



# IQRA IAS

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## Women's Reservation Bill



## Monthly Current Affairs – September 2023

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## Art and Culture

### Santiniketan: UNESCO's World Heritage

**Context:** Santiniketan, a town established by Nobel laureate Rabindranath Tagore, made it to the UNESCO's World Heritage List.

- Located in West Bengal's Birbhum district, Santiniketan, which means "abode of peace", started taking shape in 1901 and is the place where Tagore laid the foundations of Visva-Bharati University.
- Santiniketan becomes India's 41st World Heritage Site to join the UNESCO List.
- The place exhibits an important interchange in human values, over a span of time or within a cultural area of world, on developments in architecture or technology, monumental arts, town planning or landscape design.
- Attempts to get Santiniketan inscribed on the World Heritage List have been going on since 2010.



### UNESCO's World Heritage Sites

- ✓ A World Heritage Site is a place that is listed by UNESCO for its special cultural or physical significance.
- ✓ The list of World Heritage Sites is maintained by the international 'World Heritage Programme', administered by the UNESCO World Heritage Committee.
- ✓ This is embodied in an international treaty called the Convention concerning the Protection of the World Cultural and Natural Heritage, adopted by UNESCO in 1972.

### About Santiniketan

#### Historical Significance

- In 1862, Rabindranath Tagore's father, Debendranath Tagore, spotted this scenic landscape and decided to establish an ashram, building a house called Santiniketan, meaning "abode of peace".

#### Name Change

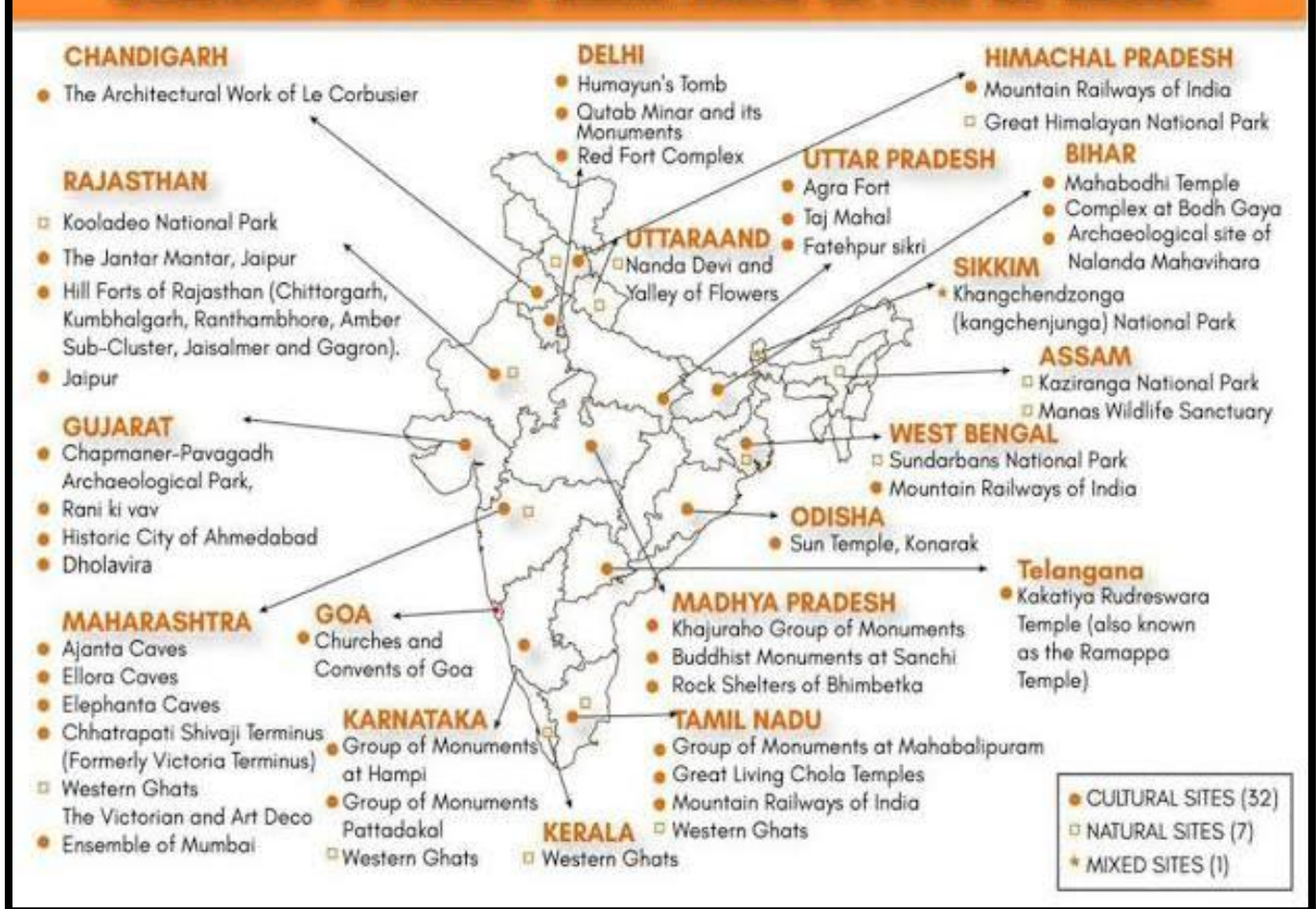
- The area, originally called Bhubadanga, was renamed Santiniketan by Debendranath Tagore due to its conducive environment for meditation.

#### Educational Legacy

- In 1901, Rabindranath Tagore chose a significant portion of land and established a school based on the Brahmachary Ashram model. This school later evolved into Visva Bharati University.



## UNESCO WORLD HERITAGE SITES IN INDIA



### Three Hoysala Temples Declared 42<sup>nd</sup> World Heritage Sites

**Context:** The Hoysala temples at Belur, Halebid, and Somanathapur in Karnataka were declared UNESCO World Heritage Sites in a move that will bring global recognition with prospects of increase in international tourism to these places.

#### Key Highlights

The Chennakeshava temple at Belur and the Hoysaleswara temple at Halebid — both in Hassan district — have been on the UNESCO's tentative list since 2014. The Keshava temple at Somanathapur in Mysuru district was appended to the other two monuments under the tentative list and all three were officially nominated by the Centre as India's entry for 2022-23 in February 2022.




- The Archaeological Survey of India (ASI) said the coming together of creative genius, architectural eclecticism, and symbolism into this outstanding sacred architecture makes these Hoysalas temples a true work of art and their inscription is an honour for India and the entire world heritage community.
- The monuments were officially inscribed as UNESCO World Heritage Sites during the **45th session of the World Heritage Committee** at Riyadh, Saudi Arabia.

- All three temples are protected by the ASI and the nominations were entered as ‘The Sacred Ensembles of Hoysalas’.

### About Hoysala Temples

Hoysala architecture, developed between the 11th and 14th centuries in southern Karnataka under the Hoysala Empire.

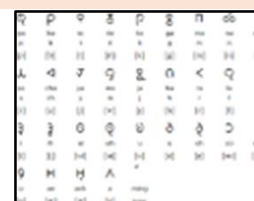
- The Hoysala temples are known for evolving a distinct style that is ornate with temple architecture following a stellate plan built on a raised platform.
- A unique style blending elements of Dravida and Nagara architectures.
- Influences from Bhumija, Nagara, and Karnataka Dravida architectural traditions.
- The material used in temple construction is chlorite schist which is also known as soapstone that are soft and amiable to carving.
- The temples have horizontal friezes and many of the sculptures are signed by artists which is unique in the history of Indian art while the doorways show intricate carvings showcasing the excellence achieved by the artist.

Temple	Features
<b>Chennakeshava Temple (Belur, Hassan, Karnataka)</b> 	<ul style="list-style-type: none"> <li>• <b>Year:</b> 1117 AD (period of king Vishnuvardhana)</li> <li>• <b>Deity:</b> Lord Vishnu (Chennakesava)</li> <li>• <b>Richly sculptured exterior depicting</b> scenes from Vishnu's life, epics, and some representations of Shiva.</li> <li>• "<b>Chenna</b>" means beautiful, "<b>Keshava</b>" means Vishnu</li> <li>• Follows a <b>stellate plan</b> with a raised platform. Constructed using chloritic schist (<b>soapstone</b>).</li> </ul>
<b>Hoysaleshwara Temple (Halebidu, Hassan, Karnataka)</b> 	<ul style="list-style-type: none"> <li>• <b>Year:</b> 1121 CE</li> <li>• <b>Deity:</b> Lord Shiva (Hoysaleshwara)</li> <li>• Known for <b>more than 240 wall sculptures</b> depicting various themes</li> <li>• Walled complex with <b>three Jaina basadi</b> (temples) and a stepped well in Halebid.</li> </ul>
<b>Keshava Temple (Somanathapura, Mysuru, Karnataka)</b> 	<ul style="list-style-type: none"> <li>• <b>Year:</b> 1268 CE (regime of Narasimha III)</li> <li>• <b>Deity:</b> Lord Krishna (Keshava, Janardhana, Venugopala)</li> <li>• <b>Trikuta Temple</b> dedicated to Lord Krishna in three forms: Janardhana, Keshava, and Venugopala.</li> <li>• The main <b>Keshava idol is missing</b>, and the Janardhana and Venugopala idols are damaged.</li> </ul>

### Toto: Toto Shabda Sangraha

**Context:** Toto Shabda Sangraha will help revive Toto, spoken by around 1,600 people in parts of West Bengal bordering Bhutan. Toto is to get a dictionary, thanks to the efforts of a professor at the University of Calcutta.

- The dictionary is a step in the direction of **preserving the language**, alive so far only orally, by putting its vocabulary in print.
- Here too, Toto words, to be translated into Bengali and English, will be composed in the Bengali script, considering that the Toto script is still in a nascent stage and members of the tribe are more familiar with the Bengali script.
- The book/dictionary is historic, in the sense that the community does



#### About Toto

- ✓ It is a language spoken by barely 1,600 people living in parts of West Bengal bordering Bhutan.
- ✓ Toto is a **Sino-Tibetan language** spoken by the **tribal** Toto people and is written in the **Bengali script**.
- ✓ Even though prominent community member **Dhaniram Toto** developed a script as recently as in 2015, most people either write it in Bengali script or write in Bengali language.
- ✓ A book by the Padma Shri-decorated Mr. Toto, titled Dhanua Totor Kathamala, was written in Bengali.



not have any collection of words or published primer.

- The trilingual dictionary, *Toto Shabda Sangraha*, will be released in Kolkata on October 7, at a function marking its founding.
- Every decade, India is losing languages and knowledge so it is important to preserve existing languages.
- The dictionary has been compiled by **Bhakta Toto**, a bank employee-cum- poet and published jointly by the trust and *Bhasha Samsad*, a publishing house run by Bitasta Ghoshal.
- This book will protect the language from vanishing. Even those studying in English and Bengali can stay in touch with Toto because of this compilation.
- The trust will soon publish **Uttal Torsa**, another Bengali novel written by Dhaniram Toto.

### Endangered Status

- Toto is considered a critically endangered language by UNESCO, with an estimated 1,000 speakers or fewer.
- Despite this endangered status, many families within the Toto community still use the language at home.
- It is often the primary language children learn at home, although they use Bengali when attending school.

### Language Preservation Efforts

- Researchers and members of the Toto community are aware of the endangered status of the language.
- The influence of other languages, particularly Nepali and Bengali, is increasing, posing a threat to Toto.
- Efforts are being made to document and preserve the language, including the Himalayan Languages Project's work on creating the first grammatical sketch of Toto.

### Anthropological Study

- The Anthropological Survey of India (AnSI) has conducted a study on the language of the Toto tribe.
- Despite the tribe's small population, the language is even more endangered.
- This underscores the urgency of preserving and revitalizing the Toto language.

## Project Udbhav

**Context:** Army's Project Udbhav to rediscover 'Indic heritage of statecraft' from ancient texts.

### Key Highlights

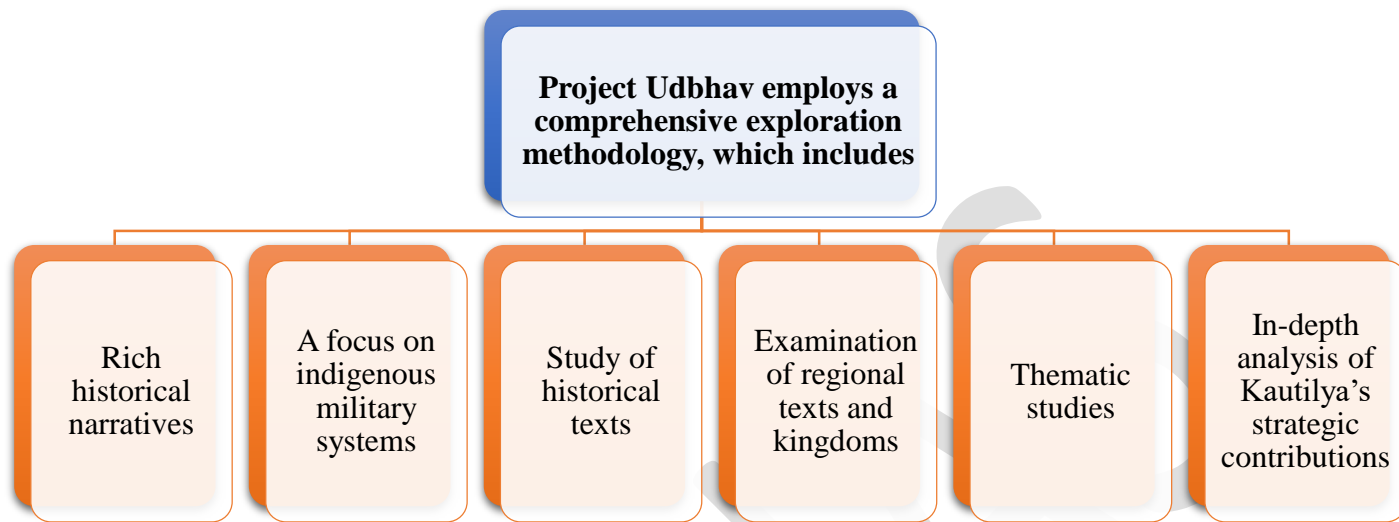
- The Indian Army has started an initiative, named Project Udbhav, to rediscover the "**profound Indic heritage of statecraft and strategic thoughts**" derived from ancient Indian texts of "statecraft, warcraft, diplomacy and grand strategy" in collaboration with the United Service Institution of India (USI), a defence think-tank.
- In connection with this, USI will conduct a **Military Heritage Festival** on October 21 and 22, to acquaint "future thought leaders with the dynamics of comprehensive national security with special emphasis on India's strategic culture, military heritage, education, modernisation of security forces and Atmanirbhar Bharat," according to an Army statement.
- The initiative stands testimony to the Army's recognition of India's age-old wisdom in statecraft, strategy, diplomacy, and warfare, the statement said, adding that Project Udbhav seeks to bridge the historical and the contemporary.
- The aim of Project Udbhav is not limited to just rediscovering these narratives, but also to **develop an "indigenous strategic vocabulary"**, which is deeply rooted in India's "multifaceted philosophical and cultural tapestry".

- ✓ The project endeavours to explore India's rich historical narratives in the realms of statecraft and strategic thoughts.
- ✓ It focuses on a broad spectrum including indigenous military systems, historical texts, regional texts and kingdoms, thematic studies, and intricate Kautilya Studies.





- The overall aim is to integrate age-old wisdom with modern military pedagogy, it stated.



Scholarly Outcomes	Significance
<ul style="list-style-type: none"> <li>A project on the compilation of Indian stratagems based on ancient texts has been ongoing since 2021.</li> <li>A book listing <b>75 aphorisms</b> from ancient texts has been released.</li> <li>The first scholarly outcome is the 2022 publication titled "<b>Paramparik Bhartiya Darshan... Ranniti aur Netriya ke Shashwat Niyam</b>" (Traditional Indian Philosophy...Eternal Rules of Warfare and Leadership).</li> </ul>	<ul style="list-style-type: none"> <li>Project Udbhav <b>aims</b> to reintroduce classical teachings into contemporary military and strategic domains.</li> <li>It seeks to <b>equip officers</b> with ancient wisdom for application in modern scenarios.</li> <li>Additionally, it <b>promotes a deeper understanding</b> of international relations and foreign cultures.</li> </ul>

## Geography

### Reserves of Phosphorus

**Context:** A handful of countries control most of the world's reserves of phosphorus. This is a major geopolitical concern. The world's largest reserves are in Morocco and the Western Sahara region. But here, phosphorus coexists with cadmium, a toxic heavy metal.

### India & Phosphorus

The problem with the fertilisation of land is as old as agriculture itself. When early humans first began to engage in settled agriculture, they quickly realised that while crops require nutrients for their growth, repeated cycles of cultivation and harvest depleted these nutrients, reducing yield over time.

- Early agricultural societies began to notice that certain areas produced better crops and that soils could be replenished. This observation led to practices to restore essential nutrients in the soil necessary for plant and crop growth. Indigenous communities around the world developed methods of fertilisation, for example, using fish remnants and bird droppings (guano) as fertilisers.
- This changed in the 19th century, which saw significant advancements in chemistry, leading to the creation of synthetic fertilisers as well as the identification of nitrogen, phosphorus, and potassium.



- They're the foundation of modern synthetic chemical fertilisers and have caused agricultural productivity to boom.
- The Green Revolution of the mid-20th century accelerated the adoption of high-yield crop varieties and intensive use of these fertilisers, and today these substances are crucial to sustain global food production.

But we now have a problem. **Phosphorus is scarce and exists only in limited quantities, in certain geological formations.**

- Not only are we running out of it, it also pollutes the environment.
- It doesn't exist as a gas, which means it can only move from land to water, where it leads to algal blooms and eutrophication.

### Geopolitics and Phosphorus

The history of phosphorus spans its discovery in guano to current global supply chains. Today, a handful of countries control most of the world's reserves of phosphorus. This is a major geopolitical concern.

- The world's largest reserves are in Morocco and the Western Sahara region.
  - But here, phosphorus coexists with cadmium, a heavy metal that can accumulate in animal and human kidneys when ingested.
  - Removing cadmium is also an expensive process.
  - As a result, cadmium-laden fertilisers are often applied to the soil, absorbed by crops, and consumed, bioaccumulating in our bodies.
  - Studies have found that this accelerates heart disease. In 2018, the EU passed new legislation to regulate cadmium levels in fertilisers.
- Only six countries have substantial cadmium-free phosphorous reserves. Of them, China restricted exports in 2020 and many EU countries no longer buy from Russia.
- So the market for safe phosphorus has suddenly exploded. This is one reason why Sri Lanka banned the import of synthetic fertilisers and went organic in 2021, later experiencing a sudden drop in crop yield that precipitated a political crisis.
- Today, **India is the world's largest importer of phosphorus**, most of it from the cadmium-laden deposits of West Africa.
  - Not all crops absorb cadmium at the same rate, but paddy, a staple crop in India, is particularly susceptible; Indian farmers also apply a lot of fertilisers to paddy.
  - Other grains, such as wheat, barley, and maize also absorb cadmium, just less.
  - The uptake of cadmium by crops varies based on soil quality, climatic conditions, and the type and variety of crops grown. Social and cultural factors further affect the intake of cadmium into human bodies and the severity of health effects.

Thus, we may face a hard choice down the line: **if we do not remove cadmium from the phosphorus, we may face a public health crisis**; if we do, fertilisers will become more expensive.

### Phosphorus Associated Problems

**First:** Only about a fifth of the phosphorus mined is actually consumed through food. Much of it is lost directly to water bodies as agricultural run-off, due to the excessive application of fertilisers.

**Second:** Most of the phosphorus that people consume ends up in the sewage.

- Most sewage in India is still not treated or treated only up to the secondary level.
- So even if the organic matter is digested, the effluent discharged from STPs still contains nitrates and phosphates.
- Of these, nitrates can be digested by denitrifying bacteria and released safely as nitrogen gas into the atmosphere, while phosphorus remains trapped in the sediments and water column.

- It is then absorbed by the algal blooms that grow in response to the high nutrient supply, and when they decompose, the bacteria that feed on them consume the dissolved oxygen.

**The result:** Water bodies become oxygen-starved, leading to fish deaths. The algal blooms are also toxic, causing respiratory issues, nausea, and other ailments to people exposed to them.

### Alternatives Available

Since much of the phosphorus is not actually taken up by crops, one way to ameliorate the phosphorus paucity is to reduce the use of chemical fertilisers through precision agriculture.

- Low-input agro-ecological approaches are increasingly proving to be a viable alternative.
  - If practised correctly, they can be achieved with little to no loss in yield, especially in smallholder farmers that cannot afford the cost of chemical fertilisers and pesticides.
- There is increasing interest in closing the phosphorous loop by mining urban sewage to produce high quality phosphorus.
  - Interest in ‘**circular water economies**’ has in fact prompted the European Union – which has almost no phosphorus reserves of its own – to rethink the urban water cycle.

#### Source separating toilets

- Almost two thirds of the phosphorus we consume leaves in our urine and the rest in faeces.
- Urine also contains large amounts of nitrogen and potassium.
- If we can collect this safe and concentrated waste stream, we could generate a local fertiliser source.
- **Source-separating toilets are designed** to separate urine from faeces.
- If they are to become mainstream, buildings and homes will **require a collection and storage system, leading to a logistics system** that collects and processes the urine centrally.

#### Recycling wastewater and sludge

- Sewage recycling already occurs in some form in India today.
- Nutrient-rich wastewater is applied directly to agriculture as at the KC Valley-Kolar project, which transports Bengaluru’s wastewater to the water-scarce regions of Kolar.
- But there are concerns that the quantity of nutrients may be too high and eventually degrade the soil.
- Similarly, in many cities and towns, farmers already take away the sludge from STPs but it is bulky to transport.
- So while farmers may be willing to pay to transport sludge, they cannot afford to pay an STP for the sludge itself.
- Thus, sewage recycling today doesn’t help render sewage treatment profitable.

#### Sludge-mining from STPs to recover nutrients.

- Companies like EasyMining in Europe are retrofitting STPs to recover nutrients from the sewage.
- The end product looks exactly like conventional fertiliser and is in fact of higher quality and marketable at a comparable cost.

Mining phosphorus from sewage allows countries to control their own phosphorus production while also addressing the problem of water-body eutrophication.

## Agriculture

### Deficit Monsoon Affects Coffee Production

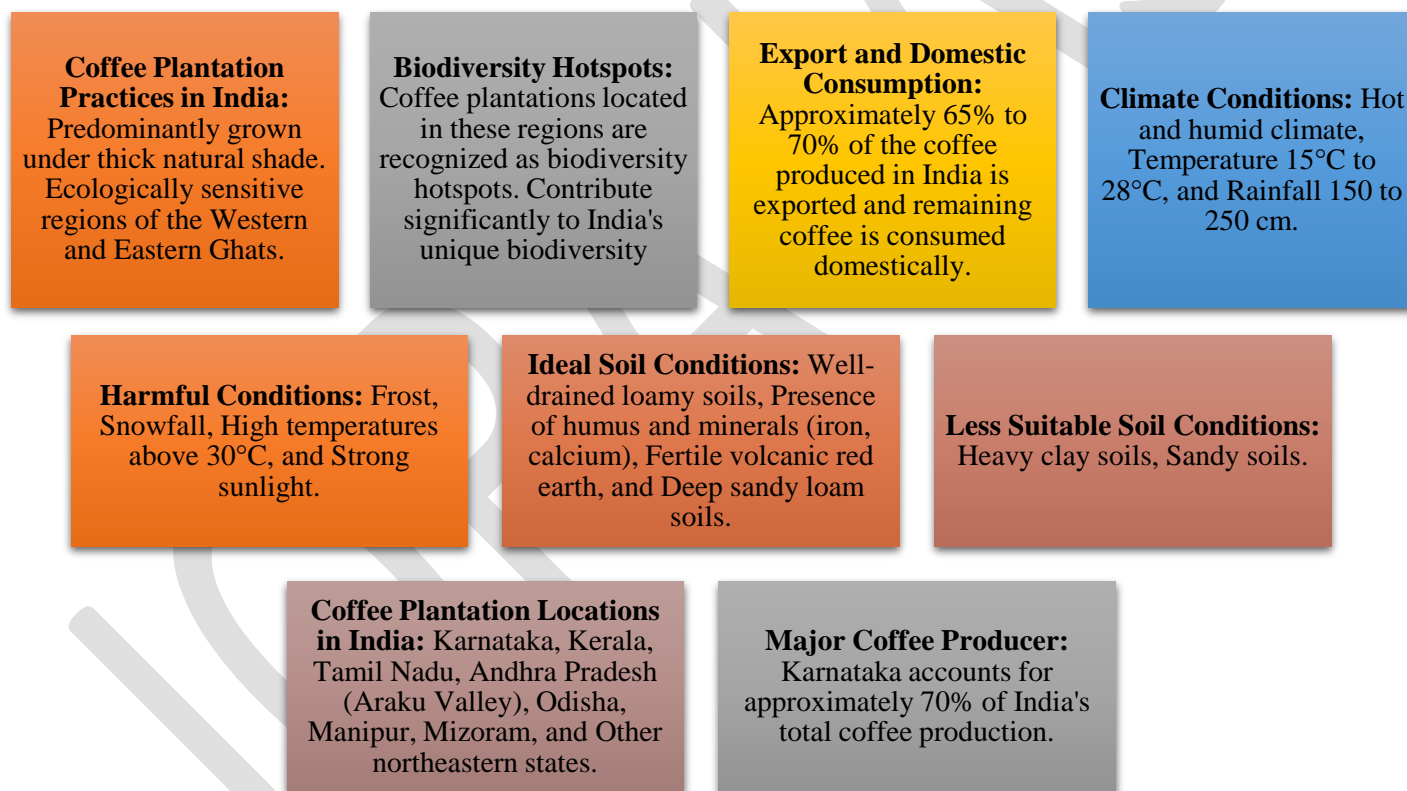
**Context:** India's coffee crop witnessed a 20% drop in yield so far this year due to deficit rainfall.

- "The blossom showers were delayed. In Karnataka... we got only 50% of the expected rains.
- There is already a 20-25% drop in yield. If there are rains now, we will get the remaining 70-75% yield," Mr. Jagadeesha added.

Indian coffee has fetched good prices lately owing to supply disruptions from Brazil, the world's largest coffee producer, he said.

### Coffee Cultivation

In May 2023, the Statista site stated that India is the sixth largest producer of coffee in the world, after Brazil (largest producer of coffee), Vietnam, Colombia, Indonesia, Ethiopia and Honduras.



## Polity

### India, Bharat and a Host of Implications

**Context:** The tradition of using India in English and Bharat in Hindi is wise and constitutionally correct; why change it?

- There are historical, ideological, constitutional and international implications associated with the words Bharat and India.

- A political dimension has been added to these names/words arising out of some Opposition parties coming together under the banner and acronym INDIA (for the ‘Indian National Developmental Inclusive Alliance’).
- For these parties in the Opposition, the unprecedented use of ‘President of Bharat’ instead of ‘President of India’ (as seen in an invitation card by the President to the heads of States and governments and Chief Ministers for an official banquet on the occasion of the G-20 summit) is on account of the Narendra Modi government’s concern that ‘INDIA’ may become politically potent.

## History

A brief look at the controversy raised by the Muslim League over the name India in 1947 would be in order. The transfer of power from the British to Indian hands in 1947 was through the British Parliament’s Indian Independence Act of 1947. It created two dominions — India and Pakistan — and released the Princely States from British paramountcy, thereby, technically making them independent and sovereign. At the same time, the British advised the Princely states to join one of the two dominions. Most did so before August 15, 1947. Thus, two dominions came into being in what was British India and the Princely states in the sub-continent.

- Pakistani leaders favoured that India should be named either Hindustan or Bharat.
  - They argued that two ‘successor’ states had emerged from the dissolution of the British Indian empire: Pakistan and Hindustan or Bharat.
- India’s position was that it was the successor state to British India, in terms of international law, and that Pakistan had seceded from India.
- Hence, while India retained its international personality, including its membership of the United Nations (UN), Pakistan, as a new state created through secession, would have to take steps to acquire an international personality.
- The matter was finally decided in India’s favour, and Pakistan was compelled to take steps to establish its international status, including applying for a membership of the UN, which, incidentally, Afghanistan opposed.
- India retained the name ‘India’ in all international and multilateral fora. Thus, the country’s international personality was and continues to be denoted by the word India.
- Generally, whenever the English language is used in international, multilateral or bilateral settings, the word India is used.

It is true that the words India and its variants such as Hind in Arabic are of foreign origin. It is generally believed that these were used by foreigners to denote the land south and east of the Indus or Sindhu river.

- During Afghan and Mughal rule, the northern areas of the Indian subcontinent were largely referred to as Hindustan, and later the Europeans, especially the British, roughly referred to not only the northern region but also to all the subcontinent as India.
- However, for them, it was a geographical expression. The rise of a consciousness that all the people living in the Indian subcontinent constituted a single nation was a product of the Indian Renaissance; one of its streams sought ancient roots for Indian nationalism.
- That gave rise to the idea, especially among sections particularly devoted to the revival of India’s ancient civilisational past, that it was unacceptable that the country and nation should carry a name given by foreigners. For them the preferred word was Bharat with its variations in different languages.
- For others such as Netaji Subhas Chandra Bose, a syncretic word, perhaps acceptable to most people, including those believing in different faiths, was more useful. That word was Hind.
  - It is used even today and the emotive expression “Jai Hind” is used by public personalities and the highest office holders.
  - In her speech on Independence Day this year, the President of India, Droupadi Murmu, concluded by saying “Jai Hind, Jai Bharat”.



- The latest example is the Joint Statement issued on August 25 on Prime Minister Modi's visit to Greece.
  - It is entitled 'India-Greece Joint Statement'. The last sentence of this document says "Prime Minister Narendra Modi extended an invitation to Prime Minister Mitsotakis to visit India".
- In letters of credence in English given by the President of India to Ambassadors-designate, under the lion's emblem the words (in Hindi), Rashtrapati, Bharat Gantantra are written and under them the words President, Republic of India written in English. Thus, in Hindi, Bharat is used while in English it is India.

### Under the 58th Amendment

For an authoritative background of the English and Hindi versions, it is best to turn to the 58th Amendment of the Constitution done in 1987.

- Its 'Statement of Objects and Reasons' mentions that "The Constitution of India was adopted by the Constituent Assembly in English.
- A Hindi translation of the Constitution, signed by the members of the Constituent Assembly, was also published in 1950 under the authority of the President of the Constituent Assembly in accordance with a resolution adopted by that Assembly".
  - The 58th Amendment empowered the President to have published under his authority the authoritative text 'in the Hindi language' of the Constitution which could be used in the legal process too. Thus, the Hindi text of the Constitution published by the government following the amendment is 'authoritative'.
- The English language version of the Constitution is entitled "Constitution of India". Its Article 1(1) is "India, that is Bharat, shall be a Union of States". The primacy in this formulation is given to the word India.
- The Hindi version is titled 'Bharat ka Samvidhan'. Article 1(1) in the Hindi version reads "Bharat artharth India, rajyon ka sangh hoga". The word "artharth" means "that is".
  - Clearly, in the Hindi version, primacy is given to the word Bharat.
- The logic of the formulations has led to the practice of using the word India in the English language and Bharat in Hindi.
- That practice has prevailed in internal documents as well as international documents which are generally in English. Thus, the Gazette published in English is called the 'Gazette of India', and in Hindi it is 'Bharat ka Rajpatra'.

### The Risk Of Alienation

It is now clear that the Sangh Parivar and the Narendra Modi government wish to use the word, Bharat. Their preference for Bharat instead of the word India is clear.

- The use of the formulation 'President of Bharat' in the G-20 invitation is a giveaway.
- They may also begin to use 'Bharat' in the English language in the government's internal documents.
- The problem is that they cannot do so internationally unless they officially change the country's name to Bharat and drop India.
- By doing so, they may alienate parts of the country which prefer India to Bharat.

### Section 69 of the Proposed Bharatiya Nyaya Sanhita (BNS), 2023

**Context:** Section 69 of the proposed Bharatiya Nyaya Sanhita (BNS), 2023, identifies 'sexual intercourse on false promise of marriage' as an offence.

- If a man promises to marry a woman but never intends to, and still has 'consensual' sex with her, it will amount to a criminal offence under Section 69 of the proposed Bharatiya Nyaya Sanhita (BNS), 2023.
- The Bill, which seeks to replace the Indian Penal Code (IPC), 1860, identifies 'sexual intercourse on false promise of marriage' as an offence.
- At present, the offence is not carved out separately in the IPC, but courts have dealt with similar cases through other provisions within the criminal law framework.

## What does Section 69 say?

Chapter 5 of the Bill, titled “Offences against woman and children” describes ‘sexual intercourse by employing deceitful means etc.’

- Section 69 creates two violations: one by deceitful means, and one by a ‘false promise to marry.’
  - Deceitful means will include the “false promise of employment or promotion, inducement or marrying after suppressing identity.”
  - The false promise to marry will be attracted only when a man makes a promise to marry a woman, with the intention of breaking it, for the purpose of getting her consent and sexually exploiting her.
  - Both offences will attract a penalty of up to ten years of imprisonment.

While introducing the Bills, Home Minister Amit Shah said, “crime against women and many social problems faced by them have been addressed in this Bill. For the first time, intercourse with women under the false promise of marriage, employment, promotion and false identity will amount to a crime.”

## How has the IPC dealt with cases of ‘false promise to marry’?

Previously, these cases were dealt with through a joint reading of Sections 375 and 90 of the IPC.

- **Section 375**, which defines rape, further defines consent as “an unequivocal voluntary agreement when the woman by words, gestures or any form of verbal or non-verbal communication, communicates a willingness to participate in the specific sexual act.”
  - Explanation 2 of Section 375 also lists seven types of consent which would amount to rape if violated; these include if a man has sexual intercourse with a woman “without her consent,” or consent taken through fear of death, hurt or intoxication.
  - In 2021, the Supreme Court reiterated that under Section 375, a woman’s consent “must involve an active and reasoned deliberation towards the proposed act”.
- **Section 90** says consent, given under “fear of injury” or “misconception of fact,” cannot be considered as consent.
  - Cases of false promise to marry are dealt with under the latter, where a ‘misconception’ is used to assess the validity of consent.
- Legal scholars have questioned the use of Section 90 to interpret consent, given that Section 375 already lays out a definition.

## THE GIST

- Section 69 of the proposed Bharatiya Nyaya Sanhita (BNS), 2023, identifies ‘sexual intercourse on false promise of marriage’ as an offence.
- Section 69 creates two violations: one by deceitful means, and one by a ‘false promise to marry.’ Deceitful means will include the “false promise of employment or promotion, inducement or marrying after suppressing identity.” The false promise to marry will be attracted only when a man makes a promise to marry a woman, with the intention of breaking it, for the purpose of getting her consent and sexually exploiting her.
- In 2016, a quarter of the total rape cases registered in Delhi pertained to sex under ‘false promise of marriage’, as per Delhi Police data. The National Crime Records Bureau in the same year recorded 10,068 similar cases of rape by “known persons on a promise to marry the victim”

In 2016, a quarter of the total rape cases registered in Delhi pertained to sex under ‘false promise of marriage’, as per Delhi Police data. The National Crime Records Bureau in the same year recorded 10,068 similar cases of rape by “known persons on a promise to marry the victim” (the number was 7,655 in 2015).

- Researchers explained that these cases happen in one of two ways — when rape is committed, and the promise of marriage is used to silence the victim, or where the promise is made to ‘convince’ the person into entering a sexual relationship.
- Activists note that such cases play out mostly among socially disadvantaged women, given that legal remedy cannot be easily sought.

## Difference between ‘false promise’ and ‘breach of promise’?

The law has distinguished between a ‘false promise’ and a ‘breach of promise’ on the basis of proving if the man intended to marry at the time of engaging in sex. Courts have previously recognised the ambiguity in determining consent and intention in such cases.

- The SC observed that a false promise is “given on the understanding by its maker that it will be broken,” but a breach of promise is “made in good faith but subsequently not fulfilled.”
- Put simply, if a man can prove he intended to marry the woman before he entered into a sexual relationship, but later is unable to do so due to whatever reason, it is not legally punishable.
- The Supreme Court in 2022 held that consensual sex on a ‘genuine’ promise of marriage does not constitute rape.

## How is intention to marry proved?

Cases of ‘false promise of marriage’ look at two central issues — how consent is obtained (through deceitful means, or by misconception), and whether the man ever intended to marry the woman.

Activists argue that ‘circumstances’ are shorthand for social norms that uphold the status quo, reinforcing gender roles, patriarchy and caste lines.

- Moreover, Section 69 in the BNS codifies the offence instead of creating a new one. Thus, in its present form, the Bill doesn’t dissolve the confused distinction between ‘false promise’ and ‘breach of promise,’ and overlooks the inherent limitations in criminal law which feminist and anti-caste activists have pointed out.

## Post Office Bill (2023)

**Context:** The new Post Office Bill (2023) introduced in the Rajya Sabha, is to replace the Indian Post Office Act (1898) in the light of the changing role of post offices where its “network has become a vehicle for delivery of a variety of citizen centric services”.

### Key Highlights

- While the 1898 Act had focused only on mail services, the new Bill authorises the Director General of Postal Services to make regulations related to activities necessary for providing various such other services as the central government may prescribe, and to fix charges of them.
  - This provision is important as parliamentary approval will not be a prerequisite for revision of charges for any service offered by post offices, including traditional mail services.
  - This aspect in the new Bill gives the postal department the requisite flexibility in deciding the prices of its services in a fiercely competitive industry and help in responding quickly to market demands.
- Also, various initiatives of India Post to dispense citizen-centric services will now be based on a strong legal framework.
- The new Bill authorises the central government which “may, by notification, empower any officer to cause any item in course of transmission by the Post Office to be intercepted, opened or detained in the interest of the security of the State, friendly relations with foreign states, public order, emergency, or public safety or upon the occurrence of any contravention of any of the provisions of this Act....”
  - Even in the existing Act (1898), there was provision for the Postal Department to open and destroy any postal article containing “explosive dangerous, filthy, noxious or deleterious substance” (Section 19, 19A, 23(3)(a) refer).
  - The provision contained in the new Bill is more generic in nature and will arrest possibilities of smuggling and unlawful transmission of drugs and other contraband goods through postal parcels. There is no similar legislation for courier firms.

- India Post has a share of less than 15% of the market in the courier/ express/parcels (CEP) industry, and so the effectiveness of the provision to intercept, open or detain any item in the course of postal transmission on the grounds of national security and public service has its limitations.
- The new Bill provides the central government “standards for addressing on the items, address identifiers and usage of post codes”.
  - This provision will have a far-reaching impact as the physical address may be replaced by a digital code using geo-spatial coordinates to identify a specific premise.
  - Digital addressing, though a futuristic concept, may ease the process of sorting and facilitate accurate delivery of mails and parcels.
  - This provision may even facilitate the delivery of parcels by drone, as is being experimented in some countries. However, there is a long way to go.
- The most important aspect of the Bill is to drop the hitherto existing provision in clause 4 of the 1898 Act: “Central Government shall have the exclusive privilege of conveying by post, from one place to another, all letters ... and shall also have the exclusive privilege of performing all the incidental services of receiving, collecting, sending, despatching and delivering all letters....”
  - This provision lost its relevance ever since couriers were allowed to operate in India since the 1980s.
  - This happened because the definition of ‘letter’ was not spelt out anywhere in the Act or in subsequent Indian Post Office Rules, 1933.
  - There is a huge grey area overlapping the concepts of ‘letter’ and ‘document’.
  - In the eyes of law, what the couriers hitherto delivered were ‘documents’ and ‘parcels’, not the ‘letters’.
  - Once the new Bill becomes an Act, all these legal debates as to what constituted a letter and what did not, will die down automatically.

## Draft Patent Amendment Rules Undermine Pre-Grant Opposition

**Context:** The Patents Act explicitly permits anyone to file a pre-grant opposition; but as per the draft patent amendment rules, the maintainability of persons or civil society organisations filing pre-grant oppositions will be decided by the controller.

### Key Highlights

- The draft patent amendment rules made public this year could hugely **benefit big pharma but turn out to be disastrous for patients in India** and in countries in the global South, which rely on generic drugs manufactured in India, in accessing affordable drugs and vaccines.
- The draft rules released by the Department for Promotion of Industry and Internal Trade for stakeholder comments have made a few significant changes that will **create needless hurdles in pre-grant opposition of patents.**

### Body blow to pre-grant opposition

The draft patent amendment rules give the controller the power to determine the maintainability of representation of those filing pre-grant oppositions



**Worrying:** The draft amendment rules create needless hurdles. SPECIAL ARRANGEMENT

■ Currently, the Patents Act explicitly permits “any person” to file a pre-grant opposition without the discretion of the Controller. But as per the draft rules, the Controller will decide maintainability

■ Big pharma had questioned the maintainability of petitioners opposing patents, leading to delays. The same can happen with pre-grant opposition

■ The present amendments present the most significant challenge to the Indian Patent System since 2005

■ Pharma companies are averse to pre-grant opposition. The draft patent amendment rules help them by

making the process difficult

■ There are innumerable instances when patient groups and civil society organisations have filed pre-grant opposition, leading to rejection of patent extension

■ The latest pre-grant opposition ruling that was not in favour of a pharma company is the Bedaquiline drug for MDR-TB patients



- The **most important change** is about granting the controller the power to determine the maintainability of representation by individuals or civil society organisations to file pre-grant oppositions.
  - Pre-grant opposition is an important public health safeguard against patent ever-greening and unmerited monopolies.
  - It is one sure way to ensure that quality-assured and affordable generics remain accessible.
- But the amendment in the draft patent rules threatens the safeguard against extending the duration of patent protection on completely frivolous grounds.

### What is the Issue?

Big pharma has lobbied for years to remove essential safeguards from India's patent laws. "The purpose of the draft amendment rules to pre-grant opposition is to knock out people whom they don't want [to challenge the granting of patents]."

- This is wrong. How will the controller decide the maintainability and on what basis? There is no guiding factor. This will create more problems.
- The [government] is favouring the companies, and pharma companies don't want pre-grant opposition. But since they can't do away with that, they are making the process difficult.
  - They are introducing the maintainability criterion but there should be a rational basis. If the pre-grant opposition has grounds of pre-grant, then how is it not maintainable? The controller will decide on an arbitrary basis [about maintainability], which is wrong.
- Bringing in maintainability of representation in the pre-grant opposition will be the first major amendment to the Indian Patent Act.
  - The provision of pre-grant opposition in the India Patent Act is unique in the world, the reason why big pharma has been opposed to it as they want continued control over the market and charge high prices for their products.
  - Any weakening of the provision will be disastrous for patients as they will not be able to afford the high price of medicines and the generic drug industry will be affected too.

## Governance & Social Justice

### One Nation, One Election

**Context:** The Central government has set up a panel headed by former President Ram Nath Kovind to explore the feasibility of the 'one nation, one election' (ONOE) plan.

#### What Is The ONOE Plan?

The idea of ONOE centres around the concept of synchronising the timing of Lok Sabha and State Assembly elections across all States to reduce the frequency of polls throughout the country.

- After the enforcement of the Constitution on January 26, 1950, the first-ever general elections to Lok Sabha and all State Assemblies were conducted simultaneously in 1951-1952.
- The practice continued into the three subsequent Lok Sabha elections until 1967, after which it was disrupted.
- The cycle was first broken in 1959 after the Centre invoked Article 356 (failure of constitutional machinery) of the Constitution to dismiss the then-Kerala government.

#### THE GIST

- On September 1, the Central government set up a panel to explore the feasibility of the 'one nation, one election' (ONOE) plan.
- The idea of ONOE centres around the concept of synchronising the timing of Lok Sabha and State Assembly elections across all States to reduce the frequency of polls throughout the country.
- The idea of ONOE does not square with the concept of 'federalism' as it is established on the notion that the entire nation is "one" contradicting the content of Article 1 which envisages India as a "Union of States".

- Subsequently, due to defections and counter-defections between parties, several Legislative Assemblies dissolved post-1960, which eventually led to separate polls for Lok Sabha and State Assemblies.
- Currently, the assembly polls in the States of Arunachal Pradesh, Sikkim, Andhra Pradesh and Odisha are held together with the Lok Sabha elections.

### What Do Reports Say About ONOE?

In August 2018, the Law Commission of India (LCI), chaired by Justice B. S. Chauhan, released a draft report on simultaneous elections, wherein the constitutional and legal questions related to the issue were analysed.

- The Commission submitted that simultaneous elections are not feasible within the existing framework of the Constitution.
- It said that the Constitution, the Representation of the People's Act 1951 and the Rules of Procedure of Lok Sabha and State Assemblies would require appropriate amendments to conduct simultaneous polls.
- The commission also recommended it receive ratification from at least 50% of the States.
- However, with respect to the advantages of holding simultaneous polls, the commission said that ONOE will lead to the saving of public money, reducing the strain on the administrative setup and security forces, timely implementation of government policies, and administrative focus on development activities rather than electioneering.
- Way back in 1999, the LCI headed by Justice B. P. Jeevan Reddy also advocated for simultaneous elections.

### What Are The Concerns?

#### Feasibility

#### ONOE does not square with the concept of 'federalism'

#### Prevents the blending of issues

- **Feasibility:** The foremost concern is with regard to its feasibility. Article 83(2) and 172 of the Constitution stipulates that the tenure of Lok Sabha and State Assemblies respectively will last for five years unless dissolved earlier and there can be circumstances, as in Article 356, wherein assemblies can be dissolved earlier.
  - Therefore, the ONOE plan raises serious questions — what would happen if the Central or State government collapses mid-tenure?
  - Would elections be held again in every State or will the President's rule be imposed?
  - Amending the Constitution for such a significant change would not only necessitate extensive consideration of various situations and provisions but would also set a concerning precedent for more constitutional amendments.
- Second, the idea of **ONOE does not square with the concept of 'federalism'** as it is established on the notion that the entire nation is "one" contradicting the content of Article 1 which envisages India as a "Union of States".
- Third, the present form of recurrent elections can be seen as beneficial in a democracy as it allows voters to have their voices heard more frequently. As the underlying issues of national and State polls are different, the **present framework prevents the blending of issues, ensuring greater accountability.**

### Centre's DIKSHA E-Education Platform to Offer AI Help

**Context:** The **National e-Governance Division (NeGD)** of the Ministry of Electronics and Information Technology (MeitY) is set to integrate **Personalised Adaptive Learning (PAL)** into its existing **Digital Infrastructure for Knowledge Sharing (DIKSHA)** platform.

- The PAL's software-based approach is expected to allow each student to have an individualised learning experience over the course of the curriculum based on their unique needs and abilities.

- Apart from PAL, MeitY is also considering the introduction of voice commands in DIKSHA 2.0 as a part of AI-enabled learning. “Just like ChatGPT, the student can access summaries of chapters by giving voice commands and so on,” the MeitY official said.

### How The System Will Work?

The NCERT has sought the MeitY’s expertise in facilitating the PAL’s integration into DIKSHA.

- In an example of how it works, if a student of Class 9 is learning the Pythagoras theorem and makes a calculation mistake, the AI learning system flags it and loops the student back to a basic video of how to make the calculation.

In some States, private players are already administering the PAL, which works on AI or Artificial Intelligence, but budget constraints have been an obstacle.

- Building the PAL is a massive exercise. Content from across subjects will have to be categorised and different chunks will have to be tagged. New content may also have to be created.
- Tagging of content is important to create learning loops, where, say, a student faces difficulty at a certain tag, then supportive material offering an explanation of the tagged concept can be provided.
- The official added that school students found chemistry, mathematics, and physics for Classes 9 to 12 to be the most difficult subjects, and the intention is to start building the PAL for these classes to begin with.

With nearly 35 lakh students dropping out in Class 10 and ineligible to qualify for Class 11 every year, the Education Ministry wants to adopt digital learning with a focus on improving learning outcomes and school retention.

### Experiments in States

- **Andhra Pradesh** has signed contracts with three privately owned edtech companies — Reliance Jio Platform’s start-up Embibe, ConveGenius, and Mindspark — for training teachers to use IT applications in the classroom, provide analytics for remedial learning, and help students improve their conceptual understanding. “We are currently implementing the PAL in 20 schools of Prakasam district for Classes 6 to 9,” a senior Jio Platforms official said.
- “Building the core tech platform may cost close to ₹2-3 crore, and then developing and tagging of content will cost another ₹20 crore.
  - The streaming costs incurred for data stored in cloud-based servers is recurring and depends on the usage.
  - If, say, 40 crore school-going students in India stream data for two hours in a day or a week, the costs will run into several hundred crores,” the MeitY official added.
- In **Assam**, for instance, the PAL was adapted in 200 schools from Classes 6 to 10.
  - Each school had nearly 200 students, and Embibe provided 10 devices per school.
  - “After implementing the project for two years, Assam discontinued it, citing lack of funds,” the Jio official said.
- Similarly, in **Haryana**, after floating the tender, the State government said Embibe’s quote for streaming content was too high, and the process of adopting PAL came to a standstill.
  - “For implementing the PAL project in the whole State, we had estimated a yearly streaming cost of ₹27 crore, considering on an average one child in a week sees four videos of 15 minutes on the platform.

### About DIKSHA

- DIKSHA, which comes under the Education Ministry, provides e-content for schools by an online portal and a mobile application.
- It has embedded assistive technologies for learners with visual or hearing challenges. However, DIKSHA is a static content repository.
- DIKSHA features digitised National Council of Educational Research and Training (NCERT) textbooks used by national and State Boards.
- Apart from this, DIKSHA hosts 2.43 lakh contributions by 11,624 academics by way of teaching videos, explainers, and practice questions. Currently, all these contributions are scattered across the platform.

- This cost was felt to be very high by the government,” the Jio official said.
- Poll-bound State **Madhya Pradesh**, too, is mulling over introducing PAL for students from Classes 6 to 10 on its flagship State education portal, the CM-RISE.

## Education Ministry Asks States to Bring All Data under One Platform

**Context:** Vidya Samiksha Kendras are repositories which will have data from all schemes run by the Ministry; cross analytics of schemes such as PM-POSHAN, UDISE+ and so on can help assess challenges faced by students and teachers in real time.

- Under the National Digital Education Architecture (NDEAR), the Education Ministry is pushing States to open Vidya Samiksha Kendras (VSKs), which are data repositories that will have data from all schemes run by the Ministry.
- This will include

Regularly updated data from the PM-POSHAN mid-day meal programmes

Teacher training data from the National Initiative for School Heads’ and Teachers’ Holistic Advancement portal

Textbook content from the Digital Infrastructure for Knowledge Sharing

School dropout and attendance-related data on the Unified District Information System for Education (UDISE+)

Students’ learning outcomes from the National Achievement Survey

Performance Grading Index which evaluates school education system at the State and Union Territory (UT) level

- Currently, at the Central level, a VSK is housed in the Central Institute of Educational Technology building on the National Council for Educational Research and Training (NCERT) campus, with multinational IT company Ernst and Young (EY) managing its operations.
  - It is an open-source platform run on C-Qube software.
- EkStep Foundation, a non-profit organisation co-founded by former Chairman of Unique Identification Authority of India Nandan Nilekani, is on board in an advisory role for implementing the VSK project, Ministry officials said.
- “Currently the data are fed on the platform manually, and available in downloadable Excel format for anyone to access and use, to visualise and analyse trends,” said a senior NCERT official working closely on the project.
  - “We will shift from manual mode to automatic mode once the Application Programming Interface (API) integration process is complete.
  - This means multiple platforms at Centre, State and district levels can communicate with each other using requests and responses to seamlessly integrate data at all levels on the platforms,” the official added.
  - This is in line with the National Education Policy (NEP)-2020 talking about developing operational standards for making data open source.
- “The Centre has allocated funds ranging from ₹2 crore to ₹5 crore to each State for adopting and establishing VSKs that include pre-configured open-source hardware and software as well as hiring human resources.
- States like Gujarat, Maharashtra, Odisha, and Jharkhand have already begun the process of setting up the tech platform,” the NCERT official said.



## Importance Of Bring All Data Under One Platform

- The idea of bringing all data on one platform is to employ analytics for correlation.
  - “Currently we have a sea of data from different schemes that cater to 15 lakh schools, 96 lakh teachers, and 26 crore students, but it is irrelevant if it cannot be correlated or analysed,” the NCERT official said.
- For instance, in certain schools, Gujarat has employed biometrics to capture attendance patterns of students and teachers.
  - “The attendance gets recorded and reported at State level.
  - This can be mapped with trends of student dropout data to analyse any correlation between both data sets,” another official from the Ministry who is working on the project said.
- Another instance would be correlating data from the mid-day meal scheme, or PM-POSHAN, with attendance.
  - “This will give us insight on whether in those demographical areas where mid-day meals are provided regularly, students are more incentivised to attend schools,” the official said.
- The idea of developing VSKs is also to map the school location layer with the population layer to assess the Gross Access Ratio.
  - This can help plan for new schools, or for industry clusters to understand skilling requirements of the area, and help plan higher educational institutions based on demand and future scenarios.

