

OCTOBER  
2024

**KSG**

An Institute For **IAS** Exam...



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- **PRE-SHOTS** • **MAP CONNECT** • **PHILOSOPHY OF THE MONTH**
- **THEMATIC ESSAYS** • **CONTEMPORARY ETHICS CASE STUDIES**

**NEW FEATURE: SNAPSHOT: THEMES OF THE MONTH**

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## MESSAGE FROM DR. KHAN ....

**Dear Students,**

In the realm of competitive examinations, it's common to witness students getting consumed by the sheer force of competition. However, an **overemphasis on comparing oneself with others** can divert attention from personal growth and potential, the two vital components of meta competition. To be in meta **competition one needs to focus on individual realizations of potentials, developing a robust knowledge base, and striving for an above-average performance** to excel in the competition undertaken. Locate the normal so that you can stay above. **Challenge self before you challenge others.**

While healthy competition is encouraged, **continuously comparing oneself with others hampers personal growth.** Instead, concentrate on building your own information and knowledge base, independent of external benchmarks shift the focus inward. Mind your personal X-bar, No one can beat you ever if you are competing with your ownself.

Each student possesses diverse strengths and backgrounds. Rather than directly competing in areas of expertise, **invest time in attending your own weaknesses.** If you think that others have a better chance, you should not be in the race. **Embrace the journey of self-improvement** and utilize it to your advantage. A balanced above average performance delivers vis a vis others.

Success in competitive exams lies not in excelling in one area alone but in maintaining an above-average performance across multiple subjects. Avoid fixating on isolated spikes in specific domains and, instead, strive for an overall higher average.

In the pursuit of success in competitive examinations, it is crucial **to strike a balance between competition and personal growth.** By prioritizing individual development, nurturing a well-rounded knowledge base, and striving for an above-average performance, you position yourself for success.

Avoid falling into the trap of constant comparison, as it can hinder progress and breed bitterness. Embrace your unique strengths and channel your energy into becoming better in areas where others may falter. **Remember, it's the journey of personal growth and achieving an above-average performance that ultimately leads to success.** The competition is basically a meta competition for a better version of you; yourself. You definitely are not that what you can become. There is always a difference between being and becoming.

**My best wishes are always with you.  
Stay Blessed!**

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### GS CONNECT

It gives us immense pleasure to present an innovative approach to mastering current affairs. Current is a passing wind and diverse issues happen at the same time. It is to an extent chaotic. Newspapers, magazines, and various other sources report the chaos per se. With our experience of current affairs, we have tried to give "the current" a medium to travel. It is the syllabus of the UPSC with its components that are the medium through which the "Current is Passed" to the readers. **Ever since the new syllabus of the UPSC came into existence, the current has been gaining significance both at prelims as well as mains examination.** This book is meant to cover current affairs and related questions arising from those events. We have not only covered the current events for their factual contents but also presented them in such a way that any question asked from that topic gets covered. Moreover, topics are also "**peppered**" with the relevant facts/key concepts that are related to the theme.

It is a collection covering myriad sources yet in a manageable size. To use this book, we recommend you to, master the components of the General Studies (GS) syllabus as broken into rows and columns (**provided on the subsequent page**). Each cell comprising the portion of GS becomes the connection for the current and every news subsequently covered guides the reader to the address of the syllabus. It is logical to expect that the same issue may be connected to more than one topic of the syllabus. Further, the news also has some additional vistas opened for the readers by adding a box with the title "**PEPPER IT WITH**" where we expect the students to build further around the theme. We are also trying to reach the remotest part of the country with our spirit and zeal of "**Mains Answer Writing**"; which has been admired by students, CSE rank holders, and other scholars. Continuing in line with the effort, we have started **programs like KTP Mains Test Series, Destinaire, Navigator, NEEV, AWSDP plus, KOL, DL& MP, Advance Foundation Course, Weekend Courses as well as Optional Courses (PSIR, Sociology, History, and Geography).**

Additionally, this month, we are introducing a new section called "**SNAPSHOTS,**" offering themes **inspired by** four monthly magazines to provide comprehensive coverage of various topics. We are also providing a **complimentary full-length test** with 100 objective questions. **Scan the QR code** to revise the previous month's current affairs and test yourself.

When it comes to evaluation, we are all together at a different level. We are also reaching every nook and corner with this expertise for the aspirants of CSE. Now you can write a Mains Answer and get it evaluated by our Expert Team and can get Feedback. Drop a mail at **evaluation@ksgindia.com** to register yourself in our race to perfection. Don't wait, it's your golden chance to crack this exam and fulfill your passionate dream.

**Team KSG**

S. No.	GS -I	GS- II	GS- III	GS-IV	Mis
1	Indian Culture-Art Forms, Literature and Architecture from ancient to modern times.	Indian constitution- Amendments, acts and bills.	Various measures to boost Indian economy- planning, policies, management	Ethical issues related to family society, education, Corruption etc.	
2	Indian History significant events, personalities, issues and the Freedom Struggle.	Legislative, executive and judicial processes.	Government budgeting and issues related to budget.	Ethics in public and private administration	
3	Post independence issues, National boundary and disputes.	Constitutional, non-constitutional, judicial, quasi-judicial, administrative and other types of bodies.	Agriculture, animal husbandry and transport	Issues	
4	Indian society features, issues, globalization and diversity	Federal structure and local bodies. Their powers and functions.	Food security- measures to boost food security and food processing. Issues related to land- land reforms	Related laws and rules	
5	Women - issues and developments	Government policies and various governance issues like transparency, accountability and – governance	Industries and infrastructure- their growth and investment model	Governance/e- Governance	
6	Urbanization – problems and remedies	Committees and schemes.	Space and technology, IT space, robotics and computer	Ethics in international issues	
7	Distribution of industries and resources – India and world	Non-government issues, self-help groups and role of civil society	Disease, biotechnology and human welfare	Personalities and their teachings	
8	Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone etc	Vulnerable sections of our society and social sector issues like Poverty, Hunger, Education, and their initiatives.	Innovations, intellectual property, Awards, POI and other important aspects of S&T	Other important topics	
9		International Relation- India and other countries, various Indian and international agreements, effects of other countries on India and international institutions.	Environment; government initiatives, various judgment, pollution, degradation and conservation efforts		
10			Disaster & Disaster Management		
11			Challenges to internal security, Various Security forces and agencies and their mandate. Cybersecurity; money laundering and its prevention.		

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## POLITY

## Moving the spotlight to grassroots democracy

## News Excerpt:

The **Election Commission of India** (ECI) has been widely recognised for its role in conducting **free and fair elections** for both Parliament and State legislatures. Over time, it has earned a reputation as one of India's most credible institutions. However, at the state level, **34 State Election Commissions** (SECs) require urgent **attention** and strengthening to ensure effective democracy at the grassroots level.

## Creation and Role of SECs

- The SECs were brought into existence by **Articles 243K** and **243ZA** of the Constitution.
- These provisions were introduced by the **73rd and 74th Constitutional Amendments** in **1993**, giving SECs the authority to oversee the **preparation of electoral rolls** and the **conduct of elections** to panchayats and urban local governments (ULGs).

## Systemic Issues Faced by SECs

- **Disempowerment:** SECs across India face increasing disempowerment. In many instances, they are embroiled in **legal battles** with their respective state governments, hindering their ability to carry out their duties effectively.
  - **Karnataka SEC vs. Government of Karnataka:** The Karnataka SEC filed a contempt petition against the state government for delaying the delimitation of panchayat raj institutions, delaying elections by over three and a half years.
  - **Cases filed by Andhra Pradesh SEC:** In 2020, the Supreme Court struck down an ordinance in Andhra Pradesh that hindered elections to the panchayat raj institutions.
- **CAG Performance Audits on Local Elections**
  - An analysis of the performance audits of the implementation of the **74th Constitutional (Amendment) Act** by the Comptroller and Auditor General (CAG) of India across 18 States shows that 1,560 out of 2,240 urban local governments (**70%**) did **not** have an **elected council** at the time of the CAG audit.
- **Ward Delimitation**
  - A major systemic issue is the limited authority of SECs to conduct ward delimitation. Janaagraha's 2023 Annual Survey of India's City Systems (ASICS) revealed **that only 11 out of 34 states and union territories** have empowered their SECs to complete this task.
  - These States and Union Territories (namely, the Andaman and Nicobar Islands, Arunachal Pradesh, Bihar, Dadra and Nagar Haveli, Daman and Diu, Gujarat, Himachal Pradesh, Jammu and Kashmir,

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Kerala, Ladakh, Maharashtra, and West Bengal) account for only 35% of India's population, as in the 2011 Census.

## Impact of Weak SECs on Local Governance

## Delayed Elections and Power Vacuums:

- Weak SECs struggle to conduct timely elections, creating power vacuums in local bodies, which are then run by bureaucrats rather than elected representatives. This undermines democratic legitimacy and denies citizens their right to elect local leaders.

## Erosion of Accountability:

- Without regular elections, local governance is handled by unelected officials, reducing accountability to the public. This erodes citizen trust and limits the responsiveness of local governments to community needs.

## Weakened Grassroots Democracy:

- Citizen participation in local governance is diminished, weakening the foundations of grassroots democracy.

## Poor Service Delivery:

- The absence of elected representatives negatively impacts essential services like water supply, sanitation, and infrastructure development.

## Manipulation of Electoral Processes:

- Disempowered SECs allow state governments to manipulate local elections by altering ward boundaries or delaying reservation announcements, leading to unfair electoral practices and reduced transparency.

## Undermining Constitutional Mandates:

- Delays in local elections violate the constitutional mandate of regular elections to local bodies, as outlined in the 73rd and 74th Amendments. Judicial interventions often become necessary, leading to governance instability.

## Supreme Court Observation

- In the 2006 case **Kishan Singh Tomar vs. Municipal Corporation of the City of Ahmedabad and Others**, the Supreme Court stressed the need to **empower SECs** on par with the ECI to ensure the proper functioning of local elections. This judgement serves as a crucial reference point for necessary reforms.

## Proposed Reforms to Empower SECs

- **Independence and Transparency of SECs**
  - SECs should be restructured to be as **independent** and **transparent** as the Election Commission of India.
  - A possible solution is to create a **three-member SEC** appointed by a committee that includes the **Chief Minister**, the **Leader of Opposition** in the **Legislative Assembly** (Vidhan Sabha), and the **Chief Justice of the High Court**. This would reduce political interference and ensure greater autonomy.
- **Fixed Intervals for Ward Delimitation and Reservation**
  - Delimitation of ward boundaries and reservations of seats must be mandated only at fixed intervals, such as **every ten years**. This would **prevent** state governments from **arbitrarily** delaying elections by manipulating boundaries and reservations.
- **Vesting Powers of Delimitation and Reservation in SECs**

- The SECs must be entrusted with reservations to the **positions** of **mayors/presidents** and **deputy mayors/vice-presidents** of the local governments, say once **every ten years**, where applicable.
- **Addressing Malpractices in Local Elections**
  - To ensure integrity, SECs should be **entrusted** with the **election of key local government positions** such as mayors, presidents, chairpersons, and standing committees.

**PEPPER IT WITH:**  
 Election Commission of India, 73<sup>rd</sup> and 74<sup>th</sup> Constitutional (Amendment) Act, State Election Commissions (SECs), Comptroller and Auditor General (CAG).

## Do doctors need a Central Protection Act?

### News Excerpt

Resident doctors across India are protesting, calling for **laws** to ensure their **safety while on duty**. The strike follows the brutal **rape and murder** of a young doctor at R.G. Kar Medical College in Kolkata.

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### Need for a Central Protection Act for Healthcare Workers

- **Escalating Violence Against Healthcare Workers:** Healthcare workers, especially doctors and nurses, face frequent attacks by patients' families, especially in government hospitals. This violence can range from verbal abuse to physical assaults, sometimes even leading to fatalities.
- **Inadequate State-Level Provisions:** As health and law enforcement fall under State jurisdiction, there are varying levels of commitment to healthcare worker safety.
- **Legal Accountability and Deterrence:** Currently, attacks on healthcare workers are often underreported, and the perpetrators are not consistently held accountable. A Central Act would institutionalise the process, ensuring timely reporting and investigation of incidents of violence across the nation.
- **Ensuring Safe Zones in Hospitals:** Healthcare professionals demand that hospitals be declared "safe zones" with mandatory security protocols. A Central Protection Act would mandate establishing security measures such as CCTV surveillance, security personnel, panic buttons, and well-lit walkways in all healthcare institutions.
- **Protecting Mental Health and Well-being of Healthcare Workers:** The safety concerns combined with high workloads, long shifts, and the risk of violence are contributing to burnout among healthcare workers.
  - The tragic history of violence against healthcare workers in India, such as the **sexual assault** on a junior nurse, **Aruna Ramchandra Shanbaug**, at King Edward

Memorial Hospital, Mumbai, in 1973, highlights the persistent danger faced by those in the medical field.

- **International Precedents and Best Practices:** Countries like the U.K., U.S., and Australia have enacted robust laws and policies to protect their healthcare workers.
  - For example, in the **U.K.**, the NHS enforces a **zero-tolerance policy** towards violence, and in the **U.S.**, some states classify assaults on healthcare workers as **felonies**. **Australia** has introduced safety measures like security personnel and **panic buttons**.
  - As one of the largest healthcare service providers, **India must adopt** similar stringent measures.

### Prevention of Violence Against Healthcare Professionals and Clinical Establishments Bill, 2022

- The "Prevention of Violence Against Healthcare Professionals and Clinical Establishments Bill, 2022," also referred to as the **"Central Protection Act for Doctors,"** was **introduced** in the **Lok Sabha** with the intent to address the growing issue of violence against healthcare workers.
  - It **defines acts of violence** against healthcare professionals, which include physical assault, harassment, and property damage at clinical establishments.
  - It specifically **addresses violence** based on caste, gender, religion, language, or place of birth.
  - Offences under this act are categorised as **cognizable** and **non-bailable**, meaning offenders can be arrested without a warrant. The punishment for such crimes includes imprisonment and fines, with severity depending on the nature of the offence.
  - The bill mandates the **reporting** of violent incidents against healthcare professionals and requires the **establishment** of a **grievance redressal mechanism** to ensure timely investigation and justice.
  - The act emphasises the need for **public education** about the challenges faced by healthcare professionals to prevent future incidents, foster greater understanding, and reduce conflicts.
  - The bill proposes the creation of **panels to investigate** reported cases of violence, with a focus on reducing long waiting periods in healthcare settings, which often contribute to patient-provider tensions.
  - Despite its introduction, the government did **not pursue it further**, as many of its provisions were believed to be **covered** under the **Epidemic Diseases (Amendment) Ordinance, 2020**.
- ### Indian Medical Association's Stand
- The Indian Medical Association (**IMA**) has called for **hospital security protocols** to be on **par** with those at **airports**, declaring **healthcare centres as safe zones** with mandatory security measures like CCTVs and security personnel.
  - The IMA also demands a comprehensive **investigation** into the recent crime, exemplary punishment for the

perpetrators, and appropriate compensation for the victim's family.

- The association stresses that resident doctors' working and living conditions need a complete **overhaul**.

