Model of physics, the Higgs boson is a **heavy particle**; it is unstable and **decays into lighter particles**, Z boson and a photon, 0.1% of the time i.e., on average, 1,000 Higgs bosons are needed to spot one of them decaying to a Z boson and a photon.
- This rare decay process has now been detected by physicists at the LHC. Two particle detectors at the LHC; ATLAS and CMS, have combined their data from 2015 to 2018, and have improved the statistical precision of their searches. However, the data **do not yet confirm this decay pathway with 100% certainty.**

- The detection of decay process of Higgs Boson can provide **significant insights in to the nature of the Universe**. There are still a lot of unanswered questions like dark matter and energy, and physicists are looking for answers. The findings of physicists at the CERN is a one small step in that direction.

### 3. High Frequency Radio Communication

**News:** Scientists at Indian Institute of Geomagnetism have developed a model for high frequency (HF) radio wave propagation through the ionosphere. It helps in studying the impacts of space weather effects on the ionosphere and Sky wave communication systems.

#### About the Ionosphere

- The ionosphere is a region of Earth's upper atmosphere ranging from ~50 – 1000 km. It is ionized part of earth's atmosphere and contains charged particles. It is ionized by solar radiation. It consists of multiple layers named D, E, Es, F<sub>1</sub>, F<sub>2</sub> etc.
- Radio waves of certain frequencies (HF band) are **reflected back to the ground by the ionosphere** which facilitates long-distance High Frequency (HF) communications beyond the horizon, known as **Skywave communications**.
- Despite the increasing use of satellite communications, traditional long-distance high-frequency (HF) radio communication remains a **vital means of communication during situations like natural disasters, mid-ocean surveillance, over-the-horizon target detection**, and so on.
- Severe ionospheric disturbances that arise due to a range of space weather events like **Solar flares, Coronal Mass Ejections (CMEs)**, and **Geomagnetic storms** significantly affect Skywave communications. (Refer EPIC February 2022 (click) and EPIC November 2022 (click) for Geomagnetic Storms).
- This variability of the ionosphere due to disturbances in space weather can **significantly limit the usage of Skywave communications**.
- Scientists at the IIG have developed a model for high frequency (HF) radio wave propagation through the ionosphere which **helps in studying the impacts of space weather effects on the ionosphere and Sky wave communication systems**. The HF radio propagation model developed by scientists has important applications in **planning the right strategies for the operation of Sky wave communication systems** during active space weather periods.

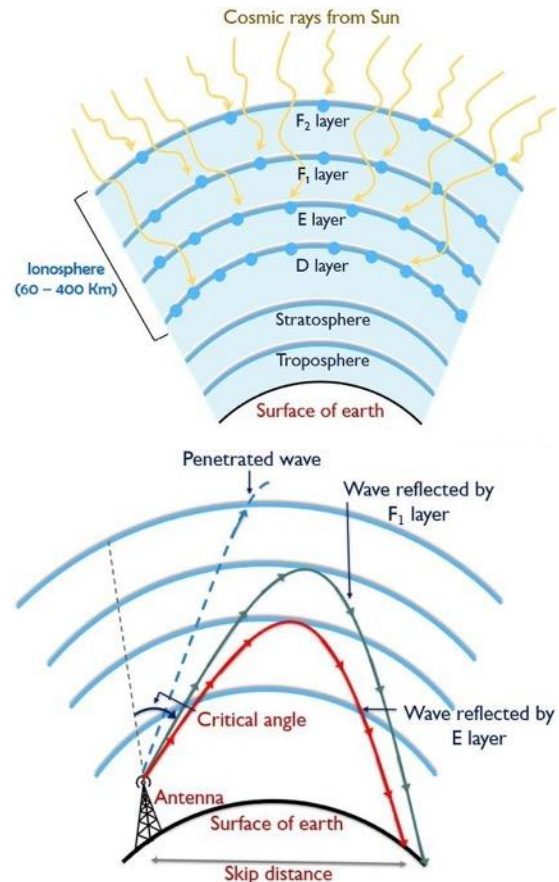


Image Source: Electronicsdesk. Ionosphere and Skywave Communication. Charged particles in the Ionosphere cause reflection of radio waves.

### 4. Concerns Associated with Neurotechnology

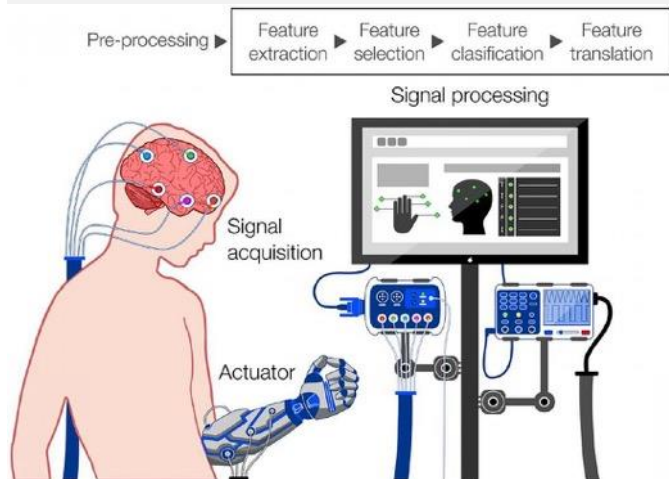
**News:** UNESCO will hold an international conference to develop ethical framework for the usage of neuro-tech devices. US FDA has granted approval to Neuralink (neurotech start-up founded by Elon Musk) to conduct clinical trials on a Brain-Computer Interface (BCI) implant for humans.

## About Neurotechnology

- Neurotechnology encompasses any method or **electronic device** which **interfaces with the nervous system** to **monitor** or **modulate neural activity**.
- Common design goals for neuro technologies include:
  - Using neural activity readings to **control external devices** such as neuro-prosthetics.
  - Altering neural activity** via neuro-modulation to repair or normalize function affected by neurological disorders.
  - Augmenting cognitive abilities.
- Some examples of neuro technologies include **Deep Brain Stimulation (DBS)**, photo-stimulation based on optogenetics and photo pharmacology, and **brain-computer interfaces**, such as cochlear implants and retinal implants.

## Deep Brain Stimulation (DBS)

DBS involves **implanting electrodes within certain areas of the brain** and **sending electrical impulses**. These impulses are used to **treat disorders** like **Parkinson's disease**, essential tremor, dystonia, etc. However, DBS may **result in several side-effects** like seizures, frequent headaches, numbness, speech or vision impairment etc.



Source: American Institute of Physics. BCI consists of array of electrodes that read brain signals. The signals are processed and interpreted by a programmed device. The signals are then used to control an application like prosthetics.

## About Neuralink's Brain-Computer Interface (BCI)

- The company plans to build a **surgically implantable chip** containing several electrodes that allows the brain to **convey intent of movement to a device connected via Bluetooth**. The device decodes the neural data and **converts intent to action**.
- Neuralink aims to address brain disorders** and eventually **merge human consciousness with Artificial Intelligence (AI)**.

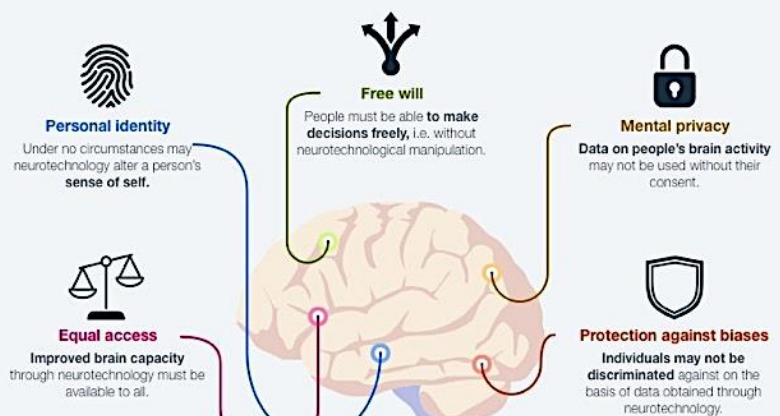
## Concerns Associated with Neuralink's BCI

**Reliability of Data:** There is lack of published data supporting the technology. Before a device is approved for use in humans, its feasibility and safety parameters need in-depth pre-clinical assessment in more mammals such as pigs, sheep and monkeys.

- Safety of Materials:** It is necessary to ensure materials used in BCI are inert and stable. There shouldn't be leaching of any material into the brain over time. Thin wires used in

## The five neurorights at a glance

The evolution of neurotechnology could jeopardise some basic human rights, which is why the **debate about its ethical limits** has given rise to the concept of neurorights.



Source: NeuroRights Initiative.

Source: NeuroRights Initiative. As neurotech advances, advocacy groups have called for preserving rights related to access, privacy, free will and against biases.



the chip may generate heat and damage neurons. Thin wires may get displaced and enter the inner brain causing major damage.

- **Animal Welfare:** Animal rights group has raised concerns regarding high mortality rates among test animals due to infections and damages caused by brain surgeries.
- **Transparency:** There is lack of information regarding procedure's safety and implant's effectiveness.
- **Ethical Concerns:** Neurotechnology can directly access, manipulate and emulate the structure of the brain, and with it produce information about human identities, emotions, fears etc. Combined with artificial intelligence, its resulting potential can easily **become a threat to notions of human identity**, human dignity, **freedom of thought, autonomy**, (mental) **privacy** and **well-being**.

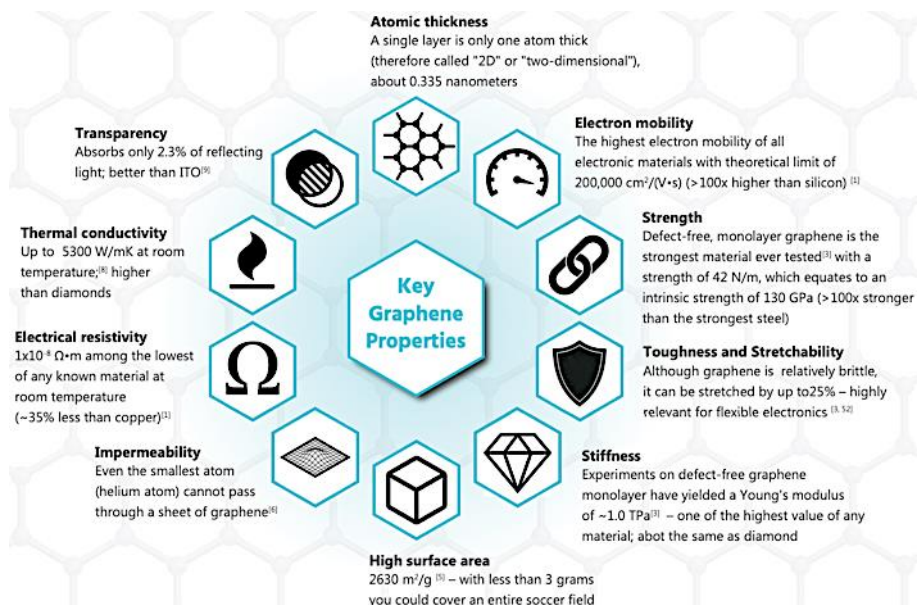
Neurotechnology holds great promise. However, safety and ethical concerns should be appropriately addressed as the technology undergoes rapid evolution.