## What Should Be Done With Electronic Waste?

**Context:** The Indian Cellular and Electronics Association (ICEA) released a report on ‘**Pathways to Circular Economy in Indian Electronics Sector,**’ following a government effort with NITI Aayog to explore opportunities to harness e-waste.

- The report talks about changing the outlook on e-waste management to build a system where discarded electronics can have a new life, either by themselves, or by reintroducing components and precious metals into new hardware.
- There could be an additional \$7 billion market opportunity in harnessing e-waste, the report said.
- Encouraging repair and making products last longer will reduce the burden of electronic waste.

## Does India Have E-Waste Management?

- E-waste management is largely informal in India, as in the case of recycling.
- “Roughly 90% of collection and 70% of the recycling are managed by a very competitive informal sector,” the ICEA report says.
- The informal sector is good at salvaging older devices for parts and profiting from repairs with them.
- Then there are almost industrial hubs like Moradabad, where printed circuit boards (PCBs) arrive in the tonnes to have gold and silver melted out of them and sold.
- The Union Government notified the **E-Waste (Management) Rules, 2022** last November in order to digitise the process and provide more visibility to the movement of e-waste in the economy.
- The level of e-waste may grow, too, as phones get cheaper and people use them more on the back of cheaper data plans. “There has been a significant increase” in people damaging their phones (as opposed to the devices simply getting too old to keep working).
- The informal sector relies on a number of tools and techniques to stay competitive.
  - For instance, the report’s authors speak of ‘**cannibalisation,**’ a euphemism for repair shops buying whole devices and breaking them down to serve as spare parts for repair.
  - As tariffs for finished products are sometimes lower than they are for parts, this works out in the repair shop’s favour.

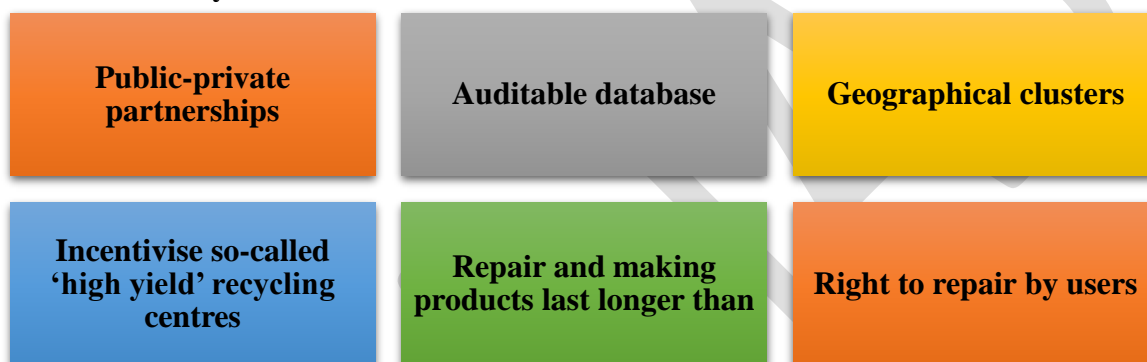


## Why Is A Circular Economy Important?

- Demand for electronics is growing across all price segments, even as the production of these devices entails the use of scarce elements and high emissions.
- Instead of merely salvaging these parts, a circular economy seeks to bring them back into the electronics ecosystem.
- A senior director at the IT Ministry who has focused on e-waste related issues, said that there needed to be a policy push to encourage manufacturers to reuse old components.
- “By 2019, China ensured that 5% of their secondary raw material went into manufacturing of new products. “By 2030, they are targeting 35%.”

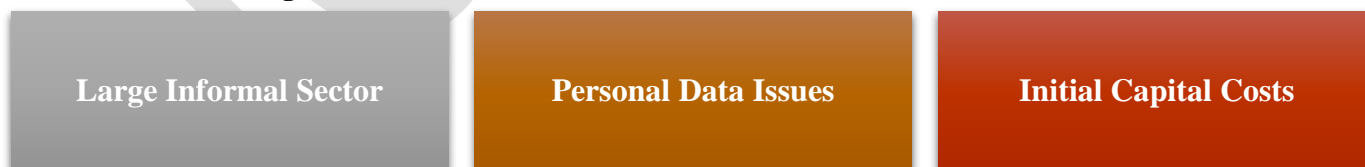
“Every material as it’s produced on earth is a resource and not waste,” Alkesh Kumar Sharma, until recently the Union IT Secretary, said during the ICEA report’s launch. “It’s wealth. We have to create more wealth.”

## How Can E-Waste Be Recycled?



- The ICEA report suggests **public-private partnerships** to distribute the costs of setting up a sprawling of “reverse supply chain,” an expensive prospect that envisages collecting devices from users, wiping them clean of personal data, and passing them along for further processing and recycling.
- It also suggests **launching an auditable database** of materials collected through this process, and creating **geographical clusters** where these devices come together and are broken apart.
- A key recommendation is to **incentivise so-called ‘high yield’ recycling centres**.
  - Facilities that recycle are generally not equipped to extract the full potential value of the products they handle, for instance extracting minute but precious amounts of rare earth metals in semiconductors.
  - The IT Ministry launched a scheme last April to cover 25% of the capital expenditure on such facilities.
- Simply encouraging **repair and making products last longer** — perhaps by supporting a **right to repair by users** — is also a policy recommendation that may reduce the environmental burden of electronic waste.

## What Are The Challenges?



- Beyond the large informal sector that is hard to track or hold to environmental norms, there are basic challenges.
  - For instance, a whopping 200 million devices are estimated to be lying at consumers’ homes, who don’t hand them in for recycling after they stop using them.
- Many people are concerned about what may happen to the personal data on their devices if they hand them in for recycling.

- Building recycling plants on a large scale also requires more than the **initial capital costs**.

Making a circular economy out of e-waste is tempting, especially given the unpredictable supply chains for electronics components. **Extracting the full value of electronics is capital intensive, and will require better clustering of materials, and a viable business model.** The challenge is to be able to replicate the success of the informal sector in a formalised and reliable way.

## Ayushman Bhav Health Scheme

**Context:** With the Ayushman Bhav campaign, which will be inaugurated by President Droupadi Murmu virtually from the Rashtrapati Bhavan, the Union Health Ministry aims to provide healthcare services to every village and town in the country.

### Key Highlights

- The campaign, initiated by the Health Ministry, is aimed at providing a comprehensive nationwide healthcare initiative to saturate coverage of healthcare services, reaching every village and town.
- The Ministry will also launch **Ayushman Apke Dwar 3.0 programme**, which will allow eligible beneficiaries enrolled under the PM-JAY scheme to download their health card on their own.
- “This historic launch of the campaign and the portal marked a significant leap towards achieving **Universal Health Coverage (UHC)** and ensuring healthcare for all as it strives to further consolidate the accessibility and affordability of healthcare services particularly for the underserved,” the President said.
- The **multi-ministerial approach** adopted by the Ayushman Bhav campaign is to achieve the ambitious goal of **delivering healthcare services to the last mile of India**.
- Underscoring the **philosophy of antyodaya**, which means good health for all and leaving no one behind, Ms. Murmu praised the **involvement and support of local governance** in this endeavour and stated that gram panchayats who successfully achieved their goals would be declared as **Ayushman gram panchayats**.
- Highlighting the role of the government and its commitment to achieve the set sustainable development goals in due time, Ms. Murmu also commended the **Seva Pakhwada initiative**, which will run from September 17 to October 2, and which strives to ensure that every individual receives essential health services.
- The President also applauded the goals of Ayushman Bhav to further facilitate access of Ayushman cards, generate ABHA IDs, and raise awareness of health schemes and disease conditions, such as non-communicable diseases, tuberculosis, and sickle cell disease.

### How Does Ayushman Bhava Transform India's Healthcare Landscape?

#### Universal Health Coverage (UHC) Goal

- The campaign adopts a collaborative, multi-ministerial approach.
- Ayushman Bhava aligns with the motto of "Sabka Saath Sabka Vikas" (Together with All, Development for All).
- This philosophy underscores inclusivity, leaving no one behind in healthcare access.

#### Three Key Components of Ayushman Bhava

- Ayushman - Apke Dwar (AAD) 3.0: AAD 3.0 will enable eligible beneficiaries to create Ayushman cards for himself/herself/any of the family members.
- This streamlines healthcare access and benefits.

#### Ayushman Melas at HWCs and CHCs

- Health Melas and Medical Camps are established weekly at Health and Wellness Centres (HWCs) and Community Health Clinics (CHCs).
- They prioritize the delivery of super-specialty healthcare services, including non-communicable disease screenings, tele-consultations, free medicines, and diagnostics.

## Ayushman Sabhas

- Ayushman Sabha is a community-level assembly, led by the Village Health and Sanitation Committee (VHSNC) in rural areas or the Ward Committee/Municipal Advisory Committee (MAS) in urban wards.
- Its primary mission is to ensure comprehensive health coverage and optimal healthcare service delivery.

## Ayushman Gram Panchayats

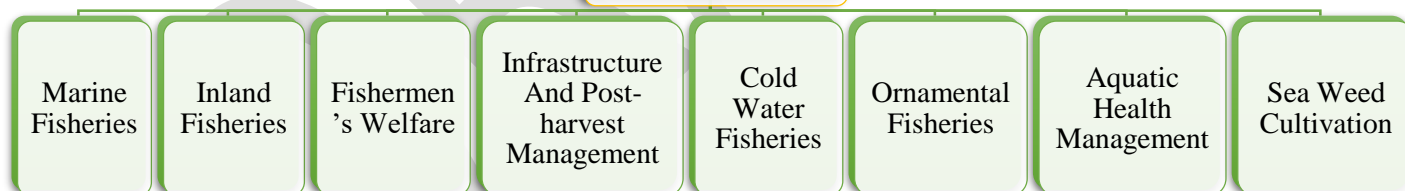
- Gram Panchayats that successfully meet their healthcare objectives will attain the status of Ayushman Gram Panchayats.
- This encourages local participation and dedication.

## PMMSY: Bridging Gaps in the Fisheries Sector

**Context:** In 2020, when the Indian fisheries sector was preparing for a big leap due to the reforms initiated by Prime Minister, who understood the immense potential of the Blue Economy, and initiated systemic development of the sector, including carving out a Fisheries Ministry, the COVID-19 pandemic threatened to halt the progress.

- However, the PM turned this crisis into an opportunity by announcing the Atmanirbhar Bharat package for the fisheries sector.
- A significant sum of ₹20,050 crore was allocated for the **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** in 2020, committing the biggest-ever investment in the history of Indian fisheries.
- The fresh chunk of investment and focused attention, the PMMSY began to address critical gaps in the fisheries value chain from **fish production, productivity and quality to technology, post-harvest infrastructure and marketing.**

### Key Strategic Priority Areas



### Key Highlights

As it completes three years, the PMMSY has successfully pulled inland fisheries from traditional waters, and infused technology, inspiring many talented and enterprising youth to venture into fisheries.

- Young woman entrepreneurs from the **Kashmir Valley** are efficiently rearing **cold water rainbow trout** using a recirculatory aquaculture system.
- Aquapreneurs in **Nellore** have become **successful exporters**, thanks to biofloc cultivated shrimps.
- The PMMSY has also helped to expand fisheries to non-traditional areas. Almost 20,000 hectares of fresh pond area is being brought under inland aquaculture, and even in **landlocked Haryana and Rajasthan**, farmers are **successfully converting their saline waste lands into wealth lands** through aquaculture.
- The PMMSY has empowered fisher women to explore remunerative options and alternative livelihoods, such as **ornamental fisheries, pearl culture, and seaweed cultivation.**



- A recently launched ₹127-crore **Seaweed Park in Tamil Nadu's Ramanathapuram district** is a truly pioneering step.
- The PMMSY has enabled **900 fish feed plants and 755 hatcheries**, and is supporting research and genetic improvement of Indian **White Shrimp** at Chennai, the development of specific pathogen-free brood stock, and domestication of **tiger shrimp** in the Andaman Islands.
- **India** is now counted among the **world's top three countries** in fish and aquaculture production, and is also the biggest shrimp exporter in the world.
- The government has recently announced investment of ₹6,000 crore as a sub scheme under the PMMSY, taking total investment into fisheries to more than ₹38,500 crore over the last nine years.

### Blue Economy

Blue economy refers to the sustainable use of marine resources for exploration, economic growth, improved livelihoods, and transport while preserving the health of marine and coastal ecosystems.

- In India, the blue economy encompasses a wide range of sectors, including shipping, tourism, fisheries, and offshore oil and gas exploration.
- 80% of world trade happens using the seas, 40% of the world's population live near coastal areas, and more than 3 billion people access the oceans for their livelihood.

Factors Affecting Blue Economy	Description
<b>Sea-based Terror Activities</b>	<ul style="list-style-type: none"> <li>• These include terrorism, robbery, piracy, trafficking of drugs and humans, illegal arms trade, illegal trade of crude oil, smuggling of drugs, etc.</li> </ul>
<b>Disasters</b>	<ul style="list-style-type: none"> <li>• Blue Economy is negatively impacted yearly by natural disasters.</li> <li>• These include Cyclones, hurricanes, Tsunamis, and typhoons.</li> <li>• These disasters damage properties and take the lives of thousands of people.</li> </ul>
<b>Man-made Issues</b>	<ul style="list-style-type: none"> <li>• These include problems such as oil spills, war and aggression, etc.</li> </ul>
<b>Climate Change</b>	<ul style="list-style-type: none"> <li>• The impact of Climate Change on the marine ecosystem is immense.</li> <li>• Increase of acidity in oceans, unnatural changes in sea temperatures, etc.</li> <li>• These negatively affect the oceanic habitat, marine resources, and people that are dependent on them.</li> </ul>
<b>Marine Pollution</b>	<ul style="list-style-type: none"> <li>• This includes the dumping of untreated sewage, runoff from agriculture, microplastic pollution, the dumping of solid waste, etc.</li> <li>• The excess nutrients from waste lead to problems such as low dissolved oxygen levels in the water.</li> <li>• Vulnerable resources, such as corals, fish species, etc., are threatened.</li> </ul>
<b>Unsustainable Exploitation of Marine Resources</b>	<ul style="list-style-type: none"> <li>• Use of marine resources in an Unregulated, illegal, and unsustainable manner.</li> </ul>

## Significance of Blue Economy

### Renewable Energy Resources

- It offers countries to fulfil their emission reduction commitments under the Paris Climate Deal.
- The renewable options include Offshore windmills, floating solar panels, wave and tidal power generation, and Oceanic Thermal Energy Conversion (OTEC).

### Better RoI (Return on Investment)

- The High-level panel for Sustainable Ocean Economy research suggests that every US 1\$ invested in Blue Economy yields at least 5\$ in return.

### Supports SDGs (Sustainable Development Goals)

- The UN-SDG 14 is related to 'Life Below Water'.
- It stresses upon sustainable use and conservation of marine resources.
- This is one of the important factors of sustainable development.

### Conservation of Coastal Ecosystems and Wetlands

- Ecosystems such as Coral Reefs, Salt Marshes, Seagrass Meadows, Mangroves, etc., are protected.
- The critical environmental services of these ecosystems are maintained.
- Ocean ecosystems are one of the best sequesters of global Carbon emissions.

### Ensuring Food Security

- Sustainable seafood harvesting will promote the world's food security.

### Employment Generation

- New employment sectors will be generated, especially in developing countries.
- This will happen when they get their fair share of Oceanic resources.

## Jal Jeevan Mission Remains a Pipe Dream

**Context:** In Mahoba district of Uttar Pradesh, which has seen a dramatic spike in official tap water connections under the Central scheme, residents say they only have pipes, not taps, and there is often no actual supply of water flowing through them; officials say the shortcomings will be rectified by Nov.

- On Independence Day, 2019, the water-starved Mahoba district in south-eastern Uttar Pradesh reported only 1,612 households with tap connections.
- Four years later, 1,29,209 households — or about 98% of all rural homes in the district — have water connections, according to the public dashboard of the Jal Jeevan Mission (JJM), the Centre's ₹3.6 lakh crore scheme that aims to provide piped water to every village home by 2024.
- No other district in India has reported such a dramatic increase in tap connections. However, a visit to some of the villages here suggests that a household certified as "connected" in JJM parlance does not always mean one with an actual water supply.

According to the scheme's definitions, an **FHTC household is one where at least 55 litres of potable water per person a day is made available to every household.**

### Claim Versus Reality

- Even in villages officially certified as having 100% coverage of functional household tap connections (FHTC), many households do not actually have taps.

- Some do have taps, but are not getting any water through them; even in the best case scenario, such households get no more than two hours of water.
- 100 out of the 398 villages in the district, eligible household tap connections had been fully connected with running water supply. However the JJM’s official dashboard reports that all 385 villages have a “100% household tap connection”.
- All of these households are included in Uttar Pradesh’s official claim of 1.6 crore households which have functional tap connections, up from 5.1 lakh households in 2019, conveying the impression that they all have access to tap water.
- The State has reported a dramatic surge of such tap connections in the past two years; they make up about 6% of the 13 crore rural households in the country connected to tap water.
- Charkhari (one of four blocks in the district) has 48 villages with 24,037 households, each of which has been marked as having a tap connection. Residents of Asthaun, a village with 420 households, gripe that only half the households have taps and no water actually flows through them.

Jal Jeevan Mission	
<b>About Jal Jeevan Mission</b>	<ul style="list-style-type: none"> <li>• It is envisioned to provide safe and adequate drinking water through individual household tap connections by 2024 to all households in rural India.</li> <li>• It is based on a community approach to water and will include extensive Information, Education and communication as a key component of the mission.</li> </ul>
<b>The mission ensures</b>	<ul style="list-style-type: none"> <li>• Functionality of existing water supply systems and water connections.</li> <li>• Water quality monitoring and testing as well as sustainable agriculture.</li> <li>• Conjunctive use of conserved water.</li> <li>• Drinking water source augmentation.</li> <li>• Drinking water supply system, grey water treatment and its reuse.</li> </ul>
<b>Nodal Ministry</b>	<ul style="list-style-type: none"> <li>• Department of Drinking Water and Sanitation under the Jal Shakti Mantralaya.</li> </ul>
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• This Mission focus on integrated demand and supply side management of water at the local level, including creation of local infrastructure for source sustainability like rainwater harvesting, groundwater recharge and management of household wastewater for reuse in agriculture.</li> <li>• The Mission will converge with other Central and State Government Schemes to achieve its objectives of sustainable water supply management across the country.</li> </ul>
<b>Funding Pattern</b>	<ul style="list-style-type: none"> <li>• 50:50 between Centre and States</li> <li>• 90:10 for Himalayan and North-Eastern States.</li> <li>• In case of UTs, 100% funding is provided by the Central government.</li> </ul>

## Nine New Vande Bharat Trains to Link Religious, Tourist Sites

**Context:** After obtaining passenger feedback, new trains have been provided better amenities; PM says popularity of Vande Bharat trains is on the rise.

- Prime Minister Narendra Modi said it was unfortunate that not much attention was given earlier to modernising the Railways, and said his government was working for its transformation.
- Mr. Modi made the remarks by videoconferencing before flagging off nine Vande Bharat trains connecting religious and tourist destinations across 11 States.
- He said the speed and scale of infrastructure development was matching the aspirations of 140 crore Indians.

- The popularity of Vande Bharat trains was constantly rising and over 1.11 crore passengers had already travelled on them.
- The Prime Minister noted that 25 Vande Bharat trains were running and now nine more had been added. The day was not far when these trains would connect all parts of the country.

## Key Highlights

- The new Vande Bharat trains will run between **Udaipur-Jaipur; Jamnagar-Ahmedabad; Patna-Howrah; Ranchi-Howrah; Rourkela-Bhubaneswar-Puri; Hyderabad-Bengaluru; Vijayawada-Chennai (via Renigunta); Tirunelveli-Madurai-Chennai; and Kasara-god-Thiruvananthapuram.**
- These trains, equipped with advanced safety features, including **Kavach**, will be a key step towards providing modern, speedy and comfortable means of travel to common people, professionals, businessmen, student community and tourists, according to an official statement.
- The new trains have a host of features incorporated after passenger feedback.
  - The seat recline angle has been raised from 17.31 degrees to 19.37 degrees, cushioning optimised and the colour of the seat in the executive class changed from red to blue.
  - The changes also include improved accessibility of mobile charging points under the seats, extended footrest and magazine bags for executive class coach-end seats also.
- The new features include provision for securing points for wheel chairs.
  - The new train sets have improved air-tightness for better air conditioning with insulation over panels, better roller-blind fabric with more tear strength with less transparency and smooth touch controls for luggage rack lights.
  - The trains have improved aerosol-based fire detection and suppression system.

## Vande Bharat Trains

- ✓ It is an **indigenously designed and manufactured semi high speed, self-propelled** train that is touted as the next major leap for the Indian Railways in terms of speed and passenger convenience since the introduction of Rajdhani trains.
- ✓ The first Vande Bharat was manufactured by the Integral Coach Factory (ICF), Chennai as part of the **'Make in India' programme**, at a cost of about Rs. 100 crore.
- ✓ The Vande Bharat was India's first attempt at adaptation of the train set technology compared with conventional systems of passenger coaches hauled by separate locomotives.
- ✓ The train set configuration, though complex, is faster, easier to maintain, consumes less energy, and has greater flexibility in train operation.

## Features of the Vande Bharat Trains

- ✓ These trains, dubbed as Train 18 during the development phase, operate without a locomotive and are based on a propulsion system called distributed traction power technology, by which each car of the train set is powered.
- ✓ It can achieve a maximum speed of 160 kmph due to faster acceleration and deceleration, reducing journey time by 25% to 45%.
- ✓ It also has an intelligent braking system with power regeneration for better energy efficiency thereby making it cost, energy and environment efficient.

## The Cauvery Water Conundrum

**Context:** On September 21, the Supreme Court asked Karnataka to continue releasing 5,000 cubic feet per second (cusecs) of water from the Cauvery River to Tamil Nadu for 15 days, in line with decisions of the Cauvery Water Regulation Committee (CWRC) and the Cauvery Water Management Authority (CWMA). This has evoked a strong reaction from certain sections of Karnataka, an upper riparian State.



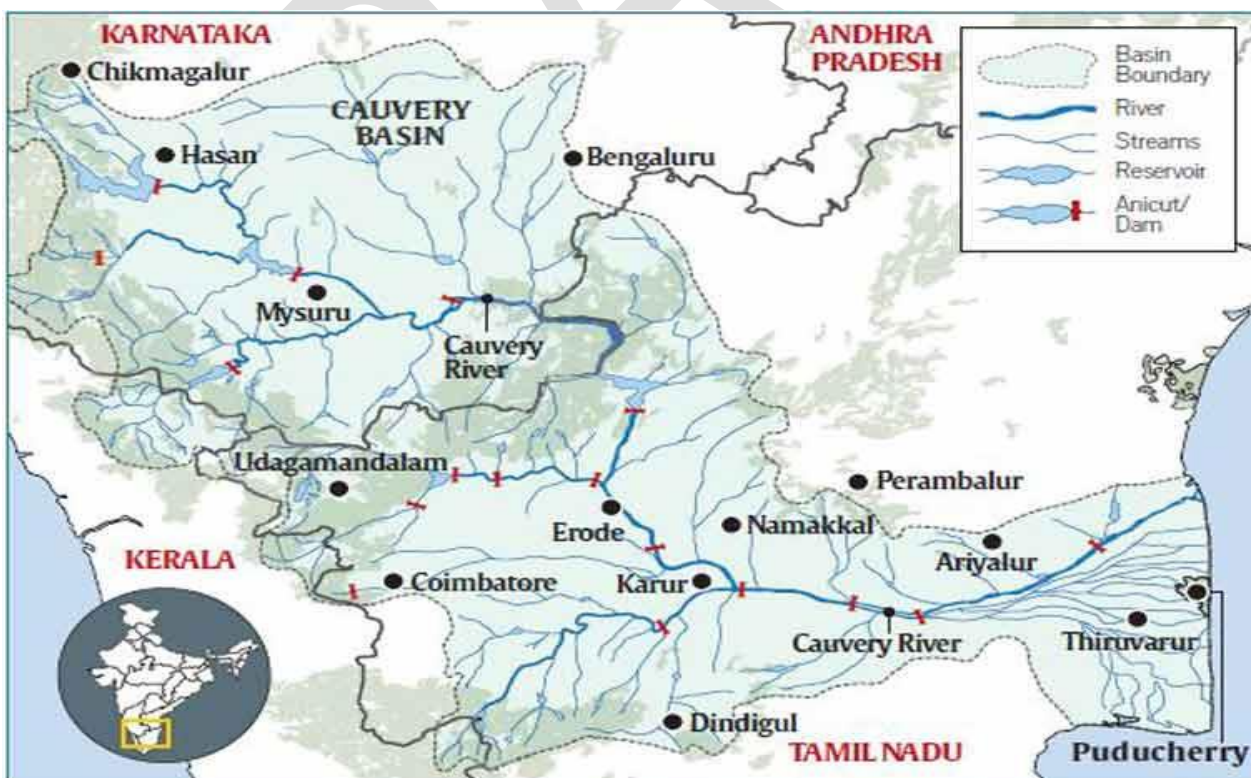
## How is the Cauvery water being shared?

- The Cauvery Water Disputes Tribunal (CWDT)'s final award of 2007 and the Supreme Court's judgment of February 2018 spell out the system for sharing the river water and the institutional mechanisms for ensuring implementation of the judicial verdicts.
- Pointing out that 740 thousand million cubic feet (tmc ft) of water would be available in the Cauvery basin in a normal year, the Court, which broadly adhered to the CWDT's award, made the allocation for constituents of the basin as follows: Karnataka (284.75 tmc ft); Tamil Nadu (404.25 tmc ft); Kerala (30 tmc ft) and Puducherry (7 tmc ft). Ten tmc ft and four tmc ft have been set apart for environmental protection and inevitable escapages into the sea.
- Of Tamil Nadu's overall allocated quantity, Karnataka is to ensure 177.25 tmc ft, as per a monthly schedule, at Biligundulu, located on the inter-State border.
- Of this quantity, 123.14 tmc ft is to be given during the period from June to September, also marking the season of the southwest monsoon.
- Invariably, it is during this period that the Cauvery issue gets flared up, as the monsoon sometimes yields lower rainfall than anticipated.

The CWMA and its assisting body, CWRC, are in existence since June 2018 to oversee the implementation of the verdicts of the Tribunal and the Court.

## THE GIST

- On September 21, the Supreme Court asked Karnataka to continue releasing 5,000 cubic feet per second (cusecs) of water from the Cauvery river to Tamil Nadu for 15 days.
- Karnataka told the Supreme Court that the daily flow of 5,000 cusecs of water to Tamil Nadu was "against [its] interest." The State, especially in urban areas like Bengaluru, was on "the brink of a drinking water crisis".
- Tamil Nadu is in need of water for at least three lakh acres over which a short-term crop (*kuruva*) has been raised. Already, there are reports of the crop being at risk of withering in many places.



## Why are Karnataka's Farmers Upset?

This year's southwest monsoon has played truant, especially in south interior Karnataka, the region where the Cauvery river originates.

- Between June 1 and September 23, the region suffered a deficit rainfall of 27%, according to the India Meteorological Department.
- Kodagu of Karnataka and Wayanad of Kerala, which form part of the catchment of the Cauvery and its tributary, Kabini, registered a deficit rainfall of 43% and 56% respectively.
- Karnataka, in its application before Court, had stated that "...at the reservoir level, which covers a part of the catchment, the shortfall is 53.42%," given the fact that the State has four reservoirs in the Cauvery basin.
- Last week, Karnataka told the Supreme Court that the daily flow of 5,000 cusecs of water to Tamil Nadu was "against [its] interest."
- The State, especially in urban areas like Bengaluru, was on "the brink of a drinking water crisis" whereas Tamil Nadu was in need of water for irrigation. It also added that the distress in Karnataka had increased in the past 15 days.

## How Serious is the Situation in T.N.?

Being the lower-riparian State in the Cauvery basin, Tamil Nadu is mainly dependent on releases by Karnataka, particularly during the southwest monsoon, as it falls under the rain shadow region in the season.

- As per the data of the Central Water Commission available up to September 21, the State received 40.76 tmc ft, whereas it should have got 112.11 tmc ft in a normal year.
- Even after giving allowance for the failure of the monsoon and the quantum of shortfall as quoted by Karnataka, Tamil Nadu contends that it should have got at least 7.8 tmc ft more (as on September 12).
- It is in need of water for at least three lakh acres over which a short-term crop (kuruvai) has been raised. Already, there are reports of the crop being at risk of withering in many places.
- However, the State will require, in the coming weeks, much more water for its long-term crop of 125-135 days (samba), which is normally raised over 15 lakh acres, providing livelihood opportunities to lakhs of landless labour.
- A substantial portion of the farming activity under the samba crop takes place during the northeast monsoon (October-December), which is much more unpredictable than the southwest.
- In addition to serving irrigation, the Cauvery is the main source of drinking water for several districts in the State.

## Way Forward

- It is time that the CWMA along with the constituents finalised a distress-sharing formula. There have been differences over the choice of parameters that determine such a formula.
- Making use of the present crisis, the Authority should take the initiative in convincing all the stakeholders in evolving the proposed formula.

## International Relations

### Black Sea Grain Initiative

**Context:** Delhi may turn venue for dialogue on reviving the Black Sea Grain Initiative.

- As world leaders gather in Delhi for G-20 Summit, United Nations Secretary-General Antonio Guterres is on a mission to revive the Black Sea Grain Initiative (BSGI or BSI), in talks on the side-lines of the summit.
- The deal that facilitates export of grain from Russia and Ukraine lapsed in July.

- The BSI, which was signed to avert massive shortages of wheat, sunflower oil, and other commodities due to the Ukraine conflict, lapsed on July 17 after Russia refused to renew the deal citing “unkept promises” by Western countries.
- UN was “deeply engaged” in resolving the issue, that would mean giving Russia more access to financial markets despite EU and U.S. sanctions and in return receiving guarantees that Russia will not threaten or bomb Ukrainian ships or ports exporting grain.

### What is the Black Sea Grain Initiative?

The Black Sea Grain initiative endeavours to tackle escalating food prices emanating from supply chain disruptions because of Russian actions in the world’s ‘breadbasket’. The deal brokered by the United Nations (UN) and Turkey, was signed in Istanbul in July, 2022.

#### Objective

- Initially stipulated for a period of 120 days, the deal was to provide for a safe maritime humanitarian corridor for Ukrainian exports (particularly for food grains).
- The central idea was to calm markets by ensuring an adequate supply of grains, thereby limiting food price inflation.

#### Importance

- Ukraine is among the largest exporters of wheat, maize, rapeseed, sunflower seeds and sunflower oil, globally.
- Its access to the deep-sea ports in the Black Sea enables it to directly approach Russia and Europe along with grain importers from the Middle East and North Africa.
- The initiative has also been credited for having made a huge difference to the global cost of living crisis.
- Approximately 9.8 million tonnes of grains have been shipped since the initiative commenced.
- People hoarding the grain in the hope of selling it for a sizable profit owing to the supply crunch were now obligated to sell.
- Although the initiative alone cannot address global hunger, it can avert the chances of the global food crisis spiralling further, especially when the region is yet to scale prior year levels.
- Ministry of External Affairs (MEA) officials said they were unaware of any meetings on the sidelines of the G-20 Summit, but underlined India’s position in support of the initiative.

## AU Leaders Welcome Admission into G-20

**Context:** African leaders welcomed the unanimous decision by the G-20 countries to admit the African Union (AU) as its 21st member.

- “Honoured to welcome the African Union as a permanent member of the G-20 Family. This will strengthen the G-20 and also strengthen the voice of the Global South,” Prime Minister Narendra Modi said.
- It is a major step towards increasing the representation of developing countries in the forum.

#### Impact of AU's Inclusion in G20

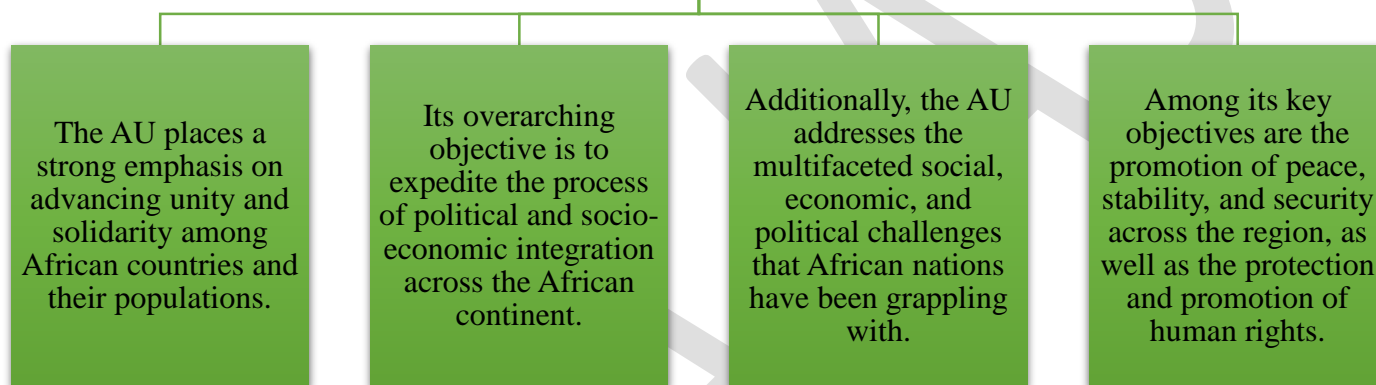
- The AU's membership in the G20 offers an opportunity to reshape global trade, finance, and investment and would provide a greater voice to the Global South within the G20.
- It allows African interests and perspectives to be heard and recognized within the G20.

#### African Union (AU)

- The African Union (AU) stands as an intergovernmental organization comprising 55 member states located on the African continent.
- The headquarters of the AU's secretariat, known as the African Union Commission, is situated in Addis Ababa.

- Its official launch was on July 9, 2002, marking it as the successor to the Organisation of African Unity (OAU), which was initially established in 1963.
  - The AU's precursor, the OAU, was founded with the aim of fostering unity among African nations and addressing common issues through collective action.
  - However, its primary focus lay in supporting the liberation of colonized countries on the African continent.
  - To achieve this goal, the OAU provided diplomatic backing and logistical assistance to liberation movements across Africa.
  - While the OAU played a pivotal role in helping numerous African nations gain independence from their European colonizers, it struggled to promote political and economic integration among its member countries.
  - Consequently, reforms were initiated in the mid-1990s, ultimately leading to the establishment of the AU.

### Objectives of the AU



### Russian Companies to Cease Offering Discounts on Fertiliser Supplies

**Context:** Russian companies have ceased offering fertiliser such as di-ammonium phosphate (DAP) to India at discounted prices due to tightening global supplies after becoming the biggest suppliers to the country last year, three industry sources told Reuters.

- The move in August by Russian companies to offer fertilisers at market prices could increase India's import costs and subsidy burden amid a rally in global prices, as top exporter, China, tries to curtail overseas sales.
- "There are no discounts," said a New Delhi-based senior industry official involved in the negotiations with overseas suppliers. "Russian companies are offering fertilisers at the market prices," the official said.

India's fertiliser imports from Russia more than tripled to a record 4.35 million tons in the 2022-23 financial year as suppliers gave discounts to the global market price for DAP, urea and NPK fertilisers.

#### Gained Market Share

- Russia's aggressive selling last year eroded the Indian market share of other fertiliser exporters including China, Egypt, Jordan, and the United Arab Emirates (UAE).
- "Russian companies were offering DAP at discounts of as high as \$80 (per ton). However, now they are not offering discounts of even \$5," said another Indian company official.
- The current price of Russian DAP is approximately \$570 per ton on a cost and freight (CFR) basis for Indian buyers, which is the same price offered to other Asian buyers, said a Russian industry official.
- Global fertiliser prices have been surging over the past two months, making it challenging for Indian companies to accumulate stocks for the upcoming winter season when demand for DAP rises for the wheat crop, said an official from a Mumbai-based fertiliser company.



- In July, global suppliers were offering urea at approximately \$300 per ton on a CFR basis, but are now quoting \$400 per ton, he said. DAP prices were about \$440 per ton in July, he added.

## Launch of West Asia Economic Corridor

**Context:** Two days after the launch of the India-Middle East-Europe Economic Corridor, Prime Minister Narendra Modi on Monday described Saudi Arabia as “one of the most important strategic partners of India”.

- As two of the world’s fastest growing countries, our partnership is important for the stability of the entire region. Yesterday, it is the historic step to connect India, West Asia, and Europe through an economic corridor.
- Apart from connecting the two countries, the corridor will help in the increase of economic growth, energy sector and digitisation, said PM, conveying India’s gratitude for the Kingdom’s initiatives to ensure welfare of the resident Indian expats.

## Significant Visit

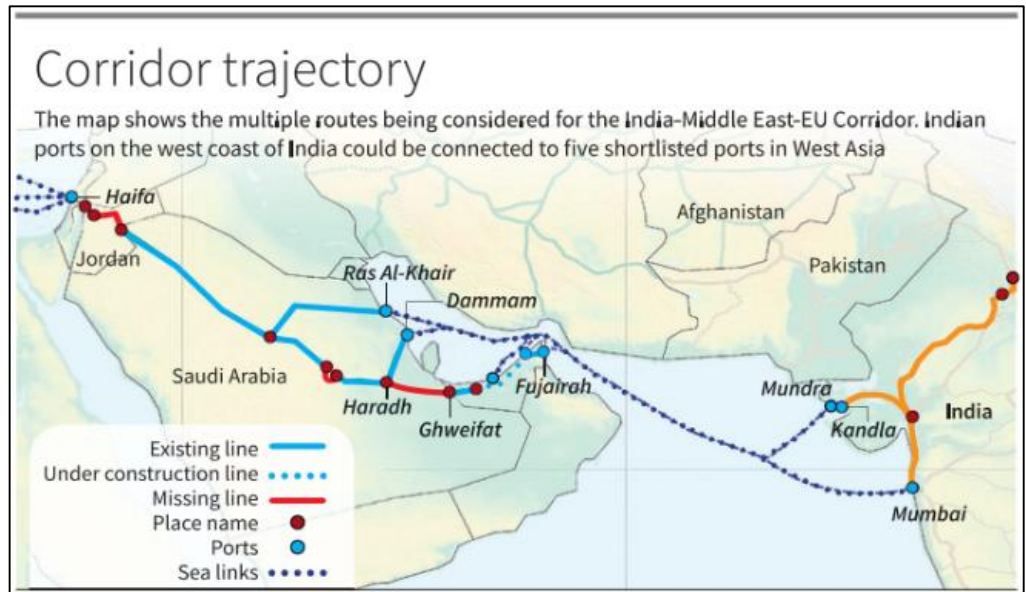
Mr. Modi and Prince Bin Salman also co-chaired the first meeting of the India-Saudi Strategic Partnership Council (SPC).

- The State visit of the Crown Prince is significant as it comes months after Saudi Arabia ended hostility with Iran through a deal that was negotiated by China.
- It has also come weeks after Saudi Arabia became a member of the BRICS during the Johannesburg summit.
- The discussion focused on defence, energy, security, education, technology, transportation, healthcare, tourism and culture, space, and semiconductors as areas of possible cooperation.
- Both sides extended full support to the West Coast refinery project — which is a trilateral project between ARAMCO, ADNOC and an Indian company — for which \$50 billion are already earmarked.
- The new thing that has come up is that the two sides agreed to set up a joint task force to help in identifying and channelising the \$100 billion investment which was actually promised by the Saudi side half of which was for the refinery,” said MEA Secretary Ausaf Sayeed announcing that Delhi and Riyadh would upgrade energy ties to “comprehensive energy partnership”.
- Both sides agreed to work on the India-GCC Free Trade Agreement, said Mr. Sayeed. Crown Prince Bin Salman had visited India in February 2019 when Saudi Arabia had pledged to invest \$100 billion and the investment into the energy project was first mooted during that initiative.
- Among the **eight agreements** that were sealed included one between the **Central Vigilance Commission of India and the Saudi Oversight and Anti Corruption Authority** and another between the **Saudi and Indian Exim Banks**.
- National Institute of Technology of India and the Saline Water Conversion Corporation of Saudi Arabia signed an agreement during the visit.
- A joint statement issued at the end of the visit mentioned that the Saudi side had assured India that it would remain a “**reliable partner and exporter of crude oil supplies**”.
- The document mentioned that the two delegations “**welcomed the expansion of the private sector in the two countries to enter into investment partnerships in the agricultural and food industries**”.
- The joint statement stressed on strengthening cooperation in the field of **defence and anti-terror cooperation** and made a special mention of preventing access to “**missiles and drones**” to carry out terror attacks.
- Indicating the ongoing reforms in Saudi Arabia, the joint statement mentioned that two sides discussed **plans to strengthen the tourism segment of bilateral relation**.

## Key Highlights

Days after India, the U.S., Saudi Arabia, the UAE and other countries launched the India-Middle East-Europe Economic Corridor (IMEC), officials said many of the details are still being ironed out, and multiple route options are being considered that will include ports such as the one at **Haifa in Israel and Piraeus in Greece**.

- Among the ports that could be connected on the **west coast of India** are those at **Mundra and Kandla in Gujarat**, and the **Jawaharlal Nehru Port Trust in Navi Mumbai**.
- In **West Asia**, at least **five ports** have been shortlisted to be connected to the Indian ports which include those at **Fujairah, Jebel Ali, and Abu Dhabi in the UAE** as well as **Dammam and Ras Al Khair ports in Saudi Arabia**.
- Apart from government-owned ports, the Mundra port and the Haifa port are privately controlled by the Adani Group, and have been highlighted in proposal documents.



- The onward rail route connectivity from five ports in the UAE and Saudi Arabia stretching up to the Haifa port in Israel will be a mix of already existing brownfield projects and fresh greenfield projects to connect missing links.
- Official sources said that a study was conducted to establish the extent of already existing and under-construction railway lines in West Asia cutting across the UAE and Saudi Arabia, while missing links have been identified, which will need fresh construction.
- For instance, a 605-km network extending from the UAE's Fujairah to Ghweifat on the Saudi Arabian border is under construction as part of Phase 2 of the Etihad Rail project, which aims at transporting freight and passengers.
- There is a missing link between **Ghweifat and Haradh**, which will need to be constructed.
- Further, **Haradh and the Riyadh Dry Port** are connected via rail and there is also an existing 1,242-km line from Riyadh to Qurayyat managed by the Saudi Arabia Railways.
- There is a missing stretch between **Qurayyat in Saudi Arabia and Beit She'an in Israel** which will have to be constructed.
- Of the total rail route length of 2,915 km stretching from the **Fujairah port to Haifa**, there are missing portions of 1,095 km, with work in progress on 536 km.
- Hence, 559 km still has to be constructed. Similarly, proposed rail routes from the **Jebel Ali port to Haifa** span 2,565 km, with 745 km lacking connectivity. Here, work is already in progress across 186 km.
- Another route, the **Abu Dhabi port to Haifa**, runs across 2,449 km, with 629 km yet to be linked.
- On the fourth proposed route from the **Dammam port to Haifa, via Haradh**, which is 2,149 km long, 289 km is yet to be constructed, while for the rail route from the **Ras Al Khair port to Haifa passing through Buraydh**, 269 km of the 1,809 km is yet to be linked.
- As per the preliminary alignment plans, from Haifa in Israel, landing destinations for Europe include the **Piraeus port in Greece, Messina in south Italy, and Marseille in France**.
- Initial estimates suggest that developing each of these IMEC routes could cost anywhere between \$3 billion to \$8 billion, but officials say it is too early to peg costs.

West Asia, especially Saudi Arabia, has a huge role in IMEC where a railway corridor is being proposed to be built.

This will open up a new dimension in trade and transportation for the region.

It is a very complex programme and will require everything to be brought to common standards.

For instance, trains should run on the same gauge, similar technologies for engines should be used, dimensions of containers should be similar.

Such important technical points have been outlined and preliminary alignments are being finalised, to achieve seamless transportation.

- While the IMEC has been proposed to counter **the Belt and Road Initiative of China**, **Chinese presence** cannot be wished away along the IMEC route, officials said.
  - This is because the Piraeus port is controlled by China Ocean Shipping (Group) Company which is a Chinese state-owned company.
  - Also, Chinese companies such as PowerChina, China State Construction Engineering Corporation and so on have qualified for multiple packages for Phase 1 and 2 of Etihad Rail.
- Currently, all trade between India and Europe happens via the **sea route**, that passes through **Suez Canal, controlled by Egypt**.
  - The all-sea route is convenient as we are assured that our cargo will land from point to point. It moves seamlessly without any obstructions.
  - However, in the alternatively proposed IMEC, the number of times the cargo will get offloaded as it changes hands from ship to rail will increase the handling costs which include terminal-handling charges, container yard charges and so on. That seems like a bit of a challenge.
  - The diplomatic sources said that Egypt, which could lose revenue if the Suez Canal is bypassed, could also raise objections to the plan.

#### How does this affect Israel and Gulf ties?

Saudi Arabia and Israel do not have diplomatic ties — primarily because of differences of opinion about the Israel-Palestine conflict. In fact, Israel has official ties only with Egypt, Jordan, the UAE, Bahrain and Morocco in the Arab region. In this light, the transit network which seeks integration on multiple fronts assumes particular significance.

- The corridor's passage through Jordan and Israel could also support the Biden administration's effort to build on the recent normalisation of ties between Israel and several Arab states, including the UAE.
- This may push Saudi Arabia to follow suit and formalise ties. China is one factor. The U.S. is also trying to refocus attention on the region, to reassure traditional partners and to maintain influence.

With Saudi Arabia being the world's top exporter of oil and the UAE being West Asia's dominant finance centre, FT says that both are "seeking to project themselves as key logistics and trade hubs between east and west."

## China, U.S. And India Absent at U.N.'S Climate Ambition Summit

**Context:** The Climate Ambition Summit (CAS) in New York, as part of the United Nations General Assembly, was marked by the absence of major economies whose actions significantly influence the future of global emissions.

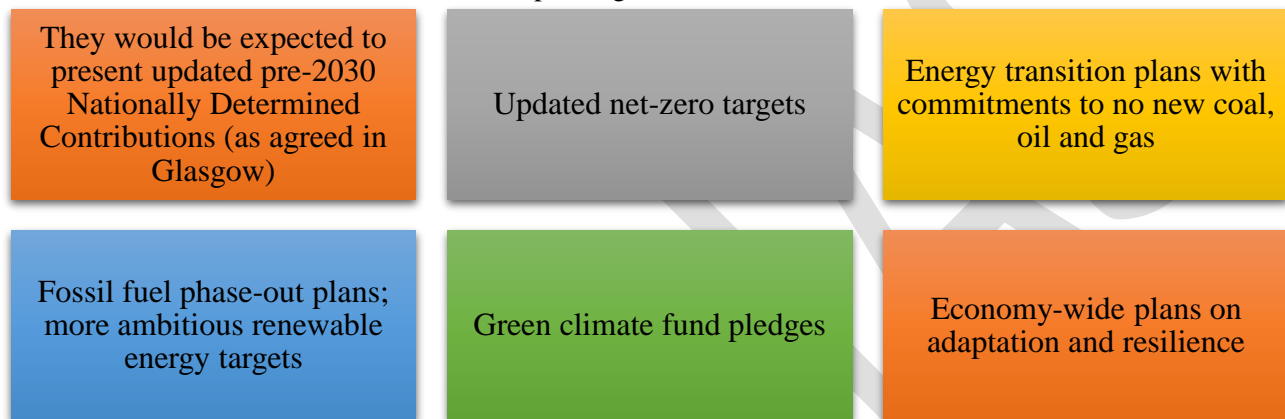
### Key Highlights

- China, the U.S. and India — which collectively account for about 42% of global greenhouse gas emissions and are the top three emitters in that order — were all absent from the summit that was designed, according to the U.N., to "showcase leaders who are movers and doers ... and have credible actions, policies and plans to keep

the 1.5 degrees Celsius goal of the Paris Agreement alive and deliver climate justice to those on the front lines of the climate crisis”.

- In the run-up to the summit, nearly 100 heads of state had written in response to a call from UN Secretary-General Antonio Guterres to ramp up action to address the climate crisis.
- However, Only representatives from 34 states and seven institutions were given the floor on the day of the summit.
- India’s neighbours Sri Lanka, Nepal and Pakistan were among the listed speakers and emerging economies such as South Africa and Brazil were also on the list. The European Union, Germany, France and Canada were also on the podium.

The criteria for countries to be considered for a speaking slot at the summit were that



- All the “main emitters” and notably all G-20 governments would be asked to commit to presenting, by 2025, more ambitious economy-wide Nationally Determined Contributions featuring absolute emissions cuts and covering all gases.
- “The Climate Ambition Summit this year set a high bar for participation. The Secretary-General’s Climate Action Team engaged governments, as well as businesses and local authorities with transition plans to reach net zero in line with the UN-backed credibility standard and accountability of net zero pledges.
- India last updated its climate pledges in 2022 of reducing emissions intensity — or the volume of emissions per unit of gross domestic product (GDP) — by 45% from 2005 levels by 2030, a 10% increase from what it agreed to in 2015.

## Climate Solutions

- The government committed to meet 50% of its electric power needs from renewable, non-fossil fuel energy sources — up from 40% committed at the Paris agreement.
- It promised to create an additional carbon sink of 2.5 to 3 billion tonnes of Co<sub>2</sub>-equivalent [GtCO<sub>2</sub>e] through additional forest and tree cover by 2030.

“Our focus here is on climate solutions — and our task is urgent. Humanity has opened the gates to hell,” Mr. Guterres said in his address. “Climate action is dwarfed by the scale of the challenge. If nothing changes, we are heading towards a 2.8-degree temperature rise — towards a dangerous and unstable world.”

## Military Exercises, Defence & Security

### Delivery of First C-295 Transport Aircraft

**Context:** Marking a major revamp of its transport fleet, the Indian Air Force received the first C-295MW transport aircraft from Airbus. The 56 C-295 aircraft will replace the ageing Avro aircraft.

- Under the contract, 16 aircraft will come in fly-away condition from Seville while 40 will be manufactured by Airbus jointly with Tata Advanced Systems Ltd. (TASL).



- Work is under way to set up the final assembly line (FAL) at Vadodara in Gujarat and the first aircraft manufactured in India will be delivered in September 2026.
- Indigenous radar warning receiver and missile approach warning systems made by Bharat Electronics Ltd. (BEL) and counter measure dispensing system made by Bharat Dynamics Ltd. (BDL) have been certified and installed on the first aircraft.

### Improved relations

- In September 2021, the Defence Ministry signed a ₹22,000-crore deal with Airbus and Space S.A., Spain for procurement of 56 C-295MW transport aircraft to replace the Avro aircraft in service with the IAF.
- The first 16 C295s of the 56 aircraft on order will be assembled at the San Pablo Sur site in Seville, Spain, with the second aircraft due to be delivered in May 2024 and the next 14 rolled out at a rate of one per month until August 2025, Airbus said.
- C-295 aircraft deal is valued at around \$2.5 billion, and it will significantly impact bilateral relations as well as economic ties between India and Spain.

### Significance of Acquisition

The acquisition of the aircraft is significant for two reasons:

- First, it will replace the legacy Avro fleet of the IAF, which was acquired in the 1960s, and thus provide a fillip to the IAF's air transport duties in carrying troops and material to different parts of the country.
  - The IAF also operates the C-130J Super Hercules planes in the medium category and the giant C-17 Globemaster III for medium and heavier loads, which it had acquired from the United States.
- Secondly, the acquisition sets into motion India's first-ever 'Make in India' Aerospace programme in the private sector, under which the aircraft will be manufactured. So far, the state-owned Hindustan Aeronautics Limited (HAL) has had a monopoly over the manufacture of military aircraft in India.
  - This will boost India's aerospace sector with 15,000 high-skilled jobs and 10,000 indirect jobs in the next 10 years.

### Multi-pronged features

- The C-295, with a carrying capacity of nine tonnes, can carry up to 71 troops or 50 paratroopers, air-drop cargo, be used for medical evacuation and take off and land on short and unpaved runways, according to Airbus.
- Adding to its flexibility is the capability of being equipped for the air-to-air refueling of fixed-wing aircraft and helicopters.
- It is a Medium Tactical Transport Aircraft. Beyond its use as a tactical transporter, the C-295 is capable of performing a wide variety of missions effectively. These included parachute and cargo dropping, electronic signals intelligence (ELINT), medical evacuation (MEDEVAC), and maritime patrol.
- Powered by two Pratt & Whitney turboprop engines, the aircraft can cruise at altitudes up to 30,000 ft and can quickly take off from and land at unpaved, soft, and sandy/grassy airstrips, the Airbus website states.