**Recent Government Initiatives**

- **Ministry of Health's August 16 Order:** In response to the growing concerns, the Ministry of Health and Family Welfare issued an order stating that in cases of violence against healthcare workers, the head of the institution must file an **FIR within six hours**.
- **National Medical Commission's (NMC) Directive:** The National Medical Commission (NMC) has also directed all medical colleges to develop **policies** for a safe work environment and ensure **prompt investigation** of any incidents of violence, with a **detailed action report submitted within 48 hours**.

**Recent Judicial Intervention**

- Following the tragic rape and murder of a junior doctor at the State-run R.G. Kar Medical College and Hospital in Kolkata. The **Supreme Court formed a National Task Force (NTF)** to develop safety measures for medical professionals nationwide.
  - The NTF will **recommend safety measures** for hospitals, such as improving infrastructure with dedicated restrooms, installing CCTV cameras, controlling access to sensitive areas, providing night-time transportation, offering counselling services, conducting crisis management workshops, performing quarterly safety checks, and increasing police presence.

**Way Forward**

- **Pass the Central Protection Act for Healthcare Workers:** Parliament should prioritise a protection act like the "Prevention of Violence Against Healthcare Professionals and Clinical Establishments Bill, 2022." It must address **not only epidemic situations** but the **broader** issue of violence in healthcare settings, with clear, stringent penalties for those committing acts of violence.
- **Safe Zones in Hospitals:** Hospitals must be declared "safe zones," with protocols on par with those found at airports. These measures should include:
  - CCTV surveillance in all critical areas.
  - Security personnel stationed at sensitive zones, such as emergency departments.
  - Panic buttons and alarm systems in vulnerable locations.
  - Well-lit corridors and secure access to departments, especially during night shifts.

- **Enforce Strict Reporting:** Following the **Ministry of Health's directive**, all incidents of violence must be reported within six hours, with an FIR lodged by the head of the institution.

**PEPPER IT WITH:**

Indian Medical Association, National Medical Commission, Epidemic Diseases (Amendment) Ordinance, 2020.

- **Improve Working Conditions for Healthcare Workers:** Resident doctors often work excessively long shifts, which increases their vulnerability to attacks. Improved working hours, restrooms, and proper break periods should be **mandatory**.

**Lateral Entry in Bureaucracy**

**News Excerpt**

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The Union Public Service Commission (UPSC) recently advertised positions for lateral entry into the posts of **Joint Secretary, Director, and Deputy Secretary** in 24 ministries of the Union government. However, the government moved to **cancel these planned recruitments**, citing **lack of quotas for SCs and STs**.

**What is Lateral Recruitment?**

- In lateral recruitment, candidates are typically **hired on contracts** ranging from **three to five years**, with **possible extensions based on performance**. Candidates must meet **specific academic qualifications** and possess **significant professional experience** relevant to the field they are applying for.
  - For instance, in the recent UPSC lateral entry recruitment drive, candidates were required to have at least **15 years of relevant experience in their field**.
- The primary goal of lateral recruitment is to address **complex governance and policy challenges by leveraging external expertise**.

**Evolution and Expansion of Lateral Entry in Bureaucracy**

- Lateral entry practices can be traced back to the **1950s**, during Prime Minister **Jawaharlal Nehru's tenure**.
- In **2005**, the **Second Administrative Reforms Commission (ARC)**, chaired by **Veerappa Moily**, emphasized the need for lateral entry to fill roles requiring specialized knowledge that traditional civil services could not provide.
- In **2017**, **NITI Aayog**, in its **three-year Action Agenda**, and the **Sectoral Group of Secretaries (SGoS)** on Governance in its report, recommended the induction of personnel at middle and senior management levels in the central government.
- Initially introduced at the **Joint Secretary** level in 2018, the scheme expanded to include **Director and Deputy Secretary ranks**, reflecting a broadening scope of lateral entry into the bureaucracy.



**Lateral entries vis-a-vis Reservation:**

- Reservation in public jobs and universities is implemented via what is known as the “**13-point roster**”.
- According to this policy, a candidate’s position on a roster of openings is determined by dividing the quota percentage of their group (SC, ST, OBC, and now EWS) by a hundred.
  - **For example, the OBC quota** is 27%. Therefore, OBC candidates are recruited to every 4th post for which a vacancy arises in a department/cadre (100/27=3.7). Likewise, **SC candidates**, with 15% reservation, are supposed to fill every 7th vacancy **ST candidates**, with 7.5% reservation, fill every 14th vacancy, and **EWS candidates**, with 10% reservation, fill every 10th vacancy.
- According to the Department of Personnel and Training (DoPT), since each post under lateral entry is considered a “**single post cadre,**” reservations do not apply.

Arguments in Favour of Lateral Entry	Arguments Against Lateral Entry
<ul style="list-style-type: none"> <li>• <b>Infusion of Expertise:</b> Lateral entry allows for the infusion of specialised knowledge and expertise into the bureaucracy, often unavailable through traditional UPSC recruitment. Specialists with years of experience in finance, technology, or health sectors can provide new perspectives and skills, leading to more informed decision-making and innovative solutions.</li> <li>• <b>Enhancing Efficiency:</b> Professionals from the private sector or academic institutions often bring best practices in management and strategic planning. Their inclusion in the bureaucracy can help streamline processes, reduce bureaucratic red tape, and make government operations more efficient.</li> <li>• <b>Addressing Skill Gaps:</b> Certain government roles require niche skills that may not be developed through the traditional civil service route. Lateral entry allows the government to directly recruit individuals with the requisite skills, effectively</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Risks to Impartiality:</b> There is a concern that lateral entrants, particularly those from corporate backgrounds, may carry biases from their previous employments, which could influence their decision-making within the government.</li> <li>• <b>Potential for Cronyism:</b> Opponents argue that lateral entry could open doors to cronyism, where positions could be filled by individuals based on their connections rather than merit.</li> <li>• <b>Impact on Morale of Existing Civil Servants:</b> Introducing outsiders at senior levels could demoralise existing civil servants, particularly those who have spent years climbing the ranks through a highly competitive system through UPSC.</li> <li>• <b>Dilution of Administrative Continuity:</b> Traditional civil servants develop a deep understanding of</li> </ul>

<p>addressing gaps in capability within the government.</p> <ul style="list-style-type: none"> <li>• <b>Promoting Accountability:</b> Since lateral entrants are often hired on a contractual basis, their continued employment can be contingent on performance. This can foster a culture of accountability and performance-oriented governance, potentially leading to higher standards in public service delivery.</li> <li>• <b>Breaking Silos:</b> Bringing in professionals from varied backgrounds can help break the silos within the civil service, promoting more holistic and integrated approaches to policy-making and governance.</li> </ul>	<p>the intricate workings of government over their careers. Lateral entrants might lack this nuanced understanding, potentially disrupting administrative continuity and institutional memory.</p> <ul style="list-style-type: none"> <li>• <b>Concerns Over Reservation and Equity:</b> Lateral entry has also been critiqued for bypassing the reservation system. This could lead to a less inclusive bureaucracy that does not reflect the diversity of the population, potentially exacerbating social inequalities.</li> </ul>
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**Way forward**

- **Transparent and Competitive Selection Process:** Establish a robust, transparent, and strictly merit-based selection process for lateral entry. Utilising independent panels or third-party agencies to oversee the recruitment can help ensure fairness and impartiality.
- **Inclusion of Reservation Policies:** Integrate appropriate reservation policies in the lateral entry scheme to ensure they align with national equity and inclusion goals.
- **Fixed-Term Contracts with Performance Reviews:** Offer fixed-term contracts to lateral entrants with regular performance reviews and clear, measurable targets.
- **Integration and Induction Programs:** Develop comprehensive induction programs for lateral entrants to familiarise them with the workings of the government and administrative procedures.
- **Ethical Training and Conflict of Interest Policies:** Mandate ethical training sessions and establish strict conflict of interest policies for all lateral entrants.
- **Creating a Level Playing Field:** Provide opportunities for existing civil servants to upgrade their skills through training and exposure to new practices, ensuring they remain competitive and relevant.
- **Regular Policy Reviews:** Conduct regular reviews of the lateral entry policy to assess its impact on governance, diversity, and public service delivery.

**PEPPER IT WITH:**

Union Public Service Commission (UPSC), Second Administrative Reforms Commission (ARC), NITI Aayog.

## OTTs under Telecom Act

### News Excerpt:

In submissions to the **Telecom Regulatory Authority of India (TRAI)**, telecom companies like **Jio, Airtel, and Vi** argued that **OTT Communication services** are covered under the new Telecom Act.

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### Broad Definition of Telecommunications Services

- When the government introduced a fresh version of the **Telecommunications Act**, the tech industry raised several key concerns, including the definition of **telecommunication services**.
  - In the Act, **telecom services** have been defined as: **“transmission, emission or reception of any messages, by wire, radio, optical or other electromagnetic systems**, whether or not such messages have been subjected to rearrangement, computation or other processes by any means in the course of their transmission, emission or reception”.
  - Messages** have been defined as “any sign, signal, writing, text, image, sound, video, data stream, intelligence or information sent through telecommunication.”
- The **definition seemed broad** enough to include over-the-top (OTT) communication services like **WhatsApp and Google Meet**, raising fears that these platforms would require government authorisation.

### Telcos' Push for OTT Regulation

- Telecom companies wanted the new law's definition of telecommunication services to include **OTT communication services**.
- In submissions to the **Telecom Regulatory Authority of India (TRAI)**, these companies argued that OTT platforms should be subject to the same regulatory framework as telecom operators, advocating the principle of **“same service, same rules.”**

### Arguments in Favour of Including OTT Under the Telecommunications Act

- Level Playing Field for Telecom Operators**
  - Telecom companies argue that they are required to **purchase spectrum**, set up extensive **infrastructure**, and comply with licensing regulations, all of which involve significant **costs**.
  - Meanwhile, **OTT communication platforms** like WhatsApp and Google Meet provide **similar services** (voice calls and messaging) without facing the same regulatory and financial burdens.
  - Including OTT platforms under the Act would ensure a **“same service, same rules”** framework, creating a level playing field.
- Fair Revenue Distribution**
  - OTT** platforms generate revenue by offering services that traditionally belonged to telecom operators, such as **voice calls and messaging**.

- However, **telecom operators** argue that they **lose out on potential revenue** as OTT platforms operate without licensing fees or spectrum purchases.
- Under the Telecommunications Act, regulating OTT services could provide a **fairer revenue-sharing model** between OTTs and telecom companies, ensuring that both **contribute equally** to the telecommunications ecosystem.
- Consumer Protection and Quality of Service**
  - By regulating OTT platforms, the government could impose **quality of service standards** and ensure that consumers receive a consistent and reliable level of service.
  - Unlike telecom operators, OTT platforms would be held accountable for network **reliability, security, and customer support**, ultimately benefiting users.
- Security and Law Enforcement**
  - Including OTT communication services under the Telecommunications Act would give the government **greater control** over security measures, including access to **data and communication** for law enforcement purposes.
  - Given the rising importance of secure communication in **national security and crime prevention**, including OTT services under regulatory oversight could help ensure that these platforms comply with **data-sharing and surveillance** regulations when required for public safety.
- Curbing Fraud and Misinformation**
  - OTT platforms play a significant role in information dissemination, and regulating them could help curb **fraud, misuse, and misinformation**.

### Arguments Against Including OTT Under the Telecommunications Act

- Privacy and Digital Rights Concerns**
  - One of the biggest arguments against regulating OTT platforms like WhatsApp under the Telecommunications Act is the potential violation of **privacy and digital rights**.
  - Many OTT platforms, especially **end-to-end encryption**, are designed to ensure that user communications are private and secure.
  - If subjected to the same regulations as telecom operators, they may be required to **enable government surveillance**, potentially eroding privacy protections.
- Technological Challenges with Encryption**
  - OTT platforms such as WhatsApp use **end-to-end encryption**, which ensures that only the sender and the recipient of a message can access its content.
  - Regulating OTT platforms under the Act might require these services to comply with government requests for communication interception, which would be **technologically difficult** and could force platforms to weaken encryption.

- This poses a technical challenge and risks **compromising users' security** worldwide.
- **Innovation and Free Market Competition**
  - Including OTT platforms under telecom regulations could **stifle innovation**.
  - Subjecting them to stringent telecom regulations may slow growth, increase operational costs, and limit the introduction of new features or services, **reducing competition** in the market.
- **Overreach and Government Control**
  - Many critics view the inclusion of OTT platforms under telecom regulations as a form of **government overreach**.
  - By bringing OTT communication services under **stricter oversight**, the government would gain more **power to control** and **regulate** online communication.
  - This could lead to **ensorship** and **restrictions on freedom of expression**, particularly in politically sensitive situations.
- **Unnecessary Duplication of Regulations**
  - OTT platforms are already subject to **Information Technology Rules, 2021**, notified by the Ministry of Electronics and Information Technology (**MeitY**).
  - Adding another layer of regulation through the Telecommunications Act may result in **overlapping compliance requirements**, which could lead to regulatory duplication.

**PEPPER IT WITH:**

Telecom Regulatory Authority of India (TRAI), Over-The-Top (OTT) communication services, Telecommunications Act, Data Privacy, Information Technology Rules, 2021.

**Way Forward**

**Clarify Definitions in the Telecommunications Act**

- While the broad definition includes the transmission of signals and messages, a clearer distinction must be made between traditional telecom services and OTT platforms.

**Collaboration Between Stakeholders**

- Regulatory bodies should consult with all stakeholders, including **OTT platforms, telecom operators, and digital rights advocates**, to design policies that balance **fair competition, security, and privacy**.

**Incorporate Global Best Practices**

- Countries like the **European Union** have developed frameworks like the **European Electronic Communications Code (EECC)**, which regulate OTT communication services while ensuring **privacy and innovation**.
- India can adopt global best practices, ensuring that any regulation of OTT platforms aligns with international standards on **privacy, competition, and consumer protection**.

**We need to reduce government litigation to ease judicial delays**

**News Excerpt**

Inefficient judicial processes cause **delays**, foster **corruption**, increase **litigation costs**, and significantly **deter investment**. While judicial reforms are critical, it is equally important for the government, as the largest litigator, to reduce **unnecessary litigation** and unclog the system.

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**Government as the Largest Litigator**

- Justice V.R. Krishna Iyer's remarks in **Dilbagh Rai Jarry vs Union of India (1973)** highlighted that the government is the largest litigator, placing a significant financial burden on the public exchequer.
- The **Tenth Law Commission's 100th report** emphasised that a large proportion of litigation in courts, including, in particular, writ petitions in the Supreme Court and the high courts, consists of cases to which the government is a party.
- **Vidhi Centre for Legal Policy** cited a Ministry of Law document in 2019 stating that 46% of all litigation in India involves the government.
- More recently, the **Delhi High Court** emphasised the need to curb unnecessary and frivolous litigation involving government departments. **Supreme Court Justice B.R. Gavai** also noted that **70% of government litigation is frivolous**, further straining the judiciary and contributing to delays.

**Challenges in Understanding Government Litigation**

- **Lack of Comprehensive Data:**
  - **Article 12** of the Constitution broadly defines the "State" encompassing the Government and Parliament of India, state governments and legislatures, and all local or other authorities within Indian territory or control.

- This broad definition **complicates** efforts to assess the full scope of government litigation.