## 5. Importance of Graphene

**News:** The unique qualities of Graphene make it an ideal material for wide range of uses.

### Importance of Graphene

- Graphene is world's **thinnest, strongest, and most conductive material** of electricity and heat.
- It conducts electricity better than copper. It is **200 times stronger** than steel but 6 times lighter.
- It absorbs only 2% of light and is nearly transparent.
- It is also **impermeable to gases**.
- Graphene has use in wide range of applications:



- **Electronics/Devices:** High-performance batteries and supercapacitors, touchscreens, and conductive inks.
- **Environment:** It is highly **sensitive to environmental changes**. It can be used in environmental monitoring, sensing chemical and biological agents, explosives, radiation, and other hazardous substances. **Graphene oxide membranes** are used for **water purification and desalination**.
- **Healthcare:** It has uses in healthcare and wearable devices. Graphene-based masks were made during COVID.
- **Defence:** Its exceptional strength makes it promising material for **armour and ballistic protection**. It has the potential to **absorb and dissipate electromagnetic waves**. Hence, it is used in developing **stealth coatings** and materials that reduce radar signatures.
- **Miscellaneous:** Graphene composites are used in aerospace, automotive, sports equipment and construction.

### Status of Graphene Industry

- The global graphene market size was valued at **US\$ 175.9 million in 2022**. It is expected to grow at a **CAGR of ~50%** between 2023 and 2030. ~300 companies are now producing graphene or its derivatives.

- China, the US, the UK, Japan, South Korea, Russia, and Singapore are leading countries in graphene research. In 2018, China filed 218 patents while the other leading countries together filed 79. India had 8 filings. **China** and **Brazil** are global **leaders** in the **commercial production** of graphene.

### India's Progress

- **IISc Bangalore** and KAS Tech produced a **graphene-based system** several years ago.
- The **IIT Roorkee-incubated Log 9** has patented a technology for **graphene-based ultracapacitors**, and the **IIT Kanpur-incubated RF Nanocomposites** has developed **EMI shielding and stealth technology** using graphene-based nanotubes.
- **The India Innovation Centre for Graphene** has been set up in Kerala. It is being implemented by the **Digital University Kerala** in partnership with Tata Steel and C-MET, Thrissur.

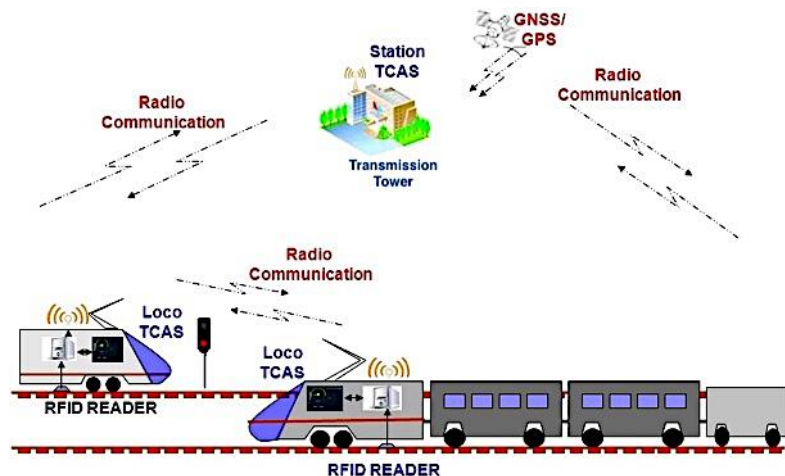
China has made progress in graphene research after the Chinese Government declared graphene as a priority in their 13<sup>th</sup> plan. India needs a National Graphene Mission on similar lines.

## 6. Kavach

**News:** The Balasore train accident has shown importance of train protection systems like Kavach.

### About Kavach

- KAVACH is an indigenously developed **Automatic Train Protection (ATP)** System for Indian Railways.
- It is designed to bring a train to a halt automatically when it notices another train on the same line within a prescribed distance.
- Kavach has been developed by the **Research Design and Standards Organisation (RDSO)** of the Ministry of Railways.



### Features of Kavach

- Kavach is a Traffic Collision Avoidance System (TCAS). The devices on Locomotives and transmission towers at stations are **connected with Radio Frequency Identification tags (RFID)**. This **aids 2-way communication** between the station master and loco-pilot to convey any emergency message. The instrument panel inside the locomotive helps the loco-pilot know about the signal in advance without visual sighting, and the permissible speeds to be maintained.
- If a red signal is jumped and two trains come face to face on the same line, with driver unable to control the train, the **technology automatically takes over and applies sudden brakes**. It prevents collision.
- Other features include:
  - Prevents trains from passing the signal at Danger (Red) and avoiding collisions.
  - **Continuous update of Movement Authority** with the display of signal aspects in the Loco Pilot operation cum Indication Panel or the Driver Machine Interface (DMI).
  - **Auto Whistling** while approaching Level Crossing Gates.
  - SoS Messages during emergency situations.
  - Centralised **live monitoring of Train movements** through Network Monitor System.

### Significance of Kavach

- Kavach is one of the cheapest technologies with the probability of an error being 1 in 10,000 years.
- Prevention of collisions will help the Railways to achieve the goal of 'zero accidents'.
- It opens avenues of export of this indigenous technology for Railways.

### Implementation Status and Approach

- The Kavach system has been deployed over 1,465 kms in the South Central Railway limits in 77 locomotives and 135 stations till March 2023.
- The top priority is the **High-Density Routes** and the New Delhi-Mumbai and New Delhi-Howrah Sections, as they have higher chances of accidents because the trains run closer to each other.
- The second priority lines are the **Highly Used Networks**, the third ones are other **Passenger High-Density Routes** and the final priority is of course to cover all other routes.

## 7. Abaucin: AI-developed Antibiotic

**News:** Scientists have used AI to discover a new antibiotic called Abaucin capable of fighting Acinetobacter baumannii Superbug.

### About Acinetobacter Baumannii

- It is a **drug-resistant bacteria**, that has developed resistance to all available antibiotics. It has been recognized as a '**red alert**' human pathogen.
- It can cause **severe infections** like pneumonia, meningitis, and wound infections, leading to fatalities.
- It is typically found in hospitals, Acinetobacter baumannii **can survive on surfaces for long periods**, making it difficult to eradicate. (Refer EPIC February 2022 (click) for Study on Superbugs and Anti-microbial Resistance).

### Narrow Spectrum Antibiotics

Narrow spectrum antibiotics are **active against a selected group of bacterial types**. They can act on either Gram +ve or Gram -ve but not both. Because they target very specific bacteria, **they don't cause an increase in bacterial resistance and avoid the spread of drug resistant infections**.

### Gram +ve and -ve Bacteria

Bacteria are classified as Gram +ve or -ve based on their response to **Gram stain test**. The test differentiates bacteria by the **chemical and physical properties of their cell walls**.

### About Abaucin

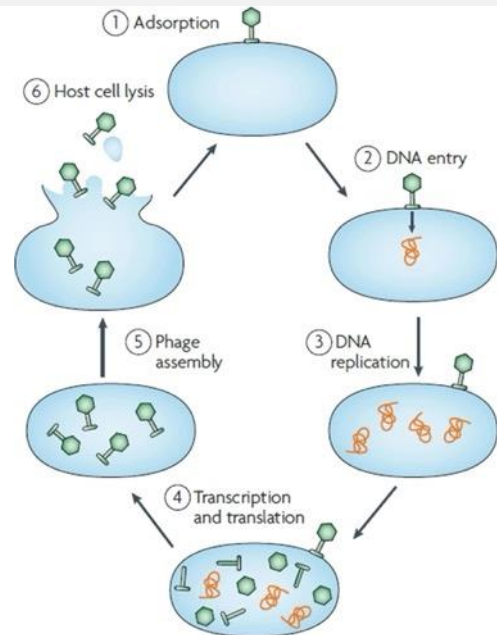
- It is a compound that shows useful activity as a **narrow-spectrum antibiotic**. It has been found to be effective against Acinetobacter baumannii.
- It disrupts the normal function of the CCR2 protein in bacteria. This disruption hinders the movement of certain molecules inside the bacteria, preventing them from reaching the outer membrane. As a result, the **growth of Acinetobacter baumannii is inhibited, reducing its ability to cause infections**.
- Abaucin has been discovered with the **assistance of AI using a machine-learning model approach**. A neural network system was trained with a dataset of ~7,500 molecules screened for inhibiting Acinetobacter baumannii growth.
- The Neural Network **suggested 240 molecules**, of which **9 inhibited the growth of the target bacteria** by more than 80%. The Scientists removed the molecules that the target bacteria A. baumannii may have been 'familiar with'. Eventually, they were left with only Abaucin. (Refer EPIC February 2023 (click) for Neuromorphic Computing and EPIC February 2022 (click) for Artificial Neural Networks).

## 8. Phage Therapy

**News:** Phage Therapy offers an alternative to antibiotics to treat bacterial diseases.

### About Phage Therapy

- A bacteriophage is a type of **virus that infects bacteria**. Bacteriophage literally means “bacteria eater”, because bacteriophages destroy their host cells (bacteria).
- Phage Therapy is a treatment protocol that involves **administration of specific bacteriophage viruses** to persons suffering from identified bacterial diseases. It has been proved successful against a range of diseases, from bubonic plague to cholera and dysentery.
- Bacteriophages are specific in their action. Hence, the application of Phage Therapy is very specific and limited. **Antibiotics are effective across a broad spectrum of infections**, making them easy to administer even if the exact pathogen has not been identified. Consequently, the research on Phage Therapy has been limited.
- As Phage Therapy is very specific, there are reduced chances of developing resistance to them. This also makes Phage Therapy more effective and reduces side-effects.
- Advancements in **genetic sequencing** will make it easier to **identify disease causing pathogens** and **harvest phages from cured patients** to make the therapy more effective.



Source: Nature.com. The Bacteriophage attaches itself to specific genetic strain of bacteria (1). It injects its genetic material into the bacterium (2) where it gets replicated (3, 4). The replicated virus gets released after the infected bacteria is lysed (rupture of bacterial cell wall). The released virus attack (6) other bacterial cells.

## 9. Spread of Dengue

**News:** The extent of spread of dengue has expanded from 8 States in 2001 to all States/UTs in India.

### About the Geographical Spread of Dengue

- During the past two decades, Dengue had covered all States/UTs in India. It reached Ladakh in 2022. Dengue outbreaks have become more frequent.
- Rural areas used to contribute ~32% cases in 2015-16, but now report 42-45% cases now.
- The World Health Organization estimates the global incidence of dengue has grown over recent decades, with half of the world population now at risk. Dengue has become endemic in more than 100 nations.

### Reasons for Spread of Dengue

- Dengue has been propelled by several factors, including **climate change**, increased urbanisation, **increased travel**, poor waste management at construction sites etc.
- The **dengue vector is very different from the malaria vector which makes its control difficult**. This includes day-biting habit, multiple biting, long incubation period, fast transport, eggs retention up to 1 year container breeding, etc.

### Government Initiatives

- Apart from vaccines, the Government is increasing awareness and promoting prevention, people's participation, and the use of the latest technology, including satellite imaging and drones to map vulnerable areas. (Refer EPIC Marcy 2023 (click) for DNA Vaccine for Dengue).



## Environment

### 1. Methane Policies

**News:** According to a study, only 13% of the methane emissions are covered by global methane mitigation policies. The warming potential of methane is much higher than carbon-dioxide.

#### Methane's Global Warming Potential

- Methane is **~80 times more potent than carbon dioxide over 20 years**. Methane has been responsible for around **30% of the rise in global temperatures** since the Industrial Revolution.
- **Agriculture, fossil fuels and solid waste and wastewater** are the three major sources of methane.
- Methane emissions are rising at their fastest pace since 1980s.