## Environment

### Wayanad Forest Survey

**Context:** As many as 67 species of reptiles and 59 species of amphibians were identified in the first herpetofaunal survey that concluded recently in the South Wayanad Forest Division in Kerala.

- Of these, four amphibians and three reptiles were spotted for the first time in the forest division.
- Of the 126 species identified, 48 amphibians and 21 reptiles are endemic to the Western Ghats.

### Key Discoveries

- The important amphibian species recorded during the survey include
  - Starry Night Frog, bearing a constellation of blue dots on its obsidian body
  - Miniature Night Frog, the tiniest frog in the country

- Endangered species such as Malabar Torrent Toad and Red Stream Toad
- The Naked Dancing Frog, previously associated only with areas in the Wayanad Wildlife Sanctuary, was also sighted during the survey.
- The survey commenced with the recording of the Green Tree Frog and culminated with a compendium of 59 amphibians, of which over 80% are uniquely found in the Western Ghats. Of the 67 reptile species sighted, 21 are unique to the Western Ghats.
- Species like the Wayanad Dravidogecko, Nilgiri Spiny Lizard, and the Nilgiri Forest Lizard added depth to the survey's significance.
- The presence of Shieldtail snake, predominantly from Wayanad, brought forth the region's crucial role in global conservation discussions.



### 'Protect Treasure Troves'

- There is need for studies on these amphibian and reptilian species which are mostly neglected.
- The South Wayanad Forest Division was appreciated for its biodiversity, which surpassed even well-known sanctuaries due to its diverse habitats.

### Wayanad Wildlife Sanctuary (WWS)

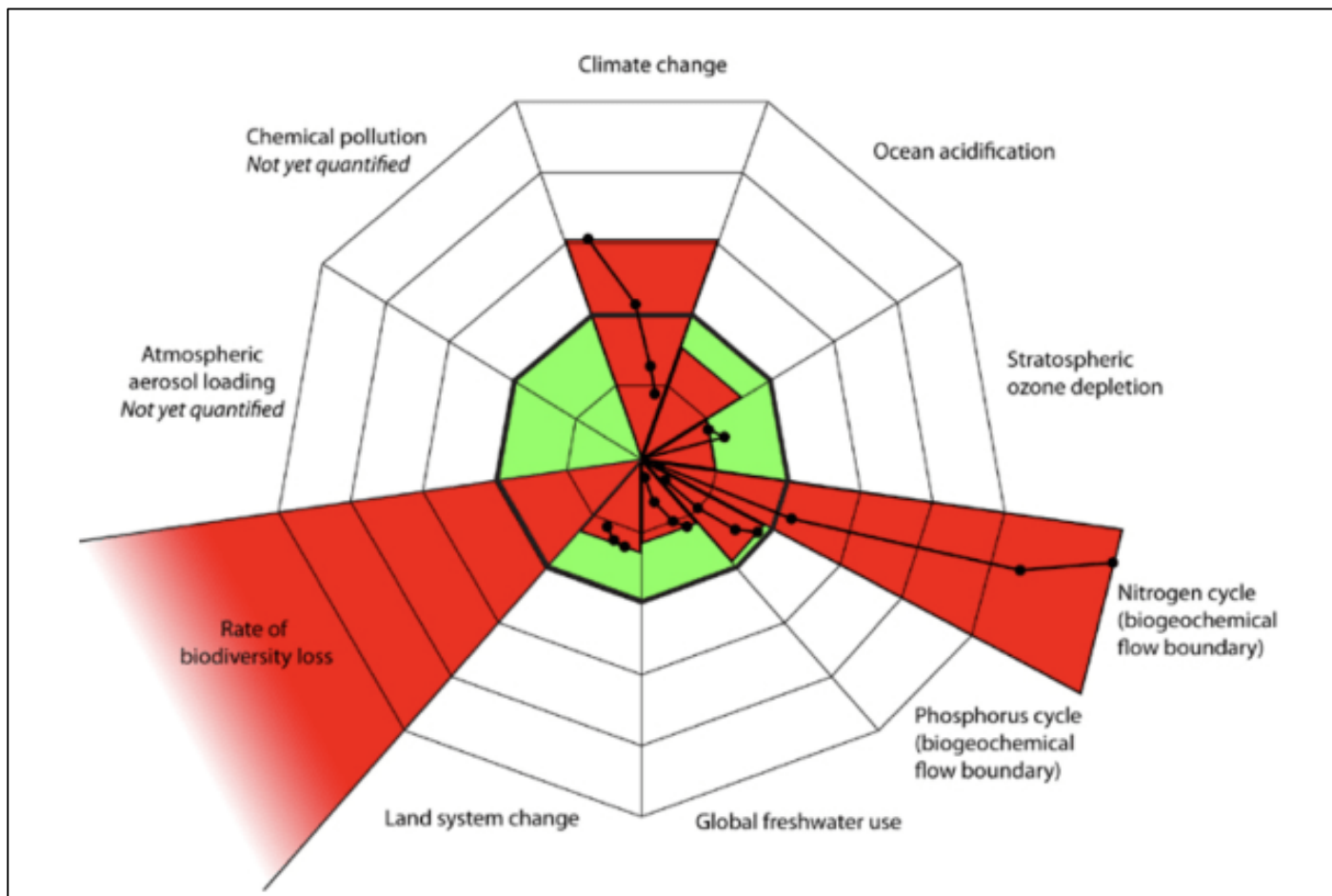
- ✓ WWS is a wildlife sanctuary in Wayanad, Kerala, India with four hill ranges namely Sulthan Bathery, Muthanga, Kurichiat and Tholpetty.
- ✓ **Species Found:** gaur, Asian elephant, deer and tiger are found there.
- ✓ It is the second largest wildlife sanctuary in Kerala.
- ✓ Established in 1973, the sanctuary is now an integral part of the Nilgiri Biosphere Reserve.
- ✓ It is bounded by the protected area network of Nagarhole National Park and Bandipur National Park in Karnataka in the northeast, and on the southeast by Mudumalai National Park in Tamil Nadu.
- ✓ It is part of the Deccan Plateau.
- ✓ **Vegetation :** Predominantly of the south Indian moist deciduous teak forests and west-coast semi-evergreen trees.
- ✓ The wildlife sanctuary comes under Protect Elephant.
- ✓ **Scheduled tribes :** Paniyas, Kurubas, Adiyans, Kurichiyas, Ooralis and Kattunaikkans.

### Earth Outside Its Safe Operating Space For Humanity On Most Key Measurements

**Context:** Earth is exceeding its "safe operating space for humanity" in six of nine key measurements of its health, and two of the remaining three are headed in the wrong direction, a new study said.

- Earth's climate, biodiversity, land, freshwater, nutrient pollution and "novel" chemicals (human-made compounds like microplastics and nuclear waste) are all out of whack, a group of international scientists said.
  - **Example:** Water went from barely safe to the out-of-bounds category because of worsening river runoff and better measurements and understanding of the problem.
- Only the acidity of the oceans, the health of the air and the ozone layer are within the boundaries considered safe, and both ocean and air pollution are heading in the wrong direction, the study said.

In 2009, Mr. Rockstrom and other researchers created nine different broad boundary areas and used scientific measurements to judge Earth's health as a whole.



Key Areas	Limit	Implication of Crossing the limit
<b>Climate Change</b>	CO <sub>2</sub> concentration in the atmosphere <350 ppm and/or a maximum change of +1 W m <sup>-2</sup> in radiative forcing	<ul style="list-style-type: none"> <li>• Loss of polar ice sheets. Regional climate disruptions.</li> <li>• Loss of glacial freshwater supplies.</li> <li>• Weakening of carbon sinks.</li> </ul>
<b>Ocean Acidification</b>	Mean surface seawater saturation state with respect to aragonite ≥ 80% of pre-industrial levels	<ul style="list-style-type: none"> <li>• Conversion of coral reefs to algal-dominated systems.</li> <li>• Regional elimination of some aragonite- and high- magnesium calcite-forming marine biota.</li> <li>• Slow variable affecting marine carbon sink.</li> </ul>
<b>Stratospheric Ozone Depletion</b>	<5% reduction in O <sub>3</sub> concentration from pre-industrial level of 290 Dobson Units	<ul style="list-style-type: none"> <li>• Severe and irreversible UV- B radiation affects human health and ecosystems.</li> </ul>

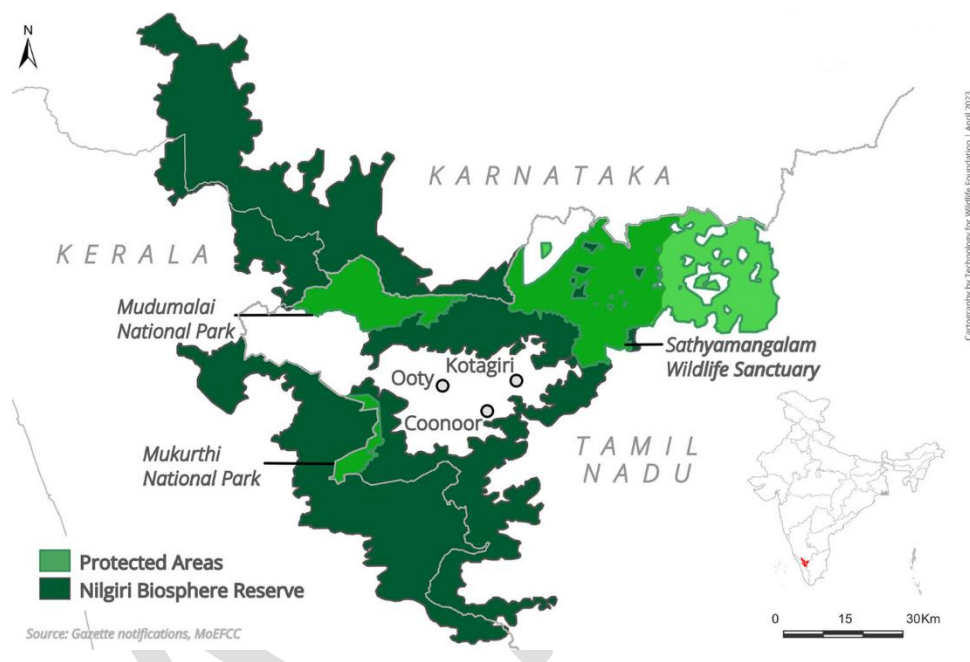
<b>Biogeo-Chemical Flows: interference with P and N cycles</b>	Limit industrial and agricultural fixation of N <sub>2</sub> to 35 Tg N yr <sup>-1</sup> Annual P inflow to oceans not to exceed 10 times the natural background weathering of P	<ul style="list-style-type: none"> <li>• P: avoid a major oceanic anoxic event (including regional), with impacts on marine ecosystems.</li> <li>• N: slow variable affecting overall resilience of ecosystems via acidification of terrestrial ecosystems and eutrophication of coastal and freshwater systems.</li> </ul>
<b>Global Freshwater Use</b>	<4000 km <sup>3</sup> yr <sup>-1</sup> of consumptive use of runoff resources	<ul style="list-style-type: none"> <li>• Could affect regional climate patterns (e.g., monsoon behavior).</li> <li>• Primarily slow variable affecting moisture feedback, biomass production, carbon uptake by terrestrial systems and reducing biodiversity.</li> </ul>
<b>Land System Change</b>	<15% of the ice-free land surface under cropland	<ul style="list-style-type: none"> <li>• Trigger of irreversible and widespread conversion of biomes to undesired states.</li> <li>• Primarily acts as a slow variable affecting carbon storage and resilience via changes in biodiversity and landscape heterogeneity</li> </ul>
<b>Rate of Biodiversity Loss</b>	Annual rate of <10 extinctions per million species	<ul style="list-style-type: none"> <li>• Slow variable affecting ecosystem functioning at continental and ocean basin scales.</li> <li>• Impact on many other boundaries—C storage, freshwater, N and P cycles, land systems.</li> <li>• Massive loss of biodiversity unacceptable for ethical reasons.</li> </ul>
<b>Chemical Pollution</b>	To be determined	<ul style="list-style-type: none"> <li>• Thresholds leading to unacceptable impacts on human health and ecosystem functioning possible but largely unknown.</li> <li>• May act as a slow variable undermining resilience and increase risk of crossing other thresholds.</li> </ul>
<b>Atmospheric Aerosol Loading</b>	To be determined	<ul style="list-style-type: none"> <li>• Disruption of monsoon systems. Human-health effects.</li> <li>• Interacts with climate change and freshwater boundaries.</li> </ul>



## Death of Tigers in Nilgiris

**Context:** The Tamil Nadu Forest Department has found “circumstantial evidence” indicating that at least one of the two tigers that were found dead could have been poisoned.

- They clarified that contrary to preliminary reports which said that the two animals were tigresses, the animals were in fact male tigers, aged three and eight respectively.
- The carcasses were found near Emerald in the **Nilgiris Forest Division**.
- Samples of all three carcasses (the two tigers and the cattle) have been collected and sent for forensic analysis.
- Forest Department staff, comprising 20 members, are perambulating the area with a sniffer dog.
- A case has been registered under the Wildlife Protection Act in the Udhagai South Range.



## Nilgiri Biosphere Reserve

- The very name Nilgiris’ with literary meaning ‘blue mountains’ has originated from the appearance of blue flower clad mountains (Neelakurinji flowers) of the Nilgiris plateau within the State of Tamil Nadu.
- The reserve spans across three Indian states: **Tamil Nadu, Karnataka, and Kerala**.
- It was the first biosphere reserve in India established in 1986.
- It is the **India’s first biosphere reserve under UNESCO’s Man and the Biosphere Programme**.
- Home to several **tribal groups** such as the Adiyani, Aranadan, Kader, Kurichian, Kuruman, and Kurumbas.
- It portrays the **confluence of Afro-tropical and Indo-Malayan biotic zones** of the world.
- **Fauna:** Animals like Nilgiri tahr, Nilgiri langur, slender loris, blackbuck, tiger, gaur, Indian elephant and marten are found here.
  - Freshwater fishes such as Nilgiri danio (Devario neilgherriensis), Nilgiri barb (Hypselobarbus dubuis) and Bowany barb (Puntius bovanicus) are endemic to this Biosphere Reserve.
- **Protected Areas in NBR:** The Mudumalai Wildlife Sanctuary, Wayanad Wildlife Sanctuary, Bandipur National Park, Nagarhole National Park, Mukurthi National Park and Silent Valley are the protected areas present within this reserve.

Forest type	Nature of Vegetation	Area of occurrence
Moist evergreen	Dense, moist and multi storeyed forest with gigantic trees	In the narrow valleys of Silent Valley
Semi evergreen	Moist, deciduous	Nilambur and Palghat division



<b>Thorn</b>	Dense	North east part of the Nilgiri district
<b>Savannah woodland</b>	Trees scattered amid woodland	Mudumalai and Bandipur
<b>Sholas &amp; grasslands</b>	High elevated evergreen with grasslands	South and western catchment area, Mukurthi national park

## Protecting Floodplains Is The Need Of The Hour

**Context:** Humanity is struggling with a shortage of water as well as an excess. As the **World Health Organization** stated, “**Floods are increasing in frequency and intensity, and the frequency and intensity of extreme precipitation is expected to continue to increase due to climate change.**”

- Last year, devastating floods in Pakistan claimed 1,700 lives and affected 33 million people.
- The 2013 floods in Uttarakhand, the 2014 floods in the Kashmir Valley, the 2015 floods in Chennai, and the 2017 floods in Gujarat all caused loss of lives and livelihoods and massive damage to infrastructure.
- This year too, we saw the devastating effects of rain-induced floods and landslides in several districts of Himachal Pradesh.
- The Yamuna water level crossed the 208.5 metre mark, breaking a 45-year-old record. All these disasters point to the severity of the situation and the urgent need to tackle it.

As per the **Geological Survey of India**, over 40 million hectares, which is nearly 12% of the total land area of India, is prone to floods.

- The severity and frequency of floods has especially affected our cities, where there is little effort made in maintaining natural topography.
- Cities expand fast and mostly in a haphazard manner, which makes them vulnerable to disasters.
- **Flooding affects the economy** too — Indian cities are projected to contribute to 75% of the GDP by 2030.
- India primarily relies on the **Disaster Management Act, 2005**, and the rules made in pursuance of the Act, to deal with flood management.
  - But this law is meant to deal with multi-hazard risks and is not specifically focused on flood risk management.
  - As per the Act, disasters cannot be predicted. This is not entirely correct, especially with respect to the frequency and intensity of floods.

### Change in Strategy

Disaster risks across the world are found to be situated within environmental and natural resource governance. There is a shift in the strategy of flood control in countries such as Germany, the U.K., and the Netherlands to flood risk management as opposed to flood protection.

- **Technical Measures:** While the protection strategy includes **technical measures** such as the laying of dikes, temporary flood defence walls, and polders, the key elements of the management strategy are retention of water and restoration of floodplains.

In India, there are large-scale encroachments on floodplains. These increase the frequency of floods and the damage caused by them. A 2018 report of the Comptroller and Auditor General of India attributed encroachments in the floodplains of the rivers of Tamil Nadu and the failure to act on them as the prime reason for the Chennai floods of 2015. The auditor called the deluge a ‘**man-made disaster**’.

## Occupying Floodplains

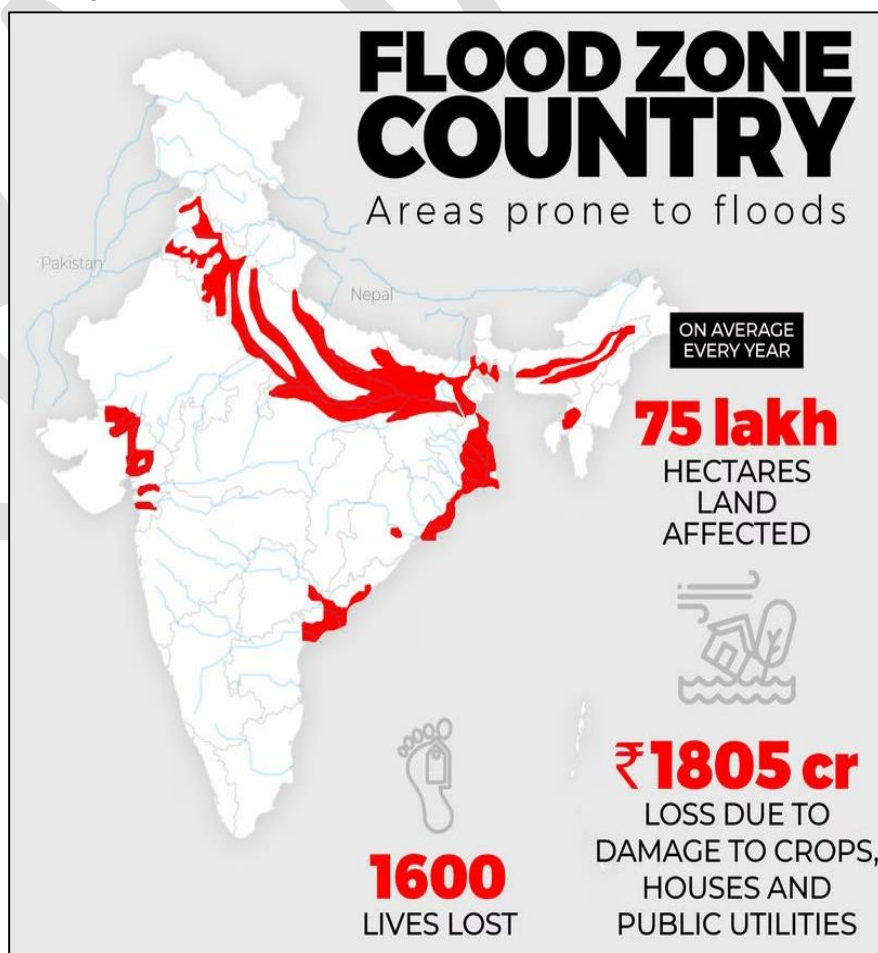
- **Illegal construction work** in floodplains reduces the capacity of rivers to contain a high level of water within their banks. This is especially the case during heavy rainfall when water flows down from upper catchment areas. Thus, the tendency to occupy floodplains results in flooding.
  - **Uttarakhand** has been neglecting eco-sensitive floodplains by allowing the construction of guest houses and hotels on the river front to promote tourism and boost its economy.
  - In the wake of the massive floods in 2013, the **National Green Tribunal** virtually barred construction of buildings 200 m along the banks of the Ganga, in a 2015 directive. But attempts were made to bypass this.
  - It is also unclear whether **environmental impact assessments** are done properly in the State.
  - The **Uttaranchal River Valley (Development and Management) Act, 2005**, is meant to regulate mining and construction in the river valley. But reports indicate that there is **rampant mining and construction activity** with little regard for the environment.

Floods do not merely show the fury of nature; they are also often brought about by **climate change-induced rainfall**.

- ✓ This especially impacts mountainous regions such as the Himalayas.
- ✓ Laws in India which are meant to protect the environment are not implemented.
- ✓ While there are central policy measures to protect floodplains, they are mostly non-binding on States.
- ✓ No State in India has been able to prevent encroachment on floodplains.

## Preserve Ecosystems

- There are many experiences around the world which point to the potential benefits of protecting and preserving ecosystems such as wetlands, forests, lakes, and coastal areas in reducing physical exposure to natural hazards such as floods, landslides or avalanches by serving as buffers.
- In 1996, Germany made a fundamental change to its Federal Water Act in the aftermath of a massive flood. The law provides for protecting original retention capacity while reconstructing bodies of water. Therefore, **flood plain restoration and water retention of water bodies are considered to be pillars against flooding**.
- **Climate change adaptation** is a cross-sectoral issue.
  - It involves laws relating to land use, preservation





- of water bodies, coastal regulations, and environmental impact assessment.
- Thus it is complex; a multitude of laws need to be integrated into a coherent framework.
- The purpose will not be served if, for instance, a law to tackle climate change is passed by Parliament while changes to land use and the preservation of water bodies are not made.

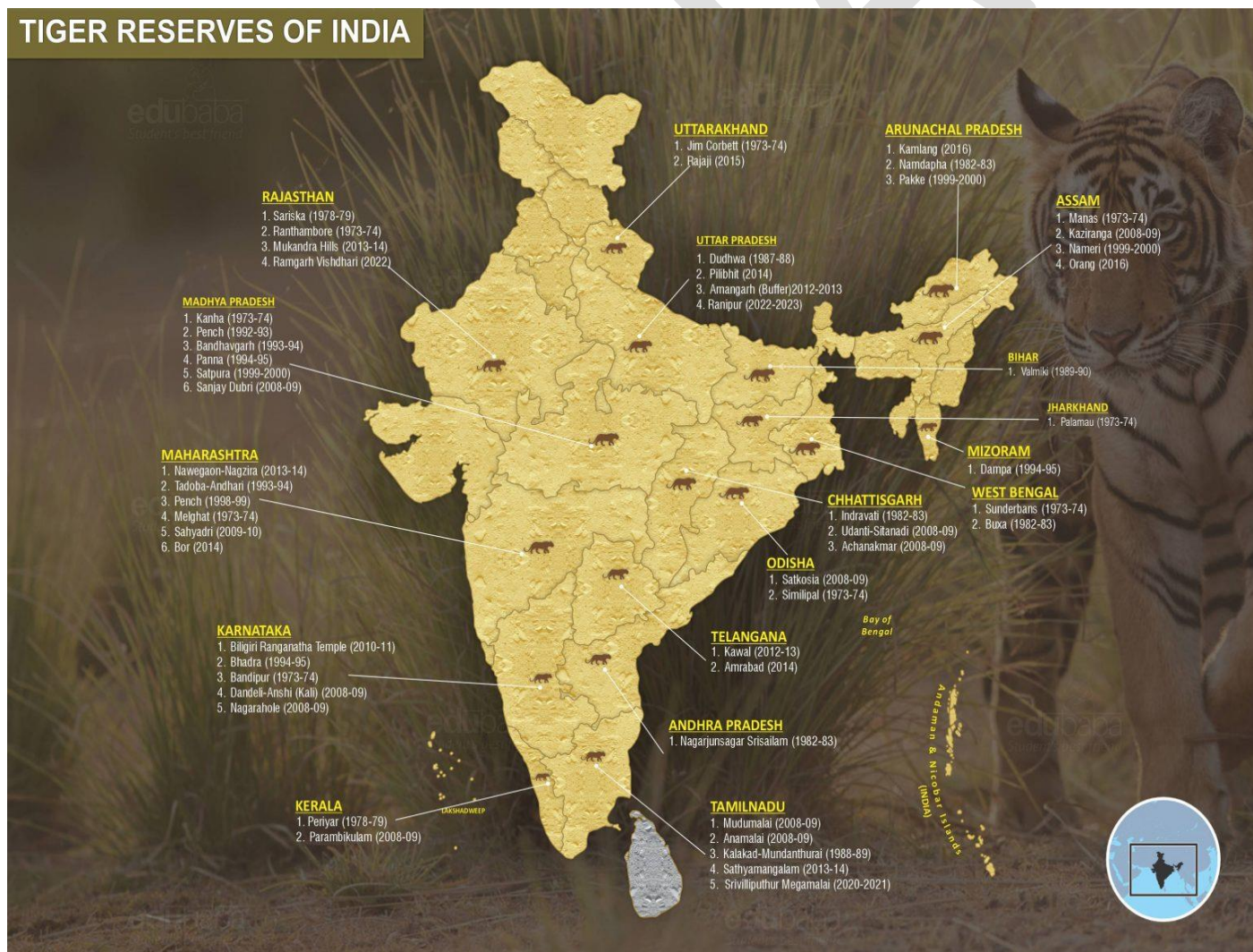
However, achieving this requires strong political will. Populist leaders tend to refrain from **implementing “green” policies**. This must change if we want to save lives and livelihoods and safeguard infrastructure.

## AI Cameras Gun For Poachers

**Context:** Wildlife officials at one of the most populous tiger zones in India are experimenting with a new set of camera traps — or **cameras with infrared sensors** deployed in forests to count wild animals or monitor the movement of potential poachers — that harness the **power of Artificial Intelligence (AI)**.

- In experiments under way at the **Kanha-Pench corridor** in Madhya Pradesh, the system has, for the first time, caught poachers on camera that — a year down — helped forest authorities secure a conviction, according to a person involved in the experiment.
- Cameras set up in **remote regions** are a key tool in **surveys and census** counts of tigers and elephants but have **limitations** such as requiring personnel physically access the machine to prise photos.
  - They are also **bulky and are not always optimised** to conserve charge to keep the instruments running.

## TIGER RESERVES OF INDIA





## TrailGuard AI Camera-Alert System

- The new kind of camera set-up, called the **TrailGuard AI camera-alert system**, being tested comprises slim devices that can be inconspicuously set up within the foliage of trees.
- **Shaped like a pen**, 13.8 cm long and 1.4 cm wide, it is wired to another ‘**communications**’ unit, the size of a notepad.
- The system has **embedded software** that can be **instructed to take pictures** of specific species of interest.
  - In the usual camera set-ups, the motion-triggered devices will snap pictures of anything — from a falling leaf to a jungle fowl that comes in its line of sight.
- The TrailGuard system can be set to specifically capture humans or species of interest — lions, tigers, cheetahs.
- 12 TrailGuard AI camera-alert systems were tested from mid-May to mid-July 2022 on the **Kanha–Pench corridor** along with seven camera-alert systems in **the Dudhwa Tiger Reserve** in early September 2022 to mid-December.
- Researchers and forest department officials **received notifications** of tiger presence via email or push notification between 30 and 42 seconds after detections.
- These notifications included tiger detections from three units that were within 300 meters of a village and from which there were also daily notifications of villagers grazing cattle or collecting forest products.

## Project Cheetah

**Context:** The first batch of eight cheetahs from Namibia arrived on September 17, 2022, officially launching Project Cheetah, India’s cheetah introduction programme. An overview of the project as it completes one year.

### Why have African cheetahs been introduced in India?

The goal of the introduction of African cheetahs is to “establish viable cheetah metapopulation in India that allows the cheetah to perform its functional role as a top predator and provides space for the expansion of the cheetah within its historical range thereby contributing to its global conservation efforts.”

- This effectively means that the project aims to enable cheetahs to establish themselves as viable and free-ranging populations in large unfenced wildlife reserves which are in turn connected by wildlife corridors to other unfenced reserves.



**CHEETAH FACTS:**

- **Oldest of the big cat species**
- **Ancestors can be traced back about 8.5 million years**
- **Number of cheetahs just under 7,500 individuals globally**

IUCN's Red List recognises cheetahs as **"vulnerable"** species

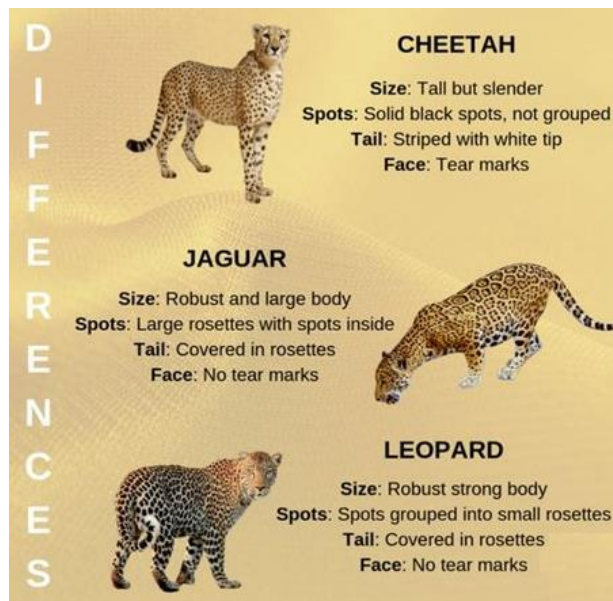
- **The Asiatic cheetah and the Northwest African cheetah are critically endangered**
- **Cheetahs have lost 90% of their global habitat**
- **They now live in 9% of its historic range**

### What is the status of the project?

In total, 20 adult African cheetahs have been imported so far. The first batch of eight cheetahs arrived on September 17, 2022 and another batch of 12 cheetahs from South Africa arrived on February 18, 2023. In late March 2023, one of the females gave birth to a litter of four cubs which were conceived in India.

- After prolonged periods of quarantine which ranged from 50 to more than 70 days (the prescribed period of quarantine is 30 days), the cheetahs were released from their quarantine enclosures into larger holding enclosures, so that they could acclimatise themselves to the local habitats and environmental conditions.
- The plan was to first release male coalitions after about 1 to 2 months of them getting acclimatised in the larger enclosures.

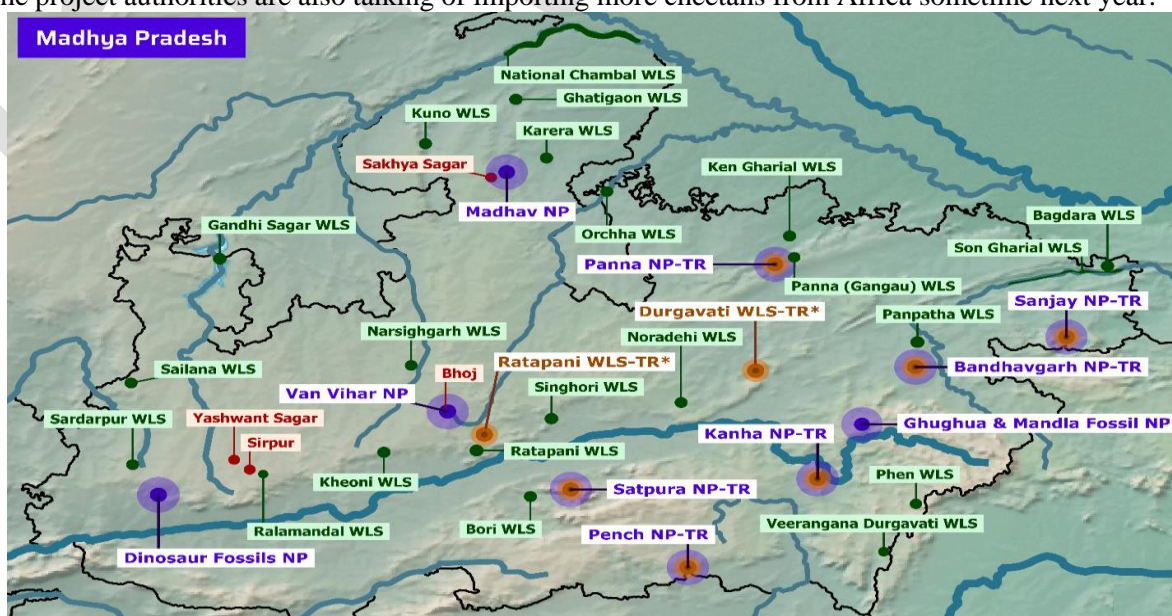
- This was to be followed by the release of females, 1-4 weeks after the release of the males.
- The release of the cheetahs to run free in the wild was delayed with the first cheetah being released after more than 100 days in the larger enclosure.
- So far, only 12 of the 20 cheetahs were ever released into the wild, with a few being brought back multiple times to the **Kuno National Park (KNP)**, since the managers felt that the cats were moving into areas that may have posed risks for their survival.
- Six of the cheetahs which came from Africa have died.
  - Four while still in captivity and two in the wild.
  - Four of the adult cheetahs are yet to be released to run free even for a single day.
  - Additionally, three of the four cubs have died and the only remaining cub is being hand reared as its mother has rejected it.



- Since the deaths of the three cheetahs in July-August, all 10 of the remaining free cheetahs have been captured and kept captive in enclosures for observation, removal of radio-collars and treatment.
- Safely capturing these cheetahs, especially a female whose radio-collar was functioning only intermittently, is no small feat and the efforts, skills, determination and dedication displayed by the field teams has to be appreciated.

Currently, from the available information, on the first anniversary of the project, all the surviving 14 adult cheetahs and one cub are in captivity and there is talk of them being radio-collared again and released once the winter sets in.

- The project authorities are talking of additional sites being prepared for releasing the cheetahs such as the **Gandhi Sagar Wildlife Sanctuary** and **Nauradehi Wildlife Sanctuary**, both in Madhya Pradesh.
- Gandhi Sagar is expected to be ready by the end of this year while Nauradehi is likely to be ready sometime in 2024.
- The project authorities are also talking of importing more cheetahs from Panna Africa sometime next year.





## Why did the cheetahs die?

There have been a variety of reasons and causes attributed to the deaths of the six adults and three cubs. **Radio collars** are not the underlying reason for the deaths of any of these cats, at least that is the officially stated position. One needs to determine if the African cheetahs are susceptible to **certain insects and parasites** in India, and if the collars provide a micro-environment conducive for these to thrive.

The first cheetah which died is said to have perished due to a renal condition. The question that arises is why the Government of India agreed to bring a cheetah which was sick and put it through more stress by transporting it and having it adapt to a new environment.

One of the females died when authorities attempted to get the cheetah to mate inside the enclosure.

Three of the four cubs born in India are reported to have died due to heatwave conditions.

One of the males is reported to have died due to cardio-pulmonary failure but what caused it (the ultimate cause), has still not been determined.

The last three deaths occurred during the monsoon. While there have been several conflicting reports regarding the cause of their deaths, no definitive cause has been shared in the public domain.

Even though the cheetahs were under constant monitoring, nine deaths have occurred. It is time the **authorities reassess the approach** and **act decisively** so that one can **prevent such deaths**, especially when the animals are in captivity. We also have to be **cognisant of the effects of long periods of captivity** on the **fitness** of these cats to be released to run free in the wild.

## Impact of the project on the conservation of other endangered species



- Unfortunately, the very high-profile cheetah project has definitely **distracted attention** and probably also **diverted financial resources** from much needed conservation projects like the ones for the Great Indian Bustard and the translocation of Asiatic lions, to mention a few.
- Project Cheetah has also been called upon as a means to **save grasslands** and other open **natural ecosystems**. However, given the challenges that the cheetahs have faced in surviving even in captivity and the **lack of sufficient suitable habitats** for them, using African cheetahs to **conserve grasslands and grassland-dependent species is clearly a faulty strategy**.

### What needs to be done?

- Without proper and adequate habitats, there is no point in importing more cheetahs.
- Focus on the establishment of high-quality habitats covering at least 5,000 square kilometres before bringing more cheetahs.
- We cannot rely on simply importing more cheetahs to establish a viable population while neglecting its habitat requirements.
- The other weakness has been the lack of wider consultation and transparency. This definitely needs to improve.

## Fossils of a Plant-Eating Dinosaur Found In Rajasthan

**Context:** IIT Roorkee scientists have characterised dinosaur fossils from the middle-Jurassic period, found in the Thar desert near the Jaisalmer Basin by the Geological Survey of India. The remains are those of a sauropod dinosaur, and happen to be the oldest known fossils of this particular sauropod.

### Key Highlights

- Sauropod dinosaur is the same clade as the long-necked herbivores in Jurassic Park – only these happened to be the oldest known fossils of this particular kind of sauropod.
- Belonging to the family Dicraeosauridae and from the superfamily Diplodocoidea, these fossils are the first dicraeosaurid sauropods to have been found in India.
- And at 167 million years old, they are the oldest known diplodocoid fossils in the world.
- The scientists named the dinosaur *Tharosaurus indicus*, with Tharo deriving from the Thar desert; saurus from the Greek ‘sauros’, or lizard; and indicus from its Indian origin.
- The most fascinating feature about sauropods is their size. They can grow more than a hundred feet. There are many sauropod groups that are even longer than the blue whale.
- However, members of the Dicraeosauridae family of sauropods – to which *Tharasaurus* belongs – were not nearly as large.
  - This family was unique: its members were smaller and had shorter necks and tails compared to the other long-necked sauropods.

Sauropods first appeared on the earth during the Jurassic period, about 200 million years ago. They were one of the most dominant clades of dinosaurs, surviving until the late Cretaceous period 65 million years ago, when dinosaurs went extinct.

### Importance of Indian landmass

Some 167 million years ago when *Tharosaurus* lived, India was not where it is now.

- It was part of a group of continents in the southern hemisphere with Africa, South America, Madagascar, and Antarctica, together called Gondwanaland.
- Considering the fact that we already have more primitive sauropods in India and now the oldest diplodocoid, it is highly likely that India was the site of radiation of these diplodocoid dinosaurs to other parts of the world.
- The scientists reasoned that these diplodocoid sauropods could have originated in India during the Middle Jurassic period and used the land connections at the time to migrate to Madagascar, Africa, and South America.
  - After that they could have made their way to North America and the rest of the world.
- Another piece of evidence that supports their theory was that diplodocoid fossils in other continents like Africa, the Americas, and Asia come from a younger geological interval.
  - This increases the possibility that the Indian landmass was the site for the *Tharosaurus*' early radiation.



- ✓ India has also been home to a few early, more primitive sauropods, like *Kotasaurus* and *Barapasaurus*.
- ✓ They were both discovered in the Kota Formation, a geological rock unit in Telangana, from the Early Jurassic period.
- ✓ In 2006, an Indo-German team found another middle Jurassic sauropod dinosaur fossil in the Kutch basin of Gujarat, named *Camarasaurus supremus*, which was also the oldest fossil of that group found at the time.
- ✓ There have been subsequent finds of extremely old sauropod fossils in the region by the same team since.



## Endangered Nilgiri Tahr

**Context:** After launching Project Nilgiri Tahr last year for the conservation of the State animal, Tamil Nadu is now working on a standardised protocol to count the endangered population of southern India’s only mountain ungulate.

- The Tamil Nadu Forest Department will also propose to its Kerala counterpart to conduct a synchronised census, as the animal is only found in select habitats in the two States.

### Key Highlights

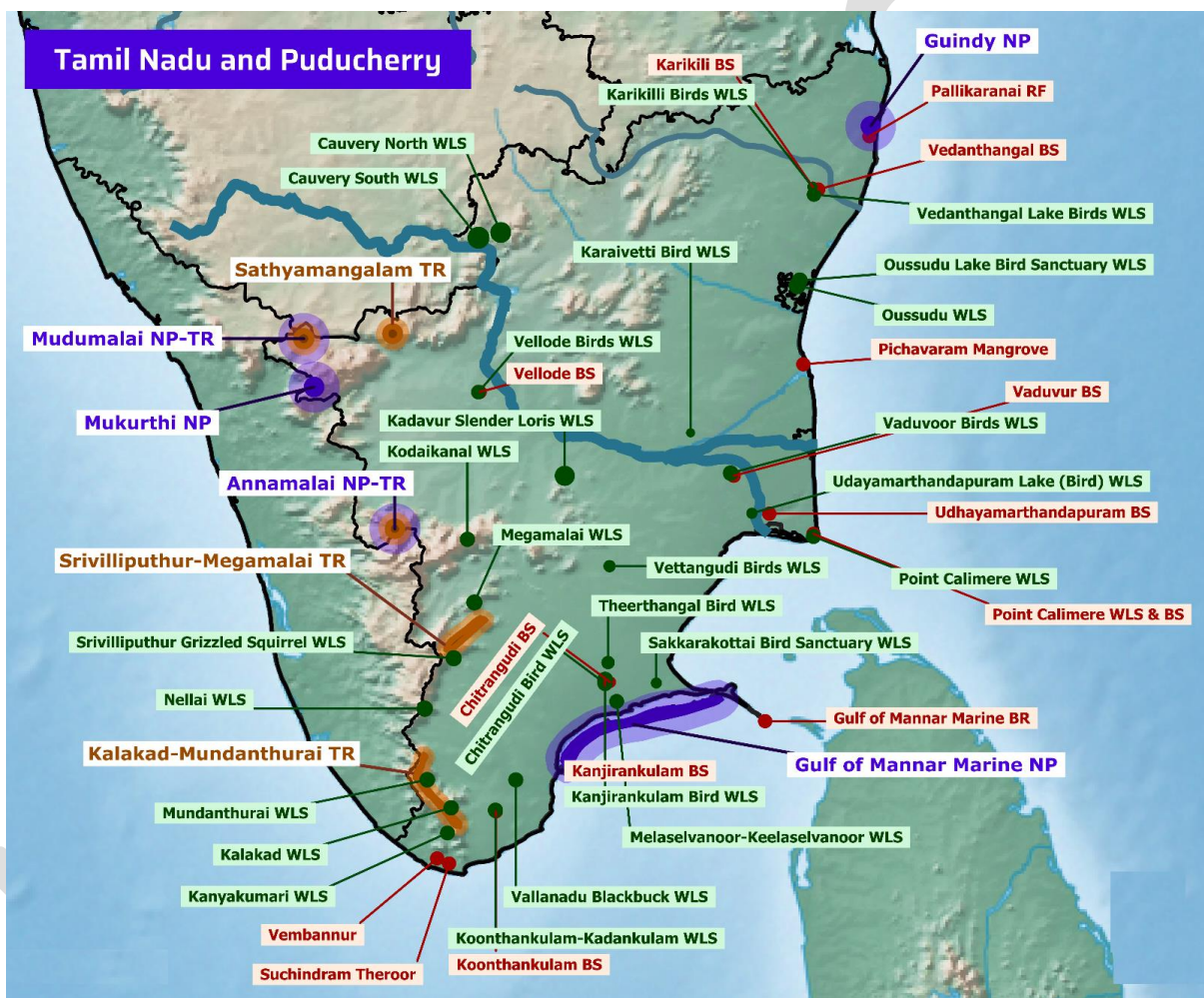
- The Tamil Nadu Forest Department is proposing two censuses:
  - One in November, after the southwest monsoon, and
  - The other in March or April, after the calving season.
- If Kerala agrees to the proposal, the second census is likely to be a synchronised count.
- This would be the first comprehensive, exclusive census for the State animal.
- Experts felt that bounded count and double-observer survey methods could be priority models. Camera traps could also be used in difficult terrains.
- The Project Nilgiri Tahr team, during field visits, experimented with drones to observe tahr groups.
  - Contrary to our perception, they were not disturbed by the drone flown around 100 metres above them.
- A component of the Project Nilgiri Tahrs aims to study the possible causes of the lumpy skin disease that has been observed in the animal, and suggest a remedy for it.



### About Nilgiri Tahr

<b>Local Name</b>	The species is locally known as <b>Varaiaadu</b> .
<b>Other Name</b>	It is also known as <b>Nilgiri Ibex</b> .
<b>Habitat</b>	<ul style="list-style-type: none"> <li>• It is the sole Caprinae species found in the <b>tropical mountains</b> of southern India.</li> <li>• The Nilgiri tahr prefers <b>montane grasslands</b>, with steep and rocky terrains at an altitude between 300 metres and 2,600 metres above sea level.</li> <li>• Historically, the Nilgiri Tahr was known to inhabit a large portion of the <b>Western Ghats</b>.                             <ul style="list-style-type: none"> <li>○ They live in highly fragmented habitats in the Western Ghats in Tamil Nadu and Kerala, ranging between the Nilgiris in the north and the Kanniyakumari hills in the south, according to a 2015 study by WWF-India.</li> </ul> </li> </ul>
<b>Population</b>	<ul style="list-style-type: none"> <li>• It is estimated that there are <b>3,122</b> Nilgiri Tahrs in the wild.</li> <li>• It has become locally extinct in around 14% of its traditional shola forest-grassland habitat.</li> <li>• The Adult males of Nilgiri Tahr species develop a <b>light grey area</b> or “<b>saddle</b>” on their backs and are hence called “<b>Saddlebacks</b>”.</li> </ul>
<b>Status</b>	<ul style="list-style-type: none"> <li>✓ IUCN – <b>Endangered</b>;</li> <li>✓ Wildlife (Protection) Act of India, 1972 - <b>Schedule I</b> : This provides absolute protection and offences under these are prescribed the highest penalties.</li> </ul>
<b>Threats</b>	<ul style="list-style-type: none"> <li>✓ Anthropogenic pressures</li> <li>✓ Threats from invasive plants such as wattles, pines, and eucalyptus in the grasslands.</li> <li>✓ Other threats are poaching and populations of these animals are small and isolated, making them vulnerable to local extinction and Climate Change.</li> </ul>
<b>Nilgiri Tahr Day</b>	<ul style="list-style-type: none"> <li>• October 7 will be celebrated as ‘<b>Nilgiri Tahr Day</b>’ in honour of E.R.C. Davidar.</li> </ul>

	<ul style="list-style-type: none"> <li>○ He was responsible for pioneering one of the first studies on Nilgiri Tahr in 1975.</li> </ul>
<b>Cultural Significance</b>	<ul style="list-style-type: none"> <li>● There are multiple references to the Nilgiri Tahr in Tamil Sangam literature dating back to 2,000 years.                     <ul style="list-style-type: none"> <li>○ The late Mesolithic (10,000-4,000 BC) paintings highlight the significance of the Tahr in folklore, culture and life.</li> <li>○ It was designated as the <b>State animal of Tamil Nadu</b> in recognition of its ecological and cultural significance.</li> </ul> </li> </ul>



### Mukurthi National Park

It is a protected area located in the northwest corner of Tamil Nadu in the Western Ghats. The park was created to protect **its keystone species, the Nilgiri Tahr.**

- The **park is characterised by** montane grasslands and shrublands interspersed with sholas in a high altitude area of high rainfall, near-freezing temperatures and high winds.
- **Other Species Found:** Royal Bengal Tiger and Asian Elephant.
- The park was previously known as Nilgiri Tahr National Park.
- It is **part of Nilgiri Biosphere Reserve** along with Mudumalai Wildlife Sanctuary, Bandipur National Park, Nagarhole National Park, Wayanad Wildlife Sanctuary and Silent Valley.

## Balsams

**Context:** Balsams in full bloom add to visual treat in Munnar.

### Key Highlights

Presenting a visual feast to tourists, balsams (genus *Impatiens*) are in full bloom in Munnar. Called Kasithumba and Onappovu locally, its small, pink flowers are a major attraction along the Devikulam stretch of the Kochi-Dhanushkodi National Highway.



- Balsams are also known as ‘**touch-me-not**’ because of the bursting of mature seeds and seed distribution.
- Botanists say the large-scale flowering of balsams indicates that **micro-climate is still active in the Munnar hill station**.
- Of the 220 balsam species in India, 135 are found in the southern Western Ghats.
- Idukki is known for the diversity of balsams, with scientists terming the district a balsam paradise.
- Anamudi, the highest mountain in the Western Ghats, and the surrounding high ranges are known for the diversity of wild balsams.
- New species of balsams are being discovered from these areas. There are balsams endemic to the high ranges.
- There are more than 30 species of balsams in the Periyar Tiger Reserve itself.

### Humid Habitats

- The normal life cycle of balsams is from **June to December**.
- The plant mainly grows inside pockets of forest areas.
- With the loss of specific habitats, many species have become rare, threatened, or even extinct.
- This fleshy orophytic herb usually **prefers humid habitats and completes the life cycle in the rainy season**.
- Balsams are a major indicator species of climate change. If climate change occurs in any area, it will reflect in the plant population.
- A forest official says 46 balsam species are found in the Munnar landscape, spread from Munnar to Chinnar and Bison Valley.
- Munnar is the major habitat of balsams, and there are over 40 wild species in the Eravikulam National Park.
- 46 species of balsams have been discovered in the altitude of Munnar. No other place in the world has such diversity.

**Features:** Consisting of both annual and perennial herbs, balsams are succulent plants with high endemism. Because of their bright beautiful flowers, these group of plants are of prized horticultural significance.

**Distribution:** About 230 species of Balsams are found in India, a majority of them in the eastern Himalayas and the Western Ghats.

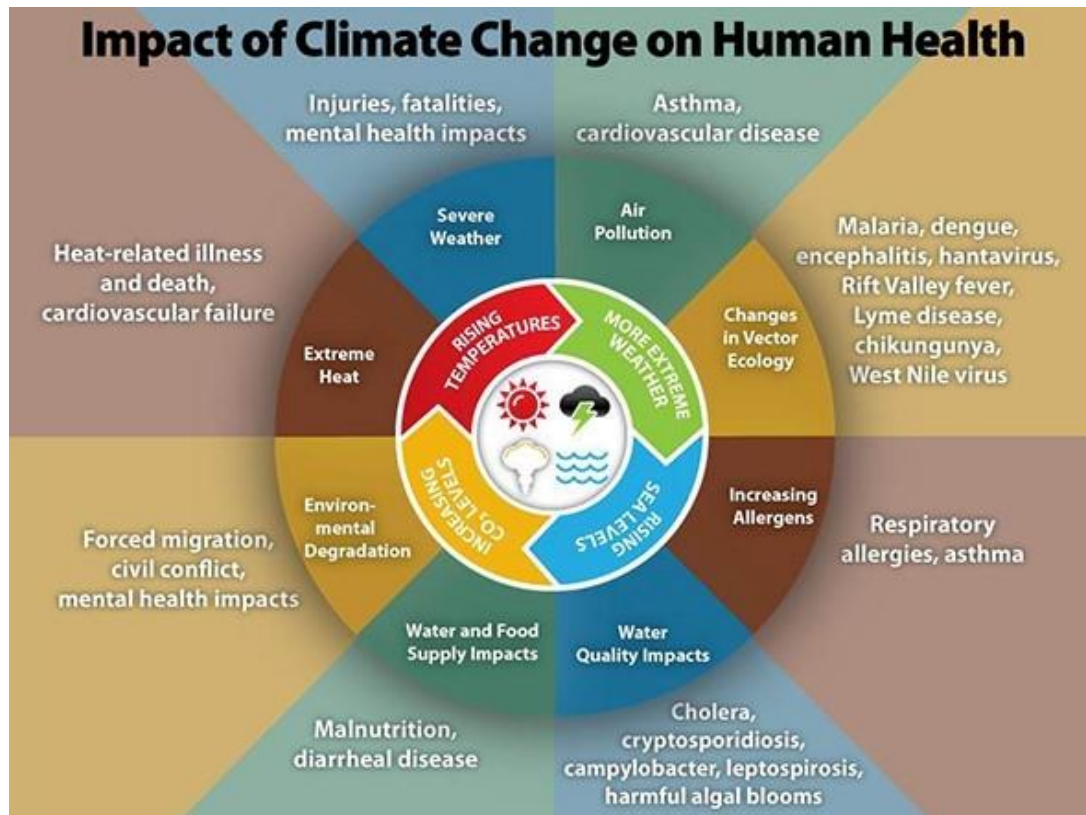
## Climate Change Heightens The Global Risk Of Infectious Diseases

**Context:** In its latest report released this March, the Intergovernmental Panel on Climate Change (IPCC) delivers a stark warning: climate change heightens the global risk of infectious diseases.

- The close relationship between climate and disease is being demonstrated every year.
- For instance, the periodicity of mosquito-borne disease outbreaks no longer follows expected patterns. Dengue manifests in two to three peaks throughout the year.
- Variability in **temperature, precipitation, and humidity** disrupt disease transmission cycles. These also alter the distribution of the **vectors and animal reservoirs** that host the parasite.