- **Expansive Definition of "State":**
  - The judiciary's further **interpretation** of the definition of "state" to include entities exercising **governmental** or **quasi-governmental** functions complicates the assessment of the true extent of government litigation.

- Entities such as **public-sector undertakings (PSUs)**, **nationalised banks**, and **cooperative societies** fall under this definition, further complicating the assessment of government-related litigation volumes.

- The lack of clarity and detailed data makes addressing the root causes challenging.

**Government Initiatives to Reduce Litigation**

- **Legal Information Management and Briefing System (LIMBS):**
  - To tackle this issue, the Union government launched the **Legal Information Management and Briefing System (LIMBS)** in 2016, updated in 2019. LIMBS tracks legal cases involving the Government of India.
  - Data from LIMBS reveals that the **Ministry of Finance** leads with 188,994 cases. The **Railways** follow with 114,387 cases, the **Defence Ministry** with 95,189, and the **Labour and Employment Ministry** with 80,027 cases.
- **Directives from CBDT and CBIC:**
  - The **Central Board of Direct Taxes (CBDT)** and the **Central Board of Indirect Taxes and Customs (CBIC)** have issued directives to withdraw low-impact appeals and focus on significant cases. Both boards have raised the threshold monetary limits for appeals.
  - The **Union Budget 2024-25** has further increased threshold monetary limits for appeals across tax tribunals, high courts, and the Supreme Court.
    - While the Union government has reduced its litigation, the same cannot be said about the **states**. There are instances when governments have appealed in cases where the amount involved is **less than Rs 1000**.

**Root Cause: Bureaucratic Risk Aversion**

- One major reason for excessive government litigation is bureaucratic risk aversion. In his book *Bureaucratic Structure and Personality*, **Robert Merton** highlighted how bureaucracies prioritise **predictability** and **strict adherence** to established protocols.
- He posits that bureaucracies aim to **minimise uncertainties** and maintain **operational stability**, often at the **expense of innovation and adaptability**.
- This leads to what he called "**trained incapacity**," where bureaucrats cannot respond effectively to new challenges and resort to litigation to avoid taking risks.

**Evolution of National Litigation Policy (NLP)**

- The **11th Law Commission's 126th report** (1988) recommended the creation of a National Litigation Policy (NLP) to make the government a responsible litigant. However, NLP policy was never effectively implemented.
- The **13th Finance Commission** proposed grants for states to improve justice delivery, conditional on adopting state litigation policies based on national policy.
  - While states introduced these policies to avail grants, implementation was weak.
- The **Department of Legal Affairs** suggested **NLP 2015**, but no substantial progress followed.
- In June 2024, the Union government announced the **National Litigation Policy (NLP) 2024**, aiming to tackle government litigation more effectively.
  - However, the success of NLP 2024 will depend on overcoming the shortcomings of past policies.

**Way Forward**

- **Enforceable Litigation Policies:** Both the Union and state governments should introduce strict litigation policies with measurable targets to minimise unnecessary appeals and litigation.
- **Decision over Litigation:** Encourage government departments to resolve disputes through alternative mechanisms such as **mediation, arbitration, and conciliation** rather than litigation.
- **Comprehensive Data Collection and Transparency**
  - **National-Level Portal:** Establish a national-level portal that tracks all litigation involving entities defined under **Article 12** of the Constitution. This will provide a clear picture of the scope of government litigation and help identify areas for reform.
  - **Expanding LIMBS:** Expand the coverage of the Legal Information Management and Briefing System (LIMBS) to include all government entities, public sector undertakings (**PSUs**), and **cooperative societies**.
- **Addressing Bureaucratic Risk Aversion**
  - **Empower Decision-Makers:** Provide legal support and protection to bureaucrats and government officials who make bold decisions, reducing their need to resort to litigation as a safety measure.
  - **Reforming Bureaucratic Culture:** Encourage a culture of **accountability** and innovation within government departments to **reduce reliance** on established rules and processes that result in litigation.
- **National Litigation Policy (NLP) 2024: Robust Implementation**
  - **Measurable Targets:** Set clear, measurable targets for reducing government litigation at the Union and state levels.
  - **Penalties for Non-Compliance:** Introduce penalties for government departments that do not comply with the policy, ensuring accountability.
  - **Legal Support:** Offer legal support and training for decision-makers within government departments to reduce the need for unnecessary litigation.
  - **Limiting Appeals:** To prevent the judiciary from clogging, enforce strict limits on government appeals, especially for cases with low financial impact.
- **Monitoring and Accountability**
  - **Independent Review Mechanism:** An independent body could periodically review the implementation of the National Litigation Policy and other reforms, ensuring transparency and accountability.

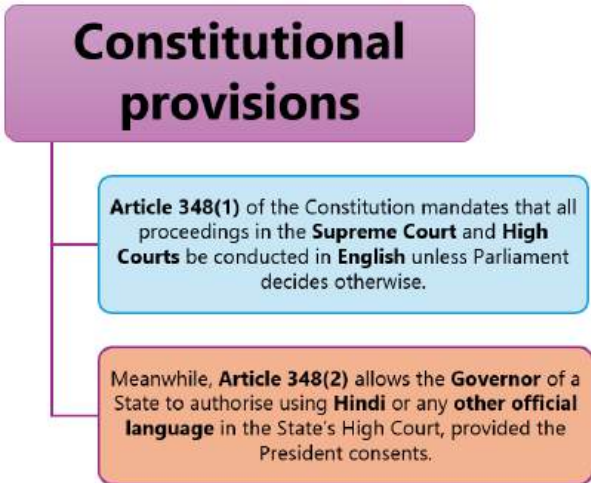
**PEPPER IT WITH:**  
 Law Commission, Public-Sector Undertakings (PSUs), Nationalised Banks, Central Board of Direct Taxes (CBDT) and the Central Board of Indirect Taxes and Customs (CBIC).

## Use of regional languages in High Courts remains limited

### News Excerpt:

In a growing movement to make justice more accessible, **lawyers** and **legal experts** increasingly **advocate** for using **regional languages** in high court proceedings, where English remains the official language.

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### Current status:

- **Only four** of India's 25 High Courts—**Rajasthan, Madhya Pradesh, Uttar Pradesh, and Bihar**—are allowed to **use Hindi** in their proceedings and legal documents.
- **Bihar** was the last High Court to receive authorisation to use Hindi in **1972**.
- **Chief Justice of India**, D.Y. Chandrachud, remarked that while judges and lawyers are familiar with English, many **common citizens** who bring their cases to court **struggle** to understand the legal process.
- The Chief Justice also stated that **legal education and proceedings** are conducted in the **regional language** in **many countries**.

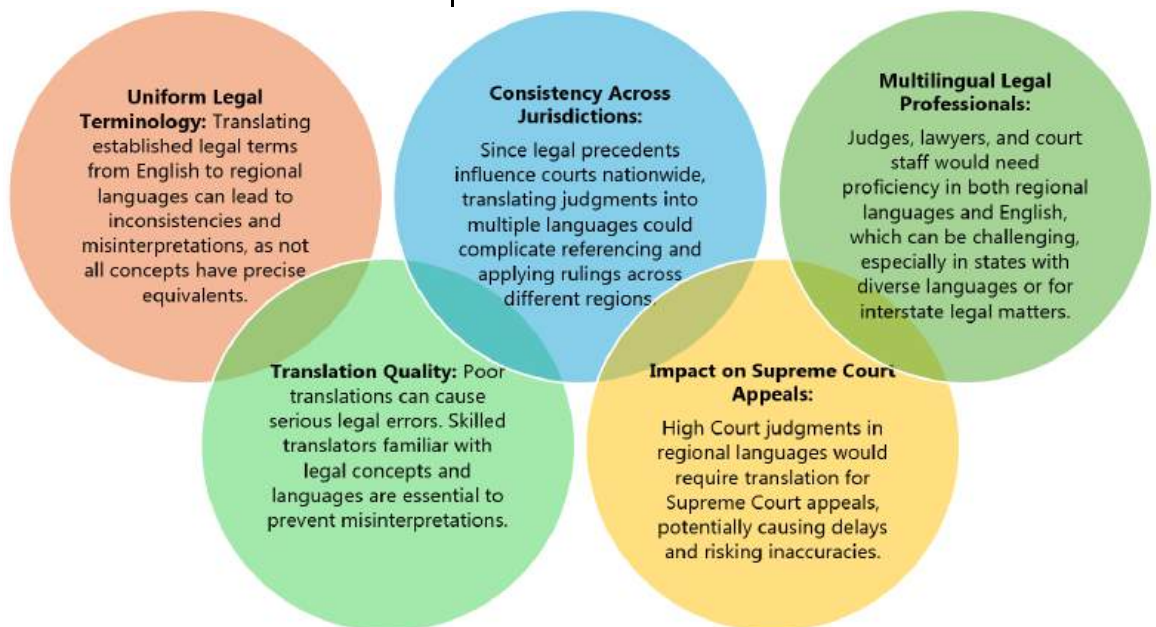
### Significance of regional language in high courts:

- **Access to Justice:** Introducing regional languages makes legal proceedings more

accessible to the common public, especially those not proficient in English, the predominant language in many High Courts. It **bridges the gap** between the **legal system** and the **local population**, enabling a better understanding of court procedures and judgments.

- **Inclusivity and Transparency:** Regional languages help legal proceedings be more transparent and inclusive for litigants, witnesses, and the general public. It allows individuals to present their cases, evidence, and testimonies in a language they are comfortable with, **reducing intimidation** from linguistic barriers.
- **Cultural Preservation:** Recognising regional languages in courts respects India's linguistic diversity and fosters the preservation of local cultures and traditions. It also ensures that **legal frameworks align** more with the **cultural and societal context** of different regions.
- **Efficiency in Legal Proceedings:** Lawyers, litigants, and judges more proficient in regional languages may **argue cases more effectively**, leading to clearer communication and potentially **swifter judgments**.

### Challenges in using regional language



### Way forward:

- **Standardised Legal Terminology:** A centralised body, perhaps under the **Law Commission of India**, could work on creating standardised legal terminology in various regional languages.
  - This would ensure **consistency** and **avoid misinterpretation** across different courts and

regions. Collaborations with **linguistic experts** and legal professionals are crucial in this effort.

- **Dual-Language Court Records:** To balance accessibility and legal uniformity, High Courts can adopt a dual-language system where judgments, legal documents, and case proceedings are available in both the **regional language and English**.

**PEPPER IT WITH:**  
Regional Languages, Official Language, Governor, AI-based translation tools.

- This would ensure consistency and clarity, especially for appeals to the Supreme Court or cases involving **parties from different states**.
- **Training and Resources for Legal Professionals:** Judges, lawyers, and court staff should be trained in English and the regional language legal terminology.
  - **Specialised programs** can be developed to improve bilingual proficiency in legal contexts, ensuring that legal professionals can **operate seamlessly** in both languages.

- **Enhancing Translation Services:** Investing in high-quality translation services and technology is key to ensuring **accuracy** and **preventing misinterpretation**.

- Courts should employ **skilled translators** with expertise in legal terminology and **train them** to handle court documents and proceedings effectively.

- **Leveraging Technology:** Technology such as **AI-based translation tools** and court transcription software can help with real-time translation during proceedings.

- Courts could explore **partnerships with tech companies** to develop systems that support multilingual proceedings while minimising human errors.

- **Data Sources:** The report uses FIR data from six States and audits of compliance with Supreme Court directives.
- **Disparities:** It reveals significant disparities in road traffic death rates across States and emphasises the vulnerability of motorcyclists and the high fatality rates involving trucks.
- **Road Traffic Injuries:** Road traffic injuries continue to pose a major public health challenge in India.
- In **2021**, road traffic injuries ranked as the **13th leading cause of death** in India. Little progress has been made in reducing fatalities despite advancements in other sectors. Most Indian States are unlikely to meet the **UN Decade of Action for Road Safety** goal of halving traffic deaths by 2030.
- In **2021**, road traffic injuries were the **12th leading cause of health loss** (measured in **Disability-Adjusted Life Years**, or **DALYs**). In six States and UTs (Haryana, Jammu and Kashmir and Ladakh, Punjab, Rajasthan, Uttarakhand, Uttar Pradesh), road traffic injuries ranked among the top 10 causes of health loss.

	Chhattisgarh	Chandigarh	Delhi	Haryana	Maharashtra	Uttarakhand
Pedestrian	19	23	44	29	24	28
Bicycle	4	13	3	3	1	3
Motorised two-wheeler	58	51	40	47	58	48
Motorised three-wheeler	1	7	4	3	1	3
Car	4	4	5	8	6	7
Bus	1	1	0	1	1	4
Truck	5	1	2	5	5	4
Farm tractor	6	0	0	2	2	0
Others	0	1	1	1	2	1
Unknown	0	1	1	0	0	1
Total (%)	100	100	100	100	100	100

	Chhattisgarh	Chandigarh	Delhi	Haryana	Maharashtra	Uttarakhand
Bicycle	0	0	1	0	1	0
Motorised two-wheeler	13	11	6	10	14	10
Motorised three-wheeler	0	7	2	1	0	1
Car	7	36	14	25	14	21
Bus	3	5	6	4	4	7
Truck	24	12	18	32	27	28
Farm tractor	5	1	1	7	4	6
Others	11	12	5	1	5	2
None	16	9	3	2	16	5
Unknown	18	9	45	17	15	21
Total (%)	100	100	100	100	100	100

Source: India Status Report on Road Safety 2024

## SOCIAL ISSUES

### On the challenges to road safety in India

#### News Excerpt

The **"India Status Report on Road Safety 2024,"** prepared by the TRIP Centre at IIT Delhi, highlights India's **slow progress** toward meeting international goals of reducing road accident fatalities.

#### Key Findings of the Report

- **Purpose:** The report explores the connection between road construction, mobility, and the need for a differentiated approach to mitigating road accidents.

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DALYs, a **time-based measure** that combines years of life lost due to premature mortality (YLLs) and years of life lost due to time lived in states of less than full health, or years of healthy life lost due to disability (YLDs). One DALY represents the loss of the equivalent of one year of full health.

#### Need for Crash Surveillance Systems

- **Data Limitations:**
  - India's national **road safety data systems** are insufficient for guiding public policy. Currently, there is **no national crash-level database**.

- Road safety statistics at both State and National levels are compiled from individual **police station records** aggregated at district, State, and national levels before publication. These tables allow only the most basic analyses, preventing effective intervention or program evaluation.

- **Safety Equipment Concerns:** While better-equipped vehicles with advanced safety features are common, they may not be a sufficient solution, as two-wheeler riders, cyclists, and motorcyclists are disproportionately affected by fatalities.

**Government Interventions for Road Safety**

**State-Level Variations in Road Safety**

- **Disparities in Death Rates:** Per capita death rates differ more than threefold between States.
  - **Tamil Nadu, Telangana, and Chhattisgarh** recorded the highest death rates, at 21.9, 19.2, and 17.6 per 1,00,000 people, respectively.
  - In contrast, **West Bengal** and **Bihar** had the lowest rates, at 5.9 per 1,00,000 in 2021.
- **Major Contributors to Fatalities:** Six states — Uttar Pradesh, Maharashtra, Madhya Pradesh, Karnataka, Rajasthan, and Tamil Nadu — account for nearly half of all traffic fatalities in India.
- **Vulnerable Road Users:** Pedestrians, cyclists, and motorised two-wheeler riders are the most frequent victims of road accidents, while trucks are responsible for the highest proportion of impacting vehicles.