#### Global Warming Potential (GWP)

- The Global Warming Potential is dependent on the ability of the gas to absorb energy '**radiative efficiency**' and its time-period of stay in the atmosphere '**lifetime**'.
- GWP is measured relative to Carbon-dioxide (GWP = 1) over a horizon of 20 years and 100 years

Gas	Lifetime (Years)	GWP (20 Y)	GWP (100 Y)	Primary Sources
Carbon-dioxide	50-200	1	1	Fossil Fuels, Land Use
Methane	12	84	28	Fossil Fuels, Agriculture
Nitrous Oxide	121	264	265	Agriculture
Sulphur Hexafluoride	3,200	16,300	23,900	Power Transmission, Semi-conductor Industry

Source: Anthropogenic and Natural Radiative Forcing (IPCC)

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Higher the lifetime, greater the GWP. Hence the GWP of SF<sub>6</sub> (lifetime 3,200 years) increases with time, while that of N<sub>2</sub>O (lifetime 120 years) remains almost same for 20 or 100 years. CH<sub>4</sub> has low lifetime (12 years), hence its GWP decreases over time.

#### About Methane Policies

- Methane policies are actions by Governments that explicitly aim to **monitor, prevent, or reduce methane emissions from anthropogenic sources**. At present, 281 policies are in place across sectors that release methane, including energy, waste, and agriculture.
- The researchers found that 90% of identified national policies were from 3 regions: North America (39%), Europe (30%), and Asia Pacific (21%).
- The policies **targeting fossil methane** (coal, oil, and gas) **are lower than biogenic methane** (released by living organisms) and are less stringent as well. This trend has emerged despite readily available solutions to cut methane emissions from the fossil fuel sector.

#### About Methane policies in India

- In India, there are **no effective policies targeting methane emissions** from rice cultivation and biomass burning (burning of crop waste residues such as rice paddy straw).
- In 1997, the Government of India designed **a policy to extract Coal-bed Methane** from coal-bearing areas prior to the mining of coal. But the policy was ineffective in incentivising coal bed methane production. At present, coal bed methane is not being produced from any coal mine.
- India can **reduce methane emissions associated with coal production**. Reducing livestock or rice-production related emissions are challenging to reduce.

### 2. Global Stocktake of Climate Action

**News:** Negotiators are undertaking stock of the Climate Action and are discussing ways to strengthen collective response to Climate Change.

#### About the Stocktake

- The Global Stocktake is a process for countries and stakeholders to check the collective progress towards meeting the goals of the Paris Climate Agreement. It is mandated by the 2015 Paris Agreement.
- It decides the ways and means to enhance the global effort to **bridge the adequacy gap**. The exercise is expected to result in a significant increase in the **global response to climate change**.
- The current stocktake has been going on for more than a year now. It is the first such exercise.

### Inadequacy of Current Actions

- The **6<sup>th</sup> Assessment Report** (IPCC) has said that the world must cut its emissions by half by 2030 from the 2019 levels if there is to be any realistic chance of achieving the 1.5°C target.

- With the current levels of climate action, the world is headed to a nearly **3°C warmer world by 2100**. (Refer EPIC May 2023 (click) for WMO Global Annual to Decadal Climate Update: 1.5°C Limit to be Breached by 2027).

- Under the Paris Agreement, **countries are allowed to**

**decide the level of their contribution** to the global effort to contain climate change (Nationally Determined Contributions (NDCs)). The collective effort of every country is now proving inadequate. So, **some amount of imposition seems necessary**. No country is comfortable with that.

- Rich and developed countries want **major developing emitters like China and India** to do more. During the Stocktake negotiations, the US has said that bridging the gap was not the **sole responsibility of the developed countries**. The US has also said that the next round of climate action plans finalised by countries (NDCs) must have **emission reduction contributions from all sectors of the economy**.
- Developing countries have been reminding the developed countries of their **unfulfilled commitments** related to **emission cuts, climate finance** and **technology transfer** to developing countries.
- India has rejected US' suggestions regarding contributions from all sectors. India is not comfortable in bringing methane emissions from agriculture sector under the NDCs. (Refer EPIC December 2022 (click) for India's Objection to Koronivia Joint Work on Agriculture).



Source: Climate Action Tracker. Present level of Climate Action of most countries will lead to temperature rise of > 3°C. The US also falls in the insufficient category. No country's Climate Action is compatible with 1.5°C target.

### 3. Ganga Prahari Initiative

**News:** Over 4,000 Ganga Praharis under the Namami Gange initiative have been keeping a check on littering and poaching in the Ganga River to protect its flora and fauna.

#### About the Ganga Praharis Initiative

- Ganga Praharis (Guardians of the Ganga) are motivated and **trained volunteers** from among the local communities working for **biodiversity conservation** and **cleanliness of the Ganga River** with the ultimate objectives of **restoring the Nirmal and Aviral Dhara**.

- These volunteers have been constituted by the **National Mission for Clean Ganga** and the **Wildlife Institute of India** (NMCG-WII) under the **Namami Gange Programme**.
- The initiative aims to establish a motivated cadre of “Ganga Prahari” to support the local level institutions and **monitor the quality of the natural resources of the river** by mobilizing local communities at the grassroots level. (Refer EPIC January 2023 (click) for Cleaning of River Ganga).
- Ganga Praharis have been identified through a series of site level consultative meetings and workshops held in villages located on the bank of the Ganga River and its select tributaries. The primary criterion for identification is their **passion and zeal to serve the river** and to maintain its integrity in terms of cleanliness and biodiversity value.
- These ‘Praharis’ have to be above 18 years of age and preferably from the riverside villages. Children below 18 years of age are enrolled under the **Bal Ganga Praharis** Programme.

#### 4. Flattening of the Aravallis

**News:** A study has pointed out that the flattening of Aravalli Hills is leaving the path open for sandstorms from the Thar Desert to hit the Delhi NCR and Western UP.

##### About the Findings of the Report

- The report has noted the systematic disappearance of hills at the upper level in Naraina, Kalwar, Kotputli, Jhalana and Sariska with heights of 200 m to 600 m above sea level (upper hill range).
- The study has identified over **31 hills in the upper Aravali range that have disappeared in the last two decades**, besides “hundreds of hills” in the lower and middle levels (50 m to 200 m).
- Until 1999, 10,462 sq. km in the range was covered with **dry deciduous forest**. This has been reduced (41%) to 6,116 sq. km in 2019.
- The loss has been attributed to **unchecked mining** and **urbanisation**, threatening the flora and fauna of one of the world’s oldest mountain ranges.

##### Causes for Flattening of Aravallis

- Indiscriminate mining.
- Routine dilution of environmental laws by a slew of exemptions, and reconversions from forest to non-forest land.
- Intrusions from developers, urban city departments and State Governments into protected eco-zones.
- Allocation of Aravalli lands for housing and other development projects etc.

##### Impact of Disappearance of Aravallis

- **Widening Reach of Sandstorms:** Places which saw the vanishing hills, like Bharatpur, Dholpur, Jaipur, Chittorgarh, have been facing **more sand storms than usual**. This has become an annual feature now. This has also exposed the NCR to more sandstorms.
- **Increased Man-animal Conflict:** Leopards, Chinkara and Sambhar deer, which live in the hills, have been entering human settlements.
- **Threatening Ecosystems:** Rare plants like Neel, Chonakurinji and Karun kurinji are facing wipe-out threats.

##### Suggestions Given by the Report

- Mining leases granted by Rajasthan (which constitutes 80% of the Aravali range), Gujarat (10%), Haryana (7) and Delhi (3) need to be reworked, and suspended in vulnerable areas.

## 5. Restoring Wetlands and Mangroves: New Initiatives

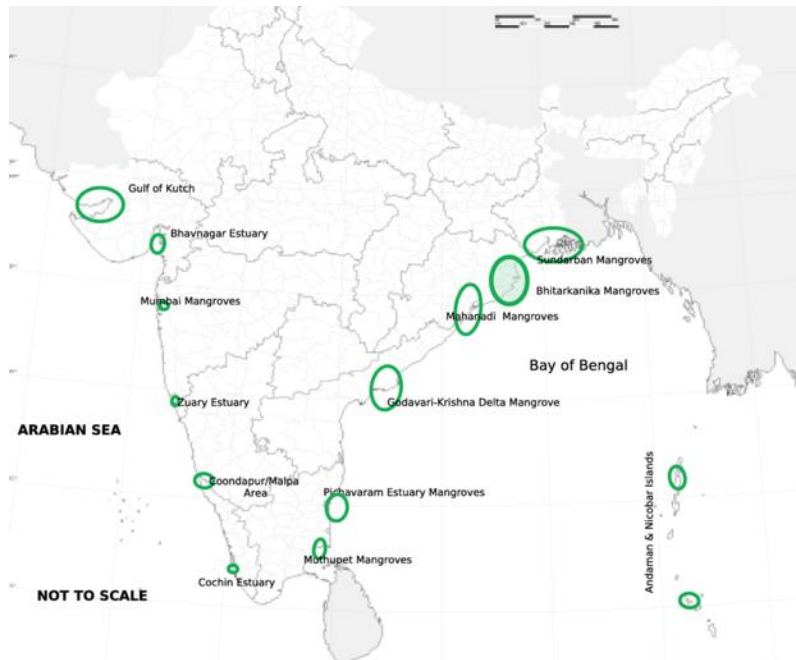
**News:** On the World Environment Day (June 05), the Prime Minister of India launched two schemes: Amrit Dharohar and MISHTI, to revive wetlands and mangroves.

### About the Amrit Dharohar Scheme

- It aims is to
  - Ensure the **conservation of the existing Ramsar sites** through **public participation**.
  - Make Ramsar sites as **centres of eco-tourism** and a source of green jobs for thousands of people.
  - Achieve **sustainable ecosystem development** with the help of local communities over the next 3 years.
- India has 75 Ramsar sites at present that are wetlands of international importance and designated under the Ramsar Convention on Wetlands. In the last 9 years, the number of wetlands and Ramsar sites in India has increased almost three times. So a separate protection strategy is necessary. (Refer EPIC August 2022 (click) for New Ramsar Sites in India).

### About the MISHTI (Mangrove Initiative for Shoreline Habitats and Tangible Incomes) Initiative

- Its aim is to
  - **Revive and protect the mangrove ecosystem** in the country.
  - Comprehensively explore the possible area for the development of mangroves covering nearly 540 sq. km, spreading across 11 States and 2 UTs over 5 years, starting from FY2023-24.
- Mangroves are unique, natural ecosystem having **very high biological productivity** and **carbon sequestration potential**, besides working as a **bio-shield**.
- India accounts for about 3% of South Asia's mangroves with substantial mangrove cover in the **Sundarbans in West Bengal**, the **Andamans region**, the **Kachchh** and **Jamnagar** in Gujarat.
- MISHTI involves sharing of best practices on plantation techniques, management practices, conservation measures and resource mobilization through the public-private partnership route.
- MISHTI programme has been launched with **active participation of coastal States and UTs**. The Union Government covers 80% of the project cost, while State Governments contribute 20%.
- MISHTI will help create an **estimated carbon sink of 4.5 million tons of Carbon**. It will also create potential areas for nature tourism and livelihood potential for local communities. (Refer EPIC November 2022 (click) for Mangrove Alliance for Climate (MAC)).



Source: Journal of Coastal Conservation. Major Mangroves regions in India.

## 6. EU's Audit of India's Organic Food Certification

**News:** An EU audit has found multiple flaws in India's Organic Food Certification process.



### About the Findings of EU's Audit

The EU Audit found many weaknesses in the certification process of organic products in India. It has found gaps in the supervision and implementation of the controls at various levels.