- **Heat** has been proven to interfere with the genomic structure of pathogens, changing their infectivity and virulence.



### Climate Change, More Infections

- Habitat loss forces disease-carrying animals to encroach upon human territory, increasing the risk of human-animal interaction and the transfer of pathogens from wildlife to humans.
  - Viruses which do not harm animals can be fatal for humans.
  - Nipah virus, which has been causing outbreaks in Kerala for many years now, is a good example.
- An analysis of 2022 published in Nature Climate Change warns that humans now face a broader spectrum of infectious agents than ever before.
  - Over half of all-known infectious diseases threatening humans worsen with changing climate patterns.
- Diseases often find new transmission routes, including environmental sources, medical tourism, and contaminated food and water from once-reliable sources.
- While ecosystems shape local climates, climate change is transforming ecosystems. This dynamic introduces invasive species and extends the range of existing life forms.
- Both these trigger upheavals in ecosystems that are complex and confound ecologists and epidemiologists to predict outbreaks.
- Human-induced climate change is unleashing an unprecedented health vulnerability crisis.
- India, in particular, has felt the ominous impact, with early summers and erratic monsoons causing water scarcity across the Gangetic plains and Kerala.



- These climatic shifts are manifesting in severe health crises, including a dengue epidemic in Dhaka (Bangladesh) and Kolkata and the Nipah outbreak in Kerala.

## Climate change impacts in India

What the INCCA Report has found

### Warmer seasons

- Avg. temp rise: 2.0 deg C predicted
- 1.0-4.0 deg C at extreme ranges

### Increased annual precipitation

- lower frequency of rainy days; increased intensity

### Cyclonic disturbances

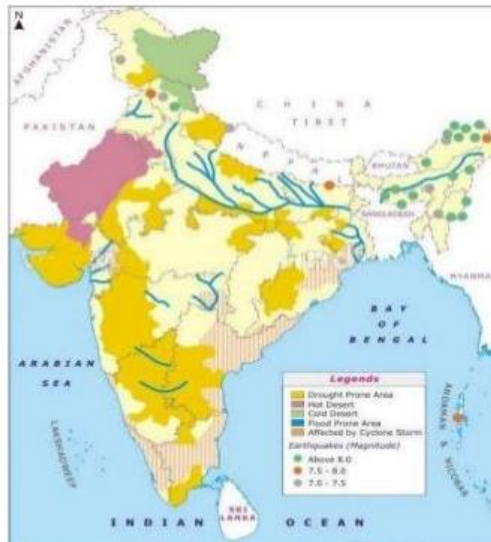
- lower frequency; increased intensity
- increased risk of storm surges

### Sea-level rise

- 1.3 mm/year on average

### Fresh water supply

- High variability predicted in water yields (from 50% increase to 40-50% reduction)
- 10-30% increased risk of floods; increased risks of droughts



### Forests and natural ecosystems

- Increased net primary productivity
- Shifting forest borders; species mix; negative impact on livelihoods and biodiversity

### Human health

- Higher morbidity and mortality from heat stress and vector/water-borne diseases
- Expanded transmission window for malaria

### Reduced agricultural productivity

- Sharp fall in land productivity of 17% farmers
- General decrease in productivity of crops; however, cash crops like coconut may increase
- Crops earlier grown in lower or mid-Himalayan regions are now grown at higher altitudes
- Marine fisheries are likely to be impacted as the area of spawning shifts to higher latitudes

### Surveillance And Reporting

- Changed disease scenarios require a revision of strategies to detect and deal with them.
- Over the past two decades, India has improved its reporting of outbreaks.
- The Integrated Disease Surveillance Programme (IDSP) was rolled out in a few States in 2007. From reporting 553 outbreaks in 2008, it last reported 1,714 in 2017.
- It was phased out in favour of a new, a web-enabled, near-real-time electronic information system called Integrated Health Information Platform (IHIP).
  - HIP was launched in seven States in 2018. It added 20 additional disease conditions over IDSP's 13 and could present disaggregated data to its users.
  - Tragically, the programme, which would have enabled real-time tracking of emerging disease outbreaks, has not delivered on expectations.

The **current design of surveillance is not adequate** for the emerging disease scenario. Mitigating the spread of climate change-induced diseases requires safeguarding ecosystems, curbing greenhouse gas emissions, and implementing active pathogen surveillance.

A unified approach, termed One Health which integrates monitoring human, animal, plant, and environmental health, recognises this interconnectedness. This approach is pivotal in preventing outbreaks, especially those that originate from animals.

It encompasses zoonotic diseases, neglected tropical diseases, vector-borne diseases, antimicrobial resistance, and environmental contamination.

## What Should be done?

India must launch One Health and infectious disease control programmes by building greater synergies between the Centre and States and their varied specialised agencies.

Animal husbandry, forest and wildlife, municipal corporations, and public health departments need to converge and set up robust surveillance systems.

More importantly, they will need to build trust and confidence, share data, and devise logical lines of responsibility and work with a coordinating agency.

So far, the Office of the Principal Scientific Adviser to the Prime Minister has been taking this lead but with new World Bank and other large funding in place, this will need greater coordination and management.

## Promote Wheat Seeds That Are Heat-Tolerant

**Context:** The Union government held an interaction with the States on the preparedness for the upcoming Rabi crop season against the background of a 5% decrease in monsoon rainfall this year.

- The Centre has asked the States to promote heat-resilient and high-yielding varieties of wheat among farmers.
- Talking to media persons, Union Agriculture Secretary Manoj Ahuja said the meeting had also reviewed the kharif season.
- The Centre was targeting an increase in the coverage of area under heat-tolerant wheat varieties to 60% this season.
- 800 climate-resistant varieties were available in the country and the States must place these seeds in the seed chain as part of a seed rolling plan. As a strategy, center requested all States to identify specific areas and map varieties that can be sown.
- Center shared information on rainfall with the States, and said if the pattern of rainfall and variations in temperature kept changing, it would affect agriculture.

- We have seen how rainfall patterns are changing. We had a deficit in June, a surplus in July, [it was] dry in August, and again excess rainfall in September.
- As a result, there is a 5% rainfall deficit in the country, adding that there was also a severe deficit in the reservoirs in Bihar, Andhra Pradesh, Tamil Nadu, Uttar Pradesh, West Bengal, Kerala, and Karnataka.

### Heat-Tolerant Wheat Varieties

To address these challenges, India has developed approximately 800 climate-resistant wheat varieties. Notable examples include:

#### HD 3385

- ✓ Developed by the Indian Council of Agricultural Research's Indian Institute of Rice Research.
- ✓ Features high-temperature stress tolerance, especially at the end of the crop cycle.
- ✓ Designed for terminal heat tolerance.
- ✓ Growth cycle of 130 to 160 days when sown in November.
- ✓ Yield potential of 75 quintals per hectare.

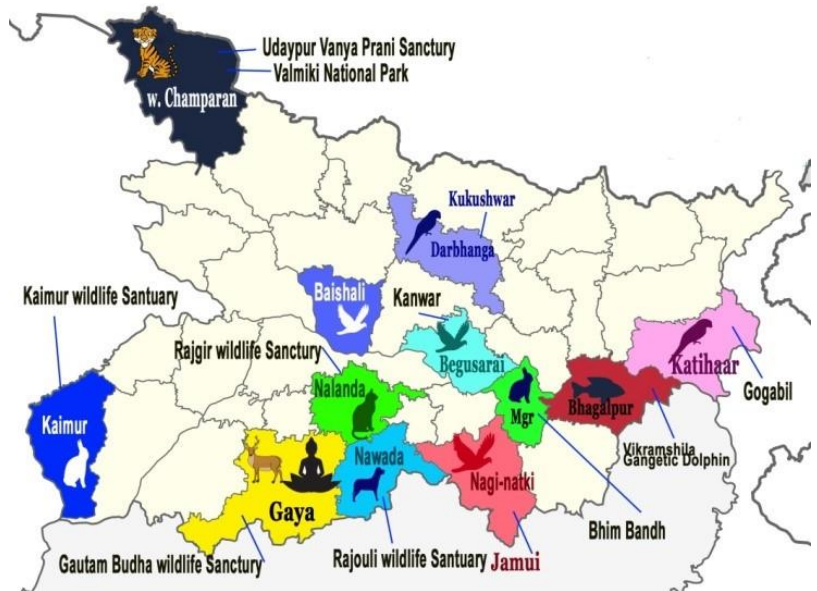
#### HI 1636 (Pusa Bakula)

- ✓ Released by the Indian Council of Agricultural Research (ICAR).
- ✓ Offers a yield potential of 72 quintals per hectare.

## Bihar's Second Tiger Reserve

**Context:** Bihar is all set to get its second tiger reserve in Kaimur district by the end of the year or early 2024. The State is home to the Valmiki Tiger Reserve (VTR) in West Champaran district.

- Officials of the State Forest Department said they are working on obtaining the National Tiger Conservation Authority's (NTCA) approval for declaring Kaimur Wildlife Sanctuary as a tiger reserve.
- The NTCA had, in principle, approved our proposal in July for the tiger reserve. The department has now started preparing for the final proposal to be sent to the NTCA for its formal approval.
- As per an NTCA report, the tiger



### About Kaimur District

- Kaimur district primarily comprises two landscapes — the hills, known as **Kaimur plateau**, and the **plains** on the west, which are flanked by the **rivers Karmanasa and Durgavati**.
- It has a **dense forest** cover and is home to tigers, leopards and chinkaras.
- According to officials, the forests in Kaimur are the biggest in the State, spanning 1,134 sq km and including the 986-sq km Kaimur Wildlife Sanctuary.
- At 34%, the district also has the highest green cover.
- The district shares boundaries with Jharkhand, Uttar Pradesh and Madhya Pradesh.
- Till 1995, tigers were regularly spotted in the Kaimur hills. After a gap, in 2017 the then District Forest Officer officially intimated the State government of their reappearance.

population in VTR at present stands at 54 as against 31 in 2018.

An official of the Environment, Forest and Climate Change Department said that in an earlier proposal, “900 km was identified as tiger habitat. But after the NTCA’s objection, it has come down to 450 km.”

## Reasons for Joshimath Sinking

**Context:** Seismic activities, construction loopholes, population pressure, poor drainage system are among the factors cited; the reports were made public only after the Uttarakhand High Court last week questioned the State for not disclosing them.

- Separate studies conducted by eight premier institutions of India to know the cause of land subsidence in Joshimath town of Uttarakhand attributed seismic activities, construction loopholes, population pressure, poor drainage system and others as the ‘likely’ reason for the sinking of the Himalayan town.



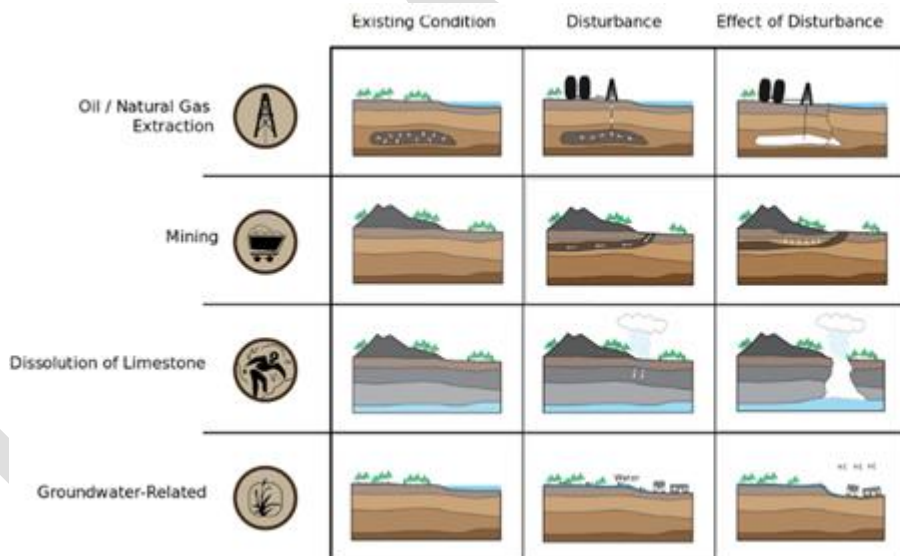
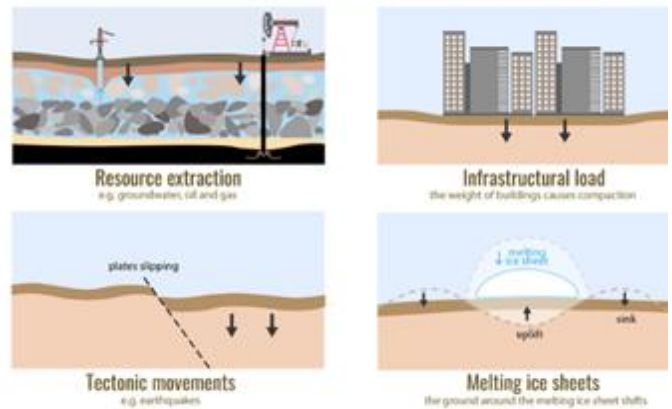


- The Wadia Institute of Himalayan Geology (WIHG), the National Geophysical Research Institute (NGRI), the National Institute of Hydrology (NIH), the Indian Institute of Technology (IIT), Roorkee, the Indian Institute of Remote Sensing (IIRS), the Geological Survey of India (GSI), the Central Ground Water Board (CGWB) and the Central Building Research Institute (CBRI) were given the mandate to identify the causes of land subsidence by the government.

## CBRI Report

- In its report, the CBRI stated that Joshimath town has 44%, 42%, 14% of masonry, RCC and other (traditional, hybrid) construction typologies, respectively, among which 99% are non-engineered.
  - It means they are not in compliance with the National Building Code of India, 2016.
- Joshimath town is situated on Vaikrita groups of rocks overlain by morainic deposits which are composed of irregular boulders and clay of varying thicknesses.
- Such deposits are less cohesive and susceptible to slow subsidence and landslide subsidence,” the CBRI said.

## WHAT CAUSES LAND SUBSIDENCE?



**Other causes of Land Subsidence:** Dissolution of underlying carbonate rock by groundwater; gradual compaction of sediments; withdrawal of fluid lava from beneath a solidified crust of rock; or warping of the Earth's crust by tectonic forces

- There is a history of **creeping and occasional subsidence** in the region and what happened in December 2022-January 2023 was another such event, it said.
- The Roorkee-based NIH, in its report, said that maps of various springs, drainage network and areas of subsidence infer that land subsidence and subsurface water in Joshimath might have some connections.
- The isotopic and water quality signature of the samples taken from NTPC sites differs from the JP site as well as drains and springs in the nearby area of Joshimath.
- The **bacteriological analysis** also suggested that the gush water is fresh water and not contaminated by the local drains, the report suggested giving a clean chit to the NTPC whose construction activities were being dubbed as one of the biggest reason for land subsidence.





- The institution hence recommended the safe disposal of the water coming from the upper reaches and waste disposal as the top priority.
- The WIHG mentioned **earthquakes** as a reason for slow and gradual land subsidence.
- The main reason for the subsidence appears to be **internal erosion** caused by the subsurface drainage, which may be due to infiltration of rainwater/melting of ice/wastewater discharge from household and hotels.
  - Though subsidence is continuous phenomenon, it can be minimised by controlling infiltration of water, which helps in minimising the internal erosion.
- After an analysis by the Small BAseLine Subset Interferometry SAR Technique, the ISRO stated that the subsidence in the Joshimath region may be due to **toe-cutting phenomenon, slope instability as a result of seepage of local drainage water in the soil, terrain and edaphic characteristics, loose and unconsolidated moraine materials of the slope** (due to old landslide) and flash flood events in and around the area in the recent past. This has resulted in development of cracks in the ground as well as houses in Joshimath town.

## Economy

### How Unemployment Is Measured?

**Context:** In order to successfully tackle unemployment, it is important to understand how it is defined and measured in a developing economy like India.

- When the Periodic Labour Force Survey (PLFS) was released in 2017, it revealed the unemployment rate of India to be 6.1%, the highest ever recorded in India.
- The PLFS of 2021-22 showed unemployment reducing to 4.1%, much lower than before, but higher than some developed economies.

#### THE GIST

- The International Labour Organization (ILO) defines unemployment as being out of a job; being available to take a job; and actively engaged in searching for work. Therefore, an individual who has lost work but does not look for another job is not unemployed.
- The situation is complicated in a developing economy. According to a 2009-10 survey undertaken by the NSSO, 33.3% of rural women and 27.2% of urban women aged 15 and above who were engaged in domestic work reported willingness to work if it were made available within the premises of the household. These women would not be counted among the unemployed because they are not actively looking for work.
- Measuring unemployment in India is difficult due to the informal nature of jobs. Unlike developed economies, individuals do not hold one job year-round.

Term	Definition
<b>Unemployment</b>	<ul style="list-style-type: none"> <li>• Unemployment is not synonymous with joblessness.</li> <li>• The International Labour Organization (ILO) defines unemployment as being out of a job; being available to take a job; and actively engaged in searching for work.</li> <li>• Therefore, an individual who has lost work but does not look for another job is not unemployed.</li> </ul>
<b>Labour Force</b>	<ul style="list-style-type: none"> <li>• The labour force is defined as the sum of the employed and the unemployed.</li> <li>• Those neither employed nor unemployed — such as students and those engaged in unpaid domestic work — are considered out of the labour force.</li> </ul>
<b>Unemployment Rate</b>	<ul style="list-style-type: none"> <li>• The unemployment rate is measured as the ratio of the unemployed to the labour force.</li> <li>• The unemployment rate could also fall if an economy is not generating enough jobs, or if people decide not to search for work.</li> </ul>

### Measuring Unemployment In India

The situation is complicated in a developing economy, because decisions to search for work are constrained by social norms.

- According to a 2009-10 survey undertaken by the National Sample Survey Organisation (NSSO), 33.3% of rural women and 27.2% of urban women aged 15 and above who were engaged in domestic work reported willingness to work if it were made available within the premises of the household.
  - This represents 18.8% of the rural female population aged 15 and up;
- The labour force participation rate (LFPR) for rural women that year was 26.5%.
  - These women would not be counted among the unemployed because they are not actively looking for work.

A definition of unemployment that focuses on actively searching for a job may underestimate the true picture in a developing economy.

- Measuring unemployment in India is difficult due to the informal nature of jobs.
- Unlike developed economies, individuals do not hold one job year-round.
- An individual may be unemployed this week, but may have worked as a casual labourer last month, and as a farmer for most of the year.

The NSSO adopts two major measures for classifying the working status of individuals in India:

### The Usual Principal and Subsidiary Status (UPSS)

- An individual's principal status, whether employed, unemployed or out of the labour force, is based on the activity in which they "...spent relatively long time..." in the previous year.
- A person who is not a worker, according to the principal status, would still be counted as employed according to the UPSS if they were engaged in some economic activity in a subsidiary role for a period "...not less than 30 days".
- Thus, an individual unemployed for five months and working for seven months in the previous year would be considered a worker according to the principal status, while an individual unemployed for nine months but working for three months would be counted as employed as per the UPSS.

### The Current Weekly Status (CWS)

- The CWS adopts a shorter reference period of a week.
- An individual is counted as being employed if they have worked for "...at least one hour on at least one day during the seven days preceding the date of survey."
- UPSS unemployment rates will always be lower than CWS rates because there is a greater probability that an individual would find work over a year as compared to a week.
- The low bar for classifying an individual as employed explains why unemployment rates are lower in rural areas than urban. In agrarian economies, where individuals have access to family farms or some form of casual agrarian work, there is greater probability of finding some kind of work when compared to urban areas.

These definitions may 'underestimate' unemployment, but they were largely designed to capture the extent of the informal economy.

The **Centre for Monitoring Indian Economy** classifies individuals based on their activity in the day preceding the interview.

**Table 1: The unemployment rates as per the Periodic Labour Force Survey**

	UPSS			CWS		
	Rural	Urban	Aggregate	Rural	Urban	Aggregate
2017-18	5.3%	7.8%	6.1%	8.5%	9.6%	8.9%
2018-19	5%	7.7%	5.8%	8.4%	9.5%	8.8%
2019-20	4%	7%	4.8%	7.9%	11%	8.8%
2020-21	3.3%	6.7%	4.2%	6.5%	10%	7.5%
2021-22	3.3%	6.3%	4.1%	6%	8.3%	6.6%



- They, therefore, estimate a higher unemployment rate, but lower labour force participation rates.
- This is because in an informal economy, there is a lower chance of an individual having work on any given day as compared to longer periods of a week or a year.

One cannot say which of the above frameworks is “right” or “wrong” for this represents an unavoidable trade-off in a developing economy. Adopt too short a reference period, and one gets higher rates of the unemployed and lower of the employed, and vice versa. This dilemma does not arise in developed nations where work is largely regular over the year.

### The Lockdown Effect

The lockdown announced in March 2020 was a profound disruption to the Indian economy. But this wasn’t reflected in the PLFS unemployment rates, which covers a period between July of one year to June of the next.

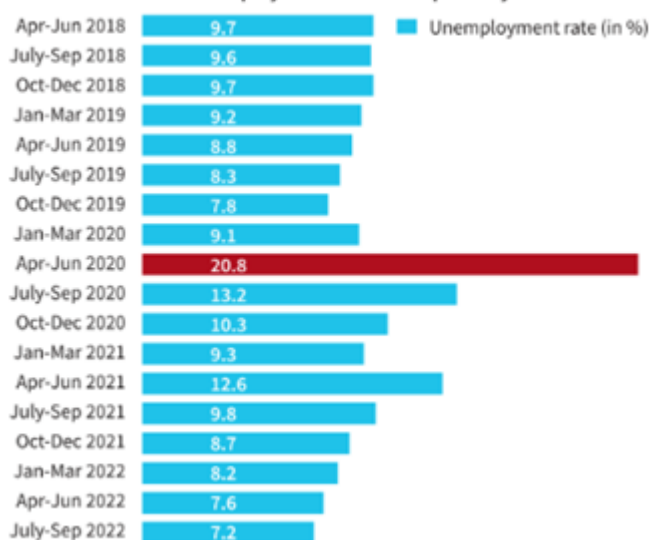
- The lockdown would have been covered in the last quarter of the 2019-20 PLFS, its after-effects seen in the 2020-21 PLFS.
- However, unemployment rates — measured both by the UPSS and CWS standards — fell in 2019-20 and 2020-21.

**Example:** Consider an individual with regular employment who loses work in March 2020. According to the UPSS status, this individual would be considered employed, since they spent most of the previous year employed. If those individuals who lost jobs during the lockdown find employment in a time less than six months, they would never be counted as unemployed by the UPSS.

- The CWS criterion, with a shorter reference period, would record higher unemployment rates.
- However, the measures presented in the PLFS report are an aggregation of interviews conducted across the year. If those rendered jobless by the lockdown were able to find employment relatively quickly, the CWS unemployment rate for the lockdown period would show high unemployment, but not so for subsequent periods.
- When averaging across these different periods, the CWS rate for the entire year would show a lower measure.

This can be seen in Table 2, which shows urban CWS unemployment rates on a quarterly basis. Unemployment spiked during the lockdown quarter, but reduced thereafter. The CWS unemployment over the year would not show such a high rise.

**Table 2: Urban CWS unemployment rates on a quarterly basis**





## Impact of RBI's Lending Guidelines

**Context:** On August 18, apex banking regulator the Reserve Bank of India (RBI) issued guidelines enabling a borrower to transition from a floating interest rate-based loan to one with a fixed interest rate.

- According to RBI, the endeavour was to address borrowers' grievances pertaining to the elongation of loan tenure and/or an increase in the EMI amount in the event of an increase in the benchmark interest rate.
- A lack of proper communication along with the absence of consent formed part of the concerns.
- The provisions would be extended to existing as well as new loans by the end of the current calendar year.

### RBI's Instructions

The apex banking regulator has given borrowers the option to switch over to a fixed (interest) rate mechanism for their loans from floating rates.

- This would be based on a board-approved policy drafted by the lending entity.
- The policy must also specify the number of times such a switch would be allowed during the tenure.
- The lender must also transparently communicate to the borrower all relevant charges alongside service charges or administrative costs associated with the transition.
- The responsibility would rest with the lender to communicate clearly, at the time of loan sanction, the impact emanating from the change in regime (floating to fixed), such as the change in EMI and/or tenure of the loan or both.
- The borrower would now also have the option to choose between enhancement of the EMI or elongation of the tenure or a combination of both.
- S/he might also opt to prepay the loan, either in part or full, at any point during the tenure. This would, however, still invite foreclosure charges or pre-payment penalty.
- Further, the regulator has sought that lending entities provide borrowers, through appropriate channels, a statement at the end of each quarter enumerating the principal and interest recovered till date, EMI amount, number of EMIs left and annualised rate of interest/ Annual Percentage Rate (APR) — for the entire tenure of the loan.
  - RBI has asked for the statement to be “simple and easily understood by the borrower”.

The instructions would apply to all equated instalment-based loans of different periodicities albeit with certain changes based on the nature of the loan.

Difference Between A Fixed And Floating Interest Rate	Arguments
<ul style="list-style-type: none"> <li>• <b>Fixed interest</b> rates are those that do not change during the tenure of the loan. On the other hand,</li> </ul>	<ul style="list-style-type: none"> <li>• Lenders argue that even if the floating interest rate were to rise by up to 2.5 percentage points, the borrower would be able to save more money when it is below the fixed rate.</li> </ul>

### THE GIST

- On August 18, the RBI issued guidelines allowing borrowers to switch from floating to fixed interest rate loans. The move aims to address concerns about loan tenure elongation and EMI increases when benchmark interest rates rise.
- Borrowers will have the option to switch based on a board-approved policy drafted by the lending entity, specifying the number of allowable switches during the loan tenure.
- Lenders must transparently communicate all relevant charges and administrative costs associated with the transition.
- Borrowers will receive clear communication about the impact of switching, such as changes in EMI or loan tenure, and can choose between EMI enhancement, tenure elongation, or prepayment options.

- ? Why did the RBI introduce guidelines enabling a borrower to transition from a floating interest rate-based loan to one with a fixed interest rate?
- ? How do lenders communicate the impact of switching from floating to fixed rates to borrowers?
- ? How does the RBI assess borrowers' repayment capacity?





**floating interest rates** are subject to market dynamics and the base rate — therefore, the risk differentiation.

- As also contended by several lending entities, **floating interest rates are generally lower than fixed interest rates**. For example, if the floating interest rate for home loans is 10.5%, the fixed interest rate would be 12%.

- It has been widely argued that their preference for the floating rate-based regime is to better adjust their positions as per the evolving market dynamics.
- The advantages are transmitted onto the borrower's savings pool, but the opposite also holds true in a rising benchmark rate regime.
- Also noteworthy is the fact that floating interest rate loans do not draw any prepayment penalty— unlike fixed rate loans.
- However, the fixed rate-based regime endows a borrower with greater certainty and security. This also helps in better planning and structuring of individual budgets. Thus, prospective borrowers should note broader evolving economic dynamics and accordingly decide the tenure they seek.

## Gresham's law

**Context:** What happens when governments fix currency exchange rates? The law, named after English financier Thomas Gresham, came into play most recently during the economic crisis in Sri Lanka last year, during which the Central Bank of Sri Lanka fixed the exchange rate between the Sri Lankan rupee and the U.S. dollar.

### Gresham's Law

Gresham's law refers to the dictum that “bad money drives out good.”

- Gresham's law comes into play when the exchange rate between two moneys or currencies is fixed by the government at a certain ratio that is different from the market exchange rate.
- Such price fixing causes the undervalued currency — that is, the currency whose price is fixed at a level below the market rate — to go out of circulation.
- The overvalued currency, on the other hand, remains in circulation but it does not find enough buyers.
- It applies not just to paper currencies but also to commodity currencies and other goods.
- In fact, whenever the price of any commodity — whether it is used as money or not — is fixed arbitrarily such that it becomes undervalued when compared to the market exchange rate, this causes the commodity to disappear from the formal market.
- The only way to get hold of an undervalued commodity in such cases would be through the black market.
- Sometimes, countries can even witness the outflow of certain goods through their borders when they are forcibly undervalued by governments.

It should be noted that the market exchange rate is essentially an equilibrium price at which the supply of a currency is equal to the demand for the currency.

- Also, the supply of a currency in the market rises as its price rises and falls as its price falls; while, on the other hand, the demand for a currency falls as its price rises and rises as its price falls.
- So, when the price of a currency is fixed by the government at a level below the market exchange rate, the currency's supply drops while demand for the currency rises.
- Thus a price cap can lead to a currency shortage with demand for the currency outpacing supply.

Gresham's law can be seen at play whenever a government fixes the exchange rate (or price) of a commodity money (such as gold and silver coins) far below than the market price of the commodity backing them.

- In such cases, people who hold the commodity money would stop offering the money at the price fixed by the government.
- They may even melt such commodity money to derive pure gold and silver that they can sell at the market price, which is higher than the rate fixed by the government.

Gresham's law, however, holds true only when the exchange rate between currencies is fixed under law by the government and the law is implemented effectively by authorities.

- In the absence of any government decree fixing the exchange rate between currencies, it is good money that eventually drives bad money out of the market and not the other way round.
- When the exchange rate between currencies is not fixed and people have the choice to freely choose between currencies, people gradually stop using currencies that they consider to be of poor quality and adopt currencies that are found to be of better quality.
- This phenomenon wherein "good money drives out bad" is called **Thiers' law** (named after French politician Adolphe Thiers) and it is seen as a complement to Gresham's law.
- The rise of private cryptocurrencies in recent years has been cited by many analysts as an example of good money issued by private money producers driving out bad money issued by governments.

## Tracking India's Growth Trajectory

**Context:** With inflationary pressures, a falling rupee, fluctuations in tax revenue streams and an apprehensive outlook on the agriculture sector in Q1 FY24, India's reported growth narrative may be over embellished.

- The conventional way to assess a country's economic situation is to look at the quarterly (three-month) and annual (12-month) GDP (gross-domestic-product) growth rate and compare it to previous quarters as well as years.
- The quarterly release of GDP figures is by the NSO (National Statistical Office).

### Q1-Data

- ✓ The **Q1 data** covering the GDP growth rate from April to June of FY24 boasts a **nominal growth rate of 8%** and a **real growth rate of 7.8%**.
- ✓ The growth story currently posits that the numbers reflect an uptick in the **agriculture sector growing at 3.5%**, unlikely to be sustained due to pressure from the El Niño phenomenon, and the services industry, with financial, real estate and professional services growing at 12.2%.
- ✓ Moreover, there is also talk of sustaining a close to 6.5% growth rate for the current financial year.

### THE GIST

- The Q1 data covering the GDP growth rate from April to June of FY24 boasts a nominal growth rate of 8% and a real growth rate of 7.8%.
- The government's tax revenue from direct taxes has weakened over the previous quarter while the indirect tax revenue remained strong, indicating a K-shaped pattern.
- Direct and personal taxes should (in the absence of any significant policy changes) have grown closer to the nominal growth rate than it has currently. Narrowing revenue streams indicate forced austerity measures, as the government intends to control the budget deficit, and hence the interest rate.

## Calculating GDP

The first factor to consider is that calculating the GDP growth rate involves many complex statistical choices and sophisticated statistical operations.

- One such decision the NSO made while conducting their research was to use the income approach of calculating GDP rather than the expenditure approach.
- The **income approach** involves summing up all national incomes from the factors of production and accounting for other elements such as taxes, depreciation, and net foreign factor income. The assumption generally is that both methods lead to similar results.
- However, the **expenditure approach** dictates headline growth to be 4.5% rather than 7.8% which is a large discrepancy.
- Moreover, another essential statistical operation is the **adjusting for inflation using the price deflator**.
  - Typically, the deflator is meant to adjust growth figures when they are overstated by inflation.

- In this case, deflation due to falling commodity prices, reflected in the wholesale price index, has worked to overstate the real growth.
- Furthermore, there is a base effect from the **COVID-19 de-growth period**, which continues to plague India's growth figures. Although less pronounced in FY24, the base effect has a role in comparative statistics due to sporadic growth in the years following FY20-21.
- Additionally, one must consider whether the proposed, supposedly cooled, inflation rate calculated through the consumer price index can be sustained at current levels with the impending depreciation of the Indian rupee against the dollar due to capital outflow pressures resulting from the RBI's reluctance to raise interest rates.
- India is a net importer, and its most significant import consists of crude petroleum, whose price seems to be rising due to Saudi's \$100 per barrel push and rupee depreciation.
  - The domestic consumption of diesel, a proxy for economic activity in India, fell by 3% in August, which, if sustained, does not paint a rosy growth picture for the coming quarters.

## Revenue from Taxes

- The government's tax revenue from direct taxes has weakened over the previous quarter while the indirect tax revenue remained strong, indicating a **K-shaped pattern**.
- The **income streams** from progressive taxation (more significant tax burden on those higher on the income ladder) seem to be a laggard compared to its regressive counterpart.
- A **muted growth of direct tax** collected in an economy boosted by the services industry is a statistical discrepancy which remains unexplained in the proposed GDP growth story.
- **Direct and personal taxes** should (in the absence of any significant policy changes) have grown closer to the nominal growth rate than it has currently.
- **Narrowing revenue streams** indicate forced austerity measures, as the government intends to control the budget deficit, and hence the interest rate.

Therefore, growth in FY24 stemming from government expenditure seems to be a pipe dream.

In conclusion, after a meticulous analysis of India's Q1 FY24 economic transcript, it becomes palpable that the reported growth narrative might be somewhat over embellished.

- The divergence in growth figures brought forth by the income and expenditure approaches manifest a significant disparity, raising fundamental questions about the veracity of the promulgated optimistic narrative.
- Moreover, the underpinnings of this growth story, nuanced by inflationary adjustments and conspicuous fluctuations in tax revenue streams, signal a cautious trajectory.
- Additionally, the apprehensive outlook on the agriculture sector and potential fiscal constraints paint an arguably more restrained picture than initially portrayed.
- Therefore, it seems prudent to assert that India's economic performance, although showing signs of resilience, does not quite emerge as the unequivocal success story depicted in initial observations, urging a more nuanced and critical approach in assessing the trajectory ahead.

## 46-Year-Low Savings Rate

**Context:** FinMin links 46-year-low savings rate to changing preferences; 'higher borrowings signal confidence in future employment, income prospects'.

- The Finance Ministry dismissed "critical voices" about household savings having fallen to a multi-decade low on account of economic distress and asserted that households were now adding lesser financial assets than in the past as they had started taking loans to buy real assets such as homes and vehicles.
- This was "not a sign of distress but of confidence in their future employment and income prospects," the ministry added.

- Data released by the Reserve Bank of India showed net household financial savings slid to 5.1% of GDP in 2022-23, reckoned to be the lowest since 1976-77, from 7.2% in 2021-22.
- This, coupled with an increase in households' financial liabilities to 5.8%, from 3.8% of GDP in 2021-22, had prompted concerns that the recovery from the COVID-19 pandemic was still incomplete for many households and that high inflation had dented savings.

### Changing Preference

- Asserting that “the correct position with true facts and right inferences” of data indicated that changing consumer preference for different financial products was the “real reason for the [decline in] household savings,” the ministry said in a 630-word statement:
  - “between June 2020 and March 2023, the stock of Household Gross Financial Assets went up by 37.6%, and the stock of Household Gross Financial Liabilities went up by 42.6% — no big difference between the two”.
- “Households added Net Financial Assets of ₹22.8 lakh crore in FY21, nearly ₹17 lakh crore in FY22 and ₹13.8 lakh crore in FY23.
- So, they added less financial assets to their portfolio than in the previous year and the year before. They added financial assets by a lesser magnitude than in the previous years because they have now started taking loans to buy real assets such as homes.
- Sharing RBI data on growth in personal loans, the ministry said there had been “a steady double-digit growth in loans for housing since May 2021” indicating that financial liabilities had been incurred to buy real assets.

### Double-Digit Growth

- Vehicle loans have been growing at double digits since April 2022 and more than 20% since September 2022.
- The household sector is not in distress, clearly. They are buying vehicles and homes on mortgages, the ministry averred.
- Overall household savings [current prices] — which includes financial, physical and jewellery — has grown at a CAGR of 9.2% between 2013-14 and 2021-22.
- Nominal GDP has grown at a CAGR of 9.65% during the same period,” the ministry highlighted.

This showed that the ratio of household savings to nominal GDP had remained constant around 20% to 19% as of 2021-22.

### Centre Softens Angel Tax Rules

**Context:** Govt. introduces five different valuation methods for shares and a 10% tolerance for deviations from the accepted share valuations; The new rules, however, do not apply to resident investors.

- The government has eased some of the provisions of the angel tax introduced in this year’s Budget on investments into start-ups by non-resident investors at a premium over their fair market value.
- It has introduced five different valuation methods for shares and offered a 10% tolerance for deviations from the accepted share valuations.
- As per a notification issued by the Central Board of Direct Taxes, Rule 11UA under the Income Tax Act has been amended, with some changes to the draft norms released in May, bringing some relief to prospective foreign investors.

### Acquiring real assets

Finance Ministry attributes decline in savings rate to an increase in borrowings to buy real assets such as homes and vehicles



■ RBI data shows net household financial savings slid to 5.1% of GDP in FY23, from 7.2%

■ Households' financial liabilities rose to 5.8%, from 3.8% of GDP in FY22

■ Ministry cites RBI data showing steady double-digit growth in housing loans since May 2021



- The introduction of five alternative valuation methods for the valuation of equity shares, which so far could only be valued based on NAV and Discounted Free Cash Flow methods, should provide more flexibility to merchant bankers for the valuation of a company,” said Subramaniam Krishnan, partner at EY India.
- The option to value equity shares by any of these five methods is not available to resident investors.
- Deloitte India partner said Indian companies and investors were facing severe practical difficulties in executing a simple transaction involving infusion of capital on account of lack of clarity on these rules. Hopefully the investors will now get a push to consummate their investment.
- The amended rule brings in more clarity for both investor and investee, basis which an appropriate valuation method can be adopted, reducing the chances of any future litigation.

## Easier rules

Govt. eases rules governing investments in start-ups by non-resident investors at a premium over fair market value

- The new rules notified by the Centre provide more flexibility to merchant bankers for the valuation of a company



- Until now, the valuation of equity shares could only be based on NAV and discounted free cash flow methods

- The new policy is expected to address practical difficulties faced by investors and firms due to lack of clarity on rules

## RoDTEP Scheme

**Context:** Exporters seek higher support under RoDTEP (Remission of Duties and Taxes on Exported Products) scheme.

- With goods exports declining for seven months in a row till August, the government has extended support to outbound shipments by stretching the applicability of the Remission of Duties and Taxes on Exported Products (RoDTEP) scheme for nine more months till June 30, 2024.

### Review of Scheme

The extension comes even as the Revenue Department began a review of the export incentive scheme which provides a mechanism to reimburse taxes, duties and levies (at the central, State and local level) that are incurred by exporters in the production and distribution process and are not refunded under any other mechanism.

- At the first review meeting, exporters’ bodies sought higher remission rates for all export items to secure more market access overseas along with Budget allocations for the scheme.

### RoDTEP Scheme

The Scheme for Remission of Duties and Taxes on Exported Products (RoDTEP) has emerged as a critical tool in supporting India's exporters.

- It became operational on **1st January 2021** replacing the existing export incentive scheme, Merchandise Exports from India (MEIS).
  - This change was prompted by a World Trade Organization (WTO) ruling that determined the MEIS scheme's violation of WTO regulations due to its provision of export subsidies for a broad spectrum of goods.
- The rebate under the scheme is allowed, based on the allowed

#### Objective

- Its primary objective is to provide comprehensive support to exporters by remitting duties and taxes incurred during the production and distribution of exported products.
- Importantly, RoDTEP covers taxes, duties, and levies at the central, state, and local levels, which are not refunded through any other existing mechanisms.



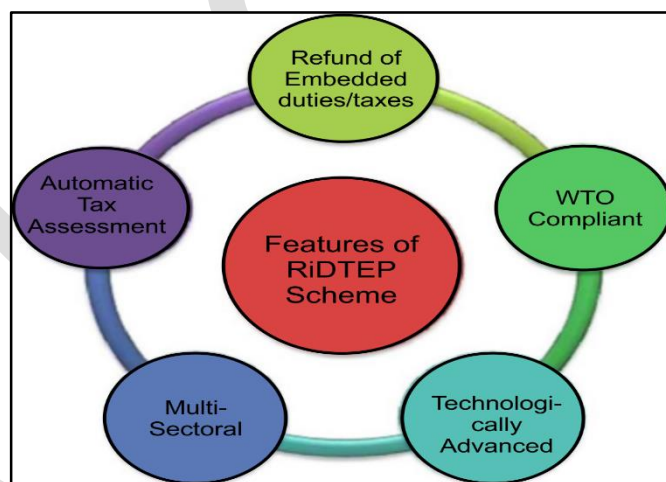
percentage of FOB (Freight On Board) value of exports and issued in the form of a transferable duty credit/electronic scrip (e-scrip), the details of which are maintained in a digital ledger by the Central Board of Indirect Taxes and Customs (CBIC).

- The RoDTEP Committee operates within the Department of Revenue.
  - Its primary responsibility is to review and recommend ceiling rates for different export sectors under the RoDTEP Scheme.

<b>Financial Allocation</b>	<ul style="list-style-type: none"> <li>• In the financial year 2023-24, the Indian Government has allocated a substantial budget of Rs. 15,070 crores to support the RoDTEP Scheme.</li> </ul>
<b>Stakeholder Engagement</b>	<ul style="list-style-type: none"> <li>• The Committee recently initiated its activities by engaging with Export Promotion Councils (EPCs) and Chambers of Commerce.</li> </ul>

### Some Key Features of Remission of Duties and Taxes on Exported Products Scheme

<b>Launch</b>	1st Jan 2021
<b>Affiliated Ministry</b>	Ministry of Commerce and Industry
<b>Tax Refund Range</b>	0.5% to 4.3%
<b>Excluded Department</b>	Steel, Organic, Chemical, and Petrochemical
<b>Target</b>	Employment-oriented sectors such as Main, Agriculture, Leather, Gems and Jewellery are its prime target.
<b>Total Outlay</b>	12454 Cr
<b>Taxes Intended to compensate to exports in this scheme</b>	<ul style="list-style-type: none"> <li>• VAT and Excise duty on the fuel used in self-incurred transportation costs</li> <li>• the fuel used in the generation of electricity via power plants or DG Sets</li> <li>• on the fuel used in running machinery/plant</li> <li>• Electricity duty on the purchase of electricity</li> <li>• Mandi Tax/ Municipal Taxes/ Property Taxes</li> <li>• Stamp duty on export documents; etc</li> </ul>



- #### Benefits Of The RoDTEP Scheme
- ✓ It will help make Indian exports more competitive in global markets and reduce the cost of production for exporters as it will reimburse exporters for the duties and taxes that they have paid on imported inputs.
  - ✓ Scheme is expected to
    - Boost exports from India by making Indian exports more competitive in global markets.
    - Create jobs in India by boosting exports from India.
  - ✓ The RoDTEP scheme is a simplified and automated scheme. This will make it easier for exporters to avail the benefits of the scheme.
  - ✓ This will improve the ease of doing business in India, making it more attractive for foreign investors.
  - ✓ The RoDTEP scheme will benefit a wide range of exporters. This will help to promote inclusive growth in India.

## Science & Technology

### Picoflare Jets

**Context:** Researchers studying the findings of the Solar Orbiter Aircraft, a joint mission by the European Space Agency and the U.S. space agency NASA, recently announced that they had detected small jets of charged particles that were being expelled in intermittent fashion from the outer regions of the sun's outer atmosphere.

- They were emerging at a supersonic speed, and the expulsions lasted for 20-100 seconds at a time.

### Picoflare Jets

According to the researchers, these 'picoflare jets' could be a source of the solar wind, which have important effects on the solar system at large as well as on the earth's magnetic field.

- A solar wind is a high-speed stream of charged particles from the sun, but their exact origin remains unclear.

'Picoflare jets' could be a source of the solar wind, a high-speed stream of charged particles from the sun, but their exact origin remains unclear



Scientists only know that coronal holes are source regions for the solar wind. Coronal holes are transient parts of the sun's corona, or the outermost portion of its atmosphere, where the atmosphere is relative less dense and cooler, and from where the sun's magnetic field extends into space.

### About the Research

- The team used the Extreme Ultraviolet Imager of the Solar Orbiter Spacecraft to observe a coronal hole.
- The spacecraft took pictures of picoflare jets in March 2022, when it moved past the sun's south pole.
- These high-resolution images revealed dark streaks that were visible for 20-100 seconds before vanishing.
- Each streak was a few hundred kilometres long and emitted as much energy as 3,000-4,000 households in the U.S. consume over a whole year.
- The researchers observed the relatively small picoflare jets within emissions from the coronal hole that they were observing.
- While they lasted only a few dozen seconds, the researchers calculated that they contained enough energy to power a nontrivial fraction of the solar wind.

'Pico' is an order of magnitude that denotes  $10^{-12}$ , or one trillionth of a unit. The researchers name these jets from the sun thus because they carried approximately one-trillionth as much energy as the largest flares that the sun is believed to be able to produce, according to the researchers.

The discovery is notable because while strong gusts of the solar wind produce beautiful aurorae over the high latitudes of different planets, they also set off a cascade of effects that disrupt the earth's magnetic field and damaging electronics in satellites in space and in circuits on the ground.

### Vagus Nerve Dysfunction & COVID-19 Connection

**Context:** There's been a lot of chatter online of late, about the vagus nerve: ways to stimulate it and possible benefits of this stimulation to help with health problems from anxiety to obesity. Research has also indicated a link between vagus nerve dysfunction and long COVID.



## What Is The Vagus Nerve?

They're actually a pair of nerves, one on each side, that run from your brainstem, through the neck, to your chest and stomach.

- They form a key part of the parasympathetic nervous system, the system that is responsible for relaxing and resting your body after a bout of activity and for a number of vital functions including your heart rate, blood pressure and digestion; it also plays a role in the immune system.

## Why Is The Vagus Nerve Being Researched?

There are many things that make the vagus nerve fascinating to researchers.

- The vagal nerves are the longest cranial nerves, going from your brain to your large intestine, fulfilling their meaning ('vagus' in Latin means 'wandering') by passing through, or connecting with your neck, heart, lungs, abdomen and digestive tract – all important parts.
- They are the 10<sup>th</sup> of your 12 cranial nerves and contain 75% of your parasympathetic nervous system's nerve fibre.
- They work bi-directionally, allowing the brain and body to communicate with each other.

So researchers are increasingly looking at ways through which stimulation of these nerves, our 'sensory superhighways', thereby triggering the parasympathetic nervous system, may potentially help with various health conditions.

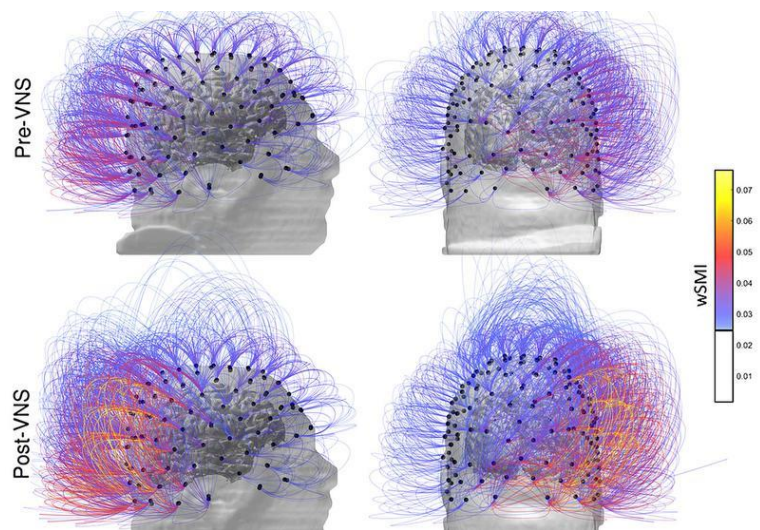
## Conditions Vagus Nerve Stimulation Can Treat

**Epilepsy and Depression:** An implantable vagus nerve stimulator is used to treat epilepsy and depression (that does not respond to conventional treatment), by stimulating areas of the brain that lead to seizures and affect moods.

There are now non-invasive devices that can be held against the skin for stimulation.

One finding about the vagus nerve was that it regulates inflammation: the body, in response to an infection, gets temporarily inflamed, but once the infection is dealt with, the vagus nerve helps bring the body back to normal by suppressing inflammation.

Vagus nerve stimulation is also being studied for other diseases and disorders such as migraines, polycystic ovary syndrome, alcoholism, rheumatoid arthritis, Alzheimer's, multiple sclerosis and gut disorders such as inflammatory bowel disease and Crohn's disease.



## Vagus Nerve's Connection To Long COVID

A study posted on the Preprints with Lancet server in June this year, took a look at patients with Post-Covid-19 Condition (PCC) or long COVID. It attempted to find out whether dysfunction of the vagus nerve could be responsible for symptoms these patients experienced, including persistent dysphonia (hoarseness), dysphagia (swallowing difficulties), dizziness, shortness of breath, fast heart rates and gastrointestinal disturbances.



- The study found that those with PCC were more likely to have vagus nerve-related symptoms, compared to those who had recovered from COVID-19 and those not infected, indicating that vagus nerve dysfunction could have a role in the pathophysiology of PCC.
- The study, also presented at last year's European Congress of Clinical Microbiology and Infectious Diseases suggested that many symptoms connected to PCC could be linked to the effect of the coronavirus on the vagus nerve.

### Does Vagus Nerve Stimulation Benefit All Patients?

Implanted vagus nerve stimulation does not work for everybody, and is not intended to replace conventional treatment.

- It is an adjuvant treatment for most conditions, not a primary treatment. VNS is still being studied and, more research is needed into its potential therapeutic effect.
- Stimulation of the vagus nerve with a device must not be done at home. Since the nerve regulates heartbeat and blood pressure, cardiac clearance is needed.
- There are inhibitory and stimulatory protocols to be followed while using these devices, and so it has to be done under a doctor's supervision.

### Rashtriya Vigyan Puraskar

**Context:** Nearly a year after deciding to cut the number of prizes annually awarded by its Ministries, the Union government is set to institute the Rashtriya Vigyan Puraskar — 56 prizes to felicitate scientists, technologists and innovators.

- Akin to the prestigious Padma awards, these awards will not include any cash component; instead, they will likely bestow a certificate and a medallion on the awardee.

### Key Highlights

- According to the proposal, the RVP will comprise three Vigyan Ratna, 25 Vigyan Shri, 25 Vigyan Yuva-Shanti Swarup Bhatnagar and three Vigyan Team awards.
- **Multidisciplinary prizes:** These prizes will be awarded annually for physics, chemistry, biological sciences, mathematics and computer science, earth science, medicine, engineering science, agricultural science, environmental science, technology and innovation, atomic energy, space science and technology, and a 13th category, simply called "others".
- The Vigyan Ratna awards shall be for "**lifetime contributions along with excellence made in any field of science**", the Vigyan Shri for "**distinguished contribution to any field**", and the SSB for "**exceptional contribution by young scientists**". The team awards shall be for three or more researchers who have made an "exceptional contribution as a team".
- There are **no age limits** for any prizes except the SSB, for which recipients must be 45 years or younger.
- "It may be ensured that each domain may be represented. Adequate representation of women may also be ensured," said the proposal forwarded by the Department of Science and Technology (DST) to the Union Home Ministry.
- The 56 proposed awards are a stark reduction from the almost 300 science prizes that used to be given by Union Ministries.
- In their previous avatar, the prizes also had a significant cash component.
  - Example: The Shanti Swarup Bhatnagar (SSB) awards, given by the Council of Scientific and Industrial Research (CSIR) since 1958, now includes ₹5 lakh per winner, as well as a salary perk.
  - The National Technology Awards, given to teams by the Technology Development Board (a DST entity), also include cash prizes worth ₹25 lakh.

- The new awards will also be open to **persons of Indian origin (PIOs)**, though a maximum of one such may be awarded the Vigyan Ratna, while three PIOs each can be selected for the Vigyan Shri and the VY-SSB. However, PIOs will not be eligible for the Vigyan Team awards.