 <p><b>National Road Safety Policy (NRSP):</b> Introduced based on the recommendations of the Sunder Committee, this policy outlines the strategies that all levels of government must adopt to improve road safety.</p> 	 <p><b>Motor Vehicles (Amendment) Act, 2019:</b> It introduced comprehensive reforms to improve road safety, such as increased penalties for traffic violations and Provisions for electronic monitoring of violations.</p> 	 <p><b>Vehicle Scrapping Policy: Announced in the Union Budget 2021-22, this policy aims to phase out old, unfit, and polluting vehicles, reducing environmental damage and road accidents.</b></p> 
<p><b>Mandatory Road Safety Audits for National Highways:</b> The government mandates Road Safety Audits (RSA) for all National Highways, conducted by third-party auditors.</p>	<p><b>Electronic Detailed Accident Report (e-DAR):</b> The e-DAR system establishes a central repository for reporting, managing, and analysing road accident data.</p>	<p><b>Good Samaritan Law:</b> This law protects those who assist road accident victims and provides legal protection to bystanders who offer help.</p>

- **Audits and Infrastructure Deficiencies:** Only eight States have audited more than half of their National Highway lengths, and very few States have done the same for their State Highways.
- **Lack of Basic Traffic Safety Measures:** Most states still lack basic safety measures, including traffic calming, markings, and signage.
- **Helmet Usage:** In only seven States, more than 50% of motorised two-wheeler riders wear helmets, even though this simple safety measure could significantly reduce fatalities and serious injuries. Helmet usage in rural areas is particularly low.
- **Inadequate Trauma Care:** Poor trauma care facilities exacerbate the mortality rate from road accidents.

**Global Comparison and Concerns**

- **Comparison with Developed Nations:** The report highlights India's stark contrast with countries like **Sweden** and other **Scandinavian nations**, where road safety governance is advanced.
  - In 1990, an Indian was **40% more likely to die** in a road accident compared to someone in these countries. By 2021, this figure had **risen to 600%**, indicating a sharp rise in road fatalities.

**Global Initiatives on Road Safety**

- **Brasilia Declaration on Road Safety (2015):** This international declaration emphasises the need for countries to adopt road safety measures and reduce fatalities. India is a signatory, committing to reduce road traffic deaths and injuries by 50% by 2030.
- **Decade of Action for Road Safety (2021–2030):** The **United Nations** launched the **Decade of Action for Road Safety**, setting the target of preventing at least 50% of road traffic deaths and injuries by 2030.
- **Bloomberg Initiative for Global Road Safety (BIGRS) 2020-2025:** India partners in the **Bloomberg Initiative**, which focuses on strengthening road safety interventions.

**Way Forward:**

- **Tailored State-Level Strategies:** Develop customised **State-Specific Road Safety Plans**, focusing on each State's unique challenges.
- **Establishing a National Crash Surveillance System:** Develop a real-time, **GPS-based** national crash surveillance system that records road accidents and provides immediate data on the location, time, and severity of crashes.

- **Integrated Road Accident Database (iRAD)** project, which aims to use digital tools to capture accident data and aid in analysis and intervention strategies.
- Align India's vehicle safety standards with the **UN's Global Forum for Road Traffic Safety (WP.1)** guidelines, which encourage the adoption of autonomous safety technologies.

## How robust are institutional rankings for higher education?

### News Excerpt

The ninth **National Institutional Ranking Framework (NIRF)** was recently released. This article critically assesses the framework's various issues.

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### NIRF and Its Purpose:

- The National Institutional Ranking Framework (NIRF), introduced by the Ministry of Education (**MoE**) in **2015**, is a system designed to rank higher education institutions in India across 13 categories.
- The ranking aims to foster **healthy competition** among institutions, ultimately improving the **quality of education** in the country.
- The framework evaluates institutions based on various parameters, including:
  - **Teaching, Learning and Resources (TLR)**
  - **Research and Professional Practice (RP)**
  - **Graduation Outcomes (GO)**
  - **Outreach and Inclusivity (OI)**
  - **Peer Perception (PP)**

### Concerns and Biases identified in NIRF

- **Urban-Rural Divide:** Institutions in urban areas may have better resources and visibility, giving them an edge over rural institutions.
- **Resource Availability:** Well-funded institutions might score higher regardless of the actual quality of education.
- **Research Output:** There might be an overemphasis on quantity over quality in research publications.
- **Inclusivity and Outreach:** There are concerns about whether these aspects are adequately represented in the rankings.
- **Regional Disparities:** Institutions in certain regions may be unfairly disadvantaged.
- **Data Reporting and Standardization:** Inaccuracies or inconsistencies in data reporting can lead to unfair rankings. Some institutions may engage in unethical practices, such as inflating data to secure better rankings. **Issues** such as data fabrication and unethical competition have been reported, raising doubts about the fairness of the rankings.
- **Ethical Concerns:** While some institutions consistently rank in the top 10, questions arise about their true contribution to society and adherence to ethical practices.

### Evaluation of NIRF's Weightage System

- The effectiveness of NIRF rankings depends heavily on the weightage assigned to different criteria. Currently, Teaching, Learning and Resources (**TLR**) and Research and Professional Practice (**RP**) receive **higher weightage** compared to Outreach and Inclusivity (**OI**).
- **Teaching vs. Research:** The current weightage may encourage institutions to prioritise research output over quality teaching. This could lead to a **"publish or perish"** mentality, where the quantity of research is valued over its impact or quality.
- **Predatory Journals and Plagiarism:** The pressure to publish results in a rise of publications in predatory journals, leading to ethical compromises like plagiarism.

### Lack of Academic Freedom

- Academic freedom is vital for fostering critical **inquiry and innovation** in education. However, it is **not** currently a criterion in the NIRF ranking system.
- **Threats to Academic Freedom:** Instances have been reported where faculty members were dismissed for **expressing their views**, such as supporting the **Palestinian cause** or speaking out against the **commercialisation of education**, suggesting that academic freedom may not be fully protected in some top-ranked institutions.

### Issue of Inclusion and Diversity in Faculty

- The NIRF considers **Outreach and Inclusivity (OI)** one of its parameters. While the NIRF includes aspects such as the percentage of **students** from other states or countries, the percentage of **women**, economically and **socially challenged students**, and facilities for **physically challenged students**, it does **not** address the need for **diversity among faculty**.
- **Lack of Faculty Diversity:** Reports indicate that some top institutions like IITs and IIMs do not have a single faculty member from Scheduled Castes, Scheduled Tribes, or Other Backward Castes, and **SCs, STs, and OBCs** together make up **only 6%** of the total faculty at IIMs.
- **Global Comparisons:** International rankings like Times Higher Education (**THE**) and Quacquarelli Symonds (**QS**) have historically focused on research output, teaching quality, and international reputation. While they consider aspects of inclusivity through metrics like international diversity, they do not comprehensively address social justice, ethics, or integrity.

### Way forward

- **Need for Reform in the NIRF Criteria:** There is a call for the MoE to **modify the NIRF criteria** to include aspects such as **academic freedom, faculty diversity, and ethical practices**, which would make the rankings more holistic and transformative.
- **Incorporating Ethics and Social Responsibility:** Institutions should not only focus on academic achievements but also on producing **morally conscious and community-oriented citizens**.



## The heavy shackles of fear and vigilance

### News Excerpt:

The brutal **rape and murder** of a woman doctor in **Kolkata** has led to the country finding itself, once again, engaged in a deep conversation on the safety of women in India.

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### Understanding and Addressing Women's Safety Issues in India

- Women's safety in India has been a topic of **deep concern** and **national discourse** for years, with recent incidents once again highlighting the vulnerabilities faced by women in various aspects of their lives.

### Perpetual State of Vigilance: A Psychological Toll on Women

- One of the most pervasive issues women face in India is the constant state of vigilance required to navigate daily life. This **ingrained alertness**, often beginning in childhood, forces women to **assess their surroundings** continually, whether in **public or private spaces**.
- This psychological burden, while often unrecognised, shapes **women's interactions** with the world and **restricts their freedom** and **potential for growth**.
- This constant vigilance is not merely a response to immediate threats but becomes a **way of life**. Women, conditioned to **prioritise** safety over exploration, often forgo opportunities that could enhance their personal and professional lives.
- The psychological strain of this lifestyle is profound, yet it remains largely **unaddressed** by society, which continues to place the **onus of safety** on women rather than creating safer environments.
- The burden of vigilance is **exacerbated** for women from **marginalised communities**, where gendered threats are compounded by **caste**, **class**, and **religious** discrimination.

Following the RG Kar case, the **West Bengal government** has issued guidelines under the **'Rattireer Sathi'** initiative to ensure women's safety.

#### Guidelines under the 'Rattirer Shaathi'

- In government services, such as hospitals**, where women are required to work at night, **multiple women** will now be assigned duties together to **promote teamwork**.
- Women can download and use the **'Ratrir Sathi'** app on their **mobile phones**. This app features an **alarm system** that allows them to contact the **nearest police station** directly in an emergency.
- Efforts will also be made to **minimise the need for women to work night shifts**.
- Provide **separate restrooms** exclusively for women in workplaces and install **CCTV surveillance** in all areas.
- In **government hospitals** and **offices** involved in emergency services, **female volunteers or security**

**guards**, referred to as "**night mates**," will be deployed to protect women working night shifts.

- The **gender ratio** among **security guards** in hospitals and government offices will be monitored, and staff will be subjected to **breath tests** as part of enhanced security checks.

#### Concerns about guidelines

- These guidelines raise questions about how it will **enhance workplace safety**.
- This **regressive approach** risks **sidelining women** from the workforce rather than addressing the root cause of violence.
- With the **labour force participation rate** for **urban women aged 15 and above** in **India** at just **25.2%** in **April-June 2024**, both central and state governments need to ensure that women in sectors like healthcare, gig work, factories, call centres, and journalism can work safely at all times and places.
  - Labor Force Participation Rate (LFPR):** The labour force participation rate is calculated by **dividing the total labour force** by the **total working-age population**, which includes individuals **aged 15 to 64**.
- Reducing their working hours** will only result in losing **jobs** and **financial independence**.

### Systemic Failure of Justice: A Reflection on Legal and Institutional Gaps

- Despite numerous legal reforms following high-profile cases, such as the **2012 Delhi gang rape**, the criminal justice system in India continues to fail women.
- According to a government report, on average, **one woman reported a rape every 15 minutes** across the country in 2018. There were more than 31,000 reported rapes in 2022, the latest year for which data are available.
- As per the **NCRB data**, conviction rates for rapes were 27%-28% from 2018 to 2022. This means that almost **70% of rape cases** in India end in **acquittal**.

### Healthcare Settings: A Microcosm of Societal Violence

- Violence within healthcare settings, particularly against women, reflects broader societal issues. Healthcare workers, especially women from marginalised backgrounds, face not only **physical** but also **emotional** and **sexual violence**.
- The vulnerability of these spaces is heightened by **systemic issues** such as **underfunding**, **poor security**, and a **toxic work culture** that disproportionately affects those lower in the power hierarchy, such as **ASHA workers** and **resident doctors**.
- Corruption** in Healthcare is another critical issue that is exacerbating women's vulnerabilities. The **World Health Organization** estimates that corruption claims nearly **\$455 billion annually** worldwide, more than it would cost to extend **universal health coverage** to all.

### Urban Planning and the Need for Gender-Inclusive Cities

- Women's safety is also closely linked to the **design and planning** of **urban spaces**. Indian cities, traditionally

designed by and for men, often neglect the needs of women, particularly those related to safe **public transport**, affordable **housing**, and accessible **care infrastructure**.

- The current urban infrastructure prioritises wider roads and flyovers over **safe sidewalks** and **public transit**, leaving women, especially those from lower socio-economic backgrounds, vulnerable.

### Film Industry

- The release of the **Justice Hema Committee report** has reignited discussions about the treatment of women in the Malayalam film industry, calling for urgent reforms to address these systemic issues.
  - The Justice Hema Committee was formed in **2017** by the **Government of Kerala** to study and report on the **working conditions, safety, and other issues women face** in the **Malayalam film industry**.

### What does the Hema Committee report say?

- The Committee reported the existence of a **casting couch** (wherein powerful men demand sexual favours from women in return for opportunities in films),
- Frequent suggestive and **vulgar comments** made by men at the workplace and **drunk male co-actors** forcing themselves into rooms of women, among other things.
- The fear of **cyber harassment**, especially from toxic fan clubs, as a means by which women are forced into silence.
- The report says that **women staff** on film sets continue to remain at the mercy of **open spaces** or **shared bathrooms** to relieve themselves, often risking **UTIs and hospital admission**.

### Way Forward

- **Implementing Protection Laws:** A law criminalising attacks on healthcare personnel and protecting medical establishments from damage should be enacted and enforced.
- The central government must pass the **Healthcare Service Personnel and Clinical Establishments (Prohibition of Violence and Damage to Property) Bill, 2019** and better implement State laws.
  - **Taiwan's** legislation protecting healthcare workers includes provisions for penalising physical violence and acts that hinder care delivery, serving as a **potential model** for India.
- **Creation of Gender-Sensitive Workspaces:** Film sets should ensure gender-sensitive infrastructure.
- **Increasing Conviction Rates:** Legal reforms should focus on improving the efficiency of investigations and trials. **Police accountability** must be emphasised, and delays in filing FIRs and gathering forensic evidence must be addressed.
- **Revamping Fast-Track Courts:** It is critical to increase the number of fast-track courts, ensure they are **fully staffed**, and enforce **strict timelines** for legal proceedings.

- The BNSS mandates timely forensic examinations and clear deadlines for filing charge sheets. These mechanisms need **better implementation** to ensure swift justice.
- **Engendering Urban Planning:** Urban development projects should prioritise women's safety through **well-lit streets, functional public transport**, and safe public spaces. The **Nirbhaya Fund**, set up after the 2012 Delhi gang rape, should be effectively utilised for such **gender-sensitive urban projects**.
  - The **Safe Cities and Safe Public Spaces** Global Initiative by **UN Women** focuses on reducing sexual violence and harassment in public spaces by improving infrastructure.

## Policy paralysis, a weakened public health sector

### News Excerpt

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The recent **Union Budget** has been **critiqued** for its **inadequate focus** on the social sector, specifically the public health sector. The government's public health policies in the last decade indicate severe paralysis without any real prescription that addresses people's felt needs.

### Introduction to Public Health Needs

- Public health needs are **complex and multifaceted**, influenced by socioeconomic factors, and defined in various ways, including **felt needs** (experienced by the population) and **projected needs** (determined by health experts and policymakers).
- These definitions shape how public health policies are crafted and implemented. Public health policies are those **decisions** made by the government based on the **resources available** to address people's health needs.