- **Awareness:** Farmers aren't aware of the **requirements of organic farming**. The implementation of the National Programme for Organic Production (NPOP) was very poor due to low awareness among farmers.



*Principles and outcomes of organic farming.*

- **Application of Chemicals:** The audit found evidence of application of chemicals like fertilizers, insecticides and fungicides by farmers. However this had not been flagged by the certifying inspector (one who inspects the field for compliance before granting Organic certificate). At one audit location, hybrid seeds were also found. Use of chemicals etc. is not considered organic.
- **Inspection Process:** The audit observed the common practice of delegating the internal inspection task and training to a 'mandator' who is generally a processor, exporter and trader who buys the certified product. They generally **lack the expertise** to undertake proper inspection.
- **Certification Bodies:** The frequency of audit of Certification Bodies (CBs) for supervising them is not according to the requirements of NPOP. The scope and focus of the audits were inadequate and inefficient. The certifying bodies did not have any documented procedure for risk assessment of operators.

### About Certification Process of Organic Products in India

- Food Safety and Standards Authority of India (FSSAI) (under the Ministry of Health and Family Welfare) regulates the manufacture, distribution, sale or import of Organic products through the Food Safety and Standards (Organic Foods) Regulations, 2017 (under FSSA 2006).
- **Various Certifications**
  - **Participatory Guarantee System (PGS):** It is implemented by the Ministry of Agriculture and Farmers Welfare. The PGS ensures that organic product production adheres to quality standards. Under this, the certification is **carried out by local groups consisting of producers and consumers** and is based on trust. This involves a documented logo or statement as proof of certification.
  - **National Programme on Organic Production (NPOP):** It is implemented by Agriculture and Processed Food Products Export Development Authority (APEDA), under the Ministry of Commerce & Industries. It involves accreditation of Certification Bodies and sets standards for organic production. Its Standards have been recognized by the EU, Switzerland, and the US.

### Programs for Organic Production

- **National Mission for Sustainable Agriculture:** It promotes sustainable agriculture (organic farming).
- **Paramparagat Krishi Vikas Yojana (PKVY):** The promotes organic farming.
- **Mission Organic Value Chain Development for North East Region (MOVCD-NER):** It supports the development of organic value chains in the North East region of India.

## 7. Contribution of Aviation in GHG Emissions

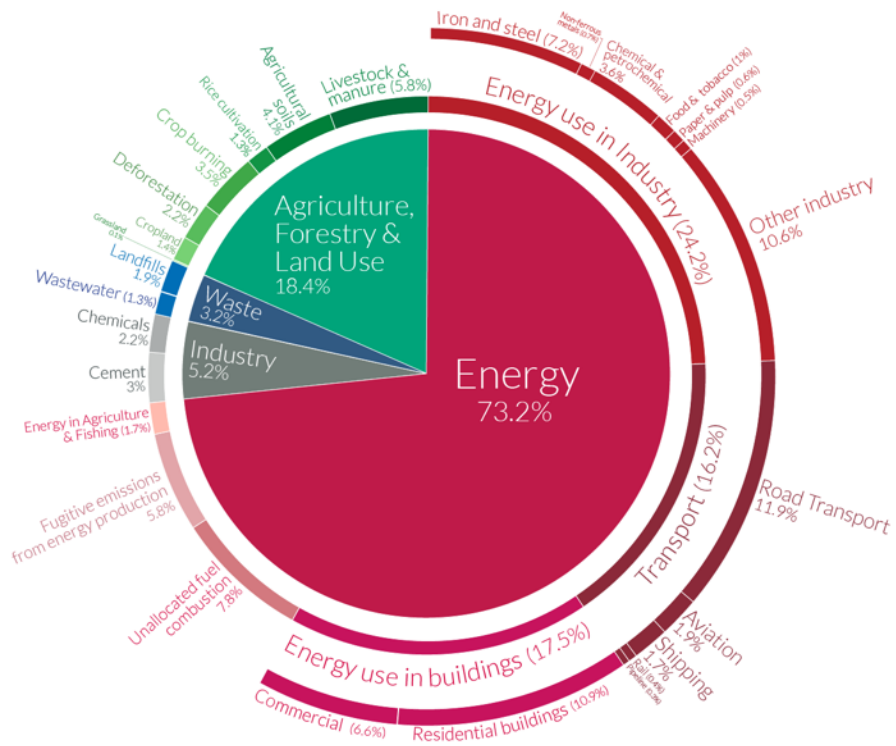
**News:** France has announced a ban on domestic short-haul flights where train alternatives exist. This is being done in order to cut carbon emissions.

### About France's Proposed Ban

- France has brought a new law which bars air travel to destinations that can be covered by up to 2.5 hours journeys by train.
- However, the move has been criticized as people may prefer to travel by private cars rather than taking the train. The move may be end up leading to an increase in emissions.

### Contribution of Aviation Sector

- Air transport (global level) accounts for ~2% of carbon dioxide emission and less than 2% Greenhouse Gas emissions.
- Though the contribution is small, there are several concerns:
  - They are caused by a very small proportion of population.
  - The pace of growth of emissions in the aviation sector is very high.
  - Emissions from **international aviation** fall in a grey area. The emissions from international flights are not attributable to a particular country. Hence, they **are difficult to be covered under Climate Actions**.



Source: Our World in Data. Energy Use in Industry (24%), Transportation (16%) and Buildings (17.5%) together contributed ~58% global emissions in 2016.

### Steps Taken

In 2016, the **International Civil Aviation Organisation (ICAO)** put in place an offset mechanism called **CORSIA** to ensure that any increase in emissions over 2020 levels is compensated for by the airline industry through **investment in carbon-saving projects elsewhere**. (Refer EPIC May 2023 (click) for CORSIA).

## 8. Achieving E20 Target: Concerns

**News:** In 2022, the Government had amended the National Policy on Biofuels and had advanced the target date of achieving E20 blend (20% ethanol in petrol) from 2030 to 2025. However, there are several concerns.

### About Status of Ethanol Production and Blending

- According to the Ministry of Petroleum and Natural Gas, India had achieved the target of E10 (10% ethanol and 90% petrol) blending in June 2022.

- According to the Government, the current ethanol production capacity (December 2022) for ethanol blending with petrol and other uses is about 947 crore litres. This includes **619 crore litres of molasses based production** capacity and **328 crore litres of grain based production** capacity.
- The major source of ethanol for blending is **sugarcane juice/sugar syrup** and **C heavy molasses**. The other source is **surplus rice and damaged food grains**. Around 16 lakh tonnes of sugar was subsumed to produce this ethanol. (Refer EPIC June 2022 (click) for Amendments to the National Policy on Biofuels).

### Concerns with E20 Target

- **Availability of Land and Ethanol Production:** Countries like Brazil have surplus land. Brazil is the world's largest producer of sugar and ethanol in the world. The productivity in Brazil is much higher. Hence, Brazil can grow crops exclusively for ethanol production (for blending purposes) but not India.
- **Diversion of Crops and Food Security:** In 2022, the Food Corporation of India gave about 1 million tonnes of subsidised rice to distilleries for ethanol production. However, this has been questioned amidst presence of malnutrition in India and poor rank in the Global Hunger Index.
- **Vehicle Modification:** Running the vehicles on E20 blend may require modification in engines, which may not be possible to be achieved by 2025.
- **Benefits from Fuel Blending:** Level of emissions reduction from blending is too small to justify diversion of food and investments in modifications in engines. According to a NITI Aayog report, the extra cost would be INR 3,000-5,000 for every 4-wheeler and INR 1,000-2,000 for a 2-wheeler.

Hence, critics of the policy has requested the Government to revisit the policy.

## History, Art and Culture

### 1. Ancient Trade Between Romans and Madurai (Pandya Kingdom)

**News:** There was a significant trade between the Romans and Pandyas.

#### About the Trade Route

- The Roman traders used to take advantage of the **monsoonal winds** blowing in the Arabian Sea to reach the ports in Kerala. It was a 45-day journey from a port in Egypt to Musiri in Kerala.
- From there, they would make the **journey by road to cross the Western Ghats**. These routes were covered with thick **shola forests**.
- **Cumbum and Thandikudi Pass:** Excavations in this area had yielded silver coins engraved with the bust of **Caesar Augustus**.



Source: Wikimedia Commons. The Ancient trade routes between India and the Roman Empire.

- **Shencottah Pass:** This route was taken by traders of precious stones. Wealthy Romans adorned themselves with pearls sourced from Korkai and other precious ornaments from the region.

- They reached the ports on the east coast through land route: Alagankulam, Arikamedu, Kaveripattinam, Kayalpattinam, Korkai, Mamallapuram, Nagappattinam, Periyapattinam and Devipattinam.

#### About the Items Trade between Romans and Pandyas

- Various poems of the **Sangam Literature** talk of how the tall and burly 'Yavanas' (Romans) rubbed shoulders with the local inhabitants.
- The 'Yavanas' brought with them their **rich and glossy pottery** known as **Arretine Ware**, along with gold. It was much sought after by the kings. Some historians say that the Romans introduced the local people to **wine made from grapes**.
- A **trading centre was established at Thandikudi** as early as the 13<sup>th</sup> Century.
- The **traders constructed tanks and temples** to create an atmosphere of goodwill among the locals.
- The popular merchant guilds in ancient Tamil Nadu were **Ainootruvar, Mani Grammathar, Pathinen Visaayathar** and **Anjuvannam**. These guilds had traders and ship owners (having own army of soldiers) as members.

#### About Madurai

- Madurai was the capital of the Pandyas. It was built around the **Meenakshi Sundaraswarar Temple**, which many believe was built in the 1<sup>st</sup>-Century CE.
- The city of Madurai was built in the **form of a lotus** on the southern banks of the **Vaigai river**. Like the unfurling petals of the lotus, various streets, exclusive for trades, radiated from the centre.

## 2. Mohenjo-Daro's Dancing Girl Figurine

**News:** The International Museum Expo was held recently in New Delhi. The mascot of the Expo was a contemporized version of Mohenjo-Daro's Figurine made of wood in the Chennapatnam art style.

#### About the Discovery of Mohenjo-Daro's Dancing Girl

- The Indus Civilisation (3300-1300 BC with its mature stage dated to 2600-1900 BC), is also known as the Harappa-Mohenjodaro Civilisation. A series of excavations were conducted in 1920s in the two major sites: Harappa and Mohenjodaro.
- The Dancing Girl was discovered in Mohenjodaro in 1926, by British archaeologist **Ernest McKay**.
- Even though Mohenjodaro and Harappa became part of Pakistani territory after the Partition, the Dancing Girl remained in India as part of an agreement. At present, the bronze figurine is housed in the **National Museum of India**.

#### Significance and Interpretations of Mohenjo-Daro's Figurine

- The existence of a figurine such as the Dancing Girl, indicates the **presence of high art in the Harappan society**.
- The bronze statuette shows the degree of **sophistication of Harappan artistry and metallurgy**. The Dancing Girl is evidence of the civilisation's knowledge of **metal blending** and **lost-wax casting**: a complicated process by which a duplicate sculpture is cast from an original sculpture to create highly detailed metallic artefacts.



Image: Wikimedia Commons. The statue is 10.5 centimetres tall, and depicts a nude young woman/girl with stylized ornaments, standing in a confident, naturalistic pose.