### Starting in 2024

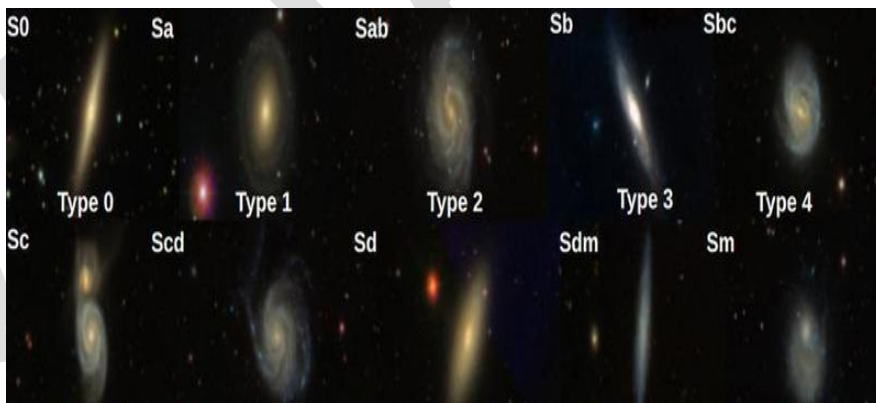
- The awards will be announced annually on May 11, which is **National Technology Day**, and will be awarded on **National Space Day**, August 23.
  - These are the days on which India successfully conducted its second nuclear test in 1998, and then catapulted the Chandrayaan-3's Vikram lander on the moon this year.
- The RVP awards, which will commence from 2024, will be given by the President or the Vice President, according to the proposal.
- A committee will be constituted every year, comprising the Secretaries of six Science Ministries, up to four presidents of science and engineering academies, and six distinguished scientists and technologists from various fields.
- The **CSIR** will coordinate the administration of the awards process for two years, after which it will be taken over by the proposed **National Research Foundation**.

## Gravitational Instabilities Affect Evolution of Galaxies

**Context:** A study conducted by the Indian Institute of Astrophysics (IIA) could help understand how gravitational instabilities are connected to galaxy evolution.

### Key Highlights

- K. Aditya, a post-doctoral fellow at the IIA, tried to explore how gravitational instabilities are connected with star formation, gas fraction, timescale for growth of gravitational instabilities and finally, the observed morphology.
- They then compared the star formation rate, gas fraction, and timescale for the growth of gravitational instabilities of nearby galaxies and investigated the stability levels of a sample of 175 galaxies taken from the Spitzer Photometry and Accurate Rotation Curves (SPARC) database.
- This helped them trace the role of dark matter in regulating the stability levels of the galaxies and understand if stars and gas can self-regulate the stability levels," the Department of Science and Technology (DST) said.
- The DST added that they found that spiral galaxies like the Milky Way exhibit a higher median star formation rate, lower stability, lower gas fraction, and a smaller timescale for the growth of gravitational instabilities.
- This indicates that gravitational instabilities in spirals rapidly convert a substantial amount of gas into stars, depleting the gas reservoirs.
- It added that the study, which compared the stability levels in the nearby galaxies with those observed at high redshift, which are precursors to the galaxies in the local universe, could help understand how gravitational instabilities are connected to galaxy evolution.



## ISRO Tests Engine for Gaganyaan Mission

**Context:** The Indian Space Research Organisation has successfully completed the CE20 E13 engine hot test for Gaganyaan qualification and 22-tonne thrust qualification.



## Key Highlights

- The engine was tested at the ISRO Propulsion Complex (IPRC), Mahendragiri on September 22.
- The CE20 engine is a vital component, serving as the powerhouse of the Cryogenic Upper Stage (CUS) responsible for propelling the upper stage (C25) of the LVM3 vehicle.
- It has demonstrated its capability by successfully operating at a thrust level of 19 tonnes in six successive LVM3 missions and two commercial OneWeb missions.
- To enhance the payload capacity of the LVM3 vehicle, ISRO is upgrading the CE20 engine.
- The upper cryogenic stage is being transformed into the C32 stage with increased propellant loading capacity, and the engine is being modified to operate at a higher thrust level of 22 tonnes.
- The Test Vehicle D-1/Crew Escape System mission of Gaganyaan is likely to be conducted in October.

Dimension	Description
<b>Objectives</b>	To launch three crew members (including a women) into low Earth orbit and bring them back safely to Earth. Demonstrate the capability to send humans into space. Develop and test the technologies required for human spaceflight.
<b>Launch Vehicle</b>	Human Rated LVM3 (HLVM3) (GSLV Mk III derived)
<b>Module</b>	The Orbiter Module consists of the Crew Module (CM) (habitable space for the crew) and the Service Module (SM)— powered by two liquid propellant engines
<b>Trial</b>	Three flights will be sent into orbit. There will be two unmanned flights and one human spaceflight.
<b>Launch Site</b>	Satish Dhawan Space Centre, Sriharikota, Andhra Pradesh
<b>Duration of Mission</b>	It will circle Earth at a low-earth-orbit at an altitude of 300-400 km from earth for 5-7 days.
<b>Collaborations</b>	Collaboration with Russia's Roscosmos State Corporation for Space Activities. France's CNES (National Centre for Space Studies) is also a partner in the mission
<b>Significance</b>	Once accomplished, India will become the fourth country in the world to launch a human space flight mission after the US, Russia and China.

## Inside the Digital World Of Cookies

**Context:** The digital world of cookies plays a significant role in any online experience. In the digital realm, cookies help in personalisation and user convenience. These unassuming bits of code, stored on a device when one visits websites, play a pivotal role in shaping any online experience.

### How Do Cookies Work?

Think of cookies as the key to a secure, members-only club. Just like the club bouncer recognises regular patrons and grants them seamless access, cookies remember a person's login information on websites.

- This means you do not have to repeatedly enter the credentials every time you revisit a site, making it convenient for use.

### THE GIST

- Cookies can track online behaviour, leading to privacy concerns about digital privacy. Inadequate security of cookies can create opportunities for cybercriminals to steal personal information.
- The Digital Personal Data Protection Act 2023 in India mandates explicit consent for collecting or processing personal data via cookies. The updated law emphasises the need for transparent and well-informed consent.
- Third-party cookies have sparked debates, resulting in web browsers limiting their usage to protect user privacy. The excessive use of cookies can slow down web browsers, affecting the user experience.
- Cookies enhance online experiences but pose privacy and security challenges. Their usage and regulation are evolving in the digital landscape.

**Example:** On websites like Amazon, cookies remember customer's previous interactions; from products they have browsed to purchases they have made.

- Armed with this knowledge, Amazon serves up tailored product recommendations and content, making the online shopping feel like a personalised boutique experience.
- Consider an enchanted grocery cart that never empties, no matter how many times you step away.
- Online shopping carts, fuelled by cookies, offer a similar enchantment.
- You can add items to the cart, leave the website, and return later to find all the selections waiting patiently, ready for checkout.
- Platforms like Facebook and Google use cookies to track online behaviour, ensuring the ads you encounter align with your preferences.
- While cookies offer undeniable advantages, there is a flip side to considering privacy concerns and the potential for data misuse.

## What Are The Types Of Cookies?



- **Session cookies** are temporary cookies like post-it notes for websites.
  - They are stored in the computer's memory only during the browsing session.
  - Once you close the browser, they vanish.
  - Session cookies help websites remember the actions as you navigate, like items in a shopping cart.
- **Persistent cookies** are the digital equivalent of bookmarks.
  - They stay on the device after your browsing session ends.
  - Persistent cookies remember the login information, language preferences, and even the ads you have interacted with.
  - They are handy for a more personalised web experience.
- **Secure cookies** are only sent over encrypted connections, making them safer from prying eyes.
  - Secure cookies are often used for sensitive data like login credentials.
- **Third-party cookies** are similar—they come from a domain other than the one you are visiting.
  - They are often used for tracking and advertising purposes, which can be both useful and, at times, intrusive.

## Uses of Cookies

Firstly, they act as digital ID cards, aiding in user authentication by allowing websites to recognise and keep you logged in during the visit.

Secondly, they foster a sense of personalisation, recalling your preferences such as language choice or website theme. Thirdly, they function as the digital equivalent of a persistent shopping cart, ensuring that items you have added online remain there when you return.

Additionally, cookies facilitate website owners in gathering invaluable analytics data about user interactions, enabling them to make enhancements and customise content.

Finally, cookies play a pivotal role in targeted advertising, as advertisers use them to display ads that align with a person's interest and browsing history, making online shopping more enticing. Navigating the world of cookies is not all sweetness; but it comes with its set of challenges.



## Challenges Associated

- **Firstly**, privacy concerns arise as cookies could track your online behaviour, which, while often harmless, can sometimes encroach upon your digital privacy.
- **Secondly**, security risks loom when cookies are inadequately secured, opening doors for cybercriminals to pilfer the personal information.
- **Thirdly**, the era of user consent has dawned, thanks to privacy regulations like the General Data Protection Regulation and The California Consumer Privacy Act, necessitating websites to seek your approval before deploying certain cookie types, resulting in those somewhat irksome pop-ups and prompts.
  - India's newly enacted **Digital Personal Data Protection Act 2023** now necessitates websites to acquire explicit consent from users prior to collecting or processing their personal data via cookies.
  - In contrast to earlier regulations that often accepted implied consent as satisfactory, the updated law highlights the significance of transparent and well-informed consent.
- **Fourthly**, third-party cookies have sparked debates, prompting many web browsers to curb their usage to safeguard user privacy.
- **Lastly**, the data deluge generated by the multitude of cookies can potentially clog the browser, leading to a sluggish web experience.

## Health

### Mpox Watch Helps Identify Variant Of Virus Causing Chickenpox

**Context:** The Indian Council of Medical Research-National Institute of Virology (ICMR-NIV) has for the first time found the presence of Clade 9 variant of varicella zoster virus (VZV) in India.

- It added that this is the first study reporting the circulation of Clade 9 in India. The variant is the most common strain in circulation in countries such as Germany, the U.K., and the U.S.
- “The multi-country mpox (monkeypox) outbreak across the globe has led to the systematic surveillance of mpox cases in India.
- During the surveillance of mpox, we encountered cases of VZV in suspected mpox cases amongst children and adults,” said the new study published in the Annals of Medicine journal.
- This study focused on the genomic characterisation of VZV in India.
- Varicella zoster virus (VZV) is an alpha herpes virus that causes **chickenpox** and **herpes zoster (shingles)**.

Monkeypox disease symptoms are frequently mistaken for VZV as their clinical presentations often closely resemble each other. There is a need for clinical differentiation between mpox and VZV for accurate diagnosis, said the study.

- It added that despite infection with the Clade 9 strain there were no significant indications of heightened disease severity in the patients.
- For the study, the scientists took a total of 331 suspected cases, of which 22 cases were positive for monkeypox virus (15 from New Delhi and seven from Kerala), while 17 were positive for Enteroviruses and one case was confirmed as buffalopox virus.

## Dementia

**Context:** With India's elderly population expected to touch 20 crore in 2031, there is a growing demand for a national action plan to tackle rising cases of Alzheimer's, the most common form of dementia which can impair memory and significantly lower quality of life.

- Estimates based on a recent multi-centric study reveal a dementia prevalence rate of 7.4% among those aged 60 years and above, translating to nearly 9 lakh Indians currently living with dementia.
- From an estimated 88 lakh in 2016, the prevalence of dementia is projected to increase to 1.7 crore by 2036.

- The study titled ‘**Prevalence of dementia in India: National and State estimates from a nationwide study**’ was published in July this year in *Alzheimer’s and Dementia*, the journal of the Alzheimer’s Association.

### Key Highlights

- The co-principal investigator of the study, said it revealed that States like Jammu and Kashmir, Odisha and West Bengal reported much higher rates of dementia.
  - This is contrary to the earlier belief that southern States with higher aging populations would have a higher prevalence rate of dementia.
- In 2012, **WHO declared dementia a public health priority** and launched the **Global Action Plan on the public health response to dementia (2017 – 2025)**, which emphasises critical areas such as dementia awareness, risk reduction, diagnosis, treatment, caregiver support, and research.
- Despite advances in drug development, risk reduction remains the only proven prevention tool, Alzheimer’s Disease International (ADI), the global federation of over 100 Alzheimer’s and dementia associations, has warned.
- Calling on governments around the world to urgently fund dementia risk-reduction research, education, and support services, ADI has said that nearly 40% of projected dementia cases can be delayed or potentially even avoided by addressing the risk factors.
- While 40 governments worldwide have so far developed national dementia plans, the proposal is yet to gain momentum in India.
- According to a **study published in the Indian Journal of Public Health in 2013**, the cost of dementia care in India in 2010 for 37 lakh people was ₹ 23,300 crore annually.
  - It is estimated that the families of 88 lakh people with dementia would be spending about ₹ 1,18,902 crore to take care of their kin with dementia in a year at present.
  - The economic burden on the households to take care of 1.7 crore people with dementia in 2036, based on the current projections will be about ₹ 3, 08,395 crore annually.
- Dementia is a major public health problem requiring multi-sectoral intervention to address the whole spectrum of services from prevention to rehabilitation and caregiver support.
- There is widespread ignorance, low awareness, and stigma surrounding this condition leading to almost 90% of people never getting a diagnosis.
- India contributes to more than 15% of the global prevalence of dementia. This estimate is much higher than the prevalence estimated earlier based on smaller studies.
- The burden due to dementia is not merely due to the increasing number of cases. It is compounded by the extent of caregiver burden and the lack of adequate health and social care services.
- The lack of effective cure for dementia necessitates the urgent development of a comprehensive national action plan for dementia to address this public health challenge.

NIMHANS and Dementia India Alliance (DIA) are working with the Karnataka government on chalking out a Karnataka State Dementia Action Plan. DIA president said the State-level plan will align with WHO’s global action plan, positioning Karnataka as a pioneer in India to formulate a comprehensive action plan for dementia.

The framework for the national dementia action plan needs to include awareness generation, early detection, clinical management and long-term care planning. The Lancet Commission on dementia has been regularly updating the modifiable risk factors. There is a need for health care providers and the general public to be educated about these risk factors to prevent dementia.

The Longitudinal Aging Study in India Diagnostic Assessment of Dementia (LASI DAD) Wave 1 has provided information on several such risk factors and the ongoing Wave 2 is also focusing on new risk as well as protective factors. Diet seems to have an important protective role.

## India Reports Fewer People With Orphan Diseases

**Context:** Much of our conversation about health leads to the talk of a few common ailments that afflict several of our acquaintances—diabetes probably tops this list. Yet, for each of the few ailments that preoccupy us, there are many that occur only rarely, but whose effects can be devastating to the sufferers and their families.

- The most common definition of a rare disease is a prevalence rate of one case in a population of 10,000 people.
- The term orphan disease is apt for many reasons. Rarity made them difficult to diagnose, because young medical practitioners may not have seen even one case.
- For the same reason, not much research was carried out in these areas, because of which treatments often did not exist.
- This situation has undergone a change as awareness of the diseases, and genomic technologies to diagnose them, has spread.
- In many countries, regulatory bodies offer incentives to promote investments in the development of pharmaceuticals for neglected illnesses. Expectedly, such moves have heightened interest in “orphan drugs”.
- Between 2009 and 2014, half of all approvals made by the FDA were for rare ailments and cancers. The costs of these therapies are prohibitive, especially from an Indian view point. Estimates put these costs between ₹1 million and ₹20 million per year.

### Key Highlights

- Global numbers indicate that there are around 7,000 rare diseases affecting 300 million people. By extrapolation, India should have 70 million cases.
- Yet hospitals in India have so far reported less than 500 of these diseases. There is not enough epidemiological data on the communities in which these rare diseases occur.
- Sophisticated clinical genomics tools are often needed to confirm these disorders.
- The Government’s National Policy for Treatment of Rare Diseases has only recently started making its mark.
- Diseases prevailing in our countries include cystic fibrosis, hemophilia, lysosomal storage disorders, sickle-cell anemia, etc.
- Citizen’s initiatives are another highlight of India’s progress regarding orphan diseases. A good example is DART, the Dystrophy Annihilation Research Trust, a body formed by parents of patients suffering from Duchenne’s muscular dystrophy.
  - In this condition, muscles in the pelvis begin to waste away from the age of three. In partnership with the IIT and AIIMS located in Jodhpur, the Trust has begun a clinical trial of an efficient and personalised antisense oligonucleotide-based therapeutic regimen for this dystrophy.

### Leprosy-Free India

With an incidence rate of 0.45 per 10,000 population, leprosy is now considered a rare disease in India. But much remains to be done to restrict the spread of this disease.

- Leprosy is a good example of how research on orphan diseases can have societal benefits.
- Recent research on the synthetic antibiotic rifapentine, which is widely used against tuberculosis, has shown that a single dose of this drug, when administered to household relatives of a leprosy patient, curtailed the spread of leprosy to them over a four-year study period (New England Journal of Medicine, 2023; 388:1843-1852).
- Such findings may help fulfil our government’s aim of a leprosy-free India by 2027.

## IISc Develops Novel Approach To Detect, Kill Cancer Cells

**Context:** Indian Institute of Science (IISc) scientists have developed a new approach to potentially detect and kill cancer cells, especially those which form a solid tumour mass.

- The scientists have created hybrid nanoparticles made of gold and copper sulphide, which can kill cancer cells using heat, and enable their detection using sound waves.

### Key Highlights

Early detection and treatment are key in the battle against cancer.

- Copper sulphide nanoparticles have previously received attention for their application in cancer diagnosis, while gold nanoparticles, which can be chemically modified to target cancer cells, have shown anticancer effects.
- These particles have photothermal, oxidative stress, and photoacoustic properties.
- When light is shined on these hybrid nanoparticles, they absorb the light and generate heat, which can kill cancer cells.
- These nanoparticles also produce singlet oxygen atoms that are toxic for the cells.
- The researchers said that the nanoparticles can also help diagnose certain cancers.
- Existing methods such as standalone CT and MRI scans require trained radiology professionals to decipher the images.
  - The photoacoustic property of the nanoparticles allows them to absorb light and generate ultrasound waves, which can be used to detect cancer cells with high contrast once the particles reach them.
  - The ultrasound waves generated from the particles allow for a more accurate image resolution as sound waves scatter less when they pass through tissues compared to light.
  - Scans created from the generated ultrasound waves can also provide better clarity and can be used to measure the oxygen saturation in the tumour, boosting their detection.
  - You can integrate this with existing systems of detection or treatment.
    - For example, the nanoparticles can be triggered to produce heat by shining a light on them using an endoscope that is typically used for cancer screening.

Previously developed nanoparticles have limited applications because of their large size.

- The IISc team used a novel reduction method to deposit tiny seeds of gold onto the copper sulphide surface.
- The resulting hybrid nanoparticles – less than 8 nm in size – can potentially travel inside tissues easily and reach tumours.
- The researchers believe that the nanoparticles' small size would also allow them to leave the human body naturally without accumulating, although extensive studies have to be carried out to determine if they are safe to use inside the human body.
- In the current study, the researchers tested their nanoparticles on lung cancer and cervical cancer cell lines in the lab. They now plan to take the results forward for clinical development.

## PCOS: Polycystic Ovary Syndrome

**Context:** Research confirms that adolescents raised in environments conducive to healthy choices have a lower risk of developing PCOS.

### Key Highlights

In September, amid **PCOS awareness month**, a concerning reality emerges: academic pressure may unknowingly contribute to a silent health crisis among young girls.

- It starts in classrooms but often leads to gynaecologists' offices, where ultrasound scans reveal ovarian cysts, resulting in a diagnosis of Polycystic Ovary Syndrome (PCOS).



## Increasingly Common

- Various studies and reports, reveal PCOS as an increasingly common health issue among modern Indian women.
- One in five women in India grapples with PCOS, with 60% of those seeking infertility treatments doing so due to PCOS-related problems. Gynaecologists nationwide concur that this condition is on the rise.
- PCOS lacks a single known cause.
  - It affects individuals with a genetic predisposition, often marked by a family history of diabetes or obesity, exposed to environments that encourage neither a healthy diet nor regular exercise and are stress-laden.

## PCOS Symptoms



- Research confirms that adolescents raised in environments conducive to healthy choices have a lower risk of developing PCOS. Unfortunately, such environments are scarce, especially for students in the Indian context.
- Physical education classes, where they exist, are typically once a week for a mere 30-45 minutes, a trend that has worsened, as revealed by the 2022 India Report Card team.
  - This falls far short of the WHO's recommendations for adolescent physical exercise, suggesting at least 60 minutes of aerobic activity and strength training three times a week.
- With parents enrolling children in tuition and coaching classes, sometimes from kindergarten, there's little time or motivation for physical activity. Many women only start exercising when health scares or infertility emerge.
- Experts in neuroscience, however, emphasise that fostering physical activity must start in childhood; those neglecting exercise in youth find it hard to initiate later when health issues arise.

The highly competitive education system not only makes normal expectations for physical activity unattainable but also subjects adolescents to extreme stress. Studies establish a clear link between stress and PCOS and in Indian adolescents, the most common cause of stress is academic.

- Dr Aslam points out, "Academic stress can be productive if channelled effectively, but education on coping skills and emotion regulation is overlooked in India. Most Indian schools lack mental health professionals to assist students with stress."

## Unrealistic Expectations

- Indian parents often lack tools to teach healthy resilience, becoming pressure points by imposing unrealistic academic performance expectations.
- Stress-induced hormonal changes alter body composition, predisposing young women to PCOS.

- PCOS is now the most prevalent endocrine disorder among young Indian women, impacting their lives from diabetes, obesity, and heart disease to mental health challenges like depression and anxiety.
- It also leaves them grappling with fertility issues and cosmetic concerns, including increased body hair, facial hair, and scalp hair loss.

### What Needs To Be Done?

While education and ambition empower women, we must not neglect health. The growing prevalence of PCOS urges us to consider how our societal narratives affect our children’s future health and well-being.

- Encouraging exercise is vital, as is ensuring children have time for it.
- A robust and universal physical education syllabus which focuses on accessibility is paramount.
- Parents disentangling themselves from the prestige or status narrative of academic success and understanding that various routes to success exist that do not involve academic excellence is a crucial way to relieve some pressure on the students.
- Including mental health and stress management skills in the curriculum is not only a necessity but also a responsibility.

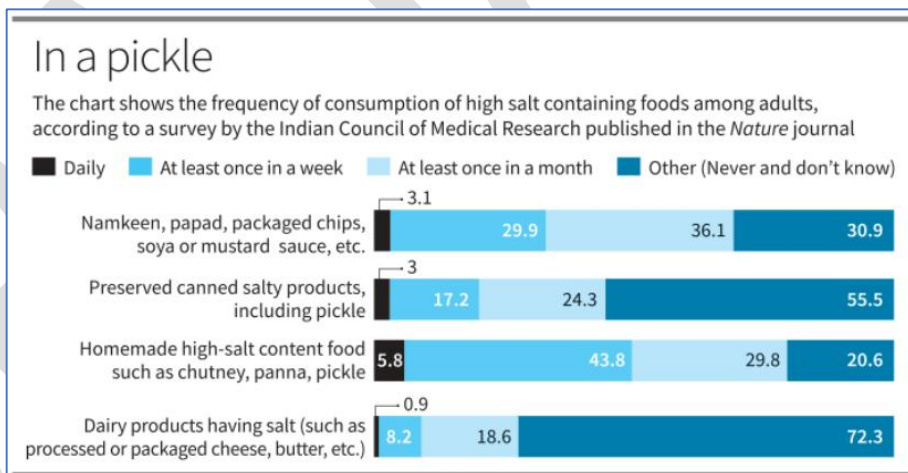
Keep in mind that women facing health challenges will face several obstacles to achieving success in life.

### Indians Eat More Salt than WHO Recommendation

**Context:** A survey undertaken by the Indian Council of Medical Research found that salt intake was higher among the employed sections, tobacco users and those with elevated blood pressure.

#### Key Highlights

- The estimated mean daily salt intake in India stands at 8 g (8.9 g a day for men and 7.1 g a day for women) against the World Health Organization (WHO) recommendation of up to 5 g daily, a study has found.
- The salt intake was significantly higher among men, those in rural areas and overweight and obese respondents, according to survey by the Indian Council of Medical Research (ICMR).
- The study, carried out as part of the National Non-communicable Disease Monitoring Survey in India, noted that the sample population had a low perception of the harmful effects of high salt intake and practices to limit consumption.
- The mean dietary salt intake is high in the Indian population, which calls for planning and implementing control of dietary salt consumption measures. We need to cut down on eating processed foods and those cooked outside home.
- 10,659 adults aged 18-69 years participated in the survey [response rate of 96.3%].
- The study notes that salt intake was higher in employed people (8.6 g) and tobacco users (8.3 g) and those with high blood pressure (8.5 g).
- It specifies that reducing the intake is a beneficial and cost-effective way to bring down elevated blood pressure by 25% and advocates a 30% reduction in mean population salt intake by 2025.



- It found that less than half of the participants practised measures to control dietary salt intake and the most commonly adopted step to prevent salt overdose was avoiding meals outside home.

### Cardiovascular Disease

Cardiovascular diseases account for an estimated 28.1% of the total deaths in India. In 2016, 1.63 million deaths were attributable to hypertension as against 0.78 million deaths in 1990, the study said.

- The study was conducted in a nationally representative sample wherein dietary sodium intake was estimated from spot urine samples, a validated method used to assess dietary sodium intake.
- The population mean was calculated using sampling weights; thus, the study findings could be generalised at a population level and used to plan and implement dietary salt control measures.

### Limitation of the Study

The information on awareness and behaviour of salt intake was self-reported and could be subjected to information bias. The study did not capture data on the actual dietary sources of salt in food items and condiments for any correlation analysis," the report said, while declaring the limitation of the study.

## Report & Index

### Global Hunger Index (GHI), 2022

**Context:** Despite being a major food producer with extensive food security schemes and the largest public distribution system in the world, India still grapples with significant levels of food insecurity, hunger, and child malnutrition.

- The Global Hunger Index (GHI), 2022, ranked India 107 among 121 countries, behind Nigeria (103) and Pakistan (99).
- The GHI provides a composite measurement and tracks undernourishment and hunger at the national level across three dimensions:

Calorie Undernourishment

Child Malnutrition

Under-five Mortality

### Key Highlights

- According to the State of Food Security and Nutrition in the World report of 2022, India is home to 224.3 million undernourished people.
- Disparities are evident among States. Leveraging subnational data that encompasses the three dimensions of the GHI enables the development of an India-specific hunger index at the level of States and Union Territories.
- This plays a pivotal role in evaluating the extent of undernourishment at a more

### Over the last half a decade, India's GHI score has deteriorated primarily due to the increasing prevalence of calorie undernourishment.

- According to the Food and Agriculture Organization, the proportion of calorie undernourishment in India has been escalating since 2017, reaching 16.3% in 2020, equivalent to the 2009 statistic.
- The Indian government has disputed these conclusions by raising concerns about the data and methodology used in calculating the GHI. However, it has not been able to provide empirical evidence to support its claims.
- Notably, no National Sample Survey (NSS) round on nutritional intake has been conducted by the government since 2011-12, which used to offer insights into the prevalence of calorie undernourishment at national and subnational levels.
- In the 78th round of the NSS conducted in 2020-21, four key questions were included to gauge household food insecurity. Unfortunately, information on these is missing from the NSS report.

localised scale, which is critical for meeting the Sustainable Development Goals of eradicating hunger and malnutrition.

## The State Hunger Index

- The GHI is computed using four indicators — the prevalence of calorie undernourishment; and of stunting, wasting, and mortality among children below the age of five; and under-five mortality rate.
- The State Hunger Index (SHI) is calculated using the same indicators **except calorie undernourishment**, which is replaced by **body mass index (BMI)** undernourishment among the working-age population, as data on calorie undernourishment are not available since 2012.
- Data for stunting, wasting, and mortality among children below the age of five are sourced from the fifth round of the National Family Health Survey (NFHS-5), while the prevalence of BMI undernourishment is computed using NFHS-5 (2019-21) and Wave 1 of the Longitudinal Ageing Study in India (2017-18).
- The calculation of the SHI score involves combining the normalised values of the four indicators using the techniques recommended by the GHI.
- The SHI scores range between 0 and 100, with higher scores indicating more hunger.
  - Scores below 10 signify low hunger, 10-20 moderate, 20-30 serious, 30-40 alarming, and 50 or above extremely alarming.
  - In the SHI, Bihar, Jharkhand, and Chhattisgarh scored 35, which places them in the ‘alarming’ category.
  - Gujarat, Uttar Pradesh, Assam, Odisha, Madhya Pradesh, Tripura, Maharashtra, and West Bengal all scored above the national average (29).
  - The performance of these States resembles that of African nations such as Haiti, Niger, Liberia, and Sierra Leone.
  - On the other hand, Chandigarh scored 12, and Sikkim, Puducherry, and Kerala all scored below 16.
  - These States, along with Manipur, Mizoram, Punjab, Delhi, Arunachal Pradesh, Andaman and Nicobar Islands, and Tamil Nadu, fall under the ‘moderate hunger’ category.
  - All the other States, which scored below the national average and above 20, have a problem of ‘serious hunger’.
- No State falls under the ‘low hunger’ category. The impact of COVID-19 on the SHI is not captured here since post-pandemic estimates are not yet available.

## Situation In India

- While the GHI has faced significant criticism from experts regarding its **conceptualisation, indicator selection, and aggregation methods**, it does provide critical insight into the state of **undernourishment and child nutrition**.
- India’s **poor performance in the GHI** is primarily attributed to its high prevalence of undernourishment and child malnutrition.
- India ranks unfavourably in child wasting, performing worse than many low-income African nations.
- The NFHS-5 indicated that one-third of children under the age of five are stunted and underweight, while every fifth child suffers from wasting.

Despite India’s notable progress in alleviating extreme poverty over the last 15 years, as indicated by the recent National Multidimensional Poverty Index, challenges persist in addressing the disparity in food insecurity, hunger, and child malnutrition.



## Data From The Air Quality Life Index 2021

**Context:** Data from the **Air Quality Life Index 2021** shows that failure to meet the World Health Organization (WHO)'s guidelines on reducing PM2.5 (particulate matter) pollution to 5 g/m<sup>3</sup> would cut global life expectancy by 2.3 years.

- AQLI data emphasises that ambient particulate pollution poses the world's greatest external risk to human health.

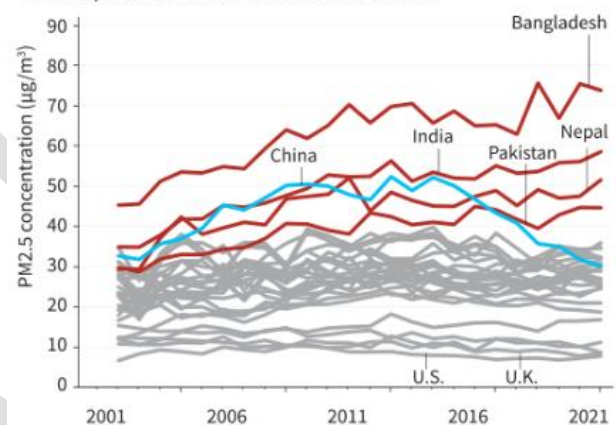
### Key Highlights

- South Asia is at the centre of the crisis. According to AQLI data, from 2013 to 2021, particulate pollution in South Asia surged by 9.7%, which is estimated to reduce life expectancy in the region by an additional six months.

### Chart 1

- Bangladesh, India, Nepal, and Pakistan, where 22.9% of the global population lives, are the most polluted countries in the world (Chart 1).
- In Bangladesh, the most polluted country in 2021, people potentially lost an average of 6.8 years of life due to air pollution not meeting WHO guidelines.
- In contrast, the average person from the U.S. lost just 3.6 months.
- Notably, China stands out due to its success in reducing pollution by a staggering 42.3% from 2013 to 2021 and extending the average life expectancy of its population by 2.2 years.
  - This reduction can be attributed to the country's policy initiatives to combat pollution in 2014.

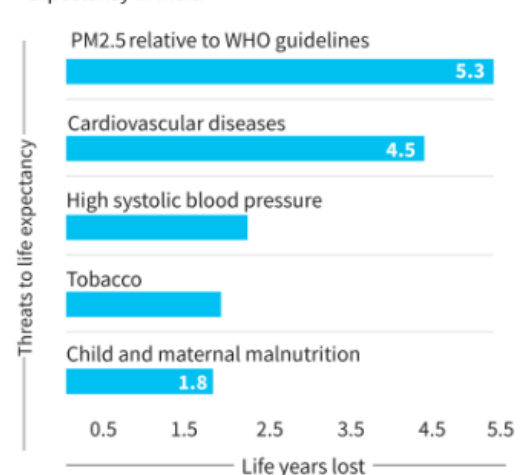
**Chart 1** | The chart shows the annual PM2.5 concentrations in the top 25 most polluted countries and other select ones



### Chart 2

- In India, the second-most polluted country in the world in 2021, particulate pollution is the greatest threat to human health (Chart 2).
- Data reveal a further rise in PM2.5 pollution from 56.2 g/m<sup>3</sup> in 2020 to 58.7 g/m<sup>3</sup> in 2021, exceeding the WHO guidelines by more than 10 times.
- The average Indian resident is set to lose 5.3 years of life expectancy if WHO guidelines remain unmet.
- In contrast, cardiovascular diseases reduce the average Indian's life expectancy by about 4.5 years, while child and maternal malnutrition reduces it by 1.8 years.

**Chart 2** | The chart shows the top 5 threats to life expectancy in India

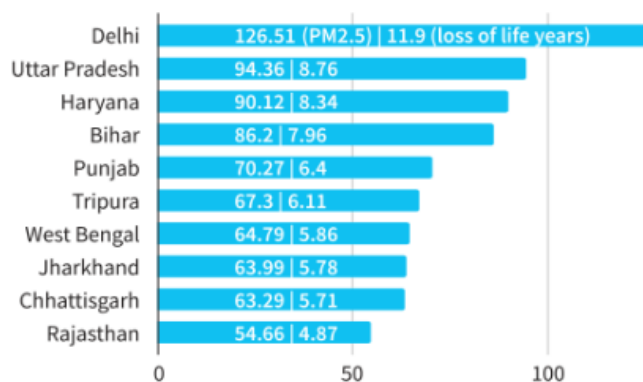




### Chart 3

- Chart 3 shows the most polluted States in India and the potential life expectancy loss if pollution levels do not meet WHO guidelines.
- In Delhi, the world’s most polluted city, 18 million people could lose 11.9 years of life expectancy relative to the WHO guideline and 8.5 years of life expectancy relative to the national guideline if current pollution levels persist.
- The northern plains, home to over half a billion people and 38.9% of India’s population, is the most polluted region.
  - The northern plains include the States and Union Territories of Bihar, Chandigarh, Delhi, Haryana, Punjab, Uttar Pradesh, and West Bengal.

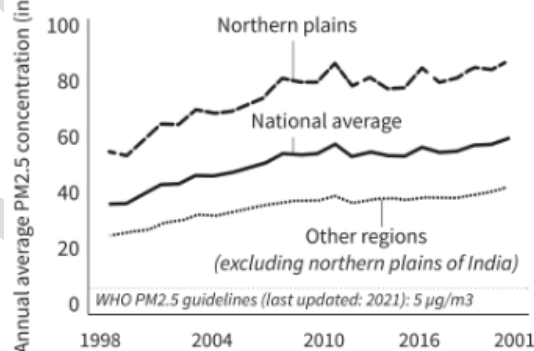
**Chart 3** | The chart shows the most polluted States in India and the potential life expectancy loss if pollution levels persist



### Chart 4

- Chart 4 shows the annual average PM2.5 concentrations in India, the northern plains, and all other regions.
- In the northern plains, the average resident is set to lose about 8 years of life expectancy if pollution levels persist and policies do not succeed in reducing pollution to levels as prescribed by the WHO.
- Pollution, once concentrated in the northern region, has spread to other parts of the country over the last two decades.
- For instance, in Maharashtra and Madhya Pradesh, which have a combined population of 204.2 million, pollution has surged by 76.8% and 78.5%, respectively, since 2000, causing a loss of an additional 1.8 years to 2.3 years of life expectancy compared to 2000 levels.

**Chart 4** | The chart shows the annual average PM2.5 concentrations in India, the northern plains and all other regions



## WHO Releases Report On Global Impact Of High BP

**Context:** Approximately four of every five people with hypertension are not adequately treated, but if countries can scale up coverage, 76 million deaths could be averted between 2023 and 2050, the World Health Organization (WHO) said in its **first-ever report** on the global impact of high blood pressure.

### Key Highlights

- The WHO report states that hypertension affects one in three adults worldwide.
- This common, deadly condition leads to stroke, heart attack, heart failure, kidney damage and many other health problems.
- The number of people living with hypertension (blood pressure of 140/90 mmHg or higher or taking medication for hypertension) doubled between 1990 and 2019, from 650 million to 1.3 billion.

### What is Hypertension?

- Blood pressure is the force exerted by circulating blood against the walls of the body’s arteries, the major blood vessels in the body.
- Hypertension is when blood pressure is too high.
- It is defined as having systolic blood pressure level greater than or equal to 140 mmHg or diastolic blood pressure level greater than or equal to 90 mmHg or/and taking anti-hypertensive medication to lower his/her blood pressure.

- Nearly half the people with hypertension globally are currently unaware of their condition.
- More than three-quarters of adults with hypertension live in low- and middle-income countries.

### Recommendations of WHO

- Recommending ways to win the race, the world organisation states that lifestyle changes such as eating a healthier diet, quitting tobacco and being more active can help lower blood pressure. Some people may need medicines.
- Unhealthy lifestyle choices, such as a high-salt diet, lack of physical activity, and excessive alcohol consumption, increase hypertension risk.
- Sedentary lifestyles, poor dietary choices, and high stress levels contribute to the rising incidence of hypertension in India.
- The treatment gaps identified in the WHO report and the Indian studies have dire consequences, as uncontrolled hypertension can lead to life-threatening conditions.
- “Prevention, early detection and effective management of hypertension are among the most cost-effective interventions in health care and should be prioritised by countries as part of their national health benefit package offered at a primary care level.
- The economic benefits of improved hypertension treatment programmes outweigh the costs by about 18 to 1,” notes the WHO.

“Hypertension can be controlled effectively with simple, low-cost medication regimens, and yet only about one in five people have controlled it,” WHO director-general said.

### India must get more people to keep blood pressure under control

- Studies have shown that excess salt consumption (over five grams a day) is responsible for 17%-30% of hypertension.
- While member States are required to achieve a 30% relative reduction in mean population intake of salt by 2025, India is yet to implement many components of WHO’s prescription to cut down salt intake.
- A study in four Indian States published in 2021 found high salt and sugar content in packaged food items.
- Making front-of-pack nutrition labelling mandatory, encouraging reformulation of foods to cut down salt, and raising awareness in people to reduce salt intake should be urgently undertaken.
- India has, however, done well in improving blood pressure control in people with hypertension through the novel India Hypertension Control Initiative (IHCI).
  - Launched in 2018, the IHCI has successfully enrolled 5.8 million hypertensive patients for treatment in 27 States, as of June 2023.
  - Importantly, 48% of patients enrolled at primary health centres and 55% at health wellness centres achieved blood pressure control as of March 2021.

- ✓ Hypertension is the most important risk factor for death and disability in India, according to a paper in The Lancet, regional health (Southeast Asia), published late last year.
- ✓ It adds that less than one-fourth of hypertensive patients in India had their blood pressure under control during 2016-2020. Though this rate has improved from the previous years’ figures, substantial differences exist across regions.
- ✓ The Lancet paper says the 2019-20 National Family Health Survey (NFHS-5) reported a hypertension prevalence of 24% in men and 21% among women, an increase from 19% and 17%, respectively, from the previous round (2015-16).
- ✓ The India Hypertension Control Initiative, a large-scale hypertension intervention under the National Health Mission, has been recognised for its positive work done within the primary healthcare system.
- ✓ Based on sketchy data from parts of India, stroke incidence was found to be 108-172 per 1,00,000 people per year and the one-month case fatality rate was 18%-42%, as per a February 2022 study. In the Global Burden of Disease report, in 2019, heart attack was the leading cause of death and disability in India.

- It is now important to greatly increase the number of hypertensive people on treatment and keep blood pressure under control.

### Way forward for India

The Indian research papers complement these perspectives by stressing the need for improved hypertension control strategies.

- They reveal that despite awareness of their hypertension diagnosis, a significant portion of patients in India do not initiate treatment.
- This indicates challenges in treatment-seeking behaviour and need for educational and behavioural interventions.
- Despite a significant four-fold improvement in control rates over two decades, the rising prevalence of hypertension, especially among the poor and young adults, necessitates re-evaluating national strategies.
- According to the WHO report, regional disparities are evident among different countries. However, WHO and Dr Frieden believe India does well.
- The Cureus study identifies regional disparities within India. Southern States such as Kerala and Tamil Nadu show better control than the western and north/north-eastern - States in India.
- Issues like forgetfulness in the elderly to take medication, availability, and affordability pose barriers.
- Limited research exists on lifestyle and risk factors, with social determinants such as education and caste playing a role. This calls for better data collection and evidence-based policies to address uncontrolled hypertension in India.
- Managing cases of high blood pressure that don't respond well to treatment, especially when doctors hesitate to take action in primary care settings, is also a problem.
- Additionally, ensuring that people take their medications over the long term and close monitoring of complications related to high blood pressure, especially in those with diabetes, are major challenges in India.
- Consequently, the National Programme for Non-communicable Diseases aims to provide proper care for 70 million people with high blood pressure in India, and its work amid the WHO report release is crucial.

The economic aspect of hypertension management is a vital focus area of the WHO report. It underscores that prevention, early detection, and effective management of hypertension are among the most cost-effective interventions.

### Findings of the Parliament Panel on NEP

**Context:** The Parliament Standing Committee on Education, headed by Bharatiya Janata Party (BJP) MP Vivek Thakur, tabled a report during the special session of Parliament on the **“Implementation of the National Education Policy (NEP), 2020 in Higher Education.”**

#### Key Highlights of the Report

- The report looked at the salient features of the NEP's implementation in the higher education sector and the progress made so far.
- The panel met representatives of various State governments, Union Ministries, higher education institutions and other stakeholders to prepare the report.
- The report noted that of the 1,043 universities functioning in the country, 70% are under the State

#### THE GIST

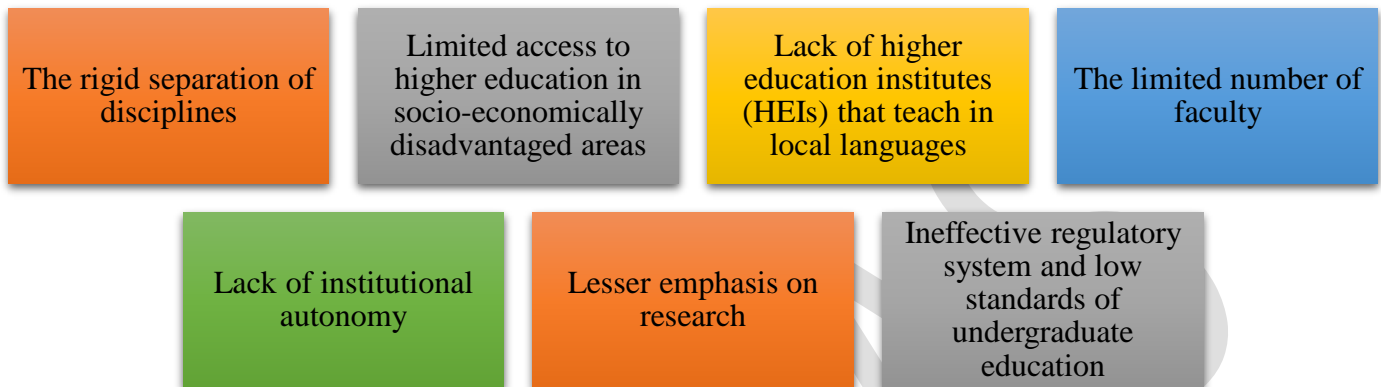
- The Parliament Standing Committee on Education tabled a report during the special session of Parliament on the 'Implementation of the National Education Policy (NEP), 2020 in Higher Education'.
- The 31-member panel tried to discuss issues such as the rigid separation of disciplines, limited access to higher education in socio-economically disadvantaged areas etc.
- The panel said that Indian institutions were likely to face several issues in implementing the multiple entry and multiple exit (MEME) system.



Act and that 94% of students are in State or private institutions with just 6% of students in Central higher educational institutions, stressing the importance of States in providing higher education.

## **Issues Discussed**

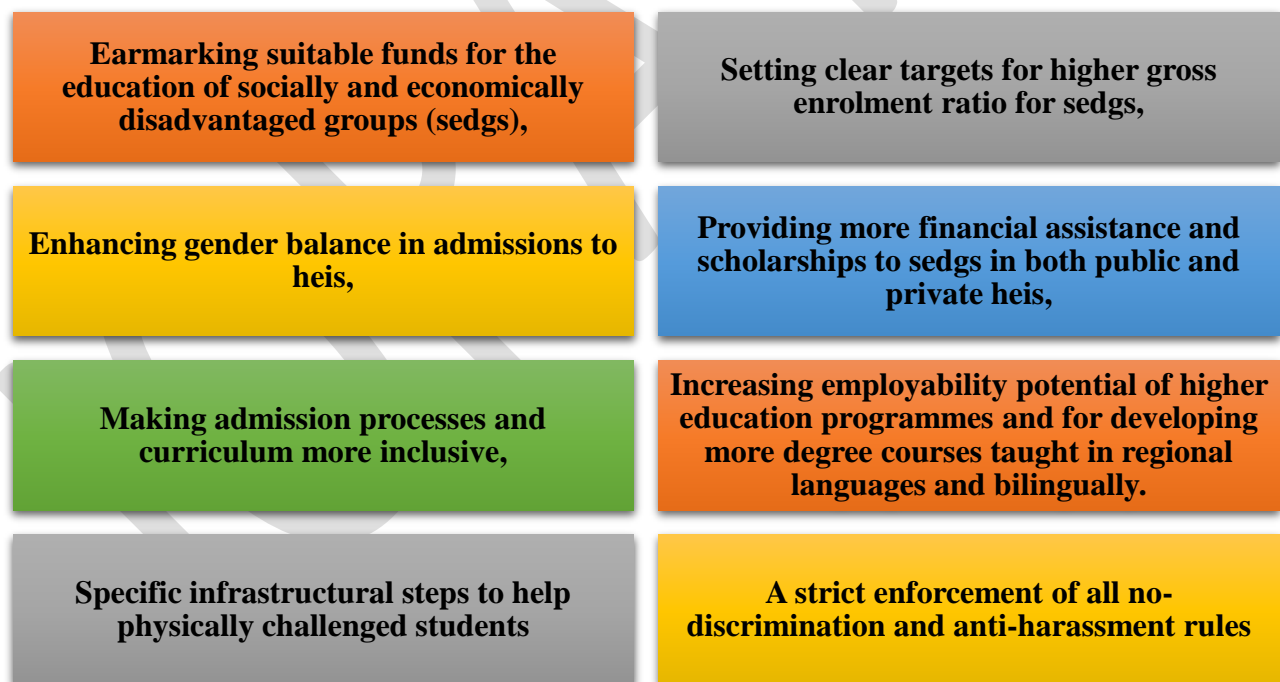
- The 31-member panel tried to discuss issues such as



- The panel said that by 2030, every district in the country should have at least one multidisciplinary HEI and that the Gross Enrolment Ratio in higher education, including vocational education, should be increased from 26.3% in 2018 to 50% by 2035.

## **Recommendations**

The panel asked the Union Government and the State Governments to take actions such as



The Committee appreciated the manner in which the NEP was implemented in Jammu and Kashmir. It said that the Union Territory was among the first in the country to implement NEP from the academic session 2022 in all its higher educational institutions. The panel said it witnessed a paradigm shift in the methods of teaching, leading to lifelong learning opportunities to students.

## What about funding?

- The Committee suggested improving the effectiveness and impact of the Higher Education Financing Agency (HEFA) in funding HEIs.
- It asked the HEFA to diversify its funding sources beyond government allocations and explore partnerships with private sector organisations, philanthropic foundations, and international financial institutions.
- It recommended reviewing and adjusting the interest rates on loans provided by HEFA “to make them more competitive and affordable” for HEIs.

## What about the multiple entry multiple exit programme?

- The panel said that Indian institutions were likely to face several issues in implementing the multiple entry and multiple exit (MEME) system.
- The panel said while the MEME looked like a flexible system, which was being operated by Western educational institutions effectively, it might not work well in the country.
- If institutions allow MEME, it would be very difficult for the institutions to predict how many students would exit and how many would join midway. Since institutions would not know the in- and out-traffic, it will certainly disturb the pupil-teacher ratio.

## A Report on Global Digital IDs

**Context:** A report on global digital IDs brings Aadhaar’s limitations, risks in focus.

- In an innocuously titled report on “Decentralized Finance and Digital Assets” released last Saturday, global rating major Moody’s Investors Service has flagged some uncomfortable home truths about India’s ambitious digital identification (ID) programme for residents, Aadhaar.
- As the world’s largest digital ID programme with biometric and demographic details of over a billion residents, Aadhaar stands out for its scale.
- But at a broader level, the agency has red-flagged security and privacy risks from “centralised” digital ID systems such as Aadhaar, where a single entity controls identifying credentials.
- Moody’s, which has mooted decentralised ID systems that give users more control over their data, has also lent weight to worries about the efficacy of Aadhaar’s biometric-based authentication systems to verify identities.
- The system often results in service denials, and the reliability of biometric technologies, especially for manual labourers in hot, humid climates, is questionable.
  - While this observation is of relevance amid the government’s push to switch all payments under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) to an Aadhaar-based payment system, it echoes the concerns raised ever since its launch under the United Progressive Alliance regime.

## Key Highlights

The vigorous pursuit of Aadhaar, after some initial hesitation, under the present government has manifested in the 12-digit number becoming mandatory for almost all welfare benefits to weaker sections as well as activities such as opening bank or provident fund accounts, securing telephone connections and remitting taxes.

- Its use, backed by the expansion of access to no-frills bank accounts and mobile phone connections, has indeed enabled the direct transfer of benefits to millions in welfare schemes and weeding out ghosts and middlemen.
- Yet, there have also been instances of people being excluded from basic services for **lack of an Aadhaar or labourers and senior citizens struggling to confirm their fingerprints and retina scans to prove they exist.**
- An audit of the Unique Identification Authority of India (UIDAI) by the Comptroller and Auditor General of India released last year, had flagged lapses that jeopardise privacy and compromise data security, along with flaws in enrolment processes leading to duplication and faulty biometrics.



- India has pushed for digital public infrastructure like the one built around the edifice of Aadhaar, as a means for service delivery in G-20 nations and beyond.
- Having appointed a part-time chief to the UIDAI last month after four years, the government must seek an honest review of, and course correction in the Aadhaar programme, before expanding its linkages further, be it for electoral rolls, private entities or MGNREGA payments.

## STs Trail Non-STs in 81 Health Measures: 2021 Study

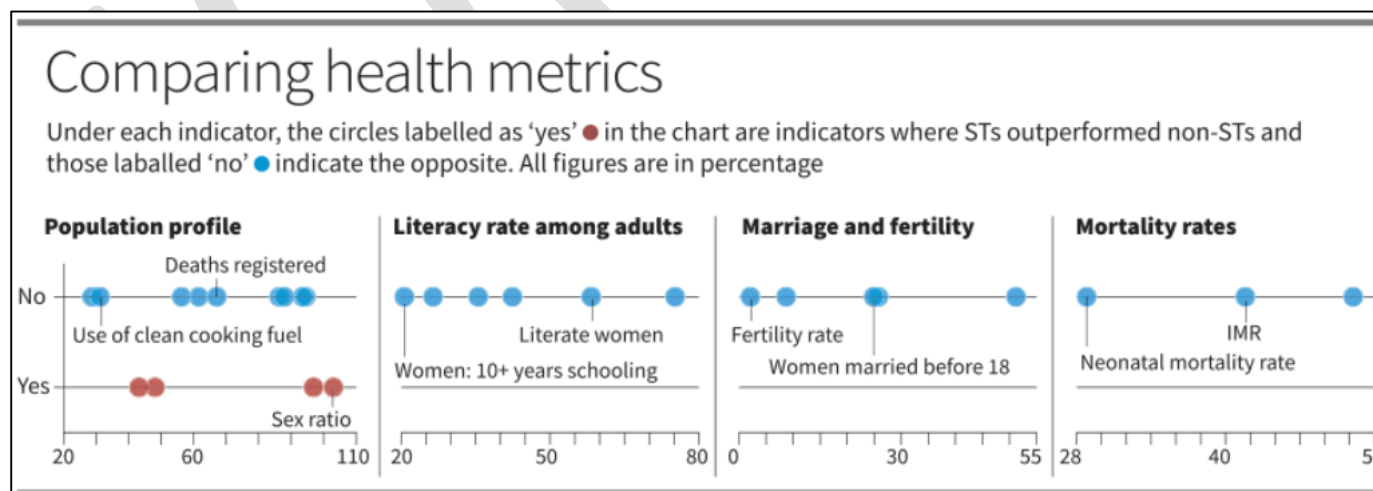
**Context:** The study evaluated 129 health indicators to compare the performance of Scheduled Tribes and non-Scheduled Tribes.