### Diversity and Perception of Health Needs Across Social Strata

- **Felt Needs of the Poor and Vulnerable**
  - **Diseases** linked to poverty, such as tuberculosis, malaria, undernutrition, maternal death, and bouts of illnesses due to food and water-borne infections leading to typhoid, hepatitis, and diarrhoeal diseases faced by the poor and the vulnerable.
  - These needs highlight the **intersection of health with rights and livelihood** issues, making their prevention a significant challenge.
- **Middle-Class Health Concerns**
  - Issues related to **environmental pollution**—air, water, waste management, lack of drainage facilities, and failure to ensure healthy foods and eateries—threaten everyday lives, most of which are due to poor infrastructure development and market regulations.
  - **Chronic illnesses** and conditions exacerbated by **lifestyle factors** also fall into this category.
- **Curative Care Needs**

- The three levels of curative care envisaged are **primary, secondary and tertiary**. The poor and the vulnerable rely on primary healthcare institutions in the public sector for primary-level care, as they are the most affordable and are closer to their places of residence. Secondary-level care was historically neglected and is still inadequate against population norms. **Shortage of infrastructure**, including health professionals in these facilities, aggravates the problem. Tertiary-care needs for curative care among the poor are the focus of the **Pradhan Mantri Jan Arogya Yojana (PMJAY)** under Ayushman Bharat.
- The ongoing policy debate centres around allocating resources for these varying levels of care.

### Historical Shifts in Public Health Policy

- **From Commercialisation to Strengthening Public Health Care**
  - The **National Rural Health Mission (2005)** and the **National Health Mission (2013)** marked a significant shift from the **National Health Policy 2002**, which leaned towards **commercialising healthcare**.
  - These missions aimed to strengthen public sector health care through systemic **architectural adjustments** and better implementation of national health programs.
- **Impact of Publicly Funded Health Insurance Schemes (PFHI)**
  - Introducing schemes like the **Pradhan Mantri Jan Arogya Yojana (PMJAY)** under Ayushman Bharat 2018 focuses on **hospitalisation** expenses and **outsourcing** certain care levels to the **private sector**.
  - The governments of Maharashtra, Andhra Pradesh, Tamil Nadu, Kerala, and others implemented PFHI schemes as part of the overall strengthening efforts under the NHM.

### Critique of Current Health Policy and Infrastructure

- **Privatisation and Its Impact**
  - Health insurance coverage ideally implies covering all healthcare expenses globally. It is unique that India's health insurance scheme covers **only hospitalisation expenses**.
    - This is based on the market logic that if 50 crore people (12 crore households are the beneficiaries of PMJAY) are enrolled in the scheme, **only 2.5 crore people** will actually need hospitalisation annually, as per **epidemiological data**.
  - Outsourcing secondary and tertiary-care services to the private sector at market rates under the scheme is an **open acknowledgement** by the government of its **failure and a lack of intention** to strengthen the country's secondary- and tertiary-level public sector health care.
    - The implication is that the remaining **100 crore population** not covered under any government schemes are **forced** to have highly

**commercialised medical care** for their illnesses, incurring an expenditure at market rates.

- Thus, by **monopolising** the market for health care, private hospitals pretend to offer services to the government at market rates while **weakening public-sector** health care and ensuring that the remaining two-thirds of the population must depend on them.
- **Transformation of Primary Health Centers**
  - In 2018, **sub-centres, PHCs, and CHCs** were transformed into **health and wellness centres (HWC)**. The proposal was to have a community **health officer** who would treat a rural population by completing a bridge course.
    - This has transformed the **original mandate** of sub-centres from rendering **outreach activity** to that which provides **curative care**.
  - Doctoring gained its acceptance through its act of diagnosis, prognosis, and treatment. Instead, the proposal to equip a **community health officer** to practise medicine minimally results in the **new professional** becoming a **dignified chemist**.
  - The latest was a 2023 directive to **rename** all the HWCs (sub-centres, PHC, and CHC) to '**Ayushman Arogya mandir**'. One could not find any clear justifications for this name change. Several questions arise on how this name is significant to a non-Hindi-speaking population.

### Way Forward

- **Leveraging Technology for Enhanced Healthcare Delivery**
  - Introduce AI-driven tools in primary care under the **National Digital Health Mission** framework to support diagnostics and disease management.
  - Utilise machine learning for public health data analysis, aligning with the **National Health Policy 2017**, encouraging digital tools in health data management and disease surveillance.
- **Community-Centric Health Initiatives**
  - Upgrade community health worker programs by integrating technology tools, supported by training mandates outlined in the **National Rural Health Mission** and **Ayushman Bharat** program.
  - Establish telehealth services guidelines per the **Telemedicine Practice Guidelines** issued by the Ministry of Health and Family Welfare.
- **Public Participation in Health Governance**
  - **Local health councils** should be formed, as the National Health Policy 2017 recommends. This promotes decentralised health governance and community participation.
- **Strengthening Health Infrastructure**
  - Construct modular health facilities quickly in underserved areas, with support and regulatory backing. These facilities should also serve as training

centres, aligning with the **Skill India Mission** to enhance local capabilities in health care.

- **Integration of Traditional and Modern Medicine**
  - Support integrative medicine initiatives under the **Ayush Mission**, which promotes traditional practices alongside modern medical treatments.
  - Establish centres of excellence for integrative medicine per the **National Medical Commission** guidelines.
- **Policy and Financial Innovations**
  - Shift to outcome-based funding for health projects, in line with the **National Health Policy 2017** which advocates for accountability and results-based financing.
  - Engage in partnerships for pilot projects under the frameworks provided by the **Public-Private Partnership in Health Policy**.
- **Health Bonds**
  - Introduce health impact bonds with regulations developed in consultation with the **Securities and Exchange Board of India** to ensure transparency and investor protection.
  - These bonds should focus on critical health areas identified under various national health programs, such as the **National Nutrition Mission** and the **National Disease Control Program**.

**Key features of the UPS:**

- **Assured Pension:** This pension will be **50%** of an employee's average basic pay during the last **12 months** before retirement, provided the employee has at least **25 years** of service. For shorter service periods, down to a **minimum of 10 years**, the pension amount will be reduced proportionately.
- **Assured Minimum Pension:** For those retiring with at least **10 years of service**, the UPS guarantees a minimum pension of **Rs 10,000 per month**.
- **Assured Family Pension:** In the event of a retiree's death, their immediate family will **receive 60% of the retiree's last drawn pension**.
- **Inflation Indexation:** All three pensions will include dearness relief, calculated based on the **All-India Consumer Price Index for Industrial Workers**, like what is provided to current employees.
- **Lump Sum Payment at Superannuation:** In addition to gratuity, retirees will receive a **lump sum amounting to 1/10th of their monthly emolument** (pay + dearness allowance) for every six months of completed service.

**How is this different from the current pension system?**

- Currently, government employees who joined service prior to January 1, 2004, are covered by what has come to be known as the Old Pension Scheme (OPS) that was replaced by the NPS for employees who joined in or after 2004.
- The **OPS also offered employees an assured pension at 50% of last drawn salary**, with dearness allowance hikes added along the way, an assured family pension of 60% of the last drawn pension, and a minimum pension of **₹9,000 plus dearness allowances**.
- At the time of retirement, **employees could commute 40% of the pension and receive it as a lumpsum**. Moreover, for pensioners or family pensioners crossing 80 years of age, an **additional 20% pension is given, with that number rising to 30% at 85 years, 40% at 90 years, and 50% at 95 years**. Pension incomes are also

**ECONOMY**

**Why did the Centre alter its pension plan**

**News Excerpt:**

The Union Cabinet signed off on a major shift in the approach for providing **old age income security to Central government employees**, setting the stage for a new **Unified Pension Scheme (UPS)** to be launched on April 1, 2025.

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**More detail about news:**

- About **23 lakh Central government employees** are expected to benefit from the new scheme, while those employees who are part of an ongoing pension scheme called the **National Pension System (originally called the New Pension Scheme or NPS) will have a one-time option to switch to the UPS**.
- **States** have been given the option to bring their employees under the UPS framework and will need to work out the scheme's funding from their own resources.
- **The Unified Pension Scheme (UPS) announced by the government for central government employees includes important features** of both the Old Pension Scheme (OPS) and the National Pension System (NPS). It asks central government employees to contribute to the UPS and offers an assured pension in return.

	NPS	UPS
<b>Eligibility</b>	Both govt & private sector	Govt sector
<b>Pension guarantee</b>	No	Yes
<b>Pension Indexed to Inflation</b>	No	Yes
<b>Pension payable</b>	As per accumulated corpus and prevailing annuity rates	50% of average pay for last 12 months on completing 25 years of service. Proportionate pension for lesser periods.
<b>Minimum service for pension eligibility</b>	No minimum service	10 years of completed service
<b>Minimum pension</b>	Not defined	₹10,000 after 10 years
<b>Employee contribution</b>	10% of basic + DA	10% of basic + DA
<b>Employer contribution</b>	14% of basic + DA	18.5%* of basic + DA
<b>Family pension on death of subscriber</b>	As per accumulated corpus and prevailing annuity rates	60% of eligible pension amount <b>BCCL</b>

\*Contribution under the UPS includes 8.5% towards guarantee reserve fund.

revised in line with salary updates as per **Pay Commission** suggestions.

- The **last salary upgrade for government employees** kicked in from 2016, based on the **Seventh Pay Commission** recommendations.
- A **critical difference between the OPS and NPS as well as the UPS**, is that its promises were funded straight off the revenues of the government at the time of making payouts.
- So, the liabilities of the OPS were “**unfunded**”, with no contributions made by employees or the employer, as is the case with non-government formal sector employees whose retirement savings are governed under the **Employees’ Provident Fund (EPF) Act**.

The **NPS**, launched through an executive order by the **Atal Bihari Vajpayee government** after years of debate about the unsustainability of civil servants’ pension bills, did away with the defined benefits system of the OPS and switched to a ‘defined contribution’ pension regime.

- **10% of employees’ salaries were remitted to a pension account with a matching contribution from the employer (the Centre, or States as almost all of them switched to the NPS after 2004)**. These funds were pooled and deployed in market-linked securities, with the option of parking some funds in equity markets, by pension fund managers.
- At the time of retirement, employees were required to **buy an annuity (an insurance instrument that provides a monthly income) with 40%** of the accumulated corpus in their NPS account and withdraw the rest.
- The Centre had raised its contribution to the **NPS to 14% in 2019, but there was no element of certainty offered on NPS members’ pension incomes**, like the OPS did. NPS members, including those who may have retired already, can now move to the UPS.

The **UPS** combines the defined benefit model of the OPS through its promised pension levels and other sops, with the defined contribution NPS mechanism. While employees’ contributions will be limited to 10% of salary as is the case with NPS, the government will contribute a higher 18.5% of salary to the pooled pension accounts.

- The Centre will also have to **bear any gap between the eventual earnings** on these contributions, and its assured pension promises under the UPS.
- **It is not clear at this point if the UPS** will factor in future Pay Commissions’ recommendations or offer higher pensions for those over 80 years of age, as the OPS did.

**Why did the government opt for a change?**

- **Prior to, and after, its launch, the NPS regime had faced a strong pushback** from government employees over the loss of any assurance about their likely pension

incomes, and the stark contrast in fortunes for post-2004 workers vis-à-vis their predecessors.

- However, in **March 2023, the finance minister** announced a committee to review the NPS for government employees in a way that **balances “their aspirations with fiscal prudence”**.
  - This panel, headed by former **Finance Secretary T.V. Somanathan** (now serving as Cabinet Secretary), held wide consultations with employees and other stakeholders, and although its report has not been made public yet, the switch to the UPS has been informed by its parleys.

**IMPACTS OF THE NEW UNIFIED PENSION SCHEME**

Its contributions, including arrears for some, are expected to **cost an additional ₹7,050 crore this year**.

- **An additional Rs 800 crore** is expected to cover arrears for employees who retired under the NPS since 2004.
- **Dearness hikes**, as and when announced, will warrant additional funding too.

The immediate impact will only be the **additional 4.5% contribution towards the UPS**.

- Future payouts will be higher but can be absorbed by higher revenue growth.

The new UPS will cost the government approximately **Rs 6,250 crore in its first year**.

- Largely to bridge the gap between the guaranteed 50% salary as pension and the returns generated from the pension fund’s investments.

Prevents states from reverting to the Old Pension Scheme (OPS)

- Some states, such as **Rajasthan, Chhattisgarh, Jharkhand, Punjab, and Himachal Pradesh, reverted to the OPS last year**.

**Blends feature from both OPS and NPS:**

- By offering a guaranteed pension, inflation indexation, a family pension, and a minimum pension, while maintaining a contributory, fully funded model.

**How have employees and States reacted?**

- Central government employees have broadly welcomed the UPS provisions as an acknowledgement of the NPS’ problems, but there are still reservations about the contributory aspects of the UPS and the lack of a commutation option like the OPS.

**Way forward:**

- **To get input and resolve issues about the UPS**, continuous communication with government workers, unions, and other stakeholders is required. This could aid in improving the plan.
- **To assess how well the UPS is accomplishing its goals**, the government ought to create precise performance measures. Making well-informed decisions regarding the necessary scheme adjustments can be aided by routine monitoring.

**PEPPER IT WITH:**

Pay Commission, Dearness Allowance, All-India Consumer Price Index for Industrial Workers

- **It is important to carry out regular assessments** to make sure the plan is still financially feasible. Based on these evaluations, the government contributions ought to be modified to preserve a balance between employee benefits and financial responsibility.

## A ground plan for sustainable mass employment

### News Excerpt:

The recent Union budget announcement of five major employment-related schemes is to have an ambitious ₹2 lakh crore outlay spread over five years to facilitate jobs and skilling and other opportunities for 4.1 crore youth.

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### About sustainable mass employment:

- **Evidence points to the continuum of education and skills.**
  - Monthly per capita consumption is the highest in States such as Tamil Nadu, Kerala, Himachal Pradesh, Goa and Sikkim.
  - These States have better human development indicators as well. Odisha, despite pushing short duration skilling, has a low per capita consumption in the absence of robust higher secondary/higher/vocational opportunities in institutions.
- **Mass employment with dignity requires productivity increases.**
  - Like private sector, state also has a role in determining the floor rate of wages and in assuring high quality public goods.
  - There is enough evidence that public employment per unit of population in India is much lower than what it is in most of the developed world.

### Key policy initiatives in creating sustainable mass employment:

#### Skilling needs:

- **Decentralised community action, to identify skilling needs.** Ownership by a community of State programmes only comes through direct community action. The gram sabha or basti samitis in urban areas can play a critical role in taking government programmes to the people.
  - **The steps can be as follows:** Create a register of all those wanting employment/self-employment. Create a plan for every youth in partnership with professionals at the cluster level. **Well-educated professionals are needed on fixed-term appointments** at the local government level, to ensure evidence-based outcomes. Make it the basis for finding skill providers and employers.
- **Converge initiatives for education, health, skills, nutrition, livelihoods, and employment (at the local government level) with women's collectives.** This will ensure community accountability, with untied funds,

functions and functionaries for effective quality outcomes. Employment does not improve in isolation. All human development indicators achieve better when they devolve and converge. Untied funds are transformational as communities make effective choices.

- **India's failures in public goods (education, health, nutrition, environment, and sanitation)** can improve through such an approach. We need to put in more money in these sectors, through decentralised community action.