- The Dancing Girl by all appearances is not an object built for some utilitarian purpose – artists took great time to create an artefact of **purely symbolic, aesthetic value**.
- John Marshall, Director-General of the ASI from 1902 to 1928, had described the girl as ‘dancing’. The historians have believed the girl as a dancer because of the striking pose. There is no other evidence to support the claim.
- An American archaeologist Jonathan Kenoyer had argued that the **figurine represents a woman carrying an offering**. It is the British historians’ readings of later Indian history, when court and temple dancers were commonplace, that led them to **interpret the figurine as ‘dancing’ girl**.
- There has been an interpretation of the figurine as depicting Hindu Goddess Parvati. However, this claim has been rejected by most historians as there is lack of evidence whether there was worship of any Hindu gods in the Civilization.

### 3. Bagh Print

**News:** MP Tourism Board, in association with district administration Dhar, has launched a training camp on manufacturing sustainable bags based on Bagh Print. The training is aimed at providing livelihood skills to participating women and promoting eco-friendly substitutes for plastic bags.

#### About Bagh Print

- Bagh printing in Madhya Pradesh is a specialised form of **wooden hand-block printing**, originally practised across the regions in the Indus Valley.
- The Khatri community of dyers of cloth lived along the Indus because of the need for plenty of clear water to wash and prepare the textiles. A branch of the Khatri became settlers in the village of Bagh in Dhar district of Madhya Pradesh and started practising Bagh prints.
- The craft, as well as the village, derive their names from the river ‘**Baghini**’ that flows through the village.



#### Salient Features

- Bagh prints consist of **weaving** and **hand block printing process** and is associated with the geometric designs and imaginative use of red and black natural colours.
- Both cotton and silk cloths are used. The designs are patterned by skilled artisans. They are created using natural dyes, which are eco-friendly and non-hazardous.
- Bagh Paintings have 4 primary design families: *Nariyal* (a coconut shape), *Tikona* (a triangle, or many triangles mounted to form a peak), *Gehwar* (a fan-like shape), and *Lehar* (waves).
- On completion of the Bagh printing process, the printed fabric is subject to **repeated washing in the flowing waters of the river** and then dried in the sun for a specific period to obtain a fine lustre.



Source: Dastkari Haat Samiti. Bagh Print wooden block.

### 4. International Gandhi Peace Prize

**News:** International Gandhi Peace Prize, 2021 has been awarded to Gita Press, Gorakhpur.

### About the International Gandhi Peace Prize

- The International Gandhi Peace Prize is an **annual award** conferred by the Government of India.
- It was first awarded in 1995 on the occasion of the 125<sup>th</sup> Birth Anniversary of Mahatma Gandhi **as a tribute to the ideals espoused by him**.
- The award is **open to all persons regardless of nationality**, race, language, caste, creed or gender.
- The award carries an amount of INR 1 crore, a citation, and a plaque.
- The jury to decide the awardee consists of the Prime Minister of India, the Leader of Opposition in the Lok Sabha, the Chief Justice of India, and two eminent personalities. (Some sources have included Speaker of the Lok Sabha as a member).
- Prominent awardees include Ramakrishna Mission (1998), Nelson Mandela (2000), Grameen Bank (2000), ISRO (2014), and Sheikh Mujibur Rehman (2020).



Source: [gandhi.gov.in](http://gandhi.gov.in). Plaque awarded to the Grameen Bank in 2000.

### About Gita Press

- Gita Press was established in 1923.
- It is one of the world's largest publishers, having **published 41.7 crore books in 14 languages**, including 16.21 crore **Shrimad Bhagvad Gita**.
- The institution has never relied on advertisement in its publications, for revenue generation.

## Miscellaneous

### 1. Impact of Groundwater Extraction on Earth's Rotation

**News:** A study published in the journal Geophysical Research Letters has revealed that extensive ground-water extraction has resulted in shift in earth's axis by nearly 80 cm to the east.

#### Impact of Groundwater Extraction on Earth's Rotation

- The points of intersection of Earth's axis of rotation with the surface form the Geographic North and South Poles. The Poles are not fixed.
- The axis of rotation and hence the poles fluctuate due to **variation in distribution of mass within Earth**.
- In the past, the **drift in the poles was caused only by natural forces** like ocean currents and the convection of heated rock deep beneath the Earth.

#### Findings of New Research

- Between 1993 and 2010, the excessive pumping of groundwater caused the planet's rotational pole to shift eastward by approximately 80 centimetres. This shift has happened due to change in the mass distribution within the earth as a result of groundwater extraction.
- The study also found that pumping groundwater from mid-latitude areas would impact the drift the most. The **maximum amount of groundwater redistribution took place in the northwest India and western North America** both situated at mid-latitudes. (Refer EPIC April 2023 (click) for Groundwater Usage and Governance in India and EPIC November 2022 (click) for Groundwater Usage in India).





### 3. Joint Child Malnutrition Estimates

**News:** The Joint Child Malnutrition Estimates Report has been released by the UNICEF, WHO and the World Bank.

#### Key Insights and Concerns Highlighted by the Report

- The world has shown insufficient progress to reach the **2025 World Health Assembly Global Nutrition Targets** and the **2030 Sustainable Development Goal (SDG) 2 Targets**.
- Only ~33% of all countries are 'on track' to **halve the number of children affected by stunting by 2030**. Even fewer countries are expected to achieve the 2030 target of 3% prevalence for overweight.
- Stunting:** India continues to show a reduction in stunting and recorded 1.6 crore fewer stunted children under 5 years in 2022 than in 2012.
  - The prevalence rate of stunting dropped from **41.6% in 2012 to 31.7% in 2022**. India's share of the global burden of stunting also declined from 30% to 25% in the past decade.
  - Globally, stunting declined from a prevalence rate of 26.3% in 2012 to 22.3% in 2022.
- Wasting:** The prevalence of wasting in 2022 was 18.7% in India, with a share of 49% in the global burden.
- Obesity:** The prevalence of obesity marginally increased in a decade from 2.2% in 2012 to 2.8% in 2022, thereby contributing to 8.8% of the global share. The global prevalence is 5.6%
- The decline in stunting in India is commensurate with National Family Health Survey (NFHS)-5 (2019-2021) data which estimated its prevalence at 35.5% (38% in NFHS-4 (2016) and 48% in NFHS-3 (2006)).
- The NFHS also highlighted that almost two-thirds (~67%) of children at 12 or 24 months had wasting at birth or at one month of age. This means **two-thirds of the wasting is caused by maternal malnutrition**.

#### Persisting challenges

The Joint Malnutrition Estimates underscore India's mixed progress in battling malnutrition



- India saw 1.6 crore fewer stunted children under five years in 2022 compared with 2012
- Despite reduced stunting, wasting remains an issue with a prevalence rate of 18.7% in 2022 in India
- Prevalence of overweight children increased from 2.2% in 2012 to 2.8% in 2022 in India
- Global stunting declined from 26.3% in 2012 to 22.3% in 2022, but obesity prevalence increased from 5.5% to 5.6%

### 4. Gender Social Norms Index, 2023

**News:** The Gender Social Norms Index, 2023 has been released by the UNDP.

#### About the Index

- The index **tracks people's attitudes towards women** in 4 dimensions: Political, Economic, Educational, and Physical Integrity. This helps in examining **how biased beliefs can obstruct gender equality** and human rights. Each dimension is characterized by 1-2 indicators of biases against women.

#### Definition of bias, by indicator

Dimension	Indicator	Choices	Definition of bias
Political	Women having the same rights as men is essential for democracy	0, it is against democracy, 1, not essential, to 10, essential	Values from 0 to 7
	Men make better political leaders than women do	Strongly agree, agree, disagree, strongly disagree	Strongly agree and agree
Educational	University is more important for men than for women	Strongly agree, agree, disagree, strongly disagree	Strongly agree and agree
	Men should have more right to a job than women	Agree, disagree, neither	Agree
Economic	Men make better business executives than women do	Strongly agree, agree, disagree, strongly disagree	Strongly agree and agree
	Proxy for intimate partner violence	1, never, to 10, always	Values from 2 to 10
Physical integrity	Proxy for reproductive rights	1, never, to 10, always	Value of 1

Source: Gender Social Norms Index, UNDP (2023). Summary of the survey information.

- Gender Bias:** Nearly 90% of people still hold at least one bias against women.
- Political Participation:** Around **half (50%) the world's population believe that men make better political leaders than women**; two in five (40%) believe that men make better business executives than women.



- Countries with **greater bias** exhibit a **lower representation of women in parliament**.
- On average, the share of women heads of State or Government has remained ~10% worldwide since 1995, and women hold just over a quarter (25%) of parliament seats globally.
- Women are grossly underrepresented in leadership in conflict-affected countries, mainly at the negotiation tables in the recent conflicts in Ukraine (0%), Yemen (4%), and Afghanistan (10%).
- **Indigenous, migrant, and women with disabilities** face even more significant challenges in attaining political representation.
- **Economic Gap:** Despite progress in education, gender gaps in economic empowerment persist.
  - **The increase in women's education has not translated into better economic outcomes.**
  - In 59 countries where adult women are more educated than men, the average income gap is 39%.
- **Domestic Chores and Care Work:** In countries with higher bias in gender social norms, **women spend more time than men** (nearly six times) **on domestic chores and care work**.
- Gender-based inequalities in empowerment are partly because of biased gender social norms or the **undervaluation of women's capabilities and rights**.
- There is an increase in the share of people with no bias in any indicator in 27 out of 38 surveyed countries. The largest improvements were seen in Germany, Uruguay, New Zealand, Singapore, and Japan, with progress greater among men than women.
- These **major improvements in gender social norms were influenced by policies, regulations and scientific breakthroughs**. (Refer EPIC March 2023 (click) for Bridging Gender Digital Divide and EPIC July 2022 (click) for Gender Representation in the Parliament and Gender Pay Gap).

## 5. Global Slavery Index, 2023

**News:** The Global Slavery Index, 2023 has been released.

### About the Index

- It provides national estimates of **modern slavery** for 160 countries. It is presented by **Walk Free**, a human rights organization.
- It is based on data provided by the Global Estimates of Modern Slavery, produced by the International Labour Organisation (ILO), Walk Free, and the International Organisation for Migration (IOM).

### About Modern Slavery

- It refers to **situations of exploitation that a person cannot refuse or leave** because of **threats, violence, coercion, deception, or abuses of power**.
- It is an umbrella term and includes **forced labour, forced marriage, debt bondage, sexual exploitation, human trafficking, and the sale and exploitation of children**.
- Target 8.7 of SDGs resolves to end modern slavery, forced slavery, child labour and human trafficking.

### Key Findings of Global Slavery Index 2023

- ~50 million people were living in modern slavery in 2021, an increase of 10 million people since 2016. 12 millions of them are children, 28 million suffer from forced labour and 22 million from forced marriages.
- **Highest Prevalence** (per 1,000 population): North Korea, Eritrea, Mauritania, Saudi Arabia, Turkey, Tajikistan, the UAE, Russia, Afghanistan and Kuwait.
- **Lowest Prevalence:** Switzerland, Norway, Germany, Netherlands, Sweden, Denmark, Belgium, Ireland, Japan, and Finland.
- **Highest Number (absolute) of People Living in Slavery:** India, China, North Korea, Pakistan, Russia, Nigeria, Indonesia, Turkey, Bangladesh, and the US.