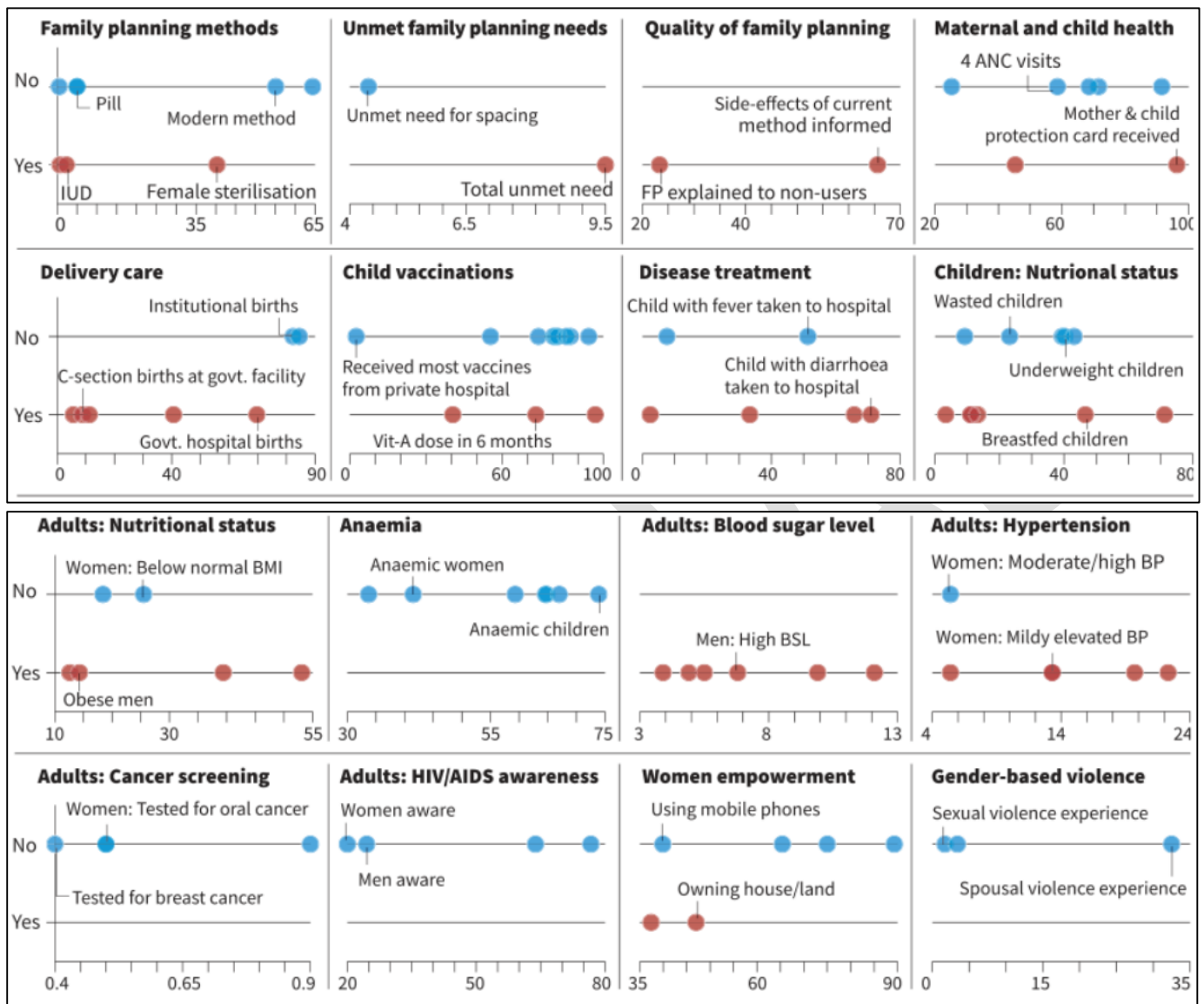
- In a recent study published in ‘The Lancet Regional Health — Southeast Asia,’ researchers provide a detailed analysis of the health, nutrition, and population trends of Scheduled Tribes (STs) from 2016 to 2021.
- Drawing from the National Family Health Surveys from 2016 and 2021, the authors contend that even though there is a noticeable improvement in the health and welfare metrics of STs, there are persistent disparities between the metrics of ST and non-ST populations, which demand urgent and consistent policy efforts.

### Key Highlights

- The 2011 Census recorded over 104 million STs spread across 705 recognised ethnic groups. Even with targeted policies in place, STs, who make up 8.6% of India’s population, face health and socioeconomic challenges.
- The study offers an overview of the performance metrics for STs, non-STs, and the overall population based on 129 parameters in 2021.
- It also highlights the contrast in the performance metrics of STs between 2016 and 2021, spotlighting areas of both progress and decline.
- In 2021, the non-ST population outperformed the ST population in 81 out of 129 indicators.
- STs continued to face challenges, particularly concerning women’s status and major public health issues such as child malnutrition, anaemia, insufficient vaccination coverage, and disparities in fertility and mortality rates.
- The **48 indicators** on which STs surpassed non-STs include overall gender balance, gender balance at birth, use of family planning methods, consistent treatment during pregnancy, and adherence to recommended breastfeeding practices.
- Moreover, STs showed a reduced occurrence of diabetes and hypertension compared to non-STs.

The research divided the **129 indicators into 21 themes** to evaluate the comparative performance of STs and non-STs in 2021.





- The chart shows the number of indicators on which the STs outperformed the non-STs or vice versa.
- The circles labelled as 'yes' in the chart are indicators where STs outperformed non-STs and those labelled 'no' indicate the opposite.
- Aside from the indicators focused on non-communicable diseases (NCDs) in adults, STs are at a disadvantage in almost all categories.
- The study says that the areas where they face greater vulnerability need dedicated policy efforts.
- The mortality rate for children under five in the ST community was alarmingly high, with 50 out of every 1,000 children not reaching their fifth birthday.
- Additionally, child malnutrition was a pressing issue, as more than 40% of ST children under five were stunted, with a similar percentage being underweight.
- The study also highlights new challenges for STs. For instance, from 2016 to 2021, there was a significant rise in high blood pressure levels among ST men and women aged 15–49, with increases of 7.5% and 8.9%, respectively.



- Between 2016 and 2021, the ST population registered improvements in 83 of the selected 129 indicators (not visualised in the chart). During these years, STs experienced major improvements in access to improved sanitation facilities (an increase of 30.4 percentage points between 2015–2016 and 2019–2021).
- Similarly, more births were being attended to by skilled health personnel (an increase of 13 points) and full vaccination coverage among children aged 12–23 months (an increase of 18.6 points).
- The civil registration of births among STs also increased from 76% in 2016 to 88% in 2021.

The study contends that India’s progress on various policy metrics concerning population, health, and nutrition hinges on the ability of its marginalised groups, with the STs being a significant segment.

## India Ageing Report 2023

**Context:** Study says challenges facing India’s ageing population are the feminisation and ‘ruralisation’ of older population, and policies must be framed accordingly; data show that women, on an average, have a higher life expectancy at the age of 60 and 80 when compared with men.

### Key Highlights

- With the decadal growth rate of the elderly population of India estimated at 41% and its share of the total population projected to double to over 20% by 2050, the United Nations Population Fund (UNFPA), India, in its 2023 India Ageing Report, has said that by 2046, it is likely that the elderly population will have surpassed the population of children (aged up to 15) in the country.
- More than 40% of the elderly in India are in the poorest wealth quintile, with about 18.7% of them living without an income, the report said, adding that such levels of poverty may affect their quality of life and healthcare utilisation.
- The report, projected that the population of people aged 80 and above will grow at a rate of around 279% between 2022 and 2050 with a **“predominance of widowed and highly dependent very old women”** — a finding in line with the pattern across several nations.
- The data showed that women, on an average, had a higher life expectancy at the age of 60 and 80 when compared with men — with variations across the States and Union Territories.
- For instance, in Himachal Pradesh and Kerala, women at 60 have a life expectancy of 23 and 22 years, respectively, which is four years more than that of men at 60 in these States — as compared with the national average differential of only a year and a half, the report said.

### Higher Life Expectancy

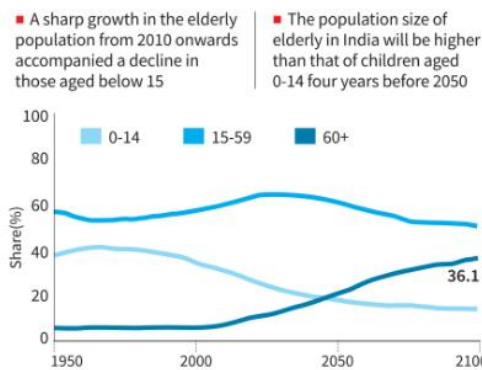
- Life expectancy of women at 60 is greater than 20 years in States such as Rajasthan, Haryana, Gujarat, Uttarakhand, Kerala, Himachal Pradesh, and the Union Territory of Jammu & Kashmir, raising concerns about their social and economic well-being, the report said.
- Further, the sex ratio (number of females per 1,000 males) among the elderly has been climbing steadily since 1991, while the ratio in the general population has been stagnating.

### Turning grey

The chart shows the share of age groups in India’s total population from 1950 to 2100. The share of the population over the age of 60 years is projected to increase from 10.5% in 2022 to 20.8% in 2050. The elderly will form over 36% of the total population of the country by the end of the century



Ageing society: Women at an old-age home in Agartala. PTI



SOURCE: INDIA AGEING REPORT 2023



- Between 2011 and 2021, the ratio increased in India as a whole and across all regions, barring the Union Territories and western India.
- In the northeast and the east, while the sex ratio of the elderly increased, it remained below 1,000 in both years, indicating that men still outnumber women in these regions even at 60-plus years.
  - This, however, is not true for the other regions (which has a bearing on the country’s average).
- A case in point is central India, where the sex ratio went from 973 in 2011 to 1,053 in 2021, implying that the women caught up with and outperformed the men in survival after 60 years over the decade, the report said.

### ‘Inherently Gendered’

“Poverty is inherently gendered in old age when older women are more likely to be widowed, living alone, with no income and with fewer assets of their own, and fully dependent on family for support,” the report said, pointing out that the major challenges facing India’s ageing population are the feminisation and ‘ruralisation’ of this older population and that policies must be designed to suit their specific needs.

- The report noted that there was a significant inter-State variation in absolute levels and growth (and hence, share) of the elderly population as well, reflecting the different stages and pace of demographic transition across States.
- Most States in the southern region and select northern States such as Himachal Pradesh and Punjab reported a higher share of the elderly population than the national average in 2021, a gap that is expected to widen by 2036, the report said.
- While the States reporting higher fertility rates and lagging in demographic transition, including Bihar and Uttar Pradesh, expect to see an increase in the share of the elderly population between 2021 and 2036, the level will remain lower than the Indian average, the report said.
- Compared with southern and western India, central and northeastern regions have States with younger groups as indicated by the ageing index.
- In the southern region, the old-age dependency ratio (elderly people per 100 people between 15 and 59 years) was higher than the national average at around 20 as is true of western India at 17.
- Overall, Union Territories (13) and the north-eastern region (13) reflected lower old age dependency ratios,” it said.

United Nations Population Fund (UNFPA)	
<b>About</b>	It is a subsidiary organ of the UN General Assembly and works as a sexual and reproductive health agency. The UN Economic and Social Council (ECOSOC) establishes its mandate.
<b>Establishment</b>	It was established as a trust fund in 1967 and began operations in 1969. In 1987, it was officially renamed the United Nations Population Fund but the original abbreviation, ‘UNFPA’ for the United Nations Fund for Population Activities was retained.
<b>Objective</b>	UNFPA works directly to tackle Sustainable Development Goals on health (SDG3), education (SDG4) and gender equality (SDG5).
<b>Fund</b>	UNFPA is not supported by the UN budget, instead, it is entirely supported by voluntary contributions of donor governments, intergovernmental organizations, the private sector, foundations and individuals.

## Global Stocktake Report

**Context:** The United Nations climate secretariat made public a ‘synthesis report’ on the results of three meetings held so far to discuss progress achieved by countries in achieving the goals of the Paris Agreement of 2015.

### Why is it called the ‘global stocktake’ report?

The synthesis report ties into a larger exercise called the ‘global stocktake,’ that is expected to take place once in five years.

- In 2015, when countries committed in Paris to keep global temperatures from rising beyond 2 degrees Celsius by the end of the century and “as far as possible” below 1.5 degrees Celsius, they also agreed to periodically review, or take stock of efforts, made by individual countries in containing greenhouse gases and transitioning their fossil-fuel dependent energy systems to renewable sources.
- The first report this year is expected to significantly influence discussions in November when country representatives converge in Dubai for the 28th edition of the UN climate Conference of Parties (COP) in November.
- While countries have laid out their Nationally Determined Contributions (NDC), they are expected to — but not obliged to — increase their ambitions every five years.
- While the latest NDC were submitted in 2020, a stocktake also aims to push countries to set higher targets before the next NDCs are publicised in 2025.

### Key Highlights

- The 45-page report lays out 17 ‘key findings’ that overall suggests that the world is not on track to achieve Paris Agreement targets, though there was still a “rapidly narrowing” window for countries to get their act together.
- In terms of new information, the synthesis report isn’t a significant update on the UN synthesis report of 2022, released ahead of COP 27 in Egypt, where the NDCs of 166 countries were analysed to conclude that they were inadequate to meet Paris-agreed targets.
- The United Nations Emissions Gap Report, also released last year, reported that 23 billion tonnes of CO<sub>2</sub> were required to be cut to keep emissions in line with Paris agreements, whereas current pledges by countries even if fully implemented would only cut 2-3 billion tonnes, leaving an emissions gap of around 20 billion tonnes. This too has been highlighted in the latest synthesis report.

### Key Findings

These 17 headline statements say that the Paris Agreement has galvanised countries into setting goals and signalling the urgency of the climate crisis.

- Governments need to support ways to transition their economies away from fossil fuel businesses and that states and communities must strengthen efforts.
  - While rapid change could be “disruptive,” countries should work on ensuring that the economic transition be equitable and inclusive.
- It stated that much more ambition was needed to reduce global greenhouse gas emissions by 43% by 2030 and further by 60% in 2035 and reach net zero CO<sub>2</sub> emissions by 2050 globally.
- Renewable energy has to be scaled up and all ‘unabated fossil fuels’ (for example, coal plants without carbon capture and storage mechanisms) were to be rapidly eliminated.

#### THE GIST

- The 45-page report lays out 17 ‘key findings’ that overall suggests that the world is not on track to achieve Paris Agreement targets, though there was still a “rapidly narrowing” window for countries to get their act together.
- These 17 headline statements say that governments need to support ways to transition their economies away from fossil fuel businesses and that states and communities must strengthen efforts.
- The Delhi Declaration for the first time formally recognises the massive jump in finance necessary for the world to transition to a renewable energy economy.

- Deforestation and land-degradation have to be halted and reversed and agricultural practices critical to reducing emissions and conserving and enhancing carbon sinks have to be encouraged.
- While the world, as a whole, has committed to scale up steps to help adapt to the unfolding and future impacts of climate change, most efforts were “fragmented, incremental, sector-specific and unequally distributed across regions.
- Transparent reporting on adaptation could facilitate and enhance understanding, implementation and international cooperation.
- Averting, minimising and addressing ‘loss and damage,’ requires urgent action across climate and development policies to manage risks comprehensively and provide support to impacted communities.
- Support for adaptation and funding arrangements for averting, minimising and addressing loss and damage, from the impact of climate change, needed to be rapidly scaled up from expanded and innovative sources.
- Financial flows needed to be made consistent with climate-resilient development to meet urgent and increasing needs.
- Access to climate finance in developing countries needed to be enhanced. It was “essential” to unlock and redeploy trillions of dollars to meet global investment needs, including by rapidly shifting finance flows globally to support a pathway towards low GHG emissions and climate-resilient development.

## Important Days

### World Suicide Prevention Day

**Context:** September 10 marked the observance of World Suicide Prevention Day, an initiative which began in 2003 to shed light on the critical issue, diminish societal stigma, and heighten awareness. The theme since 2021, ‘Creating Hope Through Action,’ aims to inspire hope and bolster preventive measures.

- In India, the day calls for attention once again to the frequently overlooked problem of suicide among housewives.
- Ever since India began categorising suicide data by occupation, housewives have consistently ranked among the top two groups. This trend held true for 2021, the most recent year for which data are available.
- A significant share of married women, especially among poor households, face abuse, control, and limited freedom from spouses. Housewives make up over 50% of India’s female suicides.

### Key Highlights

The number of women who died by suicide in India reached a peak of 45,026 in 2021. More than half of them were housewives (Table 1).

- The share of housewives in total female suicides has remained above the 50% mark for several years now.
- The share of housewives in overall suicides too has remained around the 15% mark for many years.
- Notably, as shown in Table 2, over 30% of all suicides (men and women) were due to issues relating to family or marriage.
- In general, across years, economically better States in the south featured on top of the list of suicide rates.
- In 2021, among the major States, Kerala, Tamil Nadu, Telangana, and Karnataka featured at the top of this list.
- In 2016, Peter Mayer noted in the Economic and Political Weekly that a similar trend held even if the suicide rates of housewives alone were considered. His paper suggests that shifting expectations around social roles, particularly post-marriage, could be a contributing factor.
- In the south, where female literacy rates are comparatively high and women have greater access to mass media, there tends to be a clash between modern perspectives and traditional societal norms.
- In contrast, the push back against traditional expectations is less pronounced in the north, partly due to lower levels of exposure among women.



## Domestic distress

The tables are based on data collated from the National Crime Records Bureau's 'Accidental Deaths and Suicides in India' report and the National Family Health Survey (2019-21)

**Table 1**

The share of housewives in total female suicides has remained above the 50% mark for several years now

Year	Female suicides	% of housewives
2021	45,026	51.5%
2020	44,498	50.3%
2019	41,493	51.5%
2018	42,391	54.1%
2017	40,852	52.5%
2016	41,997	51.3%
2015	42,088	53.0%
2014	42,521	47.4%

**Table 2**

Over 30% of all suicides (men and women) were due to issues relating to family or marriage

Year	% of suicides with family problems/ marriage as reason
2021	38%
2020	38.6%
2019	37.9%
2018	36.6%
2017	35.6%
2016	34.5%
2015	32.4%

**Suicide prevention helplines**

Suicides are preventable. Those in distress or having suicidal tendencies can contact I Call at 022-25521111 (Monday to Saturday, 8 a.m. to 10 p.m.). Scan for State-specific hotlines:



The National Family Health Survey (2019-21) highlights the challenging circumstances faced by married women, including limited mobility, restricted financial autonomy, and marital control, as well as physical, sexual, and emotional abuse in the hands of their spouses.

- It also shows that many women seldom seek external assistance and endure the attack on their freedoms in silence.
- Additionally, the data show that women in the lowest income bracket experience greater levels of violence and less freedom compared to those from wealthier households.

**Table 3** shows the share of married women aged 18-49 whose husbands had demonstrated specific types of controlling behaviour, across wealth quintiles, in 2019-21.

- At least one in four married women in the poorest 20% of households said her husband did not allow her to meet her female friends, insisted on knowing where she was all the time, exhibited jealousy or anger if she talked to other men, and did not trust her with money.
- The shares were relatively low in richer households.

**Table 3**

The share of married women aged 18-49 whose husbands had demonstrated specific types of controlling behaviour, across wealth quintiles, in 2019-21

Wealth quintiles	Is jealous or angry if she talks to other men	Frequently accuses her of being unfaithful	Does not permit her to meet her female friends	Tries to limit her contact with her family	Insists on knowing where she is at all times	Does not trust her with any money
Lowest	35%	14.4%	25.7%	20.1%	26.2%	28.6%
Second	30.5%	12.6%	22.3%	17.1%	22.1%	24.9%
Middle	24.9%	11.4%	19.2%	15.4%	18.8%	20.2%
Fourth	21.9%	9.3%	17.8%	13.9%	16.6%	16.7%
Highest	18.2%	5.4%	13.9%	10.8%	12.4%	12.9%

**Table 4** shows that 35% of married women in the poorest 20% of households had faced physical or emotional or sexual violence, and less than half of them had sought help (mostly from friends and family and rarely from authorities).

- The share of those who experienced violence was much lower in richer households. Also, many in richer households who did experience violence sought help.



**Table 5** shows that less than 40% of married women in the poorest quintile said that they can visit places such as markets alone. A slightly higher share of them said that they had money which they could decide how to use.

**Table 4**

Thirty-five percent of married women in poorest households had faced some form of abuse

Quintile	Physical or sexual or emotional violence	Have sought help from any source
Lowest	35%	13.6%
Second	32%	12.2%
Middle	27.8%	15.3%
Fourth	21.9%	13.7%
Highest	15.9%	18.3%

**Table 5** | Less than 40% of married women in the poorest quintile said that they can visit places such as markets alone

Quintile	Share who have money that they can decide how to use	Share who can go alone to market and health facility and places outside village/community
Lowest	46.1%	39.6%
Second	47.3%	39.8%
Middle	49.5%	39.9%
Fourth	51.5%	42%
Highest	61.5%	49.9%

## Hindi Diwas

**Context:** September 14 is celebrated in India as Hindi Diwas. The Eighth Schedule of the Constitution lists 22 languages, which includes Hindi.

### History

Hindi Diwas or the National Hindi Day is celebrated every year in India on September 14 to **mark the day of adoption of Hindi as the official language by the Constituent Assembly of India in 1949.**

- The decision of using Hindi as an official language of India was legalised by the Constitution of India on January 26, 1950. India's first Prime Minister Jawaharlal Nehru decided to celebrate Hindi Diwas on this day.
- Hindi is also an **eighth schedule language.**
- Hindi is **not a classical language.**
- **Article 351** pertains to the 'Directive for development of the Hindi language'.

### About Hindi

- Hindi is the **fourth most spoken language** in the world, and is written in **Devanagari script.**
- The language got its name from the Persian word '**Hind**' - meaning '**land of the Indus River**', and is a **descendant of Sanskrit.**
- Turk invaders in the early 11th century named the language of the region Hindi, 'language of the land of the Indus River'.
- Hindi is also **spoken in some countries outside India**, such as in Mauritius, Fiji, Suriname, Guyana, Trinidad & Tobago and Nepal.
- Hindi in its present form emerged through different stages, during which it was known by other names. The **earliest form of old Hindi was Apabhramsa.** In 400 AD Kalidas wrote a romantic play in Apabhramsa called Vikramorvashiyam.
- The **modern Devanagari script** came into existence in the 11th century.

### Significance of Hindi Diwas

#### Promotion of Hindi Language

• Hindi Diwas serves as a platform to promote the Hindi language and its rich cultural heritage. It encourages the usage of Hindi in various aspects of public life, including education, administration, and communication.

#### Linguistic Diversity

• India is a linguistically diverse nation with hundreds of languages spoken across its regions. Hindi Diwas highlights the importance of linguistic diversity and underscores the need to protect and preserve the languages that make up India's cultural tapestry.

#### Official Language Status

• The day commemorates the adoption of Hindi, written in the Devanagari script, as one of the official languages of the Indian Union. This decision was a significant step in acknowledging Hindi's role in nation-building and governance.



### Cultural Heritage

• Hindi is not just a language but also a carrier of India’s cultural and literary heritage. Hindi Diwas celebrations often include cultural programs, poetry recitations, and storytelling sessions that showcase the richness of Hindi literature and art.

### Unity in Diversity

• While Hindi holds official language status, India is a multilingual nation with various languages spoken. Hindi Diwas exemplifies the idea of “Unity in Diversity,” highlighting the coexistence of multiple languages and cultures within the country.

### Awareness and Education

• Schools, colleges, and educational institutions use Hindi Diwas as an opportunity to raise awareness about the Hindi language and organize competitions, debates, and seminars to encourage students to learn and appreciate Hindi.

### National Identity

• Hindi is a unifying language that connects people from different regions of India. Hindi Diwas plays a role in fostering a sense of national identity among Indians.

### Preservation of Heritage

• The celebration of Hindi Diwas underscores the importance of preserving and promoting India’s linguistic and cultural heritage. It encourages the younger generation to learn and value their native languages.

## Other Important Days

Date	Event	Details and Significance
1 September	<b>National Nutrition Week</b>	National Nutrition Week is observed from 1st September to 7th September to provide knowledge among people about the importance of nutrition and its importance for the human body, for better health.
2 September	<b>World Coconut Day</b>	World Coconut Day is observed on 2nd September every year to make people aware of the importance of this crop in poverty reduction. This day also commemorates the formation day of the Asian Pacific Coconut Community (APCC).
2 September	<b>Aditya L1 Launch</b>	Aditya L1 is India’s first solar mission that carries the objective to study the sun. This mission will determine the sun’s effects on the Earth and its atmosphere in real time.
3 September	<b>Skyscraper Day</b>	Skyscrapers are very tall buildings that define a city's skyline. The day marks the ability of a man to construct an industrial masterpiece.
5 September	<b>International Day of Charity</b>	International Day of Charity is observed on 5 September every year to eradicate poverty in all its forms and dimensions to achieve sustainable development goals.
5 September	<b>Teachers' Day (India)</b>	Teachers' Day in India is celebrated on 5 September every year to mark the birth anniversary of India's second President Dr. Sarvapalli Radhakrishnan. On this day we appreciate and acknowledge the efforts of teachers in making responsible individuals.

Date	Event	Details and Significance
7 September	<b>Brazilian Independence Day</b>	On 7 September 1822, Brazil got its independence from the Portuguese. In 1889 Brazil ended up with the monarchical system and became a republic but kept 7 September as its Independence Day.
8 September	<b>International Literacy Day</b>	International Literacy Day is observed to make people aware of the importance of literacy which no doubt is a matter of dignity and human rights.
8 September	<b>World Physical Therapy Day</b>	World Physical Therapy Day is observed on 8 September every year to provide an opportunity for physical therapists from all over the world to raise awareness about the important contribution of the profession in improving the well-being and health of people.
10 September	<b>World Suicide Prevention Day (WSPD)</b>	World Suicide Prevention Day (WSPD) is observed on 10 September every year to raise awareness to prevent cases of suicide. This day is organised by the International Association for Suicide Prevention (IASP). And this day is co-sponsored by WHO.
11 September	<b>National Forest Martyrs Day</b>	The date 11 September has historical significance and due to this, the date was chosen as National Forest Martyrs Day. In 1730, on this day, over 360 people of the Bishnoi tribe led by Amrita Devi, objected to the felling of trees. Due to their protest of saving the trees, they were killed in Khejarli, Rajasthan on the orders of the king.
11 September	<b>World First Aid Day</b>	It is observed on the second Saturday of September and this year it falls on 11 September. The day raises awareness among the public about how first aid can save lives in case of crises. According to the International Federation, first aid should be accessible to all people and should be an important part of developmental societies.
11 September	<b>Digvijay Diwas</b>	Digvijay Diwas is observed annually on September 11 to mark the historic speech of Swami Vivekananda in Chicago. In 1893, he attended the Parliament of the World's Religions as a representative of India and Hinduism. The inaugural World's Parliament of Religions took place from September 11 to September 27 1893.
14 September	<b>Hindi Diwas</b>	Hindi Diwas is celebrated on 14 September as on this day the Constituent Assembly of India adopted Hindi written in Devanagiri script in 1949 as the official language of the Republic of India.
15 September	<b>Engineer's Day</b>	Engineer's Day is celebrated in India on 15 September every year to mark the tribute to the Indian Engineer Bharat Ratna Mokshagundam Visvesvaraya.
15 September	<b>International Day of Democracy</b>	International Day of Democracy is observed on 15 September to remind people that democracy is about people. This day provides an opportunity to make people understand the importance of democracy and the effective realization of Human Rights.



Date	Event	Details and Significance
16 September	Malaysia Day	Malaysia Day is celebrated on 16 September and is also known as 'Hari Malaysia'. On 16 September 1963, the former British colony of Singapore and the East Malaysian states of Sabah and Sarawak joined the Federation of Malaya to generate the Malaysian Federation.
16 September	World Ozone Day	World Ozone Day is observed on 16 September annually. On this day in 1987, the Montreal Protocol was signed. Since 1994, World Ozone Day has been celebrated which was established by the United Nations General Assembly. This day reminds people about the depletion of the Ozone Layer and to find solutions to preserve it.
17 September	World Patient Safety Day	It was established by the 72nd World Health Assembly in May 2019, following the adoption of resolution WHA72.6 on 'Global action on patient safety'.
18 September	World Bamboo Day	The day is observed on 18 September to increase awareness about bamboo globally.
21 September	International Day of Peace (UN)	For the first time it was observed in September 1982 and in 2001, the General Assembly adopted a resolution 55/282, which established 21 September as International Day of Peace of non-violence and cease-fire.
21 September	World Alzheimer's Day	World Alzheimer's Day is observed on 21 September to raise awareness among people about the challenges that patient faces due to dementia. In 2012, World Alzheimer's Month was launched.
22 September	Rose Day (Welfare of Cancer patients)	Rose Day is observed on 22 September for the welfare of cancer patients or we can say that this day marks the hope for cancer patients that cancer is curable. This day is celebrated in memory of 12-year-old Melinda Rose of Canada, who when diagnosed with a rare form of blood cancer did not give up hope.
22 September	World Rhino Day	It is observed on 22 September every year. The day raises awareness and builds a safe natural habitat for this incredible species.
23 September	International Day of Sign Languages	On 23rd September, the UN General Assembly proclaimed the day as International Day of Sign Languages. The day provides a unique opportunity to support and protect the linguistic identity and cultural diversity of all deaf people and other sign language users.
24 September	World Rivers Day	World Rivers Day is celebrated on the last Sunday of September. In 2022, it falls on 26 September. The day highlights the importance of rivers and generates awareness and encourages people to improve and save water, rivers around the world. It is necessary to care for our water resources.
25 September	Antyodaya Diwas	In 2014, on 25th September 'Antyodaya Diwas' was declared in honour of Pandit Deen Dayal Upadhyaya's 98th Birth Anniversary.

Date	Event	Details and Significance
26 September	World Contraception Day	It is a global campaign to improve awareness about the contraceptive methods available and enable young people to make informed decisions regarding their sexual and reproductive health.
26 September	World Environmental Health Day	The day has been declared by the International Federation of Environmental Health.
27 September	World Tourism Day	World Tourism Day is annually celebrated on 27 September to highlight the importance of tourism which helps in generating employment and build a future for millions of people around the world.
28 September	World Rabies Day	World Rabies Day is observed on 28 September every year to make people aware of the prevention regarding rabies and to highlight the progress in defeating this horrifying disease.
28 September	International Day For Universal Access To Information (IDUAI)	International Day For Universal Access To Information (IDUAI) 2022 is observed on 28 September every year. The day focuses on the right to seek, receive, and impart information.
29 September	World Heart Day	World Heart Day is observed annually on 29 September. This day informs people about heart disease and stroke which is the world's leading cause of death.
30 September	International Translation Day	This day provides an opportunity to pay tribute to the work of language professionals. It also plays an important role in bringing nations together and strengthening world peace and security.
30 September	International Red Panda Day	It is observed on the third Saturday of September month. This year it falls on 18 September. The day raises awareness of their urgent need for conservation.

## Important Editorials of the Month

### Aditya-L1

#### Why in News?

Roughly a week after the Indian Space Research Organisation (ISRO) soft-landed a robotic lander and rover on the moon's south polar region, it launched **India's first space mission dedicated to studying the sun**, in the form of a spacecraft named **Aditya-L1**.

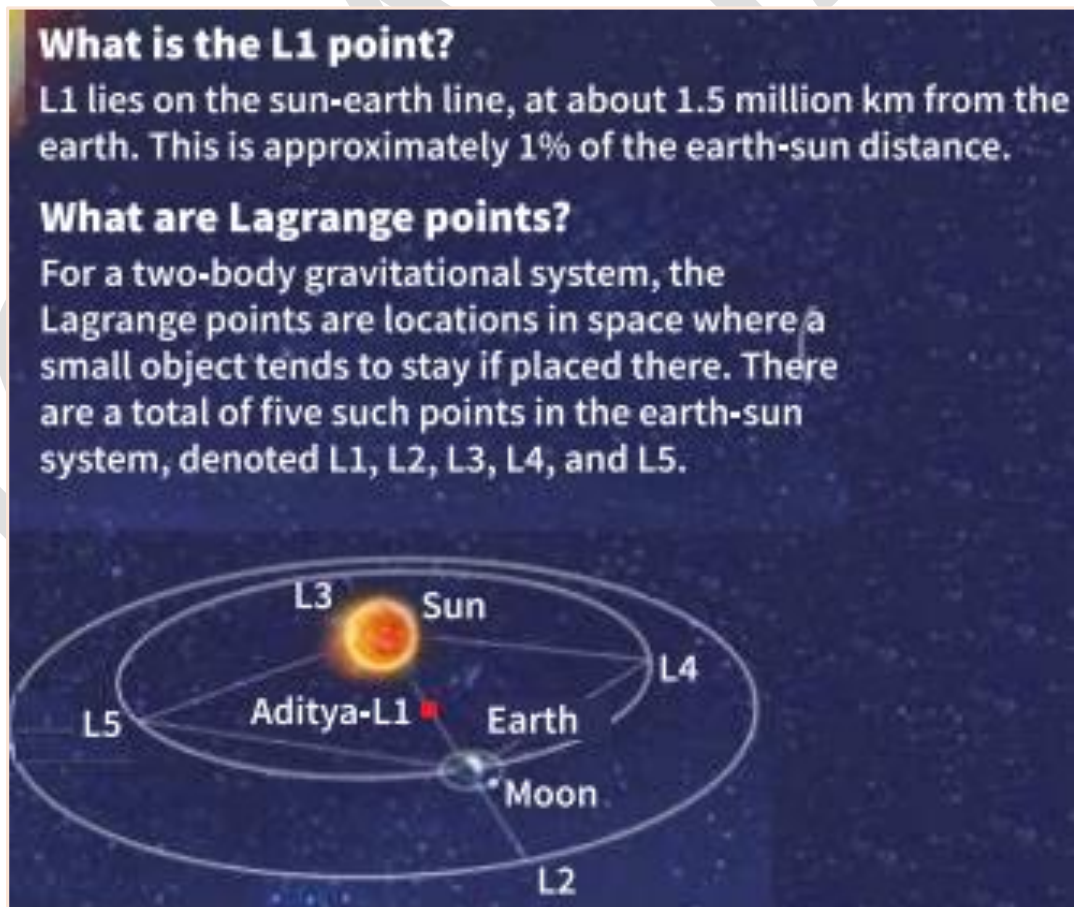
- Aditya-L1 will study the sun in multiple wavelengths with its suite of **seven instruments**: four remote-sensing and three in situ (i.e., by directly sampling a particular volume of space).
- Even though it is the star closest to the earth and has been and continues to be observed by a panoply of telescopes, the sun still holds many secrets.
  - Example is the particulars of the **solar wind**, a stream of charged particles that stream out from the sun into space.
  - Considering the solar wind affects space weather and in turn the digital components of spacecraft, Aditya-L1's findings could inform future space missions as well.
- Others are mysteries — bundles of facts not yet fully explained by scientific theories.

- The archetypal example is the **coronal heating problem**: why the uppermost layer of the sun's atmosphere is a thousand times hotter than the sun's surface.
- In the next four or so months, Aditya-L1 will travel to the **L1 Lagrange point**, a point 1.5 million kilometres from the earth, where the spacecraft will have an unobstructed view of the star while it stays in a halo orbit around the point.
- To deepen its relevance, Aditya-L1 will also have to **record and transmit data to earth** as quickly as possible, where the data downlink and analysis pipeline will have to operate with similar haste, so that scientists can piece together a concurrent image of the sun.

## L1 Lagrange Point

Discovered by mathematician Joseph Louis Lagrange, L1 is situated approximately 1.5 million kilometers from Earth.

- At L1, gravitational forces between the Sun and Earth reach equilibrium, providing an uninterrupted view of the Sun.
- The L1 is currently home to the European Space Agency (ESA)- National Aeronautics and Space Administration (NASA) Solar and Heliospheric Observatory (SOHO) observing the Sun and its dynamics.
- Aditya L1 will join this observatory to unravel the mysteries of the dynamics of the Sun.





## Aditya-L1 heads towards Lagrange point 1

India's first space-based observatory to study the Sun, Aditya-L1, which was launched on September 2, is headed to the Lagrange point 1 (L1) after ISRO carried out the Trans-Lagrangian1 insertion manoeuvre on September 19

### September 19

Aditya-L1 underwent the Trans-Lagrangian1 insertion manoeuvre, marking the beginning of its 110-day journey to its destination around the L1 point.

Upon arrival at the L1 point in January 2024, another manoeuvre will be performed to bind Aditya-L1 to an orbit around L1.



The distance to the sun from the earth is about 150 million kilometres.

### September 15

Fourth manoeuvre placed the spacecraft in a 256 km x 121973 km orbit

### September 10

Third manoeuvre placed the spacecraft in a 296 km x 71767 km orbit.

### September 5

Second manoeuvre placed the spacecraft in a 282 km x 40225 km orbit.

### Aditya-L1's journey so far

#### September 3

First manoeuvre placed the spacecraft in a 245 km x 22459 km orbit.

#### September 2

The Aditya-L1 spacecraft launched by a PSLV from Sriharikota was placed into an elliptical orbit of 235 km x 19500 km around the earth. Subsequently, ISTRAC in Bengaluru carried out four earth-bound manoeuvres between September 3 and September 15.

### Aditya-L1 mission trajectory



### What is the L1 point?

L1 lies on the sun-earth line, at about 1.5 million km from the earth. This is approximately 1% of the earth-sun distance.

### What are Lagrange points?

For a two-body gravitational system, the Lagrange points are locations in space where a small object tends to stay if placed there. There are a total of five such points in the earth-sun system, denoted L1, L2, L3, L4, and L5.





## Aditya L1 Functioning and Purpose

Sun is made up of positively charged protons, negatively charged electrons and other ions mixed with the solar magnetic field, extending somewhere between 10 and 20 solar radii from the surface of the Sun, the solar corona, the atmosphere of the Sun is an enigma.

- While the surface of the Sun is 5,600 degrees, the corona, interestingly, is about two million degrees.
- Observations from Aditya L1 will help us understand the dynamics of the Sun and how solar variability impacts the climate on Earth and affects the space weather.
- Launched on September 2, the craft will undergo five orbit-raising manoeuvres before being slingshot to the L1 point.
- The ship will coast for about four months before it reaches L1.
- At that stage, the thrusters will be fired to make the craft circle around the L1, placing it in what is known as a halo orbit around L1.

### The Sun

The sun is a massive ball of fiery plasma. Energy is generated by nuclear fusion at its core, where temperatures are as high as 15 million degrees Celsius and the density more than 20-times that of iron.

- From the centre to the surface of the sun, the temperature drops and energy flows outwards.
- Inside the sun, the temperature is high enough that atoms are broken up into negatively charged electrons and positively charged ions – the state of matter called plasma.
- Below the sun's surface lies the convection zone, where heated plasma rises and radiates its energy as sunlight upon reaching the surface.
- The light from the sun that reaches us sustains life and drives atmospheric processes that govern the earth's climate.
- After the solar plasma radiates its energy away from the surface, it cools and sinks back down, much like cyclonic convection in the earth's atmosphere.
- This twisting, churning motion of plasma within the sun creates vast electric currents and, as a by-product, powerful magnetic fields.
- This process, known as the solar dynamo, generates dark, earth-sized blotches on the sun's surface known as sunspots, and magnetic loops that rise up like giant arches threading the star's outer atmosphere, the corona.

### Function and Purpose

Monitoring The Sun

To Understand Climate Variability

Looking Deeper

Space Weather Station

## Monitoring the Sun

From this vantage point L1, Aditya L1 can observe the Sun 24X7 using its four remote sensing payloads, and measure in-situ the various parameters of space weather.

## To Understand Climate Variability

The Solar Ultraviolet Imaging Telescope (SUIT) developed by the Inter-University Centre for Astronomy & Astrophysics, in close collaboration with the ISRO, the Center of Excellence in Space Sciences India, Mohanpur, the Manipal Academy of Higher Education etc, will **observe the UV radiation from different zones of the solar atmosphere.**

- The onboard intelligence system will **detect any sudden appearance of bright spots**, such as solar flares (a sudden burst of high energy visible light, UV rays, X rays and Gamma rays) on the disc.
- The automated system will trigger the rapid imaging of different layers, and thus, we will obtain a 3D tomographic view of the Sun.
- With this system in place, the event's progression through the layers of the solar atmosphere can be imaged.
- Combining the data from the Solar Low Energy X-ray Spectrometer (SoLEXS) and the High Energy L1 Orbiting X-ray Spectrometer (HEL1OS) developed by the ISRO's Bengaluru based U. R. Rao Satellite Centre with SUIT, can [help us] gain insights into the emergence, progression and energetics of transient events on the surface of the Sun in the UV region.

Observing the Sun using the SUIT will enable us to better understand climate variation on Earth. "Earth's climate has definitely changed. Global warming is real. The data from SUIT and other papers of Aditya L1 will help us resolve the contribution of natural and anthropogenic factors driving climate change.

Solar activity is measured in terms of the number of sunspots. Sunspots are cooler regions on the Sun's surface which increase and decrease in a cycle of 11 years.

When the Sun is active, the number of sunspots is in the hundreds, and at solar minimum, the numbers are nearly zero.

- Despite the variation in solar activity, the emission in visible and long wavelengths is nearly steady.
- Whatever changes we observe in the solar radiation, nearly 80% occur in the ultraviolet range.
- The Earth's upper atmosphere absorbs most of the solar UV rays.
- The absorbed energy affects the atmosphere's composition, temperature and other parameters.
- It is imperative to know how far variation in the UV rays emitted by the Sun contributes to climate variability on Earth.

At times, the Sun sneezes. Like a tongue of fire, a chunk of the corona suddenly accelerates and leaps into interplanetary space. Called **Coronal Mass ejection (CME)**, this cloud consisting of billion tonnes of energetic plasma mixed with a solar magnetic field is hurled at 250 kilometres per second to 3,000 km/s.

- Usually, the corona is not visible in the glare of the radiant Sun, except during the brief moment of a total solar eclipse.
- However, solar physicists can create artificial eclipses in the solar telescope, called coronagraph, to observe the corona.
- Hitherto, no space telescope could peer at the inner corona, closer to the Sun. They could look at either 1.1 solar radii or larger.
- However, theoretical study indicates that the acceleration of the coronal mass ejection happens below 1.1 solar radii.

## **Looking Deeper**

With no insight into the solar corona's inner part dynamics, we are yet to fully understand the mechanism that drives the CMEs.

- The Visible Emission Line Coronagraph (VELC) developed by the Bengaluru-based Indian Institute of Astrophysics in close collaboration with the ISRO can peek as close as 1.05 solar radii, a region never imaged by any solar telescope.
- From 1.05, it can scan upto three solar radii.
- With this unique capability of VELC, “we can get crucial information about the mechanism responsible for CME acceleration.

## **Space Weather Station**

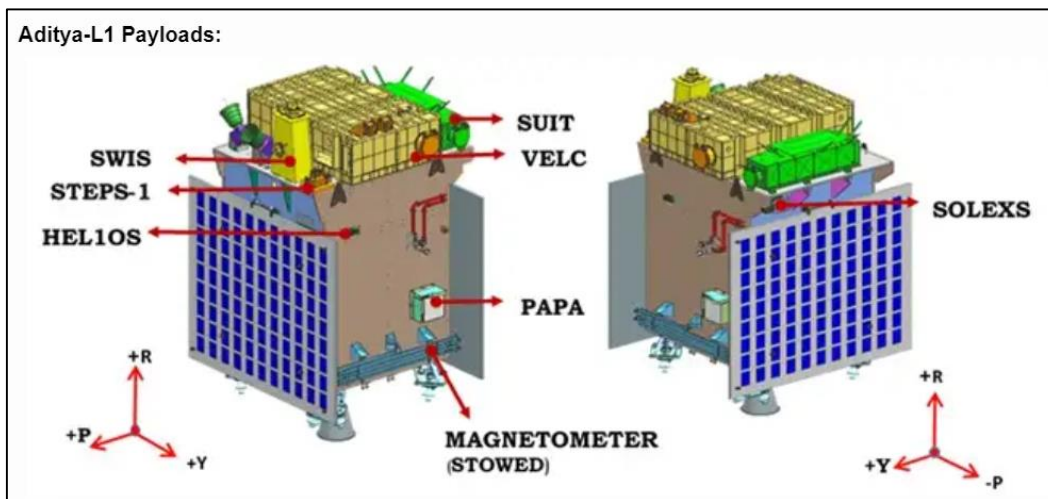
The changes in the solar wind's density, speed and direction is called space weather. Solar storms result in inclement space weather. Aditya L1 will function as a space weather station.

- The Aditya Solar Wind Particle Experiment (ASPEX), the Plasma Analyser Package For Aditya (PAPA) and the advanced Tri-axial High-Resolution Digital Magnetometers for Electro-Optics Systems keep a constant watch over the parameters of space weather near Aditya L1.
- Using the data from these instruments, scientists can predict probable geomagnetic storms and better understand space weather dynamics.
- Near Earth environ is filled with hundreds of satellites and the change in the space weather can affect them directly.
- The trajectory can be deflected by impact of a solar storm on upper atmosphere.
- Understanding space weather is an international issue, and the data from Aditya L1 will aid in making models and predicting storms in advance.

## **Solar Storm**

Along with sunlight and electromagnetic radiation, such as ultraviolet rays, the Sun emits a constant stream of charged particles and a mixture of solar magnetic fields that travel throughout interplanetary space. Called a solar wind, the average speed of the flow near the Earth is about 300 kilometres per second.

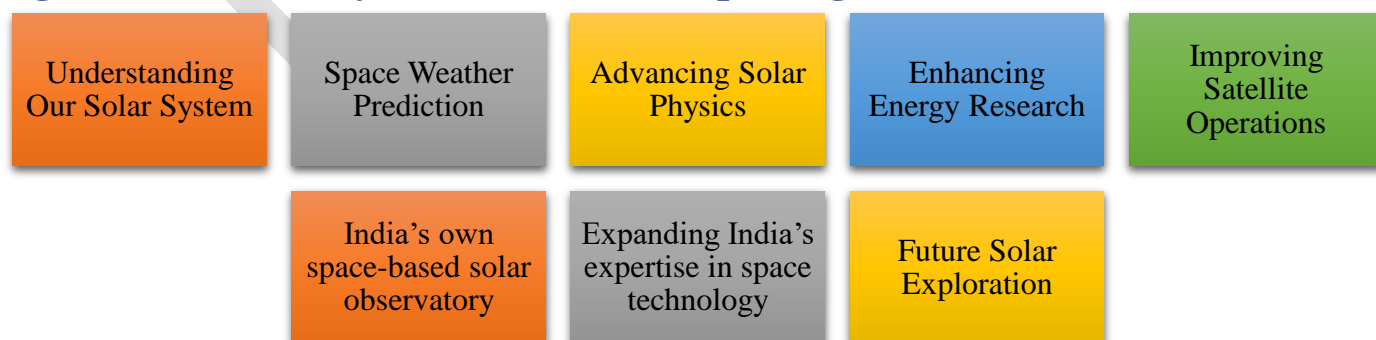
- The solar wind constantly rams the Earth's magnetosphere, which functions like a shield and deflects most of it.
- Nevertheless, the energetic particles from the solar wind sneak through the weak magnetic regions of the Earth — the north and south poles and interact with the molecules in the atmosphere, creating the dazzling display of aurora.
- Violent eruptions like solar flares and CMEs trigger a strong wind or solar storm.
- A geomagnetic storm occurs when the solar storm bashes the Earth's magnetosphere.
- While brilliant, beautiful auroras appear as more energetic particles flow through the north and south poles, GPS and short-wave communication are disrupted, and the electronics in the satellite are in danger.
- Intense geomagnetic storms can induce magnetic-induced currents in the power grid and pipelines, resulting in power outages and fire.
- The energy from the charged particles heats the upper atmosphere, increasing the density and causing extra drag on satellites in low-earth orbit.



## Payloads of Aditya L1

Type	Payload	Capability
<b>Remote Sensing Payloads</b>	Visible Emission Line Coronagraph (VELC)	Corona/Imaging & Spectroscopy
	Solar Ultraviolet Imaging Telescope (SUIT)	Photosphere and Chromosphere Imaging - Narrow & Broadband
	Solar Low Energy X-ray Spectrometer (SoLEXS)	Soft X-ray spectrometer: Sun-as-a-star observation
	High Energy L1 Orbiting X-ray Spectrometer (HELIOS)	Hard X-ray spectrometer: Sun-as-a-star observation
<b>In-situ Payloads</b>	Aditya Solar wind Particle Experiment (ASPEX)	Solar wind/Particle Analyzer Protons & Heavier Ions with directions
	Plasma Analyser Package For Aditya (PAPA)	Solar wind/Particle Analyzer Electrons & Heavier Ions with directions
	Advanced Tri-axial High Resolution Digital Magnetometers	In-situ magnetic field (Bx, By, and Bz).

## Significance of Aditya-L1 mission & Exploring the Sun





- **Understanding Our Solar System:** The Sun is the center of our solar system, and its characteristics greatly influence the behavior of all other celestial bodies. Studying the Sun enhances our understanding of the dynamics of our solar neighborhood.
- **Space Weather Prediction:** Solar activities, such as solar flares and coronal mass ejections, can impact Earth's space environment.
  - Understanding these phenomena is crucial for predicting and mitigating potential disruptions to communication systems, navigation, and power grids.
- **Advancing Solar Physics:** Exploring the Sun's complex behavior, including its magnetic fields, heating mechanisms, and plasma dynamics, contributes to advances in fundamental physics and astrophysics.
- **Enhancing Energy Research:** The Sun is a natural fusion reactor. Insights gained from studying its core and nuclear reactions can inform our pursuit of clean and sustainable fusion energy on Earth.
- **Improving Satellite Operations:** Solar radiation and solar wind affect the functioning of satellites and spacecraft. Understanding these solar interactions allows for better spacecraft design and operation.
- **India's own space-based solar observatory:** It expands ISRO's scientific capabilities beyond Earth's orbit. It highlights India's advancing space technologies, positioning ISRO as a leading space agency globally alongside NASA, ESA and China's CNSA.
- **Expanding India's expertise in space technology:** Real-time monitoring of the Sun and observations of the corona and solar storms will boost space weather prediction capabilities. This has major applications for securing satellite systems and power grids on Earth.
  - The mission affirms India's proficiency in undertaking complex deep space travel and building specialised spacecraft and instrumentation for cutting-edge space science.
  - The mission diversifies and advances ISRO's space technology expertise beyond traditional areas like remote sensing and communication.
- **Future Solar Exploration:** Aditya-L1 cements India's position as a major spacefaring nation with advanced capabilities spanning satellite applications as well as interplanetary science missions.
  - By cementing India's position as a leading space-faring nation adept across satellite applications to interplanetary missions, Aditya-L1 lays the foundation for the country to become a global hub for solar system science.
  - It also opens doors for studying the intriguing solar poles, unravelling mysteries of our closest star and enhancing our understanding of the cosmos.
  - ISRO aims to launch Aditya-L2 and Aditya-L3 missions in highly elliptical orbits to further study the Sun. Aditya-L2 satellite, placed at the L2 point, can provide the first-ever direct imaging of the Sun's far side.

## One Nation, One Election

### Why in News?

Union government is exploring the feasibility of simultaneous elections for all levels through a committee led by former President Ramnath Kovind.

## Key Highlights

In a multi-tiered governance system such as the one in India, a Union of States, electoral democracy works by allowing people to choose their representatives for each tier based on their perception of who is best suited to represent them for each specific tier.

- There is a reason why there is a demarcation of power between the Union, States and local body institutions and why there is a voter mandate every five years to elect representatives for Parliament, Assemblies and local bodies.
- The demarcation allows for specific roles for each representative across these tiers and suggests varied voter choices that could be based on party affiliation, candidate strength, ideological positions or simple socio-economic reasons specific to each constituency.
- That some States such as Andhra Pradesh and Sikkim hold simultaneous Assembly and parliamentary polls is a coincidence as their electoral cycle has coalesced with that of parliamentary polls.
- The BJP-led Union government's trial balloon, exploring the feasibility of simultaneous elections for all levels through a committee led by former President Ramnath Kovind, militates against the foundational idea of multi-tiered governance and is anti-federalist.
- Dangerously, one of the committee's terms of reference — to “examine and recommend, if the amendments to the Constitution [for the purpose of holding simultaneous elections] would require ratification by the States” — is a proposition that is anti-constitutional and will not stand legal scrutiny.
- It also advances a motive that would curtail many Assemblies much before their scheduled tenures — an untenable prospect.
- Ostensibly, the proposal speaks of the need for simultaneous elections as a cost-cutting exercise allowing voting in parliamentary, Assembly, municipal and panchayat elections in one go.
- It also stems from the flawed notion that governments are forever in campaign mode because of frequent Assembly elections.
- First, there is no study to prove that there will be significant cost-saving with simultaneous elections and in any case, the costs incurred in the conduct of elections are not essentially wasteful as there is a multiplier effect to campaign spending and economic activity around polls. Elections for different levels also allow voters to hold their representatives to account and for their specific grievances to be noted.
- Second, the conduct of various elections at different points of time is to only elect representatives for these tiers and is not a referendum on just one tier or even an individual leader at every point of time, as the BJP has sought to make it.
- Those in civil and political society who are committed to India's federal structure should argue for the separation of the Lok Sabha election from polls to Assemblies as the campaign issues and democratic choices vary.
- In any case, unless the term of each Lok Sabha and Assembly is fixed, and premature dissolution for whatever reason is barred, the idea is unworkable.