### Education and employability:

- **Introduce need-based vocational courses/certificate programmes alongside undergraduate programmes (B.A., B.Sc., B.Com.) in every college.** This has been done in the past. It needs to be made compulsory in every college. Give them the resources to experiment.
  - **For example,** there are some colleges in Mumbai that provide **certificate courses** (with graduation) such as tourist guide, counsellor, and so on. This will **greatly improve employability on scale.** Make graduation programmes employable.
- **Standardise nursing and allied health-care professional courses in all States according to international benchmarks.** Nurses, geriatric caregivers, and health paramedics are required on scale in and outside India.
  - The biggest problem is the uneven **quality of institutions** and the absence of a standardised course curriculum and duration. We need to standardise these skill sets to international standards.
- **Create community cadres of caregivers to run crèches universally so that women can work without fear.** We have a **four- to six-hour anganwadi service** but the number of infants is more than what a crèche caregiver can manage. We need to create a **community cadre of crèche caregivers**, who can be paid by the local governments/women's collective after intensive training.
  - The **Community Resource Persons of the Rural Livelihood Mission** is a good model to follow. **Community cadres** can have multiple livelihoods in agriculture, animal rearing, non-farm opportunities, and retail shops.
- **Invest in Industrial Training Institutes (ITI), polytechnics as hubs in skill development for feeder schools.** The absence of quality and up-to-date infrastructure in many ITIs, polytechnics, and **Rural Self Employment Training Institutes (RSETIs)** is a very critical gap in an age of upskilling and re-skilling. Institutions must be **autonomous and community managed.** These technical institutions can also work as a hub for feeder schools.
  - **Schools must develop an equivalence framework for academic and vocational inputs in terms of credits and hours.** The focus should be on States/districts with the least institutional structure

for vocational education. **Tamil Nadu and Maharashtra** have large capacity that has helped manufacturing in those States. Human capital matters.

- **Introduce enterprise and start-up skills through professionals in high schools.** Schools need to introduce technology and enterprise as a subject at the **upper primary/high school-level onwards**. It is important that experimentation and innovation with an understanding of business processes are a **part of the regular school curriculum**. Visits by professionals to schools can impart finishing skills to students; employment / enterprise follows.
- **Co-sharing model of apprenticeships with industry on scale.** This is critical as far as manufacturing sector opportunities or even the services sector is concerned. **Skilling costs must be shared with potential employers** as standalone government-funded skilling is not always the best way forward. Unless industry has a stake in the apprenticeship, it does not work.

**Capital loans and enterprises:**

- **Streamline working capital loans for women-led enterprises/first-generation enterprises to enable them to go to scale.** The lessons from the **lakshpati didis of the Rural Livelihoods Mission** bring out the challenges in getting working capital loans. While efforts to create comprehensive credit histories of every woman borrower is underway, technology can be a great enabler in going to scale.

RELATED GOVERNMENT INITIATIVES	
<b>The Aatmanirbhar Bharat Rojgar Yojana (ABRY)</b>	Launched with effect from 1st October 2020 to incentivise employers for creation of new employment and restoration of loss of employment during Covid-19 pandemic. The terminal date for registration of beneficiaries was 31.03.2022.
<b>Prime Minister Street Vendor's AtmaNirbhar Nidhi</b>	Government is implementing <b>PM SVANidhi Scheme</b> since June 01, 2020, to facilitate collateral free working capital loan to street vendors to restart their businesses, which were adversely impacted during the Covid-19 pandemic.
<b>PM Vishwakarma Scheme</b>	Launched on 17th September 2023 to provide end-to-end support to artisans and crafts people of rural and urban areas across the country. <b>The Scheme aims to strengthen and nurture Guru-Shishya Parampara or family-based practice of traditional skills by Vishwakarmas working with their hands and tools.</b>
<b>Pradhan Mantri Mudra Yojana (PMMY)</b>	Launched by the Government for facilitating self-employment. <b>Under PMMY, collateral free loans upto Rs. 20 lakhs (10 to 20 lakhs update on last budget)</b> are extended to micro/small business enterprises and to individuals to enable them to setup or expand their business activities.
<b>Production Linked Incentive (PLI) scheme</b>	Implemented by the Government with an outlay of Rs. 1.97 lakh crore, for a period of 5 years starting from 2021-22 which have potential for creating 60 lakh new jobs.
<b>PM GatiShakti</b>	Transformative approach for economic growth and sustainable development driven by seven engines, namely, <b>Roads, Railways, Airports, Ports, Mass Transport, Waterways and Logistics Infrastructure</b> and powered by <b>Clean Energy and Sabka Prayas</b> leading to huge job and entrepreneurial opportunities for all.
<b>Startup India initiative</b>	Launched on 16th January 2016 to build a strong ecosystem for nurturing innovation, startups and encouraging investments in the startup ecosystem of the country.

**industry jointly sponsor candidates for courses.** Skill providers can be accredited after a rigorous assessment process. Candidates can be co-sponsored by the state and employers.

- **Use 70% funds under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in 2,500 water-scarce blocks and blocks with high deprivation, with a thrust on the poorest 20 families.** Individual beneficiary schemes under MGNREGA allow for livelihood security through income-generating initiatives such as animal sheds, irrigation wells, work sheds, and so on. Focus on skills for higher productivity of **MGNREGA** wage earners. Better wage rates will facilitate lives of dignity on scale, in very poor regions.
- **Apprenticeships on scale can facilitate the absorption of youth in a workplace.** The scale must go up. **The focus must be on skill acquisition** or else it can get routinised with a stipend being provided, merely as an incentive. The government's condition for **employer subsidies** in any form must always be for wages of dignity on successful completion of apprenticeship.

**Way Forward:**

- **Retraining and upskilling are crucial for skill development.** Workers need to adjust as technology changes. Enhancing employability through lifelong learning and vocational training should be the main goal of government initiatives.
- **The foundation of our economy is made up of MSMEs.** Significant job

**PEPPER IT WITH:**  
 Labor Force Participation Rate (LFPR), PLFS, Pradhan Mantri MUDRA Yojana (PMMY), Worker Population Ratio (WPR),

creation can result from supporting their expansion and giving them access to managerial, technological, and financial resources.

- **Labor Reforms critical to guarantee respectable working conditions, appropriate hours, just compensation, and safety precautions.** Business profitability and worker rights must be balanced in labour laws.
- **Investment in Vital Public Services** in government must think of a whole economic package rather than depending just on proddings. Long-term investments can boost general well-being and create jobs in vital areas like infrastructure, healthcare, and education.

### Why the worst of food inflation may be over

#### News Excerpt:

Increased **kharif crop planting** due to **good monsoon** and **stable international prices** may help reduce inflation in the coming months.

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#### More detail about news:

- **Retail food inflation** remained **above 8%** for **eight consecutive months**, from November 2023 to June 2024.
- However, **in July**, the year-on-year rise in the official **consumer food price index (CFPI)** dropped to **5.4%**, **down from 9.4%** the previous month.
- The sharp decline, though, is a statistical illusion, stemming from a high **“base” inflation** of 11.5% in July 2023.
- The monthly CFPI rise (July 2024 over June 2024), at 2.8%, translates into an annualised inflation of 33.8%!

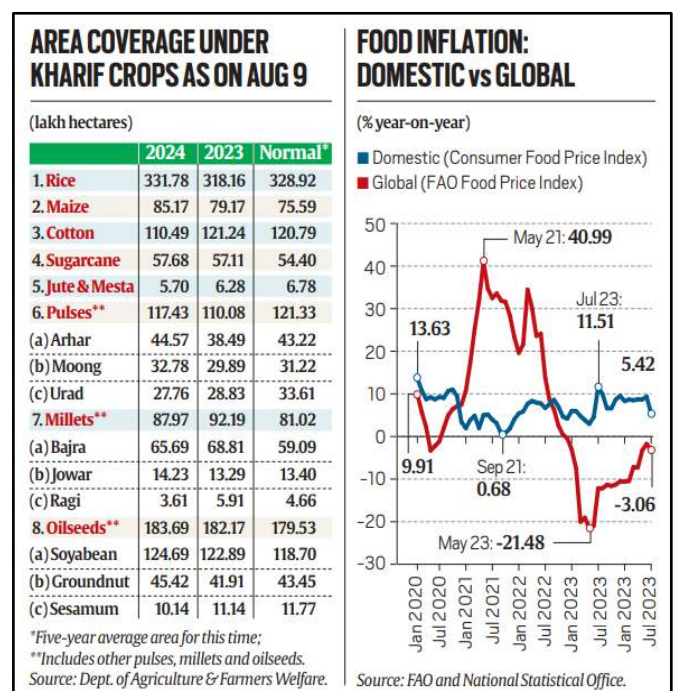
#### Significance of Food Inflation:

- In simple terms, food inflation remains a significant challenge, **eroding household incomes** and curbing spending on other goods.
- It also prevents the **Reserve Bank of India (RBI)** from lowering its **policy interest rates**.
- Given that food accounts for a **large portion** of the **average Indian's consumption**, inflation is widely perceived in terms of **rising food prices**.
- Despite these challenges, there are **two main reasons** for **cautious optimism**.

#### Favorable Monsoon:

- The **Southwest monsoon** arrived in Kerala on May 30, slightly **ahead of schedule**.
- The **overall favorable monsoon** with **well-distributed rainfall** has led to **increased acreage** under **most kharif crops** this year.
- Farmers have planted more **rice, pulses** like **arhar** (pigeon pea) and **moong** (green gram), **maize, oilseeds** (soybean and groundnut), and **sugarcane** compared to both the corresponding period in 2023 and the normal coverage for this time.

- Currently, **arhar and maize** are selling well **above their official minimum support prices (MSP)**, which has encouraged farmers to plant these crops aggressively.
- This should help **ease inflation in pulses** (arhar dal) and **animal proteins** (maize is a key ingredient in **poultry and cattle feed**) in the future.
- On the other hand, **farmers have planted less cotton**, which is trading at **prices close to its MSP**.
- Factors such as **flat prices, long cropping duration**, and the **risk of pest attacks** have dampened enthusiasm for **cotton planting**.
- Instead, **farmers have shifted to crops** like **groundnut, soybean, and maize**, which have shorter growth periods, or paddy, where MSP is assured through government procurement.



#### Global Food Prices:

- Global food inflation has been **negated since December 2022**.
- The United Nations' **Food and Agriculture Organization's food price index** averaged **120.8 points in July 2024**, 3.1% lower than the same period last year.
- The index – a weighted average of the world prices of a basket of food commodities over a **base period value (taken at 100 for 2014-16)** – is also **24.7% below its 160.3 points peak in March 2022 following Russia's full-scale invasion of Ukraine**. Even sharper is the cereal price index's fall, from **173.5 points in May 2022 to 110.8 points now**.
- Although global and domestic food inflation have recently moved in opposite directions, **low international prices make imports more feasible**.



- Low international prices reduce the **risk of "imported inflation"** and can help **cap domestic prices**, particularly for commodities like **wheat**, if imports are permitted by lowering duties.

**PEPPER IT WITH:**  
CFPI, MSP, PDS, FAO's Food Price Index, Price Stabilization Fund

**Way forward:**

- Wheat stocks** in government warehouses stood at **26.812 million tonnes** on August 1, the **third lowest** for this date after 2022 and 2008.
  - However, **rice stocks** were the **highest ever** for the same date, at **45.483 million tonnes**.
- A strong monsoon and a good kharif crop could lead to **lifting export bans on non-basmati rice and sugar** and removing stock limits on pulses for traders and retailers.
- The **above-average rains** so far have filled the **country's major reservoirs** to nearly **65% of their total storage capacity**, compared to last year's 61% and the 10-year average of 54%.
- This, along with the **high probability of La Nina (El Niño's "cool cousin," associated with strong rainfall in India)** emerging during **September-November** and persisting through the **winter-spring months**, is encouraging for the **upcoming rabi cropping season** as well.

**India's green energy goals face stiff test**

**News Excerpt:**

On 15 August, Prime Minister reaffirmed India's ambitious goal to achieve **500 gigawatts (GW) of non-fossil-based energy capacity by 2030**, covering renewables like solar, wind, biomass, and small hydro power, alongside nuclear and large hydro power.

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**More detail about news:**

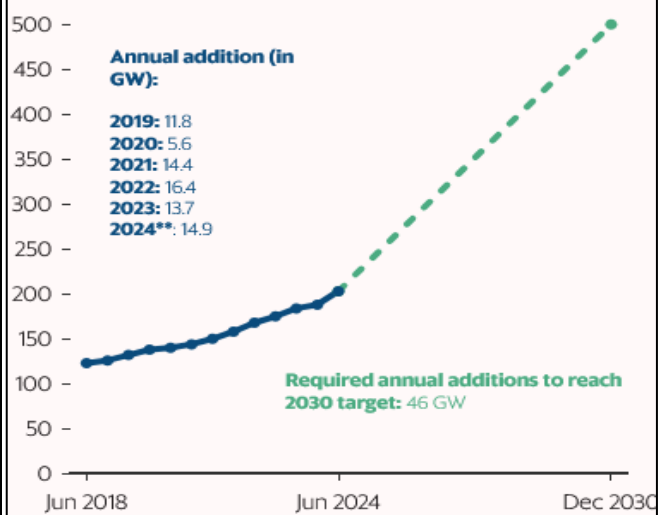
- Although the country missed its previous target of **175 GW of renewables by 2022**, recent developments suggest that India might still have a shot at reaching this goal.
- As of July 2024, India's renewable energy sources, including **large hydropower**, have a **combined installed capacity of 197.20 GW**.

**Energy target:**

- To meet this target, India needs to add an **average of 46 GW of capacity annually until 2030**—a formidable task given the pace of the last few years. However, the outlook is improving.
- In the **first six months of 2024 alone, India added 15 GW, matching the entire capacity addition of 2023**. The government is also ramping up efforts, aiming to invite bids for **50 GW of capacity additions annually until 2027-28**.

**India needs to add nearly 50 GW a year to reach 500 GW capacity target by 2030**

Non-fossil-based energy capacity at half-year intervals\* (GW)



\*This includes renewable energy sources (solar, wind, bio-energy, and small hydro)

- If this momentum continues, India would be just in **time to reach the 500 GW mark by 2030**, given that renewable energy projects typically take up to two years to power up.
- According to the **Centre for Energy Finance**, an initiative of the **Council on Energy, Environment and Water**, around **95% of the bidding trajectory target for 2023-24 was met**, though only **47% of the bids resulted in successful auctions**.
  - Meanwhile, **India holds its position as the world's fourth-largest renewable power capacity, trailing only China and Brazil** among emerging economies, excluding hydropower plants.