## Pointly

### 1. Women 20 (W20) Summit

The Women 20 Summit took place in Mahabalipuram, Tamil Nadu. The Women 20 (W20) is an **official engagement group** under the G20. It was created in 2015 with the objective of focusing on gender equity. The primary aim of W20 is **women's empowerment** and **advocating for women's rights**, raising women's voices in society. The theme of 2023 G20 Summit was 'Women-Led Development- Transform, Thrive and Transcend'. India's W20 agenda focuses on 5 key priorities: **Women's Entrepreneurship**, Grassroots Women's Leadership, **Bridging the Gender Digital Divide**, Education and Skill Development, and Climate Change. (Refer EPIC March 2023 (click) for Bridging Gender Digital Divide).

### 2. Atlantic Declaration

The US and the UK have announced the **Atlantic Declaration for a Twenty-First Century US-UK Economic Partnership**. It aims to reinforce their longstanding alliance to effectively address the challenges of the current era. It is focused on enhancing industry collaboration in multiple sectors **in response to China's competition**. It has 5 pillars including emerging technologies, supply chains, digital transformation, clean energy, defence and space.

### 3. GOI-UN Sustainable Development Cooperation Framework, 2023-27

NITI Aayog (on behalf of the Government of India) and the United Nations in India have signed the Government of India – United Nations **Sustainable Development Cooperation Framework 2023-2027** (GOI-UNSDCF). The framework serves as a strategic roadmap for **achieving India's sustainable development targets**, with a specific focus on **gender equality, youth empowerment, human rights**, and **overall sustainable development**. The framework is built upon 4 pillars: **People, Prosperity, Planet**, and **Participation**. It encompasses **6 key outcome areas** including **health and well-being, quality education, economic growth, environment and climate**, and empowerment of individuals and communities.

### 4. Armado

Mahindra Defence Systems (MDS), has started deliveries of 'Armado,' an **Armoured Light Specialist Vehicle (ALSV)** built for the Indian armed forces. It is India's first Armoured Light Specialist Vehicle (ALSV) and is **fully indigenous**. It can be used in **counter-terrorism operations**, raids in open and desert terrains, and reconnaissance missions. Special forces and quick reaction teams too can use it, doing so for conventional operations, weapon-carrying, border patrolling etc. Its armour offers **protection against armour-piercing rifles**.

### 5. Predator UAVs

The Defence Acquisition Council (DAC) has approved the procurement of armed **Predator Unmanned Aerial Vehicles (UAV)** from the US. The **MQ-9 Reaper**, (also called Predator B), is capable of remotely controlled or autonomous flight operations. These are **High-Altitude Long Endurance (HALE)** drones. It is remotely **operated by a two-person team** consisting of a pilot and an aircrew member who operates sensors and



guides weapons. The US uses the MQ-9 Reaper for **both surveillance and strikes**. It has an **endurance of over 27 hours** and can **operate up to 50,000 feet**.

## 6. Cosmic Dust

These are tiny solid particles that **exist in outer space**. They are composed of various materials, including **minerals, metals, ice, and organic compounds**. Their size range from nanometers ( $10^{-9}$  m) to micrometres ( $10^{-6}$  m). They contribute to the **formation of stars and planetary systems by providing material for accretion**. They also **scatter and absorb light**, affecting the radiation properties of celestial objects. These particles serve as building blocks for the formation of larger objects, such as asteroids, comets, and planets. Cosmic dust can be further distinguished by its astronomical location: **Intergalactic** (between galaxies), **Interstellar** (between stars), **Interplanetary** (between planets), and **Circumplanetary** (nearby a planet that can lead to formation of ring system like around Saturn).

## 7. NVS-01 Satellite

ISRO has successfully placed the NVS-01 navigation satellite, into **Geosynchronous Transfer Orbit** by **GSLV-F12**. Subsequent orbit-raising manoeuvres will take NVS-01 into the intended **Geosynchronous orbit**. It weighs about 2,232 kg. An indigenous atomic clock was flown in NVS-01. It is the first in the series of **2<sup>nd</sup>-generation navigation satellite** and the 9<sup>th</sup> satellite in the **Navigation with Indian Constellation** (NavIC). It will augment the existing satellite and bolster the capability of the NavIC. This series incorporates L1 band signals to widen the services.

## 8. Radiometric Dating

Radiometric dating calculates an age in years for materials by measuring the **presence of a short-life radioactive element**, e.g., carbon-14, or a **long-life radioactive element** plus its decay product, e.g., potassium-14/argon-40. The term applies to all methods of age determination based on nuclear decay of **naturally occurring radioactive isotopes**. Carbon-14 is common method (*Refer EPIC November 2022 (click) for Carbon Dating Methods*).

A study has shown that Calcium-41 can be used for radiometric dating the same way as Carbon-14 in carbon dating. Carbon-14 has a half-life of 5,700 years, so the technique can't determine the age of objects older than around 50,000 years. Calcium-41 is a rare **long-lived radioisotope of calcium** with a half-life of **99,400 years**. However, Calcium-41 is much rarer than C-14. **Isotopes** of an element have **same atomic number** (number of protons in nucleus) and **different mass number** (number of protons and neutrons in nucleus).

## 9. AIRAWAT Supercomputer

At the International Supercomputing Conference (ISC 2023) in Germany, **AI Supercomputer AIRAWAT, installed at C-DAC, Pune**; has been ranked at **75<sup>th</sup> in the world**. The fastest high-performance computing system in the world is currently the Frontier-Cray system at Oakridge National Laboratory, United States. The **AI Research Analytics and Knowledge Dissemination Platform** (AIRAWAT) Proof of Concept (PoC) of **200 AI Petaflops Mixed Precision peak compute capacity** is funded by the Ministry of Electronics & Information Technology and implemented by C-DAC, Pune. The system is installed under **National Program on AI by the Government of India**. The AIRAWAT PoC of 200 AI Petaflops integrated with **PARAM Siddhi – AI of 210 AI Petaflops** gives a total peak compute of **410 AI Petaflops** Mixed Precision and sustained compute capacity of 8.5 Petaflops (Rmax) Double Precision.

The deployment of AIRAWAT will empower academia, research labs, the scientific community, industry, and start-ups to develop indigenous AI-enabled products and solutions, particularly for addressing India-specific challenges.

#### 10. India's Super Computing Capability

At present, India's most powerful, civilian supercomputers: Pratyush and Mihir, with a **combined capacity of 6.8 petaflops**, are housed at the **Indian Institute of Tropical Meteorology, Pune**, and the **National Centre for Medium Range Weather Forecasting (NCMRWF), Noida**, respectively. Both these organisations are affiliated to the Ministry of Earth Sciences (MoES).

#### 11. Spear Phishing

Spear Phishing is an **email** or **electronic communications scam** with a targeted attempt to **steal sensitive information** such as account credentials or financial information often for malicious reasons. A spear phishing email uses **social engineering techniques** to urge the victim to click on a malicious link or attachment. The suspicious email often **contains familiar yet misleading information that tricks the victim to click** on the link/attachment (e.g., disconnecting electricity supply due to non-payment of dues). The attacker can then steal credentials for malicious actions like enter the internal network of organization or steal money. According to a report, as many as 53% of organizations studied in India were victims of spear phishing in 2022.

#### 12. MAHIR

The Ministry of Power and the Ministry of New and Renewable Energy have jointly launched a National Mission titled **Mission on Advanced and High-Impact Research (MAHIR)** for the period 2023-28. It aims to facilitate indigenous research and development of latest and emerging technologies in the power sector and leverage the technologies for India's economic growth. Funding will be provided by the two Ministries and the PSUs under them. 8 areas of R&D have been identified. **Alternatives to Lithium-Ion storage batteries, Modifying electric cookers/pans** to suit Indian cooking methods, **Green hydrogen** for mobility (High Efficiency Fuel Cell), **Carbon capture, Geo-thermal energy**, Solid state refrigeration, **Nanotechnology for EV battery** and Indigenous CRGO technology.

#### 13. CRGO Steel

CRGO stands for Cold Rolled Grain Oriented Steel, that contains silicon and is manufactured through process of cold rolling. CRGO steel has **high magnetic permeability** and low hysteresis and eddy current losses. It is extensively used in energy efficient transformers and large, high performance generators in the power sector.

#### 14. Global DPI Summit

The Global DPI (Digital Public Infrastructure) Summit was held as the side event of the 3<sup>rd</sup> meeting of the G20 Digital Economy Working Group. India has launched the **Digital Public Infrastructure Partnership** to enable countries, (especially **low and middle-income**), to **learn from India's experiences in harnessing technology to improve governance**, and for social, economic, digital and sustainable development.

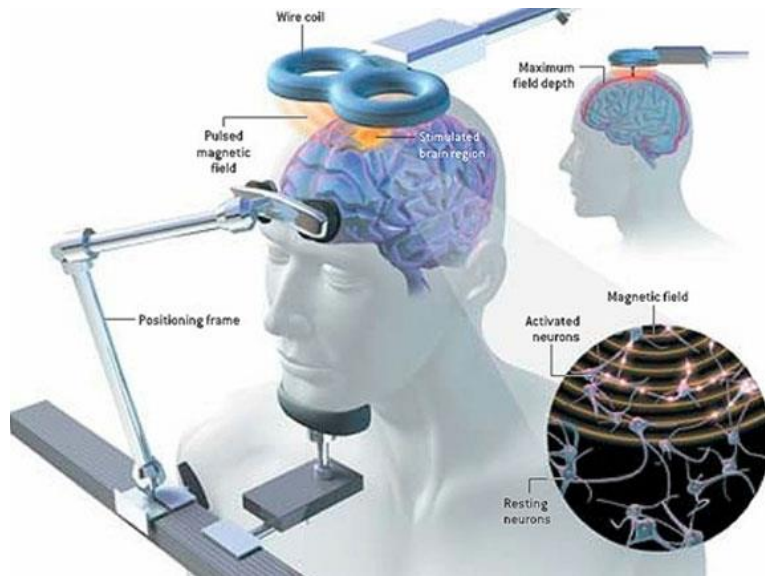
India also introduced the idea to form an alliance of countries called **One Future Alliance** which would allow like-minded nations to use technology to improve people's lives. The Ministry of



Electronics and IT has released a **Draft Public Key Infrastructure** for adoption of India's DPI beyond India's borders. (Refer EPIC April 2023 (click) for India's Digital Public Infrastructure).

### 15. rTMS Technology

Repetitive Transcranial Magnetic Stimulation (rTMS) therapy is a **non-invasive brain stimulation technique** that uses electromagnetic fields to **generate electrical impulses in specific regions of the brain** that are known to **modulate moods**. It is based on the phenomenon of **electromagnetic mutual induction**. rTMS works by generating electromagnetic pulses through a **coil placed on the scalp**, which modulates the cortical activity of the brain. The electromagnetic pulses **create electrical currents in the brain tissue** and affect the membrane potential of brain cells. rTMS may **help alleviate depression** by reversing abnormal signalling patterns between brain regions. It has also been found effective in **reducing symptoms of various neuropsychiatric disorders**.



### 16. International Pathogen Surveillance Network (IPSN)

The World Health Organization has launched the International Pathogen Surveillance Network. It is a **global network** to help **protect people from threats of infectious disease** through the power of **pathogen genomics**. The platform will help connect countries and regions by **improving systems for collecting and analyzing samples** and **using these data to drive public health decision-making** and sharing that information more broadly. It will **help detect and respond to disease threats before they become epidemics and pandemics** and to optimize routine disease surveillance.