## Central Idea of One Nation, One Election

The central concept of "One Nation, One Election" revolves around aligning the scheduling of Lok Sabha (the lower house of India's parliament) and State Assembly elections across all Indian states, with the primary goal of reducing the frequency of electoral processes throughout the country.



### Historical Background

- This electoral synchronization was a common practice in India until 1967 when various factors such as political defections, government dismissals, and dissolutions disrupted this harmonized election cycle.

### 1960s Disruptions

- The continuous cycle of synchronized elections was initially broken in 1959 when the Central government utilized Article 356 to dismiss the government of Kerala. Subsequently, due to political defections and counter-defections among various parties, numerous Legislative Assemblies were dissolved after 1960. These disruptions ultimately led to separate elections for Lok Sabha and State Assemblies.

### Current State

- Presently, some states like Arunachal Pradesh, Sikkim, Andhra Pradesh, and Odisha conduct their Assembly elections simultaneously with the Lok Sabha elections, reflecting a partial implementation of the "One Nation, One Election" idea.

### Advocacy by Law Commission

- The notion of conducting simultaneous elections gained prominence in 1999 when the Law Commission, under the leadership of BP Jeevan Reddy, recommended its adoption as a means to enhance electoral efficiency and reduce the expenditure associated with frequent elections.

## Benefits of One Nation, One Election

<b>Focused Governance</b>	<b>Continuity in Policy Decisions</b>	<b>Reduced Cost of Elections</b>
<b>Reduced Deployment of Security Forces</b>	<b>End of Horse Trading</b>	<b>Reduced Freebies and Improved State Finances</b>

### Focused Governance

- Enables the government to concentrate on governance post-elections.
- Frequent elections divert attention away from governance, involving political leaders at all levels.
- Reduces administrative paralysis and positively impacts India's growth prospects.

### Continuity in Policy Decisions

- Eliminates delays in key policy decisions caused by the Model Code of Conduct during elections.
- Prevents the derailment of ongoing projects due to election-related duties.

- Ensures a smoother policy implementation process.

### Reduced Cost of Elections

- Drastically cuts down on election-related expenses for political parties.
- Avoids the need for multiple fundraising efforts, reducing political corruption.
- Reduces the Election Commission's expenses with simultaneous elections, although initial infrastructure investment is required.
- Efficient use of electoral rolls saves time and money, making voter registration more convenient.

### Reduced Deployment of Security Forces

- Curtails the massive redeployment of police and paramilitary forces for election security.
- Frees up law enforcement personnel for their critical functions.
- Saves significant costs associated with maintaining security during elections.

### End of Horse Trading

- Minimizes the potential for elected representatives to engage in horse-trading.
- Fixed election intervals make it harder for politicians to switch parties or form alliances for personal gains, even with anti-defection laws in place.

### Reduced Freebies and Improved State Finances

- Reduces the pressure on governments to announce freebies at every election.
- Leads to better financial management for state governments, as frequent elections have strained their finances.
- Fewer elections contribute to improved state finances and sustainable policymaking.

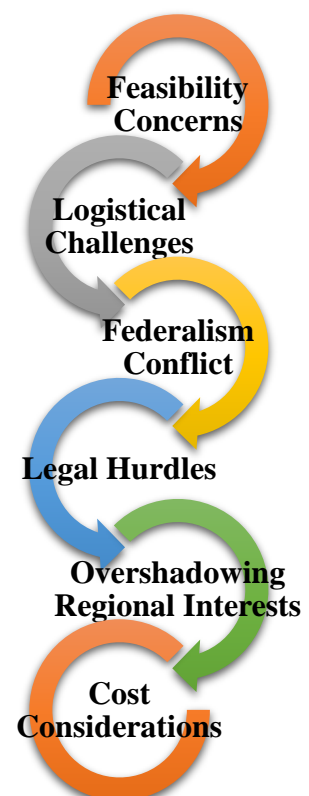
## Challenges Associated with One Nation, One Election (ONOE)

### Feasibility Concerns

- Articles 83(2) and 172 specify fixed five-year tenures for Lok Sabha and State Assemblies, with provisions for dissolution under certain circumstances, raising questions about ONOE feasibility.
- Concerns arise regarding the handling of elections if the Central or State government collapses mid-tenure.
- Questions about whether elections will be held again or President's rule will be imposed in such situations.

### Logistical Challenges

- Electronic Voting Machines (EVMs): ONOE presents logistical challenges related to the availability and security of EVMs.
- Personnel and Resources: Managing a massive simultaneous election exercise may strain the resources of the Election Commission (EC).







### Federalism Conflict

- ONOE conflicts with the federal structure of India, which envisions India as a "Union of States," potentially undermining the autonomy of individual states.

### Legal Hurdles

- The existing constitutional framework, Representation of the People Act 1951, and rules of procedure for Lok Sabha and State Assemblies would require amendments for ONOE implementation.
- The Law Commission recommended that at least 50% of the states should ratify the proposal, which may pose challenges.

### Overshadowing Regional Interests

- ONOE may lead to the blending of national and state-level issues, potentially reducing accountability and undermining regional interests.
- Studies suggest a high probability that winning parties will secure both Lok Sabha and Assembly elections simultaneously, reducing the distinctiveness of state demands.

### Cost Considerations

- While ONOE may save costs in the long term, the initial investment for infrastructure and the short-term expenses, such as deploying more EVMs, may offset these savings.
- Some argue that election spending benefits the economy and tax revenues by boosting private consumption.

### Arguments For and Against One Nation One Election

Arguments in Favor of "One Nation One Election"	Arguments Against "One Nation One Election"
Reduces the frequent imposition of the Model Code of Conduct (MCC), preventing policy paralysis and disruptions in developmental work.	Requires difficult-to-implement constitutional changes to align the terms of various assemblies.
Curtails substantial expenditures for political parties, candidates, and stakeholders.	Complicates synchronization efforts due to the absence of fixed terms for Lok Sabha and state assemblies.
Optimizes the deployment of security forces for essential internal security purposes.	Infringes upon the spirit of federalism and limits state legislatures' authority to unseat a government through no-confidence motions.
Addresses the issue of frequent elections hindering legislative work and resource wastage on short-term freebies.	Complicates voters' decision-making by combining national and local issues.
Diminishes the divisive influence of caste, religion, and communal issues in society.	Hinders governments' ability to make necessary course corrections through frequent elections.



Arguments in Favor of "One Nation One Election"	Arguments Against "One Nation One Election"
Minimizes hidden socio-economic costs, such as teachers missing from schools and diverted revenue machinery.	Presents logistic challenges in arranging Electronic Voting Machines (EVMs), manpower, and security forces.
Reduces economic costs of lost teaching weeks and poorly executed welfare programs.	Regional parties may face a comparative disadvantage against national parties in such a setup.

## Nipah Virus

### Why in News?

Nipah virus is again wreaking havoc in Kozhikode, the fourth outbreak of the disease in Kerala over the last five years. India reached out to Australia to procure monoclonal antibody doses to combat the Nipah virus outbreak in Kerala. India is expecting 20 more doses soon, Indian Council of Medical Research (ICMR) head.

- With two persons dying of Nipah this week in Kozhikode, and three more persons, two of them relatives of one of the victims, testing positive, and being hospitalised, disturbing memories from the terrifying outbreak of 2018, in which 21 of 23 infected people died, have surfaced.
- The situation remains very much the same, in terms of treatment options: there is no cure, and supportive care remains the only way to handle Nipah infection even in a hospital setting.
- Sixteen teams have been formed to take forward appropriate containment protocols.
- A central team has also been sent to Kerala to assist the State government.
- Neighbouring States have taken preparatory steps to ensure that porous borders do not bring the infection across from Kerala.

While experiences from the prior outbreaks (2018, 2019, 2021) have given medical teams a toolkit of protocols, across the sectors — management, isolation, containment, and treatment — constant vigil can be the only guard against such outbreaks.

- In the case of Nipah, rapid expansion of agricultural activity in original habitat zones of the fruit bats has repeatedly shown up on post-factor analyses.
- As governments mount strategic efforts to control outbreaks and

**Alert healthcare system detects Nipah outbreaks**  
The route of Nipah virus transmission from bats to humans has not been clearly established in Kerala

**Widespread:** NIV Pune found Nipah virus antibodies in fruit bats (*Pteropus medius*) in nine States, including Kerala, and the Union Territory of Pondicherry

- Three Nipah virus outbreaks — 2018, 2021 and 2023 — in Kerala have been in Kozhikode district; the 2019 outbreak was in Ernakulam district
- Four outbreaks in five years may be because the virus has become endemic in bats in Kerala, or due to thorough investigation of undiagnosed fever cases for possible Nipah virus infection or both
- Except in NIV Pune, there is no Nipah virus testing facility anywhere in India. Kerala screens for Nipah virus routinely in a molecular lab in Calicut Medical College
- Patients with unusual symptoms are tested for Nipah virus, the reason why Kerala might be detecting Nipah cases
- Patients who tested positive for Nipah virus in 2023 had only respiratory symptoms not reported anywhere in the world before. Nipah virus detection still became possible due to doctors' high index of suspicion
- In the latest outbreak, a combination — possible index case, clustering of cases, unusual symptoms, and proximity to the 2018 outbreak epicentre — led to testing for Nipah virus

deaths due to infectious diseases, it is increasingly clear that the State needs to initiate a One Health approach on the way forward.

- The COVID-19 pandemic has led to a deeper appreciation of the One Health concept, which is an integrated, unifying approach to balancing and optimising the health of people, animals and the environment, with the conviction that humans live in symbiosis and that the health of one impacts that of another significantly.

## Key Highlights

- According to WHO, the Nipah virus infection is a newly emerging zoonosis, that is, a disease transmitted from animals to humans. The closest reservoir of the virus is fruit bats.
- The virus belongs to a new genus termed **Henipavirus (subfamily Paramyxovirinae)**.
- Nipah surfaced in Kerala in 2018. The symptoms of Nipah are similar to that of influenza: fever, muscle pain, and respiratory problems.
- Inflammation of the brain can also cause disorientation. Late onset of Encephalitis can also occur.
- Sometimes a person can have an asymptomatic infection, and be a carrier of Nipah and not show any symptoms.

## What is Nipah Virus?

It is a zoonotic virus i.e. it is transmitted from animals to humans.

- The organism that causes Nipah Virus encephalitis is an **RNA or Ribonucleic acid virus** of the family **Paramyxoviridae, genus Henipavirus**, and is closely related to Hendra virus.
  - Hendra virus (HeV) infection is a rare emerging zoonosis that causes severe and often fatal diseases in both infected horses and humans.
- It **first broke out** in Malaysia and Singapore in 1998 and 1999.
  - The disease is named after a village in Malaysia, Sungai Nipah, where it was first detected.
- It first appeared in domestic pigs and has been found among several species of domestic animals including dogs, cats, goats, horses and sheep.

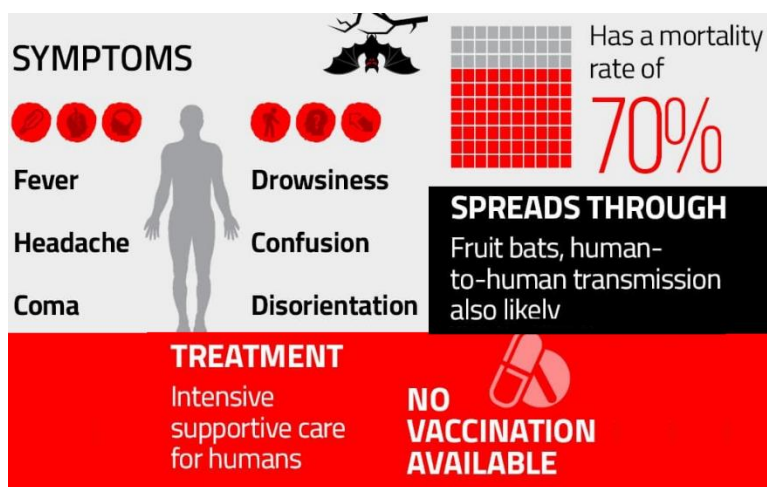
## Nipah Virus Symptoms

The human infection presents as an encephalitic syndrome marked by fever, headache, drowsiness, disorientation, mental confusion, coma, and potentially death.

## Nipah Virus Prevention

Currently, there are no vaccines for both humans and animals.

- It is **highly lethal**, with mortality rates ranging from 40% to 75%.
- In human situations, supportive medications and intensive care are the main treatments.



**SYMPTOMS**

**Fever** **Drowsiness**

**Headache** **Confusion**

**Coma** **Disorientation**

Has a mortality rate of **70%**

**SPREADS THROUGH**  
Fruit bats, human-to-human transmission also likely

**TREATMENT**  
Intensive supportive care for humans

**NO VACCINATION AVAILABLE**

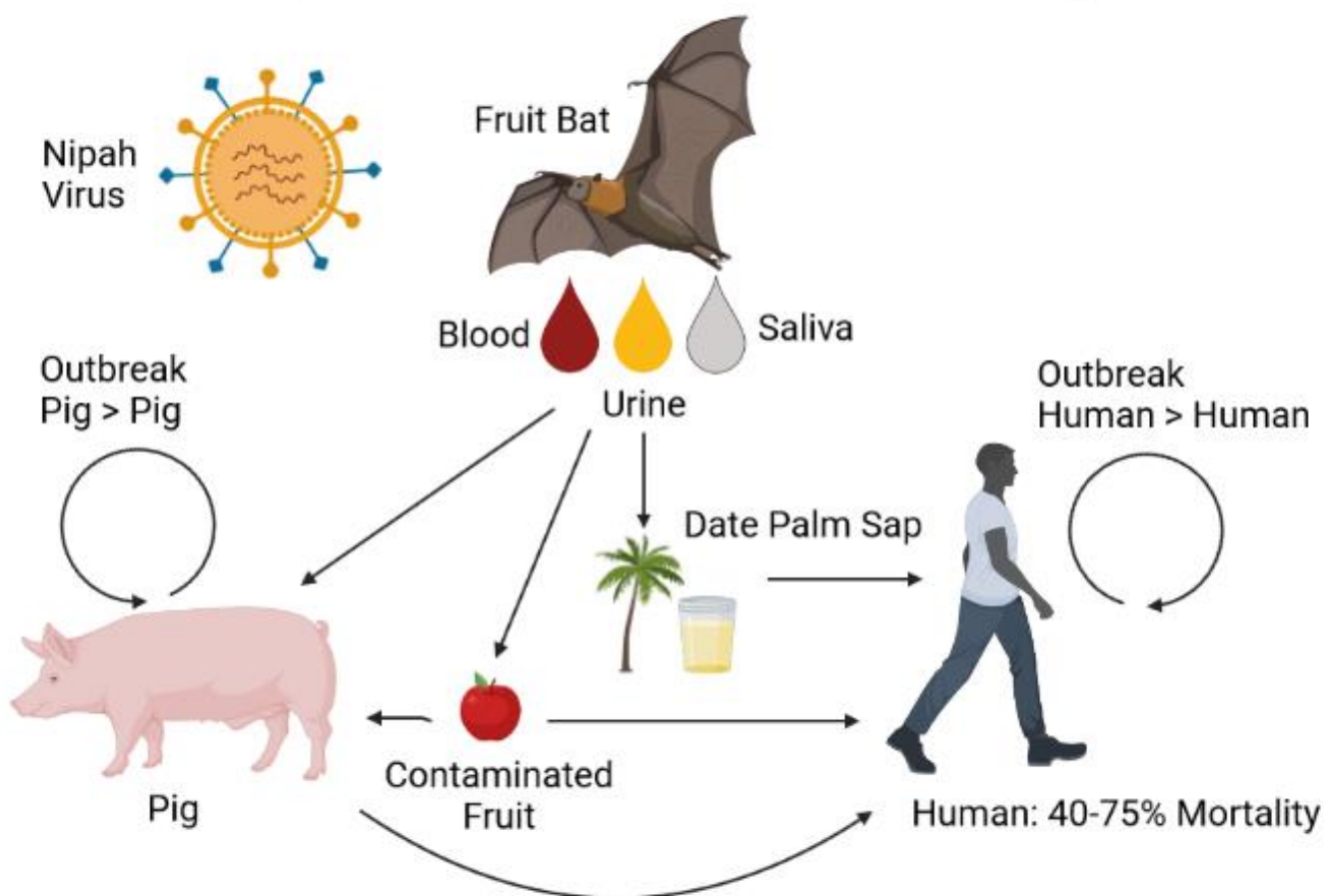
Some of the preventive measures that can be adopted are:

<p><b>Avoid contact with infected bats or areas contaminated with bat excreta or saliva.</b></p>	<p><b>Use protective equipment when handling infected patients or their bodily fluids.</b></p>	<p><b>Properly cook all meat products before consumption.</b></p>
<p><b>Maintain good hygiene practices.</b></p>	<p><b>Stay informed about outbreaks and follow guidelines from health authorities.</b></p>	<p><b>Quarantine and monitor people who have been in contact with infected individuals.</b></p>

## Nipah Virus Transmission

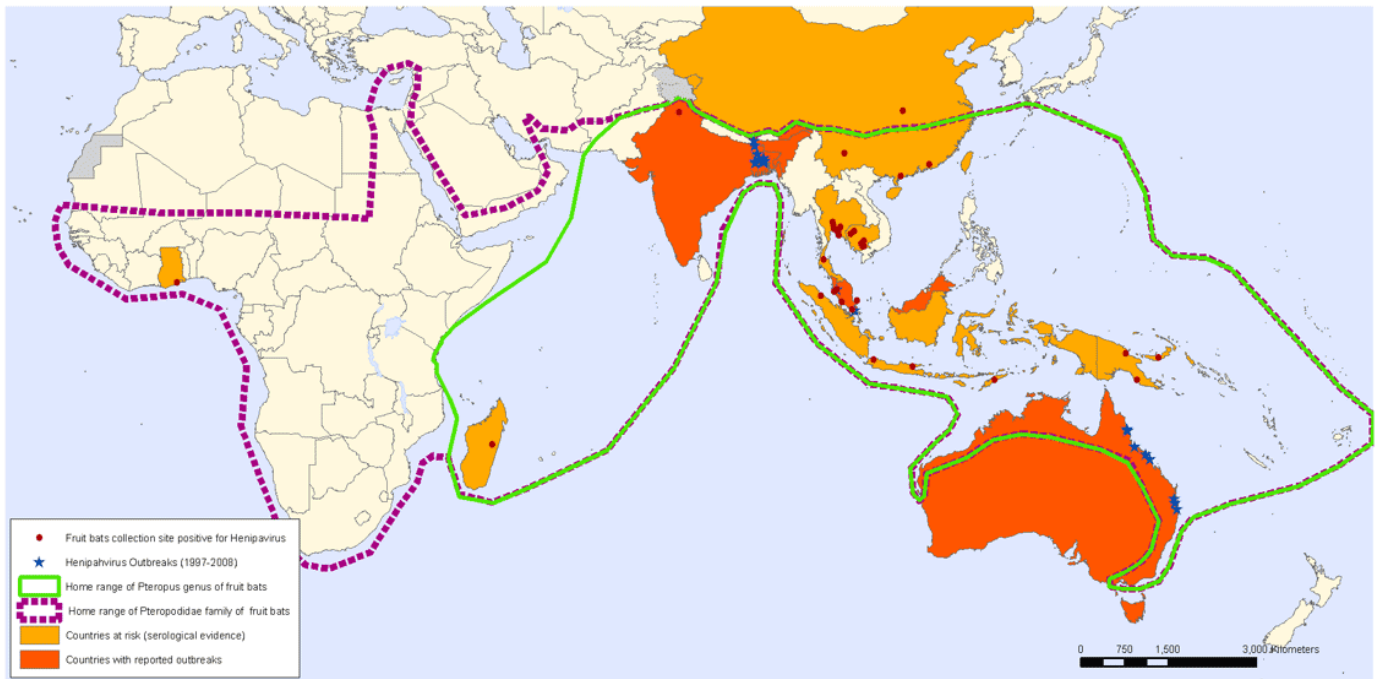
The disease spreads through fruit bats or ‘flying foxes,’ of the genus Pteropus, who are natural reservoir hosts of the Nipah and Hendra viruses. The virus is present in bat urine and potentially, bat faeces, saliva, and birthing fluids.

### Nipah Virus Transmission and Mortality





## Geographic distribution of Henipavirus outbreaks and fruit bats of Pteropodidae Family



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: Global Alert and Response Department  
World Health Organization  
Map Production: Public Health Information and Geographic Information Systems (GIS)  
World Health Organization

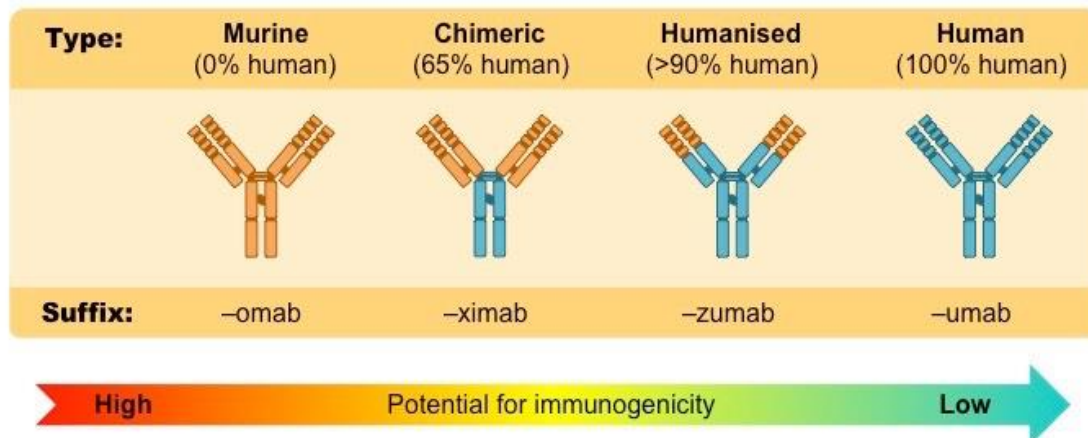


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## Monoclonal Antibodies

Monoclonal antibodies are **laboratory-made proteins** that mimic the behaviour of antibodies produced by the immune system to protect against diseases and foreign substances.

- An **antibody** attaches itself to an antigen – a foreign substance, usually a disease-causing molecule – and helps the immune system eliminate it from the body.
- Monoclonal antibodies are specifically designed to target certain antigens.
- There are **4 different ways they can be made** and are named based on what they are made of.



## Murine

- These are made from mouse proteins and the names of the treatments end in -omab.

## Chimeric

- These proteins are a combination of part mouse and part human and the names of the treatments end in -ximab.

## Humanized


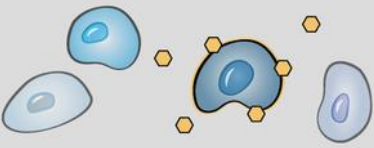
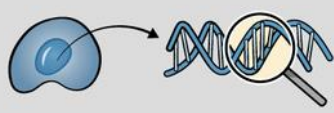

- These are made from small parts of mouse proteins attached to human proteins and the names of the treatments end in -zumab

## Human

- These are fully human proteins and the names of the treatments end in -umab.

### A bridge to vaccines: Monoclonal antibodies could save lives and slow the spread of the coronavirus

#### How to make monoclonal antibodies

- 1 Take blood from a person who recovered from COVID-19  

- 2 Use "bait" molecules to fish out the B cells that produce antibodies for a key portion of the novel coronavirus spike protein and block infection  

- 3 Decipher the DNA for those antibodies  

- 4 Insert that DNA into cells that mass-produce the antibodies.  


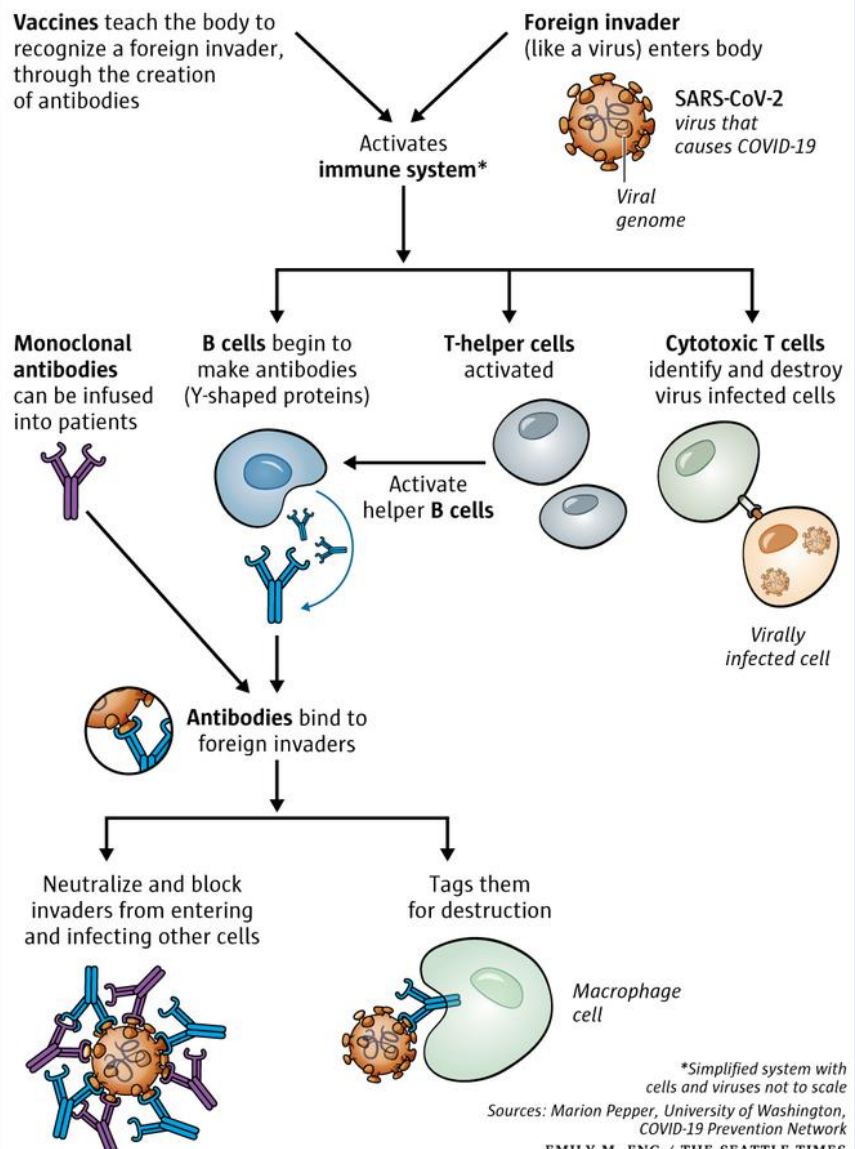
#### Potential benefits:

- Prevention option before a vaccine is available
- Provide immediate protection or treatment for those exposed
- Benefits to people who cannot develop or maintain an adequate immune response after vaccination

#### Monoclonal antibody limitations:

- Protection is short-lived
- The drugs are expensive

#### HOW VACCINES AND MONOCLONAL ANTIBODIES WORK



## What is m102.4?

According to research published in The Lancet journal of Infectious Diseases, m102.4 is a “potent, fully human” monoclonal antibody that neutralises Hendra and Nipah viruses, both outside and inside of living organisms.

- The antibody has passed phase-one clinical trials — which means that researchers tested it with a relatively small number of people to estimate the right dose of treatment that also doesn’t cause side effects.
- As of now, the drug is used on a ‘compassionate use’ basis — a treatment option that allows the use of an unauthorised medicine under strict conditions among people where no other alternative and/or satisfactory authorised treatment is known to be possible and where patients cannot enter clinical trials for various reasons.

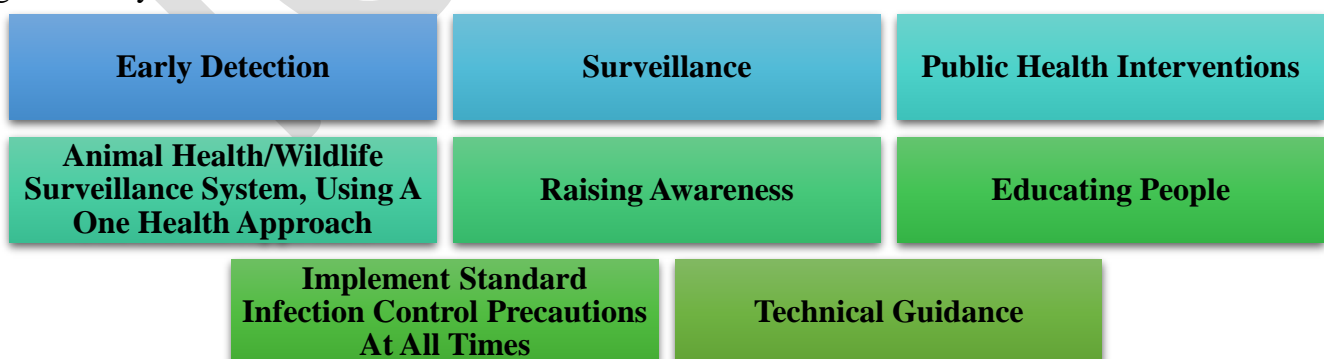
## How Do Monoclonal Antibodies Work?

Monoclonal antibodies are specifically engineered and generated to target a disease. They are meant to attach themselves to the specific disease-causing antigen. An antigen is most likely to be a protein.

- For instance, most successful monoclonal antibodies during the pandemic were engineered to bind to the spike protein of the SARS-CoV-2 virus. The binding prevented the protein from exercising its regular functions, including its ability to infect other cells.
- Today, these antibodies are made using recombinant DNA technology. Here, the gene that codes for the monoclonal antibody’s binding region — also known as the variable region — is isolated from a B cell or synthesised in the laboratory.
- This antibody is then introduced into a host cell, often a bacterium or a mammalian cell, using recombinant DNA technology (which involves manipulating DNA material outside an organism to obtain specific traits or characteristics).
- The host cells, called bioreactors, produce large quantities of the monoclonal antibodies which are extracted, purified, and readied for use as desired.
- Glycoproteins are one of the major components of viruses that cause diseases in humans. According to a research, the m102.4 monoclonal antibody binds itself to the immune-dominant receptor-binding glycoprotein of the Nipah virus, potentially neutralising it.

## Way forward

The Nipah virus is considered a serious public health concern due to its potential to cause large outbreaks with high mortality rates.





- Early detection, surveillance, and public health interventions are essential for controlling and preventing the spread of the virus during outbreaks.
- As Nipah virus outbreaks have involved pigs and/or fruit bats, establishing an animal health/wildlife surveillance system, using a One Health approach, to detect Nipah cases is essential in providing early warning for veterinary and human public health authorities.
- In the absence of a vaccine, the only way to reduce or prevent infection in people is by raising awareness of the risk factors and educating people about the measures they can take to reduce exposure to the Nipah virus.
- Health-care workers caring for patients with suspected or confirmed infection, or handling specimens from them, should implement standard infection control precautions at all times.
- WHO is supporting affected and at-risk countries with technical guidance on how to manage outbreaks of the Nipah virus and how to prevent their occurrence.

## Women Reservation Bill, 2023

### Why in News?

- The passage of the Women's Reservation Bill in the Lok Sabha almost three decades after it was first tabled in Parliament is a welcome move that can finally shatter a political glass ceiling.
- With women Members of Parliament comprising only about 15% of the strength of the Lok Sabha, the gender inequality in political representation is stark and disturbing.
- The **128th Constitution Amendment Bill**, or the **Nari Shakti Vandan Adhiniyam**, seeks to amend this by reserving a third of the seats in the Lok Sabha and legislative Assemblies for women.

### Key Highlights

It has a 15-year sunset clause for the quota that can be extended. Considering the fraught history of the struggle for women's reservation, and several false starts despite the Rajya Sabha passing it in 2010, it is laudatory that the first Bill to be introduced in the new Sansad Bhavan has been passed in the Lok Sabha. But its implementation will be delayed as it has been tied to two factors, **delimitation and the Census**, and therein lies the rub.

- It is unfortunate that implementation is being linked to delimitation, for the principle of having a third of seats reserved for women has nothing to do with the territorial limits of constituencies or the number of Assembly or Lok Sabha constituencies in each State.
- Women will thus not have access to 33% of reservations in the 2024 general election.
- The Bill also mandates that as nearly as one-third of the seats reserved for Scheduled Castes and Scheduled Tribes will be set aside for women.
- The Opposition is demanding an internal quota for women of Other Backward Classes, but this should not be used as a ruse to delay implementation. In the meantime, proposals should be fine-tuned to ensure that when it becomes an Act, it is not mere tokenism for women's political representation.
- It is a fact that local bodies are better represented, with the share of women in panchayati raj institutions well above 50% in several States.
- Lessons must be imbibed on how women at the grassroots level have broken all sorts of barriers, from patriarchal mindsets at home to not being taken seriously in their official duties, and made a difference.
- Women struggle on so many other counts: they have uneven access to health, nutrition and education, there is a lack of safe places, women are also falling out of the workforce — among the G-20 countries, India's female labour force participation is the lowest at 24%.



- India, which gave women voting rights at the very outset, should not falter when it comes to ensuring better political representation for women. For growth, and instituting change in key areas, women need to have their say.

## Background

- Discussion on women's reservation bill dates back to Former Prime Minister Shri Atal Bihari Vajpayee's tenure in 1996.
- Due to a lack of a majority, the Bill couldn't gain approval during that time.

### Need For The Bill

- ✓ There are 82 women Member of Parliaments in LS (15.2%) and 31 women in RS(13%).
- ✓ While the number has increased significantly since the 1st Lok Sabha (5%) but is still far lower than in many countries.
- ✓ According to recent UN Women data, Rwanda (61%), Cuba (53%), Nicaragua (52%) are the top three countries in women representation. Bangladesh (21%) and Pakistan (20%) as well are ahead of India in case of female representation.

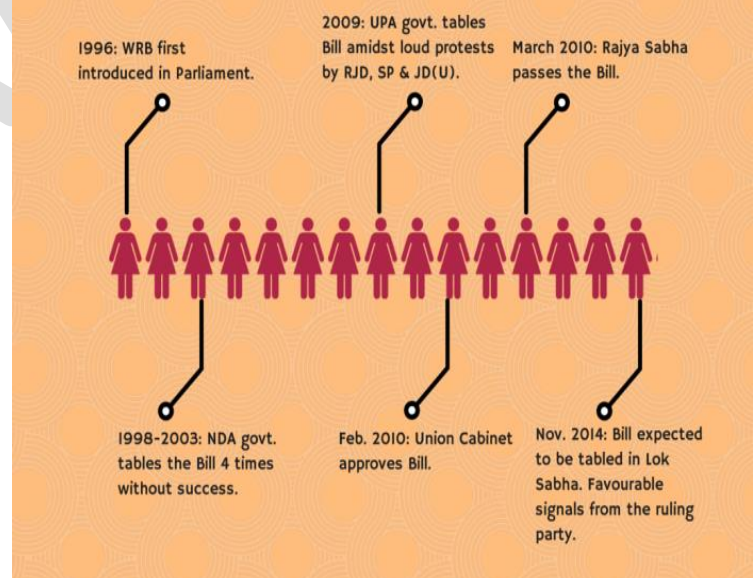
### Why Women in Legislation Matter

- ◆ **Better Economic Performance:** Women legislators raise economic performance by about 1.8 percentage points per year
- ◆ **Fewer Criminal Charges:** Women are only one-third as likely as men to be carrying pending criminal charges while entering office
- ◆ **Less Corrupt:** Their material assets grow by 10 percentage points lesser than male counterparts, indicating that women are less likely to be corrupt
- ◆ **Get Work Done:** Share of incomplete road infrastructure projects is 22 percentage points lower for women than male legislators
- ◆ **Conscientious:** Women are more efficacious and less vulnerable to political opportunism

## Earlier Attempts at Reserving Seats for Women

Year	Description
1996	Introduction of the First Women Reservation Bill in Parliament.
1998-2003	Government presented the Bill four times but failed to pass it.
2009	Bill introduced amid protests.
2010	Union Cabinet passes the Bill, and it is approved in the Rajya Sabha (RS).
2014	The Bill was anticipated to be presented in the Lok Sabha (LS).

### Charting the journey of the Women's Reservation Bill (WRB)



## Women's Representation in Indian Politics

The Government of India's introduction of the Women's Reservation Bill in the new Parliament House is a historic step towards women's empowerment. The bill, first introduced in 1996, faced several hurdles and failed to pass in the past. It has finally received unanimous approval in both the Lok Sabha and Rajya Sabha.

Aspect	Details
Constitutional Amendment	The 128th Constitutional Amendment Bill (Nari Shakti Vandan Adhiniyam) proposes reserving one-third of Lok Sabha and State Assembly seats for women. Implementation was delayed until the 2029 general election due to a delimitation exercise.
Current Representation	Women currently constitute 15% of the Lok Sabha. India has never exceeded the 15% mark in over 70 years of electoral history.
State Assemblies Lag Behind	Most State Legislative Assemblies have even lower representation, with only Tripura surpassing 15%. States like Maharashtra, Andhra Pradesh, Kerala, Tamil Nadu, Telangana, and Karnataka have less than 10% women MLAs.
Progress in 2023 Elections	In the 2023 election, Nagaland elected its first two women MLAs, and Mizoram ended a seven-assembly-long trend of no women MLAs.
Party-wise Analysis	The Bharatiya Janata Party has only 13.5% women members, while the Biju Janata Dal and Trinamool Congress have higher shares of women MPs.

## Key Features of the Women's Reservation Bill

The Women's Reservation Bill encompasses several key features aimed at promoting gender equality and representation in Indian legislative bodies. These features include:



### Reservation for Women in Lower House

- The Bill proposes the insertion of Article 330A into the constitution, inspired by Article 330, which addresses the reservation of seats for SCs/STs in the Lok Sabha.
- It suggests that seats reserved for women may be allocated to different constituencies within states or Union Territories through a rotational system.
- For seats reserved for SCs/STs, the Bill advocates that one-third of these seats should be reserved for women, to be determined through rotation.

### Reservation for Women in State Legislative Assemblies

- The Bill introduces Article 332A, which mandates the reservation of seats for women in every State Legislative Assembly.
- Additionally, it requires that one-third of the seats reserved for SCs and STs must also be allocated to women.
- Furthermore, one-third of the total seats filled through direct elections to the Legislative Assemblies shall be reserved for women.

## Reservation for Women in NCT of Delhi (New Clause in 239AA)

- Article 239AA grants special status to the Union Territory of Delhi as the national capital regarding its administrative and legislative functioning.
- The Bill amends Article 239AA(2)(b) to extend the application of laws framed by Parliament to the National Capital Territory of Delhi.

## Commencement of Reservation (New Article - 334A)

- The reservation will come into effect following the publication of the census conducted after the enactment of this Bill.
- Delimitation of seats for women will be carried out based on the census data.
- The Bill stipulates that the reservation will initially be provided for a period of 15 years. However, it can continue beyond this period as determined by a law enacted by Parliament.

**Other Constitutional Amendments Needed to Operationalise the Scheme of Women Reservation**  
**Article 82 and Article 170(3)** of the Constitution would need to be changed in order to implement delimitation, which is a requirement for the implementation of reservations.

- **Article 82** has provisions for the readjustment of constituencies (number and boundaries) of both the Lok Sabha and state Assemblies after each Census.
- Similarly, **Article 170(3)** deals with the composition of the state Legislative Assemblies.

## Rotation of Seats

- Seats reserved for women will be rotated after each delimitation process, with the specific details to be determined by legislation passed by Parliament.

## Women's Representation in Other Countries

- According to the Inter-Parliamentary Union Report, 2019, the African nation of Rwanda came out on top in the assembly's long-term portrayal with 61.3%, followed by Cuba with 53.2%.
- Nepal held the 36th position in South Asia with 32.7%. The unfortunate fact is that India came in at 149th with 14.4% portrayals, in stark contrast to Pakistan and Bangladesh.
- Party line reservation: Countries like France, Korea, and Nepal, among others, have passed quotas as high as 50% of the candidate list.
- Countries with party quota laws include Argentina, Mexico, and Costa Rica, which also have over 36% female representation in their national legislatures.
- Through voluntary (non-legislated) quotas by political parties, nations like South Africa, Sweden, and Germany have attained comparable levels of female representation.
- With 44.8% of its current National Assembly made up of women, South Africa is a great case study.

Country	% of elected women	Country	% of elected women
Sweden	46%	Canada	31%
Norway	46%	UK House of Representatives	29%
South Africa	45%	US Senate	25%

Australia	38%	Bangladesh	21%
France	38%	Brazil	18%
Germany	35%	Japan	10%
UK House of Commons	35%	-	-

## Arguments for and Against the Women's Reservation Bill

Argument	For the Bill	Against the Bill
<b>Gender Equality</b>	<ul style="list-style-type: none"> <li>- Women's political representation promotes gender equality.</li> <li>- India's low rank (48th) in Political Empowerment according to the Global Gender Gap Report 2022 highlights the need for improvement.</li> <li>- Higher-ranking countries, like Iceland and Bangladesh, score significantly better in this category.</li> </ul>	<ul style="list-style-type: none"> <li>- Opponents argue that women are not a homogeneous community like caste groups, and therefore, reservations for them are not justified.</li> <li>- Some argue that such reservations violate the Constitution's guarantee of equality. They fear that women might not compete on merit, potentially lowering their societal status.</li> </ul>
<b>Historical Underrepresentation</b>	<ul style="list-style-type: none"> <li>- Women's representation has increased from 5% in the 1st Lok Sabha to 15% in the 17th Lok Sabha, but it remains relatively low.</li> <li>- Studies show that reservation policies at the local level have enabled women to make meaningful contributions.</li> </ul>	<ul style="list-style-type: none"> <li>- Some argue that historical underrepresentation does not necessitate reservations; they believe that the trend may change naturally over time.</li> </ul>
<b>Women's Self-representation and Self-determination</b>	<ul style="list-style-type: none"> <li>- Proportional representation allows groups to influence policy-making effectively.</li> <li>- International agreements like the Convention on the Elimination of All Forms of Discrimination Against Women call for the elimination of discrimination in political life.</li> <li>- Evidence suggests that women representatives from Panchayati Raj have worked commendably in rural development.</li> </ul>	<ul style="list-style-type: none"> <li>- Critics argue that women face challenges in the current political structure and that reservations might not address these effectively.</li> </ul>





Argument	For the Bill	Against the Bill
<b>Diverse Perspectives</b>	<ul style="list-style-type: none"> <li>- A more diverse legislature can lead to better policy formulation and governance.</li> <li>- Women can bring unique perspectives to the decision-making process.</li> </ul>	<ul style="list-style-type: none"> <li>- Opponents believe that diversity can be achieved through voluntary participation and reservations may not be the only solution.</li> </ul>
<b>Empowerment of Women</b>	<ul style="list-style-type: none"> <li>- Reservations empower women to participate in politics and leadership roles in various sectors.</li> </ul>	<ul style="list-style-type: none"> <li>- Critics suggest that empowerment should be achieved through other means, not reservations.</li> </ul>
<b>Promotion of Women's Issues</b>	<ul style="list-style-type: none"> <li>- Women in politics prioritize issues affecting women, such as gender-based violence, health, and education.</li> </ul>	<ul style="list-style-type: none"> <li>- Critics argue that reservations may not guarantee a focus on women's issues.</li> </ul>
<b>Role Models</b>	<ul style="list-style-type: none"> <li>- Women leaders can serve as role models for young girls and inspire them to aspire to leadership positions.</li> </ul>	<ul style="list-style-type: none"> <li>- Opponents do not necessarily dispute the value of role models but question whether reservations are the best way to achieve this.</li> </ul>

## Challenges regarding Implementation of this Bill

### Issues related to Delimitation

- The reservation shall come into effect only after delimitation is undertaken and delimitation will be undertaken only after the relevant figures of the next census are published.
- The date of the next census is entirely undetermined. So the delimitation is doubly indeterminate.

### OBC Issue with the bill

- The women's reservation bill, which reserves 33% of seats for women in the Lok Sabha and state assemblies, does not include a quota for women from the OBCs.
- Geeta Mukherjee Committee (1996) recommended extending women reservation to OBCs.

## How can Women's Representation be Effectively put into practice?

**Strengthen Independent Decision Making**

**Increasing Awareness and Education**

**Addressing Gender-based Violence and Harassment**

**Reforms in the Electoral Process**

- **Strengthen Independent Decision Making**
  - Establish an independent monitoring system or committees that explicitly prohibits family members from influencing the decision making process of women representatives.
  - It can be implemented by reducing the influence of patriarchal mindset.
- **Increasing Awareness and Education**

- Creating awareness among women about their rights and the importance of their participation in politics is essential. Educational programs and awareness campaigns can help to increase women's political participation.
- **Addressing Gender-based Violence and Harassment**
  - Gender-based violence and harassment are major obstacles to women's participation in politics. Addressing these issues through policy and legal measures can create a safer and more supportive environment for women in politics.
- **Reforms in the Electoral Process**
  - Reforms such as introducing proportional representation and preferential voting systems can help to increase women's representation in politics by ensuring that more women get elected.

## GM Crop

### Why in News?

The adoption of science-based technologies for crop improvement, such as genetic engineering for genetically modified (GM) crops, is essential for achieving global food and nutritional security under changing climate conditions.

- Achieving the 'Zero Hunger' target by 2030 is challenging, as per the Global Food Security and Nutrition Report 2019.
- The emphasis needs to be on accelerating the pace of improving crops genetically.
- In order to increase food production and become self-reliant, we require superior crop varieties and hybrids that provide enhanced yields and wide adaptability across environments, and require fewer inputs of natural resources.
- The advent of the Green Revolution in the 1960s-70s resulted in enhanced food production from a mere 50 million tonnes in 1950-51 to over 300 million tonnes in 2020-21.
- However, new biotech/GM crops with improved traits are a must in order to mitigate climate change and produce nutrient-dense food.

### Key Highlights

Genetic modification of crops using the available and vast genetic diversity in conjunction with traditional farming has been well documented for increased productivity, contributing to global food, feed, and fibre security.

- According to a report by the International Service for the Acquisition of Agri-biotech Applications (ISAAA) 2020, a total of 72 countries have adopted GM crops either as human food or animal feed, as well as for commercial cultivation (56% of the global GM crop area is in developing countries compared to 44% in industrial countries).
- GM crops have benefited more than 1.95 billion people in five countries (Argentina, Brazil, Canada, India and the United States) or 26% of the current world population of 7.6 billion.
- **Bt cotton was commercialised as the first GM crop in India more than 20 years ago**, and has been viewed globally as a great success story in terms of **economic advantage to farmers and to the nation**.
- Globally, genetic modification has expanded its reach, beyond the **major four crops, maize, soybean, cotton and canola**, to other economically important food crops for **various traits** such as **insect and herbicide resistance, climate resilience and nutritional quality improvement**.
- Global economic gains contributed by GM crops (1996-2018) have amounted to \$224.9 billion in economic benefits to more than 16 million farmers, 95% of whom are from developing countries.

- Further, GM food crops, since adoption in 1996 globally have been proven for their biosafety for the last 25 years and more.

## In Edible Oil Deficit, a Focus on Mustard

India faces a major deficit in edible oils, with 60% of its demand being met by imports.

- Mustard is one of the **most important edible oil crops in India**; however, its per hectare yield is very low when compared to the global average.
- Thus, increasing the productivity of mustard in the country is vital for the economic well-being of farmers and self-sufficiency in edible oil production.
- Using genetic engineering, extensive research has been carried out at the Centre for Genetic Manipulation of Crop Plants (CGMCP), to create a **GM mustard hybrid, DMH-11** with higher vigour and yield — this will facilitate an increase in domestic production of edible oils as well as enhanced farm incomes.
- The GM mustard hybrid is based on the **barnase/barstar system**, which **works on the principle of removing male fertility in one parent and restoring it in the offspring**.
- The **herbicide tolerance gene** has been deployed as a selection marker for developing the GM mustard.
- While the use of herbicides in herbicide tolerant (HT) crops has an advantage in terms of saving soil moisture and nutrients, besides effective weed control, the herbicide tolerance gene in GM mustard is **primarily used for selecting genetically transformed lines, and for hybrid seed production**.

## Aiding Self-Reliance

- On October 25, 2022, the Genetic Engineering Appraisal Committee (GEAC) of the Ministry of Environment, Forest and Climate Change Government of India, made a landmark decision of approving the release of DMH-11 and its parental line for cultivation.
  - This will help boost the vibrant genetic engineering research sector in the country and enable the generation of new crop varieties with improved traits.
- As the mustard varieties in India have a very narrow genetic base, the decision by GEAC to allow barnase-barstar-based hybrid production in mustard paves the way for the breeding of mustard hybrids not only for higher yields but also to ensure resistance to diseases and improve oil quality.
  - This advancement will benefit farmers by increasing yield per hectare, also leading to an increase in their incomes.



### Did You Know?

India had granted approval for the commercial cultivation of only one GM crop, namely Bt cotton. However, a significant development has occurred as the Genetic Engineering Appraisal Committee (GEAC) has now put forth a recommendation for the commercial utilization of GM Mustard.





- The domestic consumption of edible oils is around 25 million tonnes, while the domestic production of mustard oil was approximately 8.5 million tonnes in the year 2020-21.
- India’s edible oil imports were approximately 13 million tonnes, which touched ₹1.17 lakh crore in value terms.
- Cultivation of these **GM mustard hybrids developed indigenously** could help **enhance farmers’ income, reduce the oil-import burden and help achieve much-needed self-reliance** in edible oil production.

The environmental release of DMH-11 marks the beginning of a **new era in self-reliance and sustainability in agriculture**. More improved GM food crops are needed to boost the profitability of Indian farmers.

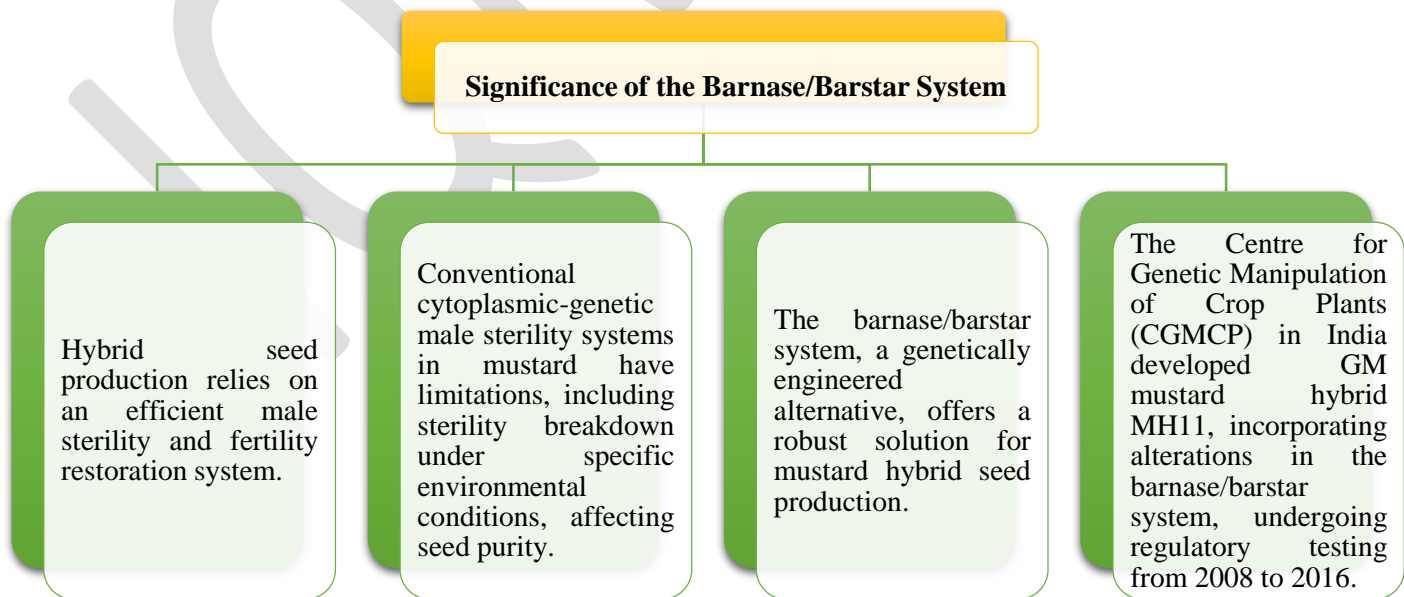
## GM Mustard

GM Mustard, known as DMH-11, is a genetically modified variety of Herbicide Tolerant (HT) mustard developed in India.

- It results from a cross between the Indian mustard variety '**Varuna**' and the East European '**Early Heera-2**' mustard.
- Two alien genes, '**barnase**' and '**barstar**,' sourced from a soil bacterium called *Bacillus amyloliquefaciens*, play a crucial role in breeding high-yielding commercial mustard hybrids.
- '**Barnase**' induces temporary sterility in Varuna, **preventing natural self-pollination**, while '**barstar**' in Heera counteracts barnase, **allowing seed production**.
- DMH-11 has demonstrated approximately **28% higher yield** than the national check and **37% more** than zonal checks, with approval from the Genetic Engineering Appraisal Committee (GEAC).

### The Need for GM Mustard

- India faces a rising import of edible oils to meet domestic demand, leading to forex drain. GM Mustard aims to reduce this dependence on agricultural imports.
- Productivity of oilseed crops in India, including soybean, rapeseed mustard, and others, lags behind global averages. Crossbreeding genetically diverse parents can result in hybrids with higher yields and adaptability.





## Safety Concerns and Research

Concerns have arisen about the safety of the three genes involved in DMH-11: Barnase, Barstar, and Bar.

- **Field trials** over three years, including two years of BRL-I and one year of BRL-II, have been conducted to assess the **impact on human health and the environment**, adhering to guidelines and rules.
- Comprehensive research on **toxicity, allergenicity, compositional analysis, field trials, and environmental safety** has indicated that GM mustard is safe for food, feed usage, and production.
- The "Bar gene," responsible for herbicide tolerance, has raised questions about its **effectiveness in terms of herbicide tolerance**.

## What are GM Crops?

Genetically Modified (GM) crops refer to plants whose genetic makeup has been deliberately altered through artificial means, typically involving the insertion of genetic material from a different organism.

- This modification is aimed at imbuing the crop with new characteristics, such as enhanced crop yields, resistance to specific herbicides, immunity to diseases or drought, or improved nutritional content.

## Advantages of GM Crops



There are numerous advantages of genetically modified (GM) crops. Some of the advantages are listed below:

- **Enhanced Crop Yields:** Genetically modified (GM) crops can be engineered to have improved resistance against pests and produce higher yields, which can play a significant role in addressing concerns related to food security.
- **Reduced Dependency on Pesticides:** GM crops with built-in pest resistance can reduce the necessity for chemical pesticides, resulting in a decreased environmental impact and potential health benefits for farmers.
- **Improved Nutritional Value:** GM crops can be specifically designed to offer enhanced nutritional content, potentially addressing nutrient deficiencies in specific populations and contributing to improved overall health.
- **Prolonged Product Shelf Life:** Certain GM crops have been genetically altered to resist spoilage, leading to extended shelf life for products such as tomatoes. This trait can reduce food wastage and increase the availability of fresh produce for consumers.

## Arguments in Favour and Against

In Favor of GM Crops	Against GM Crops
<b>Increased Crop Yields:</b> GM crops can be engineered to produce higher yields, addressing food security concerns.	<b>Environmental Impact:</b> Critics argue that GM crops may have unintended ecological consequences, such as harm to non-target organisms, development of resistant pests, or disruption of local ecosystems.
<b>Reduced Pesticide Use:</b> Pest-resistant GM crops can reduce the need for chemical pesticides, leading to a decreased	<b>Loss of Seed Sovereignty:</b> Opponents argue that farmers lose their sovereign right over seeds as they are forced to



In Favor of GM Crops	Against GM Crops
environmental impact and potential health benefits for farmers.	buy GM seeds and technologies from multinational corporations.
<b>Enhanced Nutritional Content:</b> GM crops can be designed to offer improved nutritional content, potentially addressing nutrient deficiencies in certain populations.	<b>Human Health Concerns:</b> There are concerns about the safety of consuming GM foods, although the scientific consensus is that approved GM crops are safe for human consumption.
<b>Extended Shelf Life:</b> Some GM crops are modified to resist spoilage, leading to extended shelf life for products, reducing food wastage.	<b>Economic and Socio-cultural Concerns:</b> Some worry about the economic control of GM crop technologies by a few large corporations and the potential displacement of traditional agricultural practices.
<b>Potential to Reduce Hunger:</b> GM technologies are seen as a means to reduce hunger and malnutrition on a global scale.	<b>Irreversible Environmental Impact:</b> Critics argue that once GM crops are released into the environment, any negative consequences are irreversible.
<b>Support from Agricultural Scientists:</b> Many agricultural scientists support GM crop research and field trials for their potential benefits.	<b>Dependency on Multinational Corporations:</b> Opponents assert that GM seed reliance forces farmers to buy seeds and technologies from multinational corporations, reducing their independence.

## Legal Position of Genetically Modified Crops in India

In India, the **Genetic Engineering Appraisal Committee (GEAC)** is the apex regulatory body responsible for allowing the commercial release of GM crops.

- Unauthorized use of GM variants can result in penalties, including a jail term of 5 years and a fine of Rs 1 lakh, as per the Environmental Protection Act of 1989.
- Certain genome-edited crops were exempted from strict regulations governing GM crops by the Central government, encouraging further research and development.
- Specifically, the Ministry of Environment and Forests exempted SDN1 and SDN2 genome-edited plants from certain provisions of the Environment Protection Act 1989.

### GENETIC ENGINEERING APPRAISAL COMMITTEE (GEAC)

- The primary biotech regulator in India is the Genetic Engineering Appraisal Committee (GEAC), operating as a statutory body under the Environment Protection Act of 1986 within the Ministry of Environment & Forests (MoEF).
- Formerly known as the Genetic Engineering Approval Committee, GEAC is responsible for granting permits for experimental and large-scale open field trials and approving the commercial release of biotech crops under the EPA 1986.



The Rules of 1989 define five competent authorities:

- Institutional Biosafety Committees (IBSC),
- Review Committee of Genetic Manipulation (RCGM),
- Genetic Engineering Approval Committee (GEAC),
- State Biotechnology Coordination Committee (SBCC),
- District Level Committee (DLC).

These authorities handle various aspects of the regulations governing biotechnology.



- The **Department of Biotechnology (DBT)** has issued guidelines to ease norms for GM crop research, addressing challenges associated with using foreign genes to modify crop profiles.
- In February 2021, the Food Safety and Standards Authority of India (FSSAI) established a permissible limit of 1% for genetically modified organisms (GMO) in imported food crops.

## WHO Report on Hypertension

### Why in News?

Globally, hypertension affects one in three individuals and four out of five do not have it adequately controlled, according to the first World Health Organization (WHO) report on hypertension released in September.

### **Key Highlights**

- It is a grim reminder that countries have done little to keep the biggest risk factor for death and disability under check despite the easy availability of inexpensive medicines.
- Uncontrolled blood pressure (over 140/90) is a main risk factor for cardiovascular diseases such as heart attacks and stroke, and the most common cause of disease and death.
- It is important to note that health risks associated with hypertension do not begin at over 140/90. Instead, they operate in a continuum even below what is classified as clinical hypertension, especially in people who are diabetic, are obese, and those who consume tobacco and alcohol. Hence, reports on hypertension levels in the population underestimate the cumulative risk of high blood pressure.
- In the **WHO report that relies on 2019 data**, 188 million Indians adults aged 30-79 years have hypertension. Of them, the condition has been diagnosed only in 37%, 30% are treated and a meagre 15% of people have hypertension under control.
- **Women appear to be marginally better** than men in having the condition diagnosed, treated and controlled.
- Based on sketchy data from parts of India, stroke incidence was found to be 108-172 per 1,00,000 people per year and the one-month case fatality rate was 18%-42%, as per a February 2022 study.
- In the Global Burden of Disease report, in 2019, heart attack was the leading cause of death and disability in India.
- Studies have shown that **excess salt consumption (over five grams a day) is responsible for 17%-30% of hypertension.**
- While member States are required to achieve a 30% relative reduction in mean population intake of salt by 2025, **India is yet to implement many components of WHO's prescription to cut down salt intake.**
- A study in four Indian States published in 2021 found high salt and sugar content in packaged food items.
  - Making front-of-pack nutrition labelling mandatory, encouraging reformulation of foods to cut down salt, and raising awareness in people to reduce salt intake should be urgently undertaken.
- India has, however, done well in improving blood pressure control in people with hypertension through the novel **India Hypertension Control Initiative (IHCI).**
  - Launched in 2018, the IHCI has successfully enrolled 5.8 million hypertensive patients for treatment in 27 States, as of June 2023.
  - Importantly, 48% of patients enrolled at primary health centres and 55% at health wellness centres achieved blood pressure control as of March 2021.
  - It is now important to greatly increase the number of hypertensive people on treatment and keep blood pressure under control.

## Findings of the Report

To underscore the profound impact of the disease burden caused by this "silent killer," the World Health Organization (WHO) has compiled a comprehensive Global Report on Hypertension. Some of the key highlights of the Report are given below:

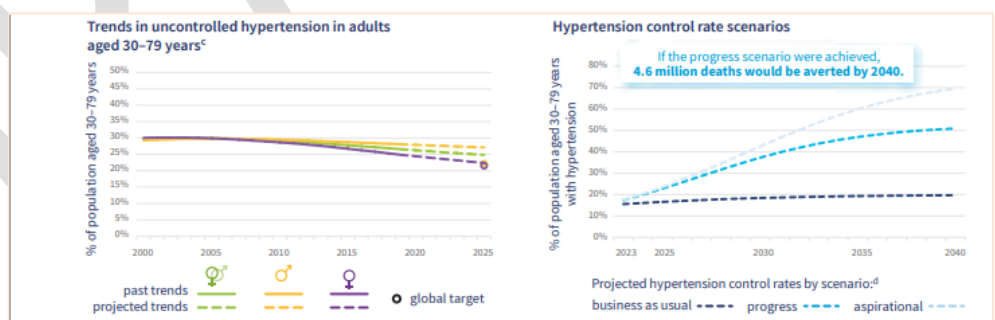
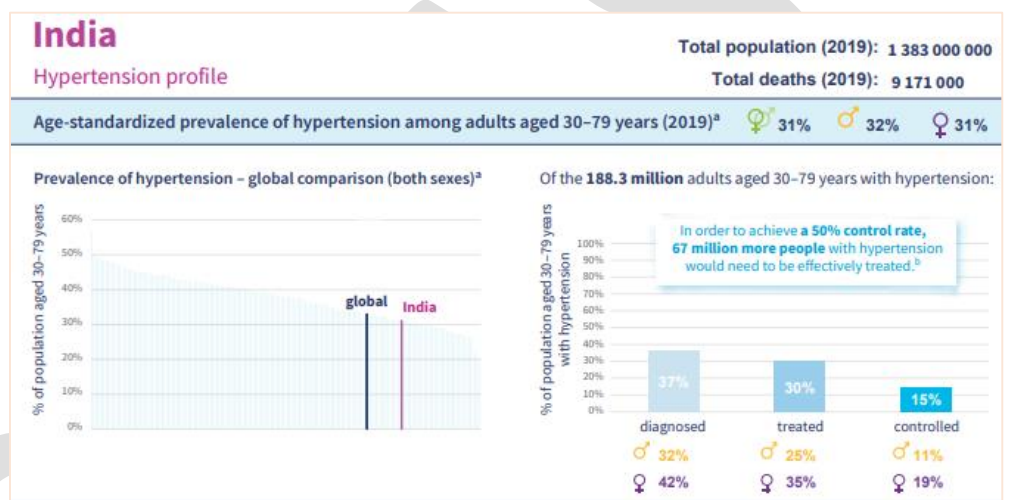


### Global Epidemic

- One-third of adults worldwide suffer from hypertension.
- Hypertension cases doubled from 650 million to 1.3 billion between 1990 and 2019.
- Affects around 33% of adults aged 30-79 globally.
- Approximately 80% of people with hypertension lack adequate treatment.

### India's Hypertension Burden

- India has approximately 188.3 million adults aged 30-79 with hypertension.
- Prevalence in India is slightly lower than the global average at 31%.
- To achieve a 50% control rate, India needs to treat an additional 67 million hypertension cases.
- Achieving this progress scenario could avert 4.6 million high-blood-pressure-related deaths by 2040.



Mortality				
	both sexes	males	females	year
Probability of premature mortality from NCDs (%)	22	25	19	2019
Cardiovascular disease deaths	2 566 000	1 451 000	1 116 000	2019
Cardiovascular disease deaths attributable to high systolic blood pressure (%)	52	51	54	2019
Risk factors*				
	both sexes	males	females	year
Mean population salt intake, adults aged 25+ years (g/day)	10	11	9	2019
Current tobacco use, adults aged 15+ years (%)	28	42	14	2019
Obesity, adults aged 18+ years (%)	4	3	5	2016
Total alcohol per capita consumption, adults aged 15+ years (litres)	5	8	2	2019
Physical inactivity, adults aged 18+ years (%)	34	25	44	2016



- In India, of the estimated 188.3 million individuals with hypertension, only 37% receive a diagnosis.
- A significant portion of those diagnosed do not commence treatment.
- Only 30% of those with hypertension start treatment, and merely 15% manage to keep their blood pressure under control.
- While the number of adults with uncontrolled hypertension is decreasing, the report stresses that progress needs to accelerate.
- By treating half of those with hypertension, referred to as the "progressive scenario," India could prevent 4.6 million deaths from heart attacks and strokes.
- Uncontrolled hypertension accounts for 52% of cardiovascular disease-related deaths in India, highlighting its critical role in heart attacks and strokes.
- Further lives could be saved if the "aspirational scenario" of achieving 75% control of hypertension could be realized.

### **Inadequate Treatment**

- Roughly 80% of individuals with hypertension lack proper treatment.
- Effective treatment could prevent 76 million deaths, 120 million strokes, 79 million heart attacks, and 17 million cases of heart failure by 2050.

### **Disparities in Treatment Coverage**

- Treatment coverage varies significantly by country, favoring high-income nations.
- WHO region of the US leads with a 60% coverage rate; the African region lags at 27%.
- Over 75% of adults with hypertension live in low- and middle-income countries.

### **Urgency of Timely Treatment**

- Nearly 30% of individuals with uncontrolled hypertension have blood pressure levels requiring urgent treatment.
- Globally, the percentage of adults aged 30–70 taking hypertension medication doubled from 22% in 1990 to 42% in 2019.
- Effective treatment coverage quadrupled during the same period, reaching 21%.

### **The WHO's Call to Action**

- WHO emphasizes prioritizing prevention, early detection, and effective management of hypertension in national health benefit packages.

### **Recommendations**

- Strengthening hypertension control programs is essential as they are often under-prioritized and underfunded.
- Integrating hypertension control into universal health coverage initiatives should be a fundamental aspect of every country's healthcare strategy.

### **Hypertension**

Hypertension, also known as high blood pressure, occurs when blood pressure in the blood vessels exceeds 140/90 mmHg or higher. It is a common condition that can have serious health implications if left untreated.

#### **Symptoms and Diagnosis**

- Hypertension is often asymptomatic, making regular blood pressure checks essential for detection.
- Risk factors include older age, genetics, obesity, physical inactivity, high-salt diet, excessive alcohol consumption.

<b>Risk Factors</b>	<ul style="list-style-type: none"> <li>Modifiable risk factors: Unhealthy diets, physical inactivity, tobacco and alcohol use, obesity.</li> <li>Non-modifiable risk factors: Family history of hypertension, age over 65, co-existing conditions like diabetes or kidney disease.</li> </ul>
<b>Symptoms and Complications</b>	<ul style="list-style-type: none"> <li>Most individuals with hypertension experience no symptoms, but very high blood pressure can lead to headaches, chest pain, vision problems, and more.</li> <li>Left untreated, hypertension can result in kidney disease, heart disease, and stroke.</li> </ul>
<b>Treatment and Lifestyle Changes</b>	<ul style="list-style-type: none"> <li>Lifestyle changes: Healthy diet, weight loss, physical activity, quitting tobacco.</li> <li>Medications: ACE inhibitors, ARBs, calcium channel blockers, diuretics.</li> <li>Target blood pressure levels depend on individual health conditions, with a general goal of less than 140/90.</li> </ul>
<b>Prevention</b>	<ul style="list-style-type: none"> <li>Lifestyle changes, including diet, exercise, and medication when necessary, can prevent and manage hypertension.</li> <li>Key recommendations include reducing salt intake, avoiding saturated/trans fats, not smoking, limiting alcohol, taking prescribed medications, and attending medical appointments.</li> </ul>
<b>Complications of Uncontrolled Hypertension</b>	<ul style="list-style-type: none"> <li>Hypertension can lead to serious heart conditions such as angina, heart attacks, heart failure, and irregular heartbeats.</li> <li>It can also cause stroke by blocking or bursting arteries in the brain.</li> <li>Kidney damage and kidney failure are potential consequences of hypertension.</li> </ul>
<b>Hypertension in low- and middle-income countries</b>	<ul style="list-style-type: none"> <li>Global prevalence varies, with the highest rates in the WHO African Region (27%) and the lowest in the WHO Region of the Americas (18%).</li> <li>Hypertension has increased significantly, mainly in low- and middle-income countries, due to rising risk factors in those populations.</li> </ul>

## Steps Taken to Manage Hypertension in India



### India Hypertension Control Initiative (IHC)

- Launched in 2017 under the National Health Mission.
- Collaborative effort involving the Ministry of Health and Family Welfare, Indian Council of Medical Research (ICMR), state governments, and WHO Country Office for India.
- Implementation in 138 districts across 23 states.
- Received the 2022 UN Interagency Task Force and WHO Special Programme on Primary Health Care Award.

### 25 by 25 Goal

- Government of India's commitment to reduce premature mortality due to non-communicable diseases (NCDs) by 25% by 2025.

### DID YOU KNOW

India has set a target of 25% relative reduction in the prevalence of hypertension (raised blood pressure) by 2025. To achieve this, the Government of India launched the Indian Hypertension Control Initiative (IHCI) to fast-track access to treatment services for over 220 million people in India who have hypertension.

Only about 12% people with hypertension in India have their blood pressure under control. Uncontrolled blood pressure is one of the main risk factors for cardiovascular diseases (CVDs) such as heart attacks and stroke, and are responsible for one-third of total deaths in India.

IHCI, launched in November 2017, is a multi-partner initiative of the Ministry of Health & Family Welfare, Indian Council of Medical Research, WHO Country Office for India, and Resolve to Save Lives.



- One of the nine voluntary targets is reducing the prevalence of high blood pressure by 25% by 2025.
- Includes a pledge to reduce salt intake by 30% in the population by 2025 (aligned with WHO's target).

### 75/25 Initiative

- Aims to provide standard care to 75 million individuals with hypertension and diabetes by 2025 through primary health care centers.

### Food-Related Measures

- Implementation of the 'Eat Right India' movement by the Food Safety and Standards Authority of India (FSSAI).
- Seeks to transform the nation's food system to ensure secure, healthy, and sustainable nutrition.
- Introduction of the social media campaign 'Aaj Se Thoda Kam' in line with the movement's goals.

## Caring For The Old

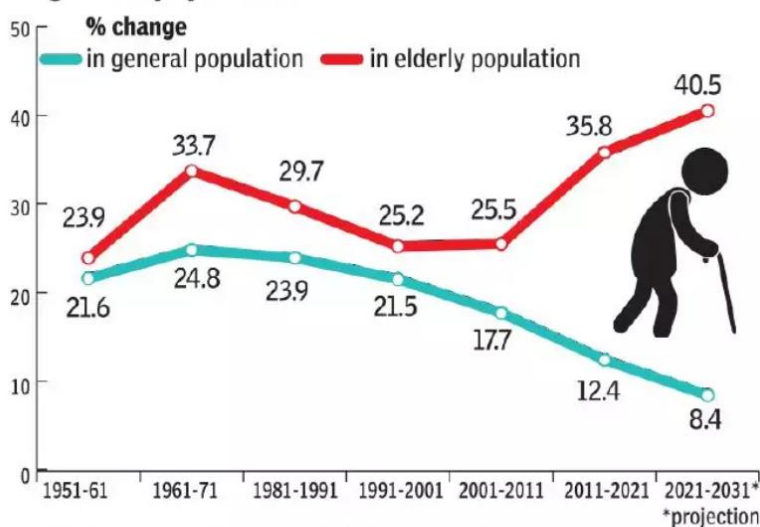
### Why in News?

A good part of the world's population is growing older, and India mirrors this trend as well. India must attune its policies to ensure the elderly live a life of dignity.

### Key Highlights

- The reality, according to the **United Nations Population Fund's India Ageing Report 2023**, is that the population above 60 years will double from 10.5% or 14.9 crore (as on July 1, 2022) to 20.8% or 34.7 crore by 2050.
- With one in five individuals set to be a senior citizen, **there will be implications for health, economy, and society.**
  - In Kerala and West Bengal for instance, there is a growing population of the elderly who live alone as children migrate for better opportunities.
- With **life expectancy increasing**, thanks to better ways to fight disease, and **decreasing fertility rates** in many countries, including India, **there are challenges in nurturing an expanding elderly population.**
  - Within this macro phenomenon, there are myriad other data of importance.
  - For instance, women elderly citizens outnumber their male counterparts.
  - At 60 years, a person in India may expect to live another 18.3 years, which is higher in the case of women at 19 years compared to men at 17.5 years.
  - If women in India, where labour force participation is low at 24%, do not have economic and social security, they will become more vulnerable in old age.
- There are also significant inter-State variations. Most **States in the south** reported a **higher share of the elderly population** than the national average in 2021, a gap that is expected to widen by 2036.

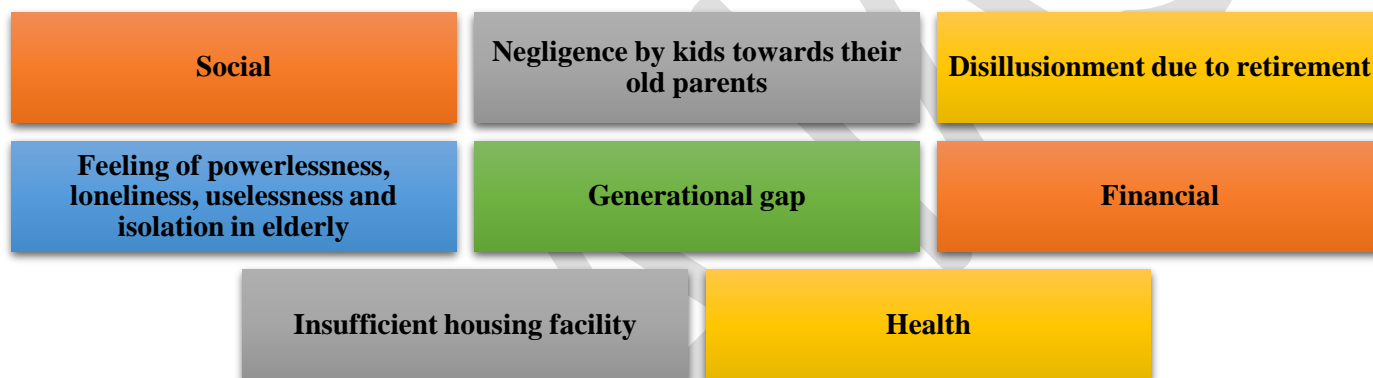
### Decadal growth in elderly population compared to that of general population



Population Census Data, Report of the Technical Group on Population Projections November 2019, Population. Projections for India and States 2011-2036, Census of India 2011  
Source: MOSPI

- While **States with higher fertility rates**, such as Bihar and Uttar Pradesh, **expect to see an increase** in the share of the **elderly population** too by 2036, the level will remain lower than the Indian average.
- Overall, more than two-fifths of the elderly are in the poorest wealth quintile — ranging from 5% in Punjab to 47% in Chhattisgarh; also, 18.7% of the elderly do not have any income.
- A **high proportion of the rural population** is among the **elderly** and often **economically deprived**.
- **To meet the challenges**, physical and mental health, basic needs of food and shelter, income security, and social care, a ‘whole-of-society’ approach is required.
- **Geriatric care** must be fine-tuned to their unique health-care needs.
- There are **several schemes targeting the elderly** but many are **unaware of them** or find it **too cumbersome** to sign up.
  - **The National Policy on Older Persons, 1999** and the **Maintenance and Welfare of Parents and Senior Citizens Act, 2007** lay down the care of the elderly but to ensure that senior citizens live in dignity, public and private policies must provide a more supportive environment.

## Problems Associated with the Ageing Population



- **Social:** Indian society is undergoing rapid transformation under the impact of industrialization, urbanization, technical & technological change, education and globalization.
  - Consequently, the traditional values and institutions are in the process of erosion and adaptation, resulting in the weakening of intergenerational ties that were the hallmark of the traditional family.
  - Industrialization has replaced the simple family production units by the mass production and the factory.
- **Other Problems** include negligence by kids towards their old parents, disillusionment due to retirement, feeling of powerlessness, loneliness, uselessness and isolation in elderly, generational gap.
- **Financial:** Retirement and dependence of elderly on their child for basic necessity.
  - Sudden increase in out of pocket expenses on treatment.
  - Migration of young working-age persons from rural areas has negative impacts on the elderly, living alone or with only the spouse, usually poverty and distress.
  - Insufficient housing facility.
  - A national survey carried out by the NGO HelpAge India has shown that as many as 47% of elderly people are economically dependent on their families for income and 34% are relied on pensions and cash transfers, while 40% of the surveyed people have expressed the desire to work “as long as possible”.
- **Health:** Health issues like blindness, locomotor disabilities and deafness are most prevalent.
  - Mental illness arising from senility (showing poor mental ability because of old age) and neurosis.
  - Neurosis is a class of functional mental disorders involving chronic distress, but neither delusions nor hallucinations.



- Absence of geriatric care facilities at hospitals in rural areas.
- According to a recent survey, 30% to 50% of elderly people had symptoms that make them depressed. A large majority of elderly persons living alone are women, especially widows.
- Depression is strongly correlated with poverty, poor health, and loneliness.

## Old Age Homes (OAHs)

The OAHs are a consequence of the emergence of the nuclear family system. Factors such as familial neglect, disintegration of families necessitated by the migration of children and their inability to keep pace with the new generation in terms of education, technology etc. pushes them towards these OAHs where they can live with people of their like.

- Even at times, elders feel comfortable in OAHs for the **freedom and friendly atmosphere** with other elders who keep them company, enjoying the time by interacting with each other.
- They even show some detachment from family members and feel more secure in OAHs.
- These OAHs, however, **do not always provide good facilities**, not all elders are taken care of well by the management, some of them impose restrictions.
  - The **food served** is often reported to be of **low quality and deficient in quantity** in many of them. The **bedrooms and toilets are often poorly maintained**.
  - Some of the managements do not utilise payments made to them by children of these elderly people, leaving the helpless parents in the lurch.
  - Such **abuse and misuse of OAHs** come to the limelight often, but seldom is action taken to rectify the situation.

## What Challenges Does An Ageing Population Pose?

### Increased spending on health care facilities

In India, a significant portion of the senior population lacks health insurance, increasing out-of-pocket medical expenses.

### Decreased Income security

India, which has one of the worst social security systems in the world and spends just 1% of its GDP on pensions, makes it difficult for elderly people to make ends meet.

### Feminization of ageing

One of the major issues brought on by population ageing is the “Feminization of Aging,” or the fact that more women than men are living longer.

### Lack of geriatric facilities

There is an increased urban-rural gap in the matters of tertiary hospital facilities for elderly people. A recent survey found that 30% to 50% of elderly persons reported depressive symptoms.

### Reduced quality workforce

There can be a severe lack of qualified workers due to the decline in the number of people who are of working age.

### Increase in dependency ratio

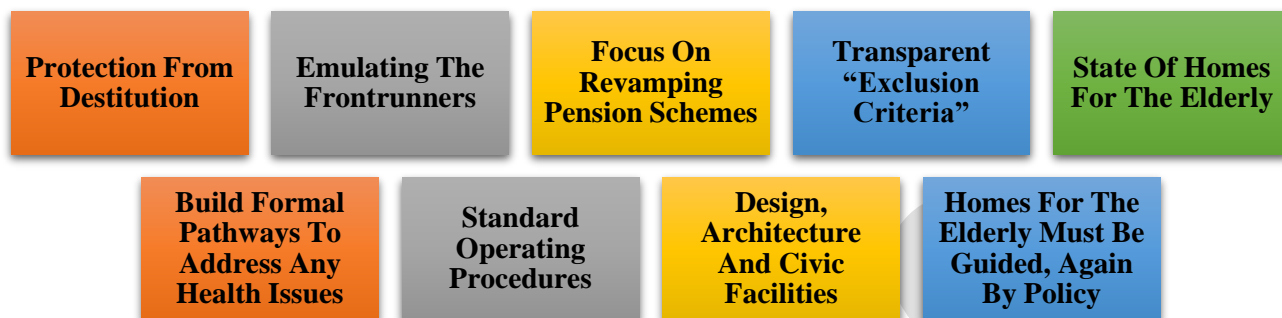
In order to cover greater healthcare expenses, pension benefits, and other publicly supported services, India with an increasing rate of older populations must rely on smaller labor pools to raise taxes.

## Importance of Elderly population in any society

- Elderly peoples carries immense experience of their personal and professional life, society at large need to channelise those experience for better tomorrow.
- They can provide a **vital generational link for upcoming generations**. It provides support and stability to families and society at large.
- Grandparents in joint families provide a **crucial link for transferring values and morals** to the younger generation in their initial years, thereby contributing towards upbringing of better human beings and responsible citizens.
- Their **deep cultural impressions and social experiences** provide the necessary buffer against intolerance, violence and hate crimes which provides stability in society especially in the era of hate and crime.
- They can play a **significant role in easing out societal tensions**, both within and outside families through their insight and understanding.

Elderly Related Schemes	
<b>Pradhan Mantri Vaya Vandana Yojana (PMVVY)</b>	<ul style="list-style-type: none"> <li>• It is a Pension Scheme announced by the Government of India exclusively for the senior citizens aged 60 years and above.</li> <li>• The scheme is now extended up to 2023 for a further period of three years beyond 2020.</li> </ul>
<b>Integrated Program for Older Persons (IPOP)</b>	<ul style="list-style-type: none"> <li>• The main goal of this policy is to improve the quality of life of senior citizens.</li> <li>• This is done by providing them with various basic amenities such as food, shelter, medical care, and even entertainment opportunities.</li> </ul>
<b>Rashtriya Vayoshree Yojana</b>	<ul style="list-style-type: none"> <li>• It is a central sector scheme funded from the Senior Citizens' Welfare Fund.</li> <li>• The fund was notified in the year 2016.</li> <li>• All unclaimed amounts from small savings accounts, PPF and EPF are transferred to this fund.</li> <li>• It aims to provide aids and assistive living devices to senior citizens belonging to Below Poverty Line (BPL) category who suffer from age-related disabilities such as low vision, hearing impairment, loss of teeth and locomotor disabilities.</li> </ul>
<b>SAMPANN Project</b>	<ul style="list-style-type: none"> <li>• It was launched in 2018. It is a seamless online pension processing and payment system for Department of Telecommunications pensioners. It provides direct credit of pension into the bank accounts of pensioners.</li> </ul>
<b>SACRED Portal for Elderly</b>	<ul style="list-style-type: none"> <li>• The portal was developed by the Ministry of Social Justice and Empowerment.</li> <li>• Citizens above 60 years of age can register on the portal and find jobs and work opportunities.</li> </ul>
<b>Elder Line: Toll-Free Number for Elderly</b>	<ul style="list-style-type: none"> <li>• It provides information, guidance, emotional support - particularly on pension, medical and legal issues - besides immediate assistance in cases of abuse.</li> <li>• It is devised to provide all senior citizens, or their well-wishers, with ONE platform across the country to connect and share their concerns and get information and guidance on problems that they face on a day-to-day basis.</li> </ul>
<b>SAGE (Seniorcare Ageing Growth Engine) Initiative</b>	<ul style="list-style-type: none"> <li>• It is a "one-stop access" of elderly care products and services by credible start-ups.</li> <li>• It has been launched with a view to help such persons who are interested in entrepreneurship in the field of providing services for elderly care.</li> </ul>

## Way Forward



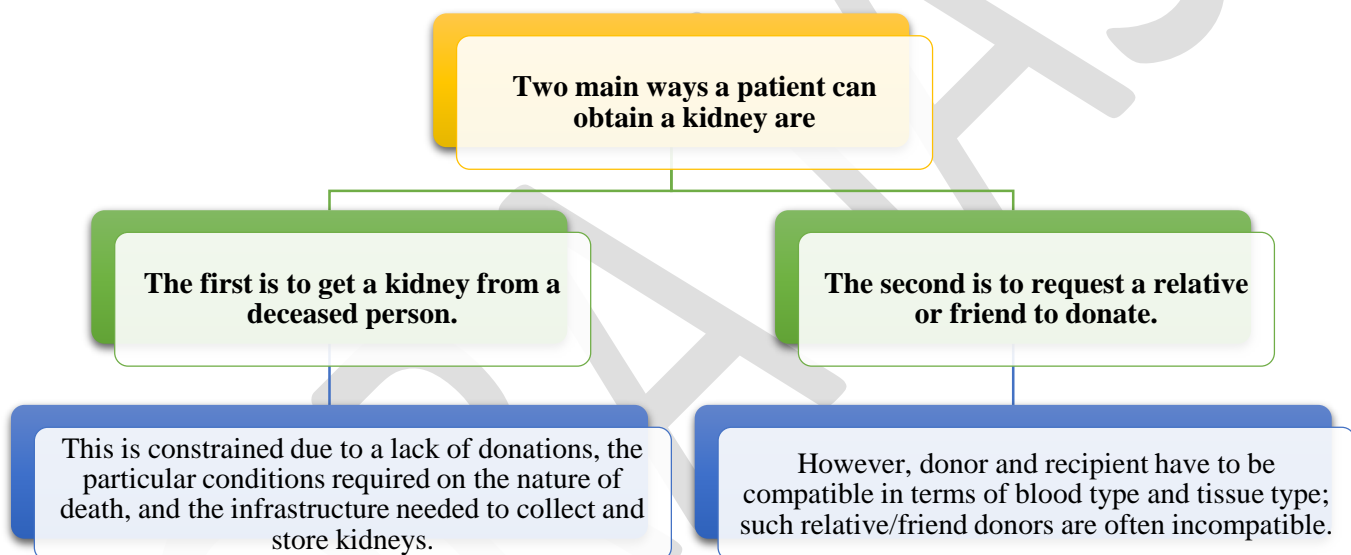
- **Protection from Destitution:** The first step towards a dignified life for the elderly is to protect them from destitution and all the deprivations that may come with it.
  - Cash in the form of a pension can help to cope with many health issues and avoid loneliness as well. That is why old-age pensions are a vital part of social security systems around the world.
- **Emulating the Frontrunners:** The southern States and India’s poorer States such as Odisha and Rajasthan have achieved near-universal social security pensions. Their actions are worth emulating.
  - It would be much easier for all States to do the same if the central government were to revamp the NSAP.
- **Focus on Revamping Pension Schemes:** Another critical area would be bringing reforms in the social security pensions.
  - They also need other support and facilities such as health care, disability aids, assistance with daily tasks, recreation opportunities and a good social life.
- **Transparent “Exclusion Criteria”:** A better approach is to consider all widows and elderly or disabled persons as eligible, subject to simple and transparent “exclusion criteria”.
  - Eligibility can even be self-declared, with the burden of time-bound verification being placed on the local administration or gram panchayat.
  - Although there are chances of privileged households taking the advantage, it is much preferable to accommodate some inclusion errors than to perpetuate the massive exclusion errors as is the case today.
- **The state of homes for the elderly** today offers us some low-hanging fruit we can address easily: build formal pathways for basic health screening between such homes and public health facilities.
  - This can include screenings for blood sugar, blood pressure, periodic vision and hearing screening, and a simple questionnaire to assess mental health.
  - Such interventions are inexpensive (think of all the motorcycle-operated screenings outside public grounds for morning-walkers) and could go a long way in identifying health issues and offering support.
- The next step would be to **build formal pathways to address any health issues** that such screenings identify. Many hospitals (public, NGO-run, and private care) can help.
  - Health institutions will also need to offer a comprehensive set of packages that are tailored for the elderly not piecemeal solutions for diabetes, cardiology or cancer, for example.
- Many homes lack clearly established **standard operating procedures**, and their referral paths to health care are informal.
  - There is an urgent need to understand the quality of life at such institutions, including the impact of these homes on the mental health of their residents.
- **Design, architecture and civic facilities** must be thought from the ground up — and these innovations must be available for all residents, not just those living in expensive ones.

- Homes for the elderly must be guided, again by policy, to make their facilities, buildings and social environment elderly- and disabled-friendly.

## Reform Can Address India’s Kidney Transplant Deficit

**Context:** India’s organ shortage when it comes to kidneys is alarming.

- In 2022, over two lakh patients needed a transplant, but there were only about 7,500 transplants (about 3.4%).
- Due to the prevalence of diabetes, malnourishment, overcrowding and poor sanitation, there is a high prevalence of Chronic Kidney Disease (CKD) in India, affecting about 17% of the population.
- CKD often leads to end-stage renal disease (ESRD). A kidney transplant is often the best treatment for ESRD.
- Specifically, transplant is often better than alternatives on almost all dimensions that matter: quality of life, patient convenience, life expectancy, as well as cost-effectiveness.
- In contrast to India, the United States and other developed countries could carry out about 20% transplants. Notably, a significant portion of this gap is on account of more stringent regulations in India than a lack of medical facilities.



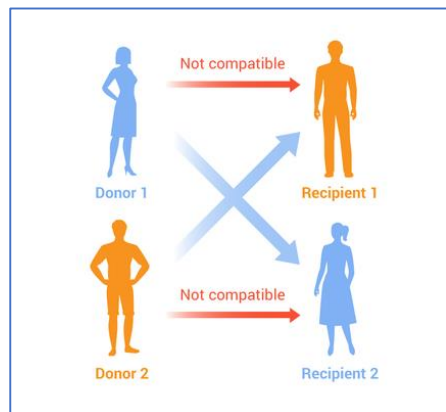
### A Case for Changes

Thus, regulations for kidney exchange are needed as kidney exchange must often occur across family units. But we argue that these regulations need urgent reform to unshackle two innovative kidney exchange methods: kidney ‘swaps’ and kidney ‘chains’.

#### Kidney Swap Example

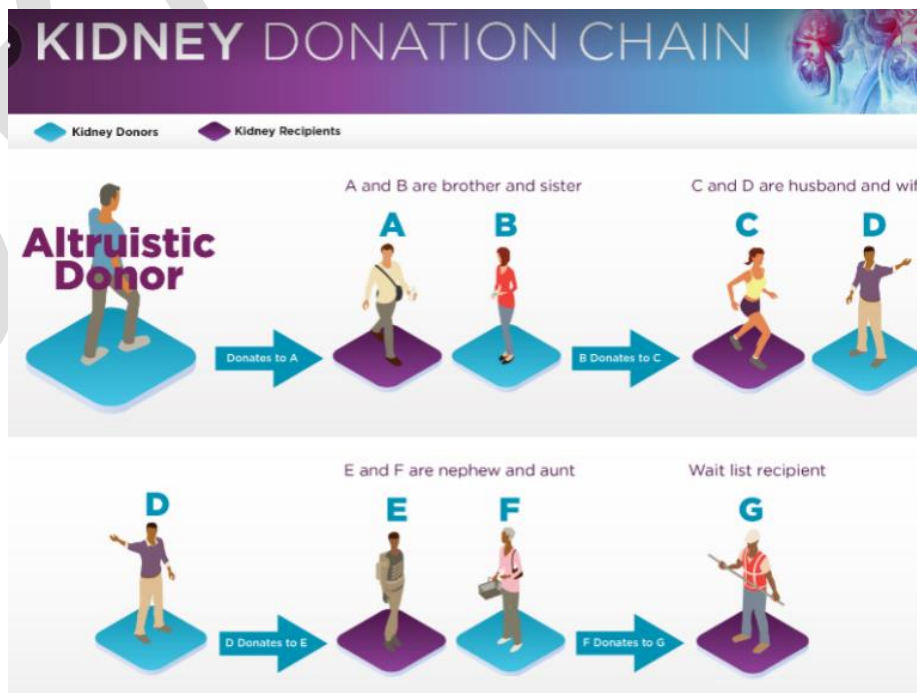
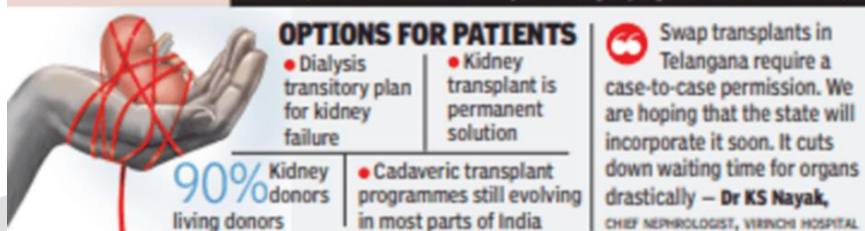
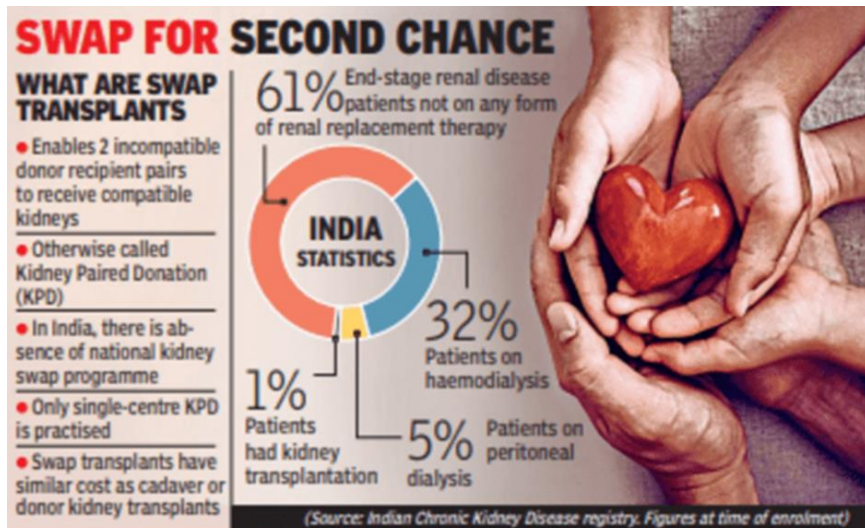
Consider two strangers, Sunita and Zoya, who need kidneys. Sunita’s spouse is incompatible with her, and Zoya has the same problem. However, if Sunita’s spouse is compatible with Zoya, and Zoya’s spouse is compatible with Sunita, swap donations are possible.

In kidney chain, let us look at the case of Sonu who is an altruistic donor donating his kidney with no expectation of a kidney in return. Sonu donates to Sunita (assuming compatibility), Sunita’s spouse donates to Zoya, and Zoya’s spouse donates to some other compatible person, and so on.





- Our research shows that there are barely any swaps and almost no chains in India. This is because of legal roadblocks.
- And this is a significant opportunity missed with terrible consequences. Consider swaps. Swap transplants are legally allowed in India with due permission, but only near-relatives are allowed as donor-recipient pairs.
- Exceptions to this restriction are Kerala, Punjab and Haryana, where High Court judgments have recently allowed non-near-relative donor-recipient pairs after verification.
- Thus, in most States, if Sunita's donor is not a near relative (such as spouse, parents), she and her donor cannot participate in a swap. By contrast, it is legal for Sunita's non-near-relative to donate to her. These double standards across swaps and direct donations are questionable.
- Easing the laws for swaps to make them on a par with direct donations is necessary.
- Further, unlike national, regional, and State lists for direct transplant from cadavers, there is no national coordinating authority for swaps.
  - This is again a huge lost opportunity, since larger and more diverse pools make it easier to find compatible swaps.
- While there are occasional swaps in India, there are almost no **kidney chains**.



- The lack of kidney chains is possibly an even bigger opportunity missed than swaps.
- While participating in swaps, families demand nearly simultaneous operations of all donors and recipients since no one wants to lose a kidney without gaining one. But in chains, each patient first receives a kidney and only then does their relative donate.
- Thus, chains, compared to swaps, involve significantly lower hospital resources and uncertainty for participants.

Needlessly harsh laws regulating swaps and chains have contributed to a proliferation of black markets for kidneys. ‘Selling a kidney’ to relieve financial distress is a mainstream reference. These black markets endanger all their desperate participants since these operations are conducted ‘off the books’, without due legal and medical safeguards.

## Reforms are At a slow pace

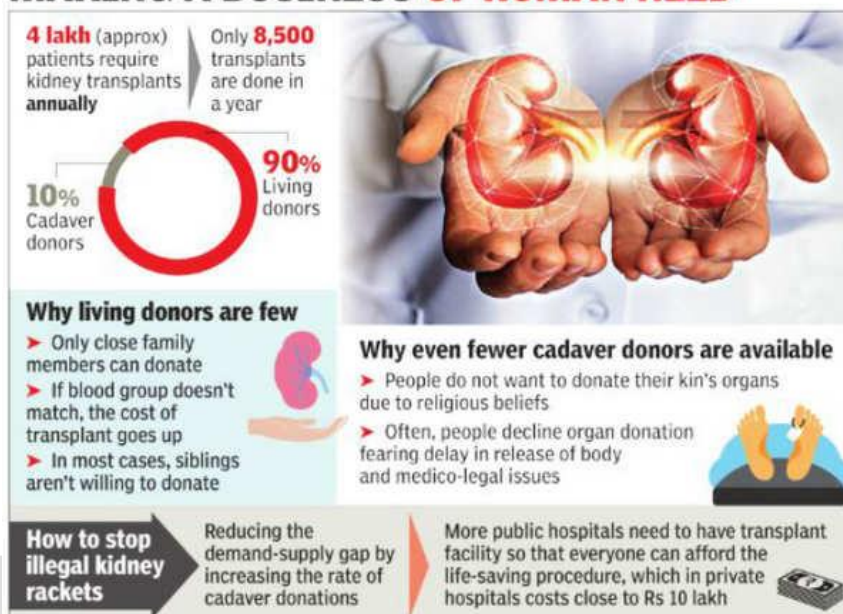
Reforms of kidney exchange laws have been slow.

- The **Transplantation of Human Organs and Tissues Act 1994** set the ball rolling by recognising transplant possibility from brain-stem death.
- In the 2011 amendment, swap transplants were legalised, and a national organ transplant programme was initiated. But the national network remained underdeveloped initially.
- According to the **Transplantation of Human Organs and Tissues Rules 2014**, swap transplants are allowed only for near relatives.
- The **government’s recent reforms (February 2023)** allow more flexibility in age and domicile requirements while registering to obtain an organ.
  - But these reforms leave the fundamental issue of inadequate kidney supply largely unaddressed. This is why it is beneficial to allow and encourage altruistic donation, non-near relative donation for swaps, and to improve the kidney-exchange infrastructure.

India does not need to innovate in order to reform chains and swaps. Sufficient precedents have been set globally.

- Australia, Canada, Israel, the Netherlands and the United States (among others) now allow altruistic donations.
- Spain and the United Kingdom have national-level registries for kidney chains and swaps.
- The U.S. has especially made progress in facilitating thousands of swaps and chains.
- Spain even has international collaborations for kidney exchange.

## MAKING A BUSINESS OF HUMAN NEED



DONATION	
<b>LIVING PERSON</b>	
➤ Blood	
➤ Bone marrow	
➤ Kidney	
➤ Portion of liver	
➤ Portion of lung	
➤ Portion of pancreas	
<b>AFTER NATURAL DEATH</b>	
➤ Eyes	
➤ Heart valves	
➤ Bones and tendons	
➤ Cartilage	
➤ Veins and arteries	
➤ Skin and fascia	
<b>AFTER BRAIN DEATH</b>	
➤ Kidney	➤ Eyes
➤ Liver	➤ Ear bones
➤ Lungs	➤ Bone
➤ Pancreas	➤ Cartilage
➤ Small intestine	➤ Tendons
➤ Voice box	➤ Veins
➤ Hands	➤ Arteries
➤ Uterus	➤ Nerves
➤ Ovaries	➤ Fingers
➤ Face	➤ Toes



India's real challenge, therefore, is to learn from and replicate such existing successful regulations to improve the lives of several thousands of citizens.

## Reasons For Kidneys Shortage In India

### High Demand

• In 2022, over two lakh people in India needed a kidney, but only about 7,500 transplants were done, showing a stark shortage.

### Prevalence of Chronic Diseases

• Chronic Kidney Disease (CKD) affects about 17% of India's population, mainly due to widespread diabetes, malnourishment, and poor living conditions, raising the demand for kidneys.

### Stringent Regulations

• Strict laws in India limit kidney swaps to near-relatives in most states and prohibit kidney chains, except in Kerala, restricting the availability of kidneys for transplants.

### Lack of Donations

• There is a scarcity of kidney donations from deceased donors due to specific conditions on the nature of death and the lack of infrastructure needed to collect and store kidneys.

### Limited Compatibility

• Even when willing donors are available, like friends or relatives, often they are not a match in terms of blood type and tissue type, limiting the successful transplants.

### Absence of Coordinating Authority

• The lack of a national authority for managing and coordinating swaps restricts the potential to find compatible matches and facilitate more transplants.

## Challenges Regarding Organ Donation

### Lack of Awareness and Education

### Family Consent and Decision-Making

### Organ Trafficking and Black Market

### Medical Eligibility and Compatibility

### Donor Incentives and Compensation

### Infrastructure and Logistics

- **Lack of Awareness and Education:** Limited awareness among the general public about organ donation and its impact. Insufficient education among medical professionals to identify potential donors and counsel families effectively.
- **Family Consent and Decision-Making:** Family reluctance to give consent for organ donation, even when the deceased individual had expressed a willingness to donate. Emotional and ethical dilemmas that families face when making decisions about organ donation.
- **Organ Trafficking and Black Market:** Illegal organ trafficking and the existence of a black market for organs. Criminal activities exploiting the demand for organs and undermining legitimate donation processes.
- **Medical Eligibility and Compatibility:** Matching suitable donors and recipients based on medical compatibility and organ availability. Limited availability of compatible organs, leading to prolonged waiting periods for patients.

- **Donor Incentives and Compensation:** Debates over the ethical implications of offering financial incentives or compensation to organ donors. Balancing the need for increasing donation rates with ensuring ethical practices.
- **Infrastructure and Logistics:** Inadequate infrastructure and resources for organ retrieval, preservation, and transplantation. Challenges in the timely transportation of organs from donors to recipients, especially across different regions.

## Highlights of the New National Organ Transplantation Guidelines

Removed Age Cap

No Domicile Requirement

No Registration Fees

- **Removed Age Cap:** Age limit for organ recipients eliminated due to improved life expectancy. NOTTO (National Organ and Tissue Transplant Organization) guidelines previously prohibited end-stage organ failure patients above 65 years from registering for organ transplants.
- **No Domicile Requirement:** Domicile requirement waived for organ recipient registration. 'One Nation, One Policy' approach allows patients to register for organ transplants in any state.
- **No Registration Fees:** Removal of registration fees for organ recipient registration. States, including Gujarat, Telangana, Maharashtra, and Kerala, no longer charge fees for patient registration.

## Way Forward



- **Reform Regulations:** Laws limiting kidney swaps and prohibiting kidney chains need to be relaxed to enhance kidney availability.
- **Promote Swaps and Chains:** Encourage the implementation of kidney swaps and chains to maximize the utilization of available donors.
- **Altruistic Donations:** Permit altruistic kidney donations to initiate kidney chains, providing more patients access to compatible kidneys.
- **Enhance Infrastructure:** Improve the infrastructure to collect and store kidneys, making donations from deceased individuals more feasible.
- **National Coordinating Authority:** Establish a central authority for coordinating swaps and chains, allowing a more extensive and diverse pool for compatible matches.
- **Adopt International Practices:** Learn and incorporate successful regulations and practices from countries like Spain and the U.S. to facilitate more kidney exchanges and transplants.



- Partner with **artists, influencers, and celebrities** to create **impactful campaigns** highlighting organ donation's significance.
- **Organize seminars** for medical professionals, employing interactive simulations and case studies for donor identification and family counseling.
- Collaborate with educational institutions to **raise awareness** among students about organ donation through workshops and talks.
- **Host community-driven events** that showcase the success stories of organ recipients and donors.
- **Engage religious leaders** to debunk myths and misconceptions about organ donation, emphasizing its compassionate aspect.
- **Introduce a program to honour donors and their families**, recognizing their selfless contribution through plaques and certificates.
- **Foster collaborations between healthcare institutions** to optimize organ transplantation processes for efficient outcomes.