**India is among the biggest countries by renewable energy capacity globally**

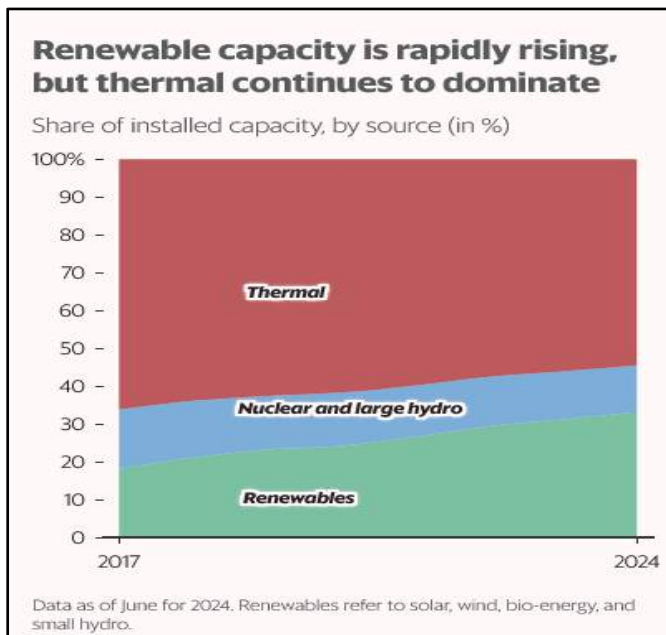
Top five countries by renewable energy capacity (in GW)

	Total RE capacity	RE capacity (excl. hydropower)
1	China	China
2	US	US
3	Brazil	Germany
4	India	India
5	Germany	Japan

Data as of December 2023.

**Transition tightrope:**

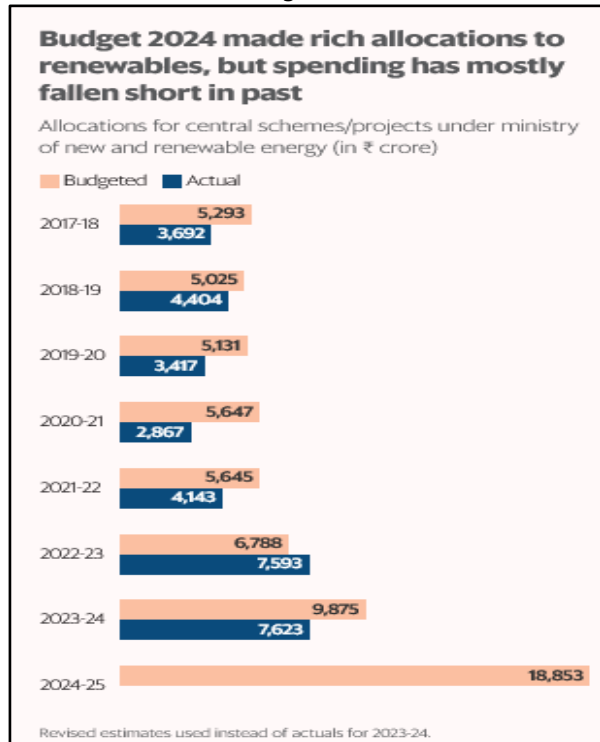
- India also aims to **power half of its energy capacity with renewables by 2030**, a goal supported by encouraging progress.
- **Thermal power (which largely relies on coal-fired plants) now accounts for a 55% share** in India's overall capacity, down from 66% in 2017, while renewable energy's share has increased to 33% from 18%.
  - But while **India's renewables sector is growing rapidly**, its increasing power demands as a developing economy often lead it back to coal.
- **According to the Global Energy Monitor, India already has 240 GW operating coal power capacity, and 97 GW is under development.** Earlier this year, the power ministry told Reuters that India would start operating new coal-fired power plants totalling up to 13.9 GW this year, the biggest addition in six years.
- **At COP28 last year, India and China abstained from committing to tripling the global renewable energy capacity by 2030**, as the pledge called for a phase-down of coal power.



**State pioneers:**

- While India pursues ambitious goals as part of its climate pact on the global stage, only a handful of major states lead this commitment.
  - **As of July, Rajasthan and Gujarat are at the forefront with 28 GW and 27 GW of installed renewable capacity**, respectively, followed by **Tamil Nadu (20 GW), Karnataka (17 GW), Maharashtra (13 GW), Andhra Pradesh (9 GW), and Madhya Pradesh (7 GW).**
- The government has announced transmission schemes to integrate 66.5 GW of renewable energy generation across these states, with projects in various stages.
- The state-run **Solar Energy Corp. of India Ltd** has identified potential zones in eight states for addition of 181.5 GW.

- **Meanwhile, segment-wise progress within renewables will also need to be watched:** Solar has led the push so far, though low installation rates in the solar rooftop sub-segment and the wind energy component were blamed by a parliamentary committee for India's failure to meet its 2022 target.



**Green budget:**

- **The Union budget plays a crucial role in setting the tone for clean energy acceleration each year.**
  - In line with this commitment, the **2024-25 budget saw one of the largest and most significant allocations** towards central schemes and projects under the ministry of new and renewable energy, allocating **₹18,853 crore** to renewable energy initiatives, a **90% increase from the previous year and 147% jump from the 2023-24 revised estimates.**
- This significant boost in the budget may highlight the government's dedication, but a look at historical data reveals a cautionary trend. **Actual spending has often fallen short of the budgeted amounts in recent years, with 2022-23** being a notable exception.

**Way forward**

- As India pursues its ambitious 500 GW non-fossil-based energy goal by 2030, success will depend on developing a balanced green grid, advancing research and development, and moving away from coal.
- Despite increased budgets and ongoing progress, these challenges must be addressed swiftly to shape India's renewable energy future.

**PEPPER IT WITH:**

Green Budget, CoP28, Green Energy Corridor, National Smart Grid Mission, PM-Surya Ghar Muft Bijli Yojna

## The shock of crumbling infrastructure and the solution

### News Excerpt:

An under-construction bridge collapsed over a stream of Bagmati and Lakhani rivers in Bihar's Muzaffarpur district.

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### More about news:

- **Reports** on the collapse of a series of under-construction bridges in Bihar have highlighted the issues of quality control and project implementation in infrastructure in India.
- In some instances, these have been megaprojects. The number of such incidents where bridges have collapsed could be 10 or even more.

### Challenges to infrastructure sector:

- One of the most common issues faced by most projects, particularly those that are government-sponsored, are time delays and cost overruns.
- A report by the **Ministry of Statistics and Programme Implementation** reveals that as many as 431 infrastructure development projects, each with investments of ₹150 crore or more, suffered a cost overrun of ₹4.82 lakh crore, as of December 2023.
- Moreover, the percentage of delayed projects hit a three-year low in March this year.
- Out of **779 projects** delayed, **36%** were running behind schedule for a period between 25 to 60 months, **26%** for one to 12 months, **23%** for 13 to 24 months, and **15%** for over 60 months averaging a three-year delay.
- Any industrial or commercial activity in India requires multiple clearances from the time of conception to the commissioning of the project.

- The implementation status of most of the projects points to gaps in project management practices, especially in urban infrastructure projects, including a lack of comprehensive planning and management by urban local bodies, and a lack of capacity of local self-government institutions.
- All this results in an additional expenditure burden on the government, crowds out funding for more deserving projects and increases procurement costs.
- It has also been observed that sufficient attention, time and expertise are not devoted during the project planning stage.

### Way forward:

- **Traditional practices need an overhaul:**

**PEPPER IT WITH:**  
GatiShakti, NLP, Smart Cities, PPP

- Traditional project management practices require an overhaul to integrate modern tools and techniques that involve **real-time data management** and then crunching that data.
- An enabling policy framework should consider global best standards on project management and prescribe procedures/guidelines for effective project execution in public sector and public-private partnership projects.
- Various countries have adopted multi-pronged approaches to address these issues. In the **United Kingdom**, the Infrastructure and Projects Authority has a special emphasis on the processes involved for project completion.
- **China, Saudi Arabia** and a few other countries have set up similar agencies for end-to-end project deliveries.
- **A holistic "Program Management Approach":**
- This involved a disciplined and systematic coordination of human resources, time, money, and information to plan and deliver multiple projects in a unified manner.

## Government Steps:

Steps to advance India's infrastructure have taken shape in the form of the **PM Gati Shakti National Master Plan (NMP)**, the **National Logistics Policy** and the **Smart Cities Mission** among others.

The government's aim of making India a developed nation by 2047 is linked to improvements in its infrastructure sector.

**PM GatiShakti** is being demonstrated through a GIS-based ERP portal wherein the objective is to monitor real-time progress. This will provide not only visual depiction of the National Master Plan but will also integrate, through application programming interface, real-time progress of various departments.

Under **PM Gati Shakti**, the **National Master Plan** has been launched to break the silos in which government ministries/departments work to bring all stakeholders to work on an integrated platform. This initiative has set benchmarks for all departments to achieve the proposed targets and deadlines.

Further, the government increased its capital expenditure allocation to **₹11.11 lakh crore (3.4% of GDP)** in Budget 2024, indicating the government's commitment towards infrastructure development.

and deliver multiple projects in a unified manner.

○ It is typically employed when the mission involves significant resource expenditure and requires the integration of diverse activities.

- **Setting up an agency:**

- Setting up an agency to conduct professional courses in project management along the lines of **The**

**Institute of Chartered Accountants of India** and chartered engineers in various other countries, will help in developing professional ethics and responsibilities in project execution, monitoring and oversight.

## Women micro-savings

### News Excerpt:

Recently, **Reserve Bank of India (RBI)** governor Shaktikanta Das underscored the **widening gap** between **credit and deposit growth** as a potential risk to the structural liquidity of the country's financial system.

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### Understanding the Credit-Deposit (CD) Ratio

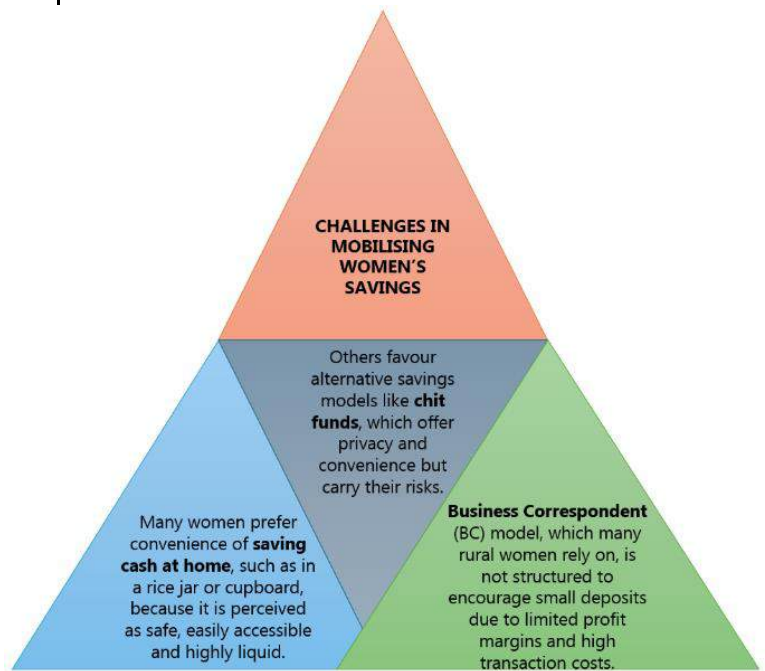
- The Credit-Deposit (CD) ratio is a critical measure of **banking stability**. It indicates the **proportion** of **deposited funds** banks have lent out as **loans**.
- A **higher CD** ratio implies that **banks are lending more** than they receive in deposits, which can **strain liquidity** and impact their ability to meet withdrawal demands.
- As of 12 July 2024, the CD ratio stood at **79.4%**, reflecting a steady rise over the past three years. This increase signals that **credit growth is outpacing deposit growth**, which is a cause for concern within the banking industry.

### Impact of Declining Deposit Growth

- Household savings** are increasingly **diverting** from traditional bank deposits to mutual funds, stocks, and other investment avenues. This trend reduces the inflow of deposits into banks, **limiting** their **ability to fund loans** and maintain liquidity.
- Banks rely heavily on deposits as a stable, low-cost source of funds. The decline in deposit growth forces banks to resort to **costly market borrowings** and increase deposit interest rates. However, these measures are **short-term fixes** that do not address the underlying issue.

### Untapped Potential of Women as Depositors

- Expanding the depositor base is a **sustainable approach** to bridging the credit and deposit growth gap. It is crucial to **engage segments of the population** currently not using formal saving services or cannot fully use them.
  - One significant untapped segment is **women** across India.
- According to the **World Bank's Findex Survey 2021**, while **79%** of Indian women have bank accounts, **32%** of these accounts are **inactive**.
- Additionally, **RBI's report** Deposits with Scheduled Commercial Banks (March 2023) reveals that women account for **just 20.5% of total deposits**, representing a missed opportunity for women and the banking sector.
- Data from the Unique Identification Authority of India (UIDAI) indicates that there are about **516 million**



**women Aadhaar holders** in India aged 18 and above. If each of these women saves **500 per month**, this could generate total monthly savings of ₹25,800 crore, amounting to nearly **3.1 trillion annually**. This represents nearly 13% of the total deposit growth between 2022-2023 and 2023-2024.

### Way forward:

- Designing Products for Women's Unique Needs**
  - Banks and financial institutions must innovate by creating **gender-intentional financial products** to increase women's participation in formal savings.
  - These products should cater to women's needs, such as **goal-based savings** tied to personal or family aspirations and products that balance saving **lock-ins** with immediate liquidity options.
  - Segmenting women** based on income sources and agency while **incentivising BCs** to accept small deposits can significantly boost women's participation in formal savings mechanisms.
- Behavioural Nudges and Financial Literacy**
  - Financial literacy and **awareness programs** tailored to women's needs can empower them to make informed decisions about their savings and investments.
- Collaborations to Enhance Financial Inclusion**
  - Collaborative efforts between **banks, non-governmental organisations, and community groups** are essential to bridging the knowledge gap and fostering a culture of formal savings among women.

**PEPPER IT WITH:**  
CD ratio, Mahila Samman Savings Certificate (MSSC), Payment and Settlement System act

- These partnerships can be **pivotal** in reaching underserved segments and enhancing **financial inclusion**.

### Issues faced by EPFO pensioners

#### News Excerpt:

Nearly 78 lakh **Provident Fund (PF) pensioners** across the country under the Employees' Pension Scheme, 1995 (EPS-95) of the **Employees' Provident Fund Organisation (EPFO)** will receive their pension through any bank, any branch from January 1, 2025.

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#### More about news:

- The Union Labour Ministry has cleared a proposal for the **Centralised Pension Payment System (CPPS)** for about 78 lakh pensioners under the Employees' Pension Scheme, 1995. The new system enables pension disbursement through any bank, any branch across the country.
- By enabling pensioners to receive their pensions from any bank, any branch, anywhere in the country, this initiative addresses the long-standing challenges faced by pensioners and ensures a seamless and efficient disbursement mechanism

#### Issues faced by Pensioners:

- At present, if a pensioner decides to migrate, they have to seek the transfer of **Pension Payment Orders (PPO)** from one office to another.
- This has invariably resulted in complaints from pensioners about the delay in transfers, and subsequent payments.
- Moreover, pensioners can draw their monthly pension only through a group of three or four banks empanelled with the **EPFO** at every zone or region.

#### About new arrangement:

- The **CPPS** would ensure disbursement of pension throughout India without any need for transfer of Pension Payment Orders from one office to another even when the pensioner moves from one location to another or changes the bank or branch.
- This would be a great relief to pensioners who move to their hometown after retirement.
- This facility will be launched as part of **EPFO's** ongoing IT modernisation project **Centralized IT Enabled System (CITES 2.01)** from January 1, 2025. In the next phase, CPPS will enable a smooth transition to the **Aadhaar-based payment system**. There will be no need for pensioners to visit the branch for any verification at the time of commencement of pension and the pension shall be immediately credited upon release.
- **EPFO** expects a significant cost reduction in pension disbursement after moving to the new system.