### 17. Pathogen Genomics

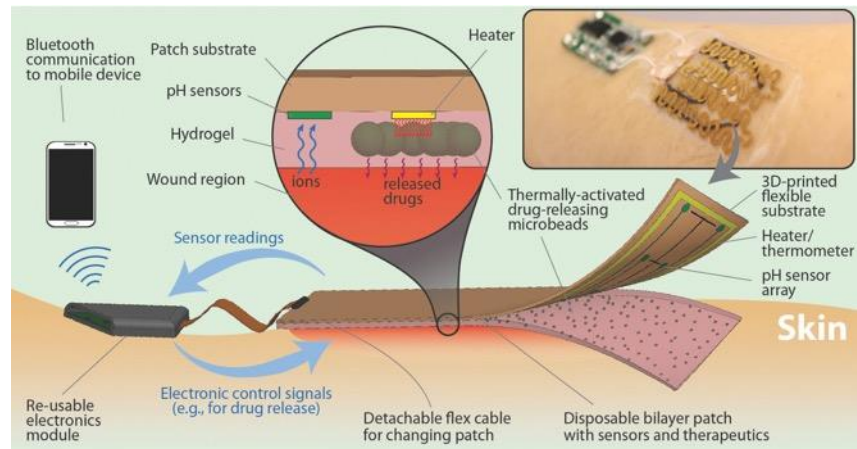
Pathogen genomics **analyzes the genetic code of pathogens** (viruses, bacteria and other disease-causing organisms) to understand their infectiousness, deadliness and manner/mechanism of spread. With this information, scientists and public health officials can **identify and track diseases to prevent and respond to outbreaks** as part of a broader disease surveillance system, and to develop treatments and vaccines.

### 18. Chronic Wounds

Chronic wounds do not progress through a normal, orderly, and timely sequence of repair. They are **non-healing wounds** affect tens of millions of people around the world and cause huge financial burden on the healthcare system. They are **most common in the lower socio-economic strata of society**. ~80% of people with chronic wounds are diabetic.

### 19. Smart Bandage

Researchers have developed smart bandage which can help treat chronic wounds. It is a soft **stretchable polymer** that helps the bandage maintain contact with and stick to the skin. The **bioelectronic system** consists of **biosensors that monitor biomarkers** in the wound exudate.



Bio-sensors determine the wound status by **tracking the chemical composition** of the exudates, which changes as the wound heals. Data collected by the bandage is passed to a **flexible printed circuit board**, which **relays it wirelessly** to a **smartphone or tablet** for **review by a physician**. A pair of electrodes **control drug release** from a **hydrogel layer** as well as stimulate the wound to encourage tissue regrowth.

### 20. Captagon Pills

Captagon is a **highly addictive amphetamine-type drug**. It stimulates the central nervous system, **providing a boost of energy**, enhancing focus, letting **stay awake for longer periods of time**, and producing a **feeling of euphoria**. These types of drugs usually stay in the blood for around 36 hours. However, they can cause **loss of appetite and weight, heart problems**, increased blood pressure, and heart attack, which can lead to death. They can also cause memory loss and impact clear thinking.

It was commercially sold in several countries until the 1980s and was banned due to fears of its highly addictive nature. It is produced mainly in Syria and smuggled to West Asia. IS fighters are said to have used these drugs during their battles. As global isolation of Syria comes to an end with the **Arab League reinstating Syria as its member**, the discussions on the trade of Captagon pills have taken the centre-stage once again.

### 21. Leptospirosis

It has emerged as an important infectious disease which tends to have large outbreaks after heavy rainfall or flooding. It is a potentially fatal **zoonotic bacterial disease**. The disease is caused by a bacterium called *Leptospira interrogans*, or *Leptospira*. The disease is more prevalent in **warm, humid countries** and in both urban and rural areas. It affects an estimated 1.03 million people every year, killing around 60,000. The carriers of the disease can be either **wild or domestic animals**, including **rodents, cattle, pigs, and dogs**. Humans get infected when they come in direct contact with (infected) animal urine or indirectly, through soil and water that contain leptospira bacteria. It can cause mild flu-like illness to being life-threatening.

### 22. Taurine

Researchers have found that **Taurine supplements can slow down the ageing process** in worms, mice, and monkeys. It is a **common ingredient in health supplements and energy drinks**. Taurine is a type of chemical called an amino sulfonic acid. **It occurs naturally in the body** and its main food sources are meat, fish, and eggs. It helps support nerve growth. It might also benefit people

with heart failure by lowering blood pressure and calming the nervous system. This might help prevent heart failure from becoming worse.

### 23. Facultative Parthenogenesis (FP)

Scientists have documented the first-known instance of a '**virgin birth**' by a crocodile, which had been living in isolation for 16 years at Costa Rican zoo. This was a result of **facultative parthenogenesis** or **reproduction without the genetic contribution of males**. It is the term for when a **female can produce offspring either sexually or via asexual reproduction**. The phenomenon has been earlier observed in some species of fish, birds, lizards and snakes.

In FP, a female's egg cell can develop into a baby **without being fertilized by a male's sperm cell**. In making an egg cell, a precursor cell divides into 4 cells: one becomes the egg cell and retains key cellular structures and the gel-like cytoplasm, while the others hold **extra genetic material**. Then, one of those cells essentially acts as a sperm cell and fuses with the egg to become "**fertilized**".

### 24. LEED Ratings

LEED (Leadership in Energy and Environmental Design) is the world's most widely used **green building rating system** in the world. It has been developed by the US Green Building Council (USGBC). To achieve LEED certification, a project has to adhere to prerequisites that address carbon, energy, water, waste, transportation, materials, health and indoor environmental quality. Projects go through a **verification and review process by Green Business Certification Inc. (GBCI)** and are awarded points that correspond to a level of LEED certification: **Certified** (40-49 points), **Silver** (50-59 points), **Gold** (60-79 points) and **Platinum** (80+ points).

### 25. LEED Zero

LEED Zero recognises projects that have reached a **net-zero** or **net-positive status in the categories of carbon, energy, water, or waste**. **India has emerged as a top country with LEED Zero Green Building Projects**, outperforming the US and China. Out of 150 LEED Zero certified projects, India has 45% (73) projects, with Haryana and Tamil Nadu leading the certifications.

### 26. Global Wind Day

It is celebrated annually on **June 15**. It is organised by WindEurope and Global Wind Energy Council. It is a day for discovering wind energy, its power and the **possibilities it holds to reshape the energy systems, decarbonise economies and boost jobs and growth**. On the occasion this year, the Ministry of New and Renewable Energy **felicitated Rajasthan for achieving highest wind capacity addition**, Gujarat for achieving the highest wind capacity addition through open access and Tamil Nadu for initiating the repowering of wind turbines. **India now ranks 4<sup>th</sup> in wind power capacity in the world with installed capacity of 42 GW**.

### 27. Formation Water

Formation water is water that appears during the **drilling process for oil and gas extraction**. It consists of oily components, brine solutions, and solvents that are used during various phases in the oil industry. It is **usually drained off** and **reaches the rivers and streams, deteriorating the water quality and threatening the existing aquatic life**. Scientists have now developed a mixture of **plant-based biomaterial, biosurfactant, and NPK fertilizer** that can help in efficient restoration of formation water. This is a **green approach towards treatment of formation water**.

## 28. Chite Lui River

It originates in the **Bawngkawn range in north Aizawl** and flows in alluvial valley at an altitude of 1,000 m. State capital Aizawl is situated nearby on its banks. The rapid growth and expansion of Aizawl City has led to **unplanned construction activities** on the banks and **encroachments**. The river suffers from **loss of natural vegetation** and **soil erosion** due to deforestation and land use change. This has affected the water flow, aquatic life, and biodiversity of the river. Local people have been making efforts for its revival.

## 29. Babool

It is a **perennial tree, indigenous to Indian Sub-continent** as well as tropical Africa, Burma, Sri Lanka, Saudi Arabia, Egypt and West and East Sudan. It occurs in **tropical and subtropical regions of India**. Historically in India, the bitter babool has been used as a famine food in arid and semi-arid regions like Rajasthan.

Almost every part of the babool tree is packed with **medicinal properties**.

Its seeds are rich in **nutritional value** containing Protein, fibre, fat, Potassium, Phosphorus, Magnesium, Iron, Manganese. Its **seed oil** can be an alternative to chemicals for **controlling major farm pests**.

Its **Pods** act as **natural food preservative**, have **antibacterial properties** and are effective against **gram-positive bacteria**.

Its **leaves improve digestion**. Together with pods, leaves are used as **feed for animals**.

Its woody **stems keep teeth clean** and gums healthy; Bark treats burns, skin diseases, and infected wounds.

Babool helps in the **reclamation of degraded areas by fixing nitrogen**, acting as a **windbreak** and combating desertification.



## 30. Orchids

Orchids are plants that belong to the family Orchidaceae, a **diverse and widespread group of flowering plants** with blooms that are often colourful and fragrant.

Orchids are **natural gauges of air quality** because they **don't grow in polluted air**. They draw pollinators like bees and other insects to their nectar and thereby **help cross-pollination**.

Orchids are broadly categorized into 3 forms:

**Epiphytic**: plants growing on another plants including those growing on rock boulders and often termed lithophyte) These are not parasitic.

**Terrestrial**: Plants growing on land and climbers.

**Mycoheterotrophic**: Plants which derive nutrients from mycorrhizal fungi that are attached to the roots of a vascular plant.

## 31. Orchids in India

According to the Botanical Survey of India's **Orchids of India: A Pictorial Guide**, India has over **1200 species of Orchids**. **388 species of orchids are endemic to India**, of which about one-third (128) endemic species are found in the Western Ghats. 757 (60%) of all orchids found in India are epiphytic, 447 are terrestrial and 43 are mycoheterotrophic. The **Himalayas, North-East parts of**



**India and Western Ghats** are the **hot-spots of orchids**. The highest number of orchid species is recorded from Arunachal Pradesh followed by Sikkim and West Bengal.

The entire orchid family is listed under **appendix II of CITES** (Convention on International Trade in Endangered Species of Wild Fauna and Flora) and hence any trade of wild orchid is banned globally. Epiphytic orchids found in the Dooars and Darjeeling hills are dying out because of **deforestation in their natural habitat**.

### 32. Sea Lettuce

Researchers have recently discovered 20 new species of Sea lettuce along the Baltic and Scandinavian coasts. Sea Lettuce is a species of **green macroalgae**. It belongs to the genus *Ulva*. Sea Lettuce grows naturally all over the world. It grows in both **littoral and sublittoral waters in depths of up to 75 meters**, although it **needs a lot of sunlight to flourish**. It is **perennial**, and **grows all year**, although the largest blooms occur during the summer. **Large masses of sea lettuce are often an indicator of nutrient pollution in the water**.



Sea Lettuce has a **high protein content**, advantageous polyunsaturated fatty acids, dietary fibres, and valuable biochemical components, making it particularly nutritive. It is consumed in many parts of the world as soup and salad.

### 33. Axolotl

The Axolotl is a species of salamander (lizard-like amphibians). They are amphibians but spend their whole lives underwater. They exist in only one place in the wild: **Lake Xochimilco near Mexico City**. (Lake Xochimilco is an **ancient endorheic lake** and is a UNESCO World Heritage site). The IUCN status of Axolotl is **critically endangered**. They feast on mollusks, worms, insect larvae, crustaceans, and some fish. Their population declined due to **habitat loss, water pollution, and consumption by invasive fish species**.



Axolotls, like humans, contain two copies of every gene: one inherited from the father and the other from the mother. Axolotls have the **ability to regenerate lost body parts** and have a rare **trait of neoteny**, which means they retain larval features throughout life. This has interested cancer researchers for their unique resistance to developing cancerous tissues.