#### Demands of the pensioners:

- Trade unions and even Members of Parliament, cutting across party affiliations, have been urging the government to hike the minimum pension amount of ₹1,000.

- Many pensioners as they expected the government to provide them with a pleasant surprise, just as it has done for its government staff, a unified pension scheme which seeks to combine many features of the **Old Pension Scheme (OPS) and the New Pension Scheme (NPS)**.

#### Union government's position:

- As regards the hike in minimum pension, the Centre has been citing financial constraints, though it has been increasing its allocation annually for the EPS-95.
- The government's contribution to the Pension Scheme is at the rate of 1.16% of the basic wages of employees, apart from providing budgetary support to ensure the minimum pension payment. The Pension Scheme is also getting funds through the transfer of **8.33% of the Provident Fund** contributions by employers.
- On the issue of pension on higher wages, the **EPFO** was originally against it, as the body had contended that the EPS-95 was meant for economically weak workers, who had, proportionately, contributed more than the high wage earners.
- The **"reverse subsidy"** was an **"anomaly,"** which was corrected by the modifications in 2014. Even now, its stand has been that it cannot be liberal in granting pension on higher wages as this would affect the sustainability of the Pension Fund.
- However, till now, the fund has not witnessed any cash flow problems, despite there being a projected actuarial deficit in the valuation. There has been a widespread complaint that the PF body has been **"unrealistic"** in seeking very old documents from pensioners, members, and employers.

#### Way forward:

- Apart from increasing its contributions substantially to the EPS-95 and revising upwards the ceiling for PF contributions from ₹15,000 which was fixed 10 years ago, the Union government should implement the idea floated by former Union Finance Minister during his Budget speech in February 2015, that an option be given to employees to invest in the EPF or the NPS, a move which will take care of the issue of returns on investment.
- This is not to overlook the fact that since 2015, the **EPFO** has been investing in **exchange-traded funds (ETF)**, as notified by the **Union Labour Ministry**.
- The exclusion of the applicability of EPS-95 to those who joined after September 1, 2014, and earned more than the ceiling has to be removed, making pension eligible to all employees, regardless of the pay.

#### PEPPER IT WITH:

CITES 2.01, PPO, OPS vs NPS, Employees' Deposit-Linked Insurance Scheme

#### Employees' Provident Fund Organisation:

- EPFO ranks among the globe's premier Social Security Organizations, distinguished by its vast clientele and the magnitude of financial transactions it manages.

- The inception of the **Employees' Provident Fund** dates back to the enactment of the Employees' Provident Funds Ordinance on November 15, 1951, which was subsequently replaced by the **Employees' Provident Funds Act of 1952**.
- **Mission:**
  - To meet the evolving needs of comprehensive social security in a transparent, contactless, faceless and paperless manner.
  - To ensure Nirbadh services with multi-locational and auto claim settlement process for disaster proofing EPFO.
  - To ensure ease of living for members and pensioners, and ease of doing business for employers by leveraging Government of India's technology platforms for reaching out to millions.
- **The Employees' Provident Fund Organisation (EPFO)** is under the administrative control of the Ministry of Labour and Employment.

## AGRICULTURE

### Centre Expands Agricultural Infrastructure Fund

**News Excerpt:**

The **Union Cabinet** approved measures to make the **Agricultural Infrastructure Fund (AIF)** more appealing, impactful, and inclusive.

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**More detail about News:**

- The Cabinet **expanded the AIF**, a **1 lakh crore** scheme. The revised scheme will now provide **financial support** to **Farmers' Producers Organisations (FPOs)** to improve their **financial security** and **creditworthiness**.
- These changes are meant to make AIFs more attractive and help **expand agricultural infrastructure** across the country.

**Key Changes to the AIF Scheme Include:**

- **Viable Farming Assets:**
  - All eligible beneficiaries can now develop **infrastructure projects** for **community farming**.
  - This move aims to improve productivity and sustainability by enhancing **community farming capabilities**.
- **Integrated Processing Projects:**



- The fund will now cover **integrated primary and secondary processing projects**.
- However, **standalone secondary projects** will not be eligible and will instead be covered under the **Ministry of Food Processing Industries (MoFPI) schemes**.
- **PM KUSUM Component-A:**
  - The AIF will now align with **Component-A of the PM-KUSUM scheme** to promote **sustainable clean energy solutions** alongside agricultural infrastructure development.
  - This alignment will benefit farmers, groups of farmers, FPOs, cooperatives, and panchayats.
- **NABSanrakshan:**
  - In addition to the **Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE)**, the AIF credit guarantee coverage for FPOs will be extended through **NABSanrakshan Trustee Company Pvt. Ltd.**
  - This extension aims to boost **FPOs' financial security and creditworthiness**, encouraging more investments in agricultural infrastructure.

**Progress of the AIF:**

- So far, **47,575 crore** has been sanctioned for 74,508 projects **under the AIF**. These projects have attracted an investment of **78,596 crore in the agriculture sector**, with **78,433 crore coming from private entities**.
- The projects have also generated over **8.19 lakh rural jobs** in the **agriculture sector**.
- Since its launch by the Prime Minister **in 2020**, the AIF has increased the country's **storage capacity** by about **500 lakh metric tonnes (LMT)**.
- This includes **465 LMT of dry storage** and **35 LMT of cold storage**, enabling the annual preservation of 18.6 LMT of food grains and 3.44 LMT of horticulture produce.

**Way Forward:**

- **Strengthening FPOs:** Provide training and capacity building programs to FPOs to enhance their management skills and financial literacy.
  - Support the development of infrastructure for FPOs, such as warehouses, cold storage facilities, and processing plants.
  - Facilitate market access for FPOs to help them sell their products at fair prices.
- **Integration with Other Government Schemes:** Explore opportunities for synergy between the AIF and other government schemes related to agriculture, such as the PM Kisan Samman Nidhi and the National Agricultural Market (e-NAM).
  - Ensure that the AIF provides complementary support to other government initiatives to create a

**PEPPER IT WITH:**  
PM KUSUM, AIF, FPOs, Supply Chain linkage in Agriculture

comprehensive ecosystem for agricultural development.

- **Monitoring and Evaluation:** Implement a robust monitoring and evaluation framework to track the progress of AIF-supported projects and assess their impact on the agricultural sector.
  - Use data and evidence to inform decision-making and identify areas for improvement.
- **Sustainability:** Ensure that AIF-supported projects are environmentally sustainable and contribute to climate resilience.
  - Prioritize projects that have a positive social impact, such as improving the livelihoods of small and marginal farmers.

### The road to 2047 for Indian agriculture

#### News Excerpt:

India's centennial year of independence is still away, in **2047**, but the goal of becoming a developed nation looms large. This necessitates a comprehensive development approach, especially in agriculture.

#### More about the News:

- Transforming Indian agriculture depends on adopting sustainable practices that ensure long-term productivity and environmental health.
- Precision farming, genetically modified crops, and advanced irrigation techniques such as drip and sprinkler systems are leading this transformation.

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- India's real per capita income increased by 41% from 2011-12 to 2021-22 and is projected to accelerate further. However, the **expenditure elasticity post-2023** is anticipated to be lower, correlating a 5% rise in per capita expenditure to a 2% growth in demand. The anticipated food demand will vary among commodities, with meat demand growing by 5.42% and rice demand by a mere 0.34%.

#### Initiatives by Government:

- **The Pradhan Mantri Kisan Samman Nidhi (PM-KISAN):**
  - **The Pradhan Mantri Kisan Samman Nidhi (PM-KISAN)**, launched in 2019, disburses ₹6,000 annually to farmers in three instalments.
  - This scheme has already benefited over 11.8 crore farmers, offering much-needed financial support.
- **Soil Health Card (SHC) scheme:**
  - Another critical initiative, the **Soil Health Card (SHC) scheme**, aims to optimise soil nutrient use, thereby enhancing agricultural productivity.
  - Over 23 crore SHCs have been distributed, providing farmers with crucial insights into soil health and nutrient management.
- The government also championed the **International Year of Millets in 2023**, promoting nutritious coarse grains, both domestically and internationally.
- The **Agriculture Infrastructure Fund**, with a ₹1 lakh crore financing facility, supports the development and modernization of post-harvest management infrastructure. Within three years, over 38,326 projects have been sanctioned, mobilizing ₹30,030 crore in the agricultural infrastructure sector. These projects have created employment for more than 5.8 lakh individuals and improved farmer incomes by 20%-25% through better price realization.
  - Moreover, the **Survey of Villages and Mapping with Improved Technology in Village Areas (SVAMITVA)** initiative aims to ensure transparent property ownership in rural areas. As of September 2023, over 1.6 crore property cards have been generated, enhancing land security and facilitating credit access for farmers.

**Challenges faced by Indian Agriculture Sector**

India's agricultural sector faces challenges, including climate change, land degradation, and market access issues.

Despite **agriculture engaging nearly 46% of workforce**, **agriculture's contribution to GDP is about 18%**, highlighting a stark imbalance. If current growth trends continue, this disparity will worsen while overall GDP has grown at 6.1% annually since 1991-92, agricultural GDP lags at 3.3%.

By 2047, agriculture's share in **GDP might shrink to 7%-8%**, yet it could still employ **over 30% of the workforce** if significant structural changes are not implemented. This indicates that merely maintaining the current growth trajectory will not suffice.

The Agri-GDP's anaemic growth of 0.7%, primarily due to unseasonal rains, is alarming.

#### Need of Growth in Agriculture sector:

- According to **United Nations** projections, India's population is expected to reach **1.5 billion by 2030 and 1.59 billion by 2040**.
  - Following the **agricultural challenges**, meeting the food requirements of this burgeoning population will be imperative.
- With an estimated expenditure elasticity of food at 0.45, the demand for food is expected to grow by approximately 2.85% annually, considering the population growth rate of 0.85%.

#### Strategic planning:

- The government's strategic planning for agriculture, leading up to **2047**, focuses on several key areas:
  - Anticipated future demand for agricultural products,
  - Insights from past growth catalysts,
  - Existing challenges, and
  - Potential opportunities in the agricultural landscape.
- Projections indicate that the total demand for food grains in 2047-48 will range from **402 million tonnes to 437 million tonnes**, with production anticipated to exceed demand by 10%-13% under the **Business-As-Usual (BAU) scenario**.

- However, to meet this demand sustainably, significant investments in agricultural research, infrastructure, and policy support are required.
- The **Budget for 2024-25**, with an allocation of ₹20 lakh crore for targeted agricultural credit and the launch of the **Agriculture Accelerator Fund**, highlights the government's proactive approach to fostering agricultural innovation and growth.

**Way forward:**

- **Sustainable Practices:** Promote organic farming to enhance soil health, reduce chemical pollution, and improve the quality of agricultural products. Utilize precision agriculture techniques to optimize resource use, reduce waste, and improve yields. Implement integrated pest management practices to control pests and diseases while minimizing the use of harmful chemicals.
- **Technological Innovations:** Invest in research and development to develop and adopt new agricultural technologies, such as genetically modified crops and biofertilizers. Promote the use of renewable energy sources in agriculture to reduce dependence on fossil fuels and improve energy efficiency. Leverage digital technologies, such as IoT, AI, and big data analytics, to improve decision-making and optimize agricultural practices.
- **Infrastructure Development: Expand cold storage facilities** to reduce post-harvest losses and ensure the availability of fresh produce throughout the year. Develop modern market infrastructure, including **wholesale markets and retail outlets**, to facilitate the efficient marketing of agricultural products. Improve transportation infrastructure, such as **roads and railways**, to reduce transportation costs and improve market access for farmers.
- **Policy Reforms:** Implement land reforms to address land fragmentation and improve land ownership rights for farmers. Provide price support mechanisms to protect farmers from price fluctuations and ensure a fair return for their produce. Improve access to credit for farmers, particularly small and marginal farmers, to invest in agricultural inputs and infrastructure.

**PEPPER IT WITH:**  
Agriculture accelerator fund, NeGP-A, PM KISAN,

## INTERNATIONAL RELATIONS

### Prime Minister Modi's Visit to Poland

**News Excerpt**

Prime Minister Narendra Modi's visit to Poland marks the **first time** an Indian prime minister has visited the

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country in nearly **five decades**. This visit forms a key part of a broader diplomatic mission, including a trip to Ukraine.



**Key highlights of the visit**

- **Strategic Partnership:** Both countries have upgraded their ties to the level of a "strategic partnership."
- **Five-Year "Action Plan" (2024-2028):** During the talks between Prime Minister Modi and Polish Prime Minister Donald Tusk, the two leaders unveiled a five-year "Action Plan".
  - This plan identifies **key areas for cooperation**, including defence, trade, agri-tech, energy, green technologies, infrastructure, pharmaceuticals, and mining.
- **Defence Cooperation:** Both sides recognised the need to strengthen and deepen cooperation in the defence sector. Poland is eager to be a key partner in India's efforts to boost domestic defence production and modernise its armed forces.
- **Social Security Agreement:** This agreement aims to promote the mobility of the workforce between India and Poland and ensure the welfare of workers from both nations.
- **Wreath-Laying Ceremony:** Prime Minister Modi laid a wreath at the **Tomb of the Unknown Soldier** in Warsaw, a significant monument dedicated to the unknown soldiers who sacrificed their lives for Poland.
  - It is one of many such national tombs of unknowns erected after **World War I** and the most important monument in Poland.
- **Interaction with Polish Indologists:** Prime Minister Modi had a fruitful exchange with prominent Polish Indologists who have significantly contributed to studying Indian culture, language, and arts.
- **Meeting with Gawel Lopinski, CEO of Billenium Pvt Ltd:** Prime Minister Modi met with Gawel Lopinski, the CEO of Billenium Pvt Ltd, a prominent Polish IT company with a notable presence in Pune, India.



- During this meeting, Modi highlighted India's growth story, which is driven by a favourable investment climate and the **'Make in India'** program.
- He discussed opportunities for business collaboration between India and Poland, particularly in **new and emerging technologies**, AI, cybersecurity, and the digital economy.

### India-Poland Bilateral Relations

- 2024 marks the **70th anniversary** of establishing diplomatic relations between Poland and India. Diplomatic relations between the two countries were formally established in **1954**, leading to the opening of the Indian Embassy in Warsaw in 1957.
- The relations were cordial after Poland joined the European Union in 2004, becoming a key economic partner for India in Central Europe.
  - The top **Indian exports** to Poland include textiles, base metals, chemical products, and machinery. Meanwhile, **Poland exports** machinery, mineral products, base metals, and chemical products to India.

### Convergence of Interests of Poland and India

- **Historic Ties and Symbolic Gestures**
  - Poland and India share several historical connections, such as the **Maharaja of Jamnagar Jam Saheb Digvijaysinhji Ranjitsinhji Jadeja**, who provided **refuge** to Polish women and children during World War II, and the joint efforts of Poles and Indians in the **Battle of Monte Cassino**.
  - Poland also played a pivotal role in helping India evacuate its **4,000 Indian students from Ukraine** during the onset of