### 34. Homo Naledi

Homo Naledi is a **species of human** discovered (2013) in the **Rising Star Cave system**, a UNESCO World Heritage Site in South Africa. They were **short-statured** and small-brained and are thought to have lived in Southern Africa between 335,000 and 241,000 years ago (possibly up to 2 million years ago). They exhibit a **combination of primitive and modern features** and are **not a direct ancestor of modern humans**. A study has claimed that Homo Naledi practiced **burial of dead** and **created rock art**. They also **used fire strategically for illumination** during mortuary and engraving activities in the cave. However, the claims have not been peer-reviewed so far. Previously, the earliest evidence of Mortuary behaviour was found among **Neanderthals** and modern humans, occurring **more than 100,000 years after Homo naledi**.

### 35. Brahmani Natural Arch

The Geological Survey of India (GSI) has proposed to declare the '**Brahmani Natural Arch**' as a **Geo Heritage Site**. It is located in the **Kanika range of Sundargarh forest division of Odisha**. The oval-shaped arch has a base length of 30 meters and a height of 12 meters. The natural arch is composed of ferruginous sandstone from the Upper Kamthi Formation. It dates back to the **lower to middle Jurassic age** (~184 to 160 million years old). It is believed to have formed due to **fault activities and sub-aerial weathering**. India currently has two other natural arches, located at **Tirumala hills in Tirupati** and **Andaman and Nicobar**. (Refer EPIC March 2023 (click) for Draft Geo-heritage Sites and Geo-relics (Preservation and Maintenance) Bill, 2022 and EPIC April 2022 (click) for Geological Heritage Sites).



### 36. Kari Ishad Mango GI Tag

The Kari Ishad mango has been given the Geographical Indication (GI) tag. It is grown in **Ankola taluk of Uttara Kannada district of Karnataka**. It is accepted as one of the **finest quality mangoes** due to its unique aroma, luscious taste, high amount of pulp, shape, and size. They have oblique to oval shape. A well-grown tree produces up to 2,000 fruits in a season. The fruit has a short shelf life of about 5 days. It has another variant called Bili Ishad, which has thick skin and less pulp and sweetness compared to Kari Ishad.



### 37. Gilgit Manuscripts

The **birchbark and clay-coated Gilgit manuscripts** are the **oldest surviving manuscripts in India**. These manuscripts include both **canonical and non-canonical Buddhist works** that throw light on the **evolution of Sanskrit, Chinese, Korean, Japanese, Mongolian, Manchu and Tibetan religion-philosophical literature**. They are used for the study of the history and **development of Buddhist thought** and writing is invaluable. These manuscripts can be dated back to the 5<sup>th</sup> to 6<sup>th</sup> Century A.D. and are written in the **Buddhist hybrid Sanskrit language of the Gupta Brahmi and Post-Gupta Brahmi script** of that period. The manuscripts were discovered in three instalments in the Gilgit region of Kashmir.



### 38. Mesolithic-era Paintings in Guntur, Andhra Pradesh

Archeologists have discovered a Mesolithic period rock painting in Guntur district, Andhra Pradesh. The paintings depicted a person tilling a piece of land. This is an indication of a **semi-settled life pattern** in which members of this community cultivated crops. Several other paintings depicted a **man catching a wild goat** with his left hand while wielding a hook-like implement to control it.



Another showed **two couples standing with their hands raised** while a child stood behind them. The paintings were made with **natural white kaolin and red ochre pigments**.

### 39. Mesolithic Period

The Mesolithic period also called the Middle Stone Age. It existed between the **Palaeolithic** (Old Stone Age, chipped stone tools), and the **Neolithic** (New Stone Age, polished stone tools). The technological hallmark of this period are **tiny stone tools** or '**microliths**'. In addition, the Mesolithic people also used non-microlithic tools made of **flakes and blades**. Mesolithic people made a number of **technological innovations** like **bow and arrow for hunting**; querns, **grinders** and **hammer stones for grinding and pulverizing plant foods** like roots, tubers and seeds; and **regular use of fire** for Indian Mesolithic Cultures roasting meat, tubers, etc.

### 40. Antardrishti Dashboard

The RBI has launched a **financial inclusion** dashboard named '**Antardrishti**'. Its objective is to assess the current state of financial inclusion by analyzing key metrics and indicators. It will enable policymakers and stakeholders to **identify areas that require attention** and **implement targeted interventions**. It will further facilitate greater financial inclusion through a multi-stakeholder approach.

### 41. Lightweight Payment and Settlement System (LPSS)

Conventional payment systems such as RTGS, NEFT, and UPI are **designed to handle large volumes of transactions**. They are dependent on **complex wired networks** and **advanced IT infrastructure**. However, **catastrophic events like natural calamities** have the potential to disrupt the infrastructure and **render these systems unavailable**.

The RBI has conceptualized a **Lightweight Payment and Settlements System (LPSS)**. It aims to ensure that the processing of transactions continues **without disruption** during natural calamities. This system can be operated from anywhere by a bare minimum staff. It will be **independent of conventional technologies** (like NEFT). It will **operate on minimalistic hardware and software** and would be made active only on a need basis. It will **process transactions that are critical to ensure the stability of the economy**, including government and market-related transactions.

### 42. National Time Release Study, 2023

It has been released by the Central Board of Indirect Taxes and Customs (CBIC). It is performance measurement tool for **assessing the cargo clearance process of international trade** as recommended by the WTO under the **Trade Facilitation Agreement (TFA)** and the World Customs Organization (WCO). It measures **cargo release time from arrival at the port to final clearance** for both imports and exports. The Study includes seaports, air cargo complexes (ACCs), inland container depots (ICDs) and integrated check posts (ICPs). The average import release time has continued to improve due to several initiatives like advance filing of import documents enabling pre-arrival processing. (Refer EPIC October 2022 (click) for Port Infrastructure in India).

### 43. Electronics Repair Services Outsourcing (ERSO) Initiative

The Government has launched the Electronics Repair Services Outsourcing (ERSO) Pilot initiative. In the next 5 years, India's ERSO industry is likely to fetch India up to US\$ 20 billion in revenue and also generate millions of jobs. The initiative aims to validate certain transformational policy and process changes to **make India the Repair Capital of the World** and capture 20% of the global repair service market within 5 years. The **e-waste policy will be modified to enable repair companies to domestically**



**recycle 5% of imported goods** by weight on a trial basis. The repaired goods will **not be permitted to be sold in the domestic market**. ERSO will also be a game-changer for **Global environmental sustainability**. (Refer EPIC July 2022 (click) for The Right to Repair).

#### 44. Skill Impact Bond Initiative

Skill Impact Bond (SIB) Initiative has skilled nearly 18,000 first-time job seekers, **72% of whom are women**. SIB is India's first development impact bond for skilling and employment. It has been launched by **National Skill Development Corporation (NSDC)** in collaboration with global partners. It targets to benefit 50,000 young Indians (over 4 years), with a focus on **empowering women** (60% of beneficiaries). It is a **public-private partnership (PPP)** model that **shifts its focus from inputs** like training and certification **to outcomes** like job placement and retention for India's youth.

#### 45. Impact Bond

Impact bonds are innovative **financing instruments** that **leverage private sector capital and expertise**, with a focus on achieving results. It shifts the focus from inputs to performance and results. Rather than a government or a donor financing a project upfront, private investors (risk investors) initially finance the initiative and are repaid by 'outcome funders', only if agreed-upon outcomes are achieved. The outcomes to be measured are agreed upon at the outset and independently verified.

#### 46. Kerala Fibre Optical Network (KFON)

The Kerala government has launched the Kerala Fibre Optical Network (KFON). Kerala is the first State to **declare the right to Internet as a basic right**. It is **an optical fibre cable network** of 30,000 kms, with internet speed from 10 mbps to 10 Gbps. KFON aims to **reduce the digital divide** by ensuring high-speed broadband internet access to **all houses and Government offices**. It will give fillip to **e-governance** and **knowledge based economy**. The Government wants to ensure internet connection for 20 lakh BPL families under KFON. In the first phase, ~14,000 BPL families would get connections to high-speed internet, free of cost.

#### 47. VAIBHAV Scholarship

The Government of India has launched the *Vaishvik Bhartiya Vaigyanik* (VAIBHAV) fellowship programme. It will be managed by the **Department of Science and Technology (DST)**, Ministry of Science and Technology. It aims to **connect the Indian STEMM** (Science, Technology, Engineering, Math and Medicine) **diaspora with Indian academic and R&D institutions for collaborative research work** leading to sharing of knowledge, wisdom, and best practices in the frontier areas of science & technology.

#### 48. One Nation One Anganwadi Programme

The programme allows the migrants **to avail the benefits of the Anganwadis even if they relocate to another State**. The benefits are for children under six years of age and pregnant and lactating women. More than 57,000 migrant workers have registered for the programme by using the **Poshan Tracker App** on mobile phones.

#### 49. Poshan Tracker App

Poshan Tracker app provides a view of the activities of the *Anganwadi* centres (child care centres), **service deliveries** of *Anganwadi* workers and **complete beneficiary management** for pregnant women, lactating mothers and children under 6 years. It also **digitises and automates physical registers used**



by workers that helps improve the quality of their work. The **Anganwadi** workers are being provided **smartphones** procured through the Government e-Marketplace (GeM) for efficient service delivery. A nodal person has also been appointed for **providing technical support** and resolving any issue with downloading the new Poshan Tracker application and its functioning in each State.

#### 50. National Training Conclave

The National Training Conclave was held recently in New Delhi. It has been organized as part of the **National Programme for Civil Services Capacity Building** (NPCSCB): '**Mission Karmayogi**'. It has been conducted by the **Capacity Building Commission**. Its objective is to **foster collaboration among civil services training institutes** and **bolster the training infrastructure for civil servants across the country**.

#### 51. Capacity Building Commission

It has been constituted in 2021. Its mandate is to drive **standardization and harmonization across the Indian civil services landscape**. It has been mandated to perform several key functions like Preparing an Annual State of Civil Services Report, Exercising functional supervision over Training Institutions, Facilitating the creation of **Annual Capacity Building Plans for Ministries**, Undertaking an **Audit of Human Resources available in Government**, and **recommending policy interventions** in areas of personnel/HR to DoPT among others.

#### 52. SAMARTH Campaign

The Ministry of Rural Development and Panchayati Raj has launched the SAMARTH campaign. It is a campaign to **Promote Digital Transactions in 50,000 Gram Panchayats**. Its aim is to **increase the adoption of digital payment methods**, particularly among women, in 50,000 Gram Panchayats across the country. It will empower rural communities by enabling them to participate in the digital economy and access the benefits of digital transactions.

#### 53. Commission for Railway Safety (CRS)

The investigation of the train crash in Odisha is being conducted by the Commission of Railway Safety (CRS). It is a Government body that acts as the railway safety authority. It is headquartered in Lucknow, Uttar Pradesh. CRS deals with **matters related to the safety of rail travel and operations**, among some other statutory functions mentioned under the **Railways Act, 1989**. These statutory functions include inspectorial, investigatory, and advisory functions. Investigating serious train accidents is one of the key responsibilities of the CRS. **The CRS is under the administrative control of the Ministry of Civil Aviation (MoCA). The CRS does not report to the Ministry of Railways.** The reason is to **keep the CRS insulated from the influence** of the Ministry of Railways and **prevent conflicts of interest**.

NOTE: With effect from 1<sup>st</sup> February 2022, the monthly ForumIAS Epic Magazine, for the month will provide wholistic coverage for the said month up to 20<sup>th</sup> of the month. This ensures that issues / stories that occur after 21<sup>st</sup> of the month are allowed to fully develop and are covered wholistically in the next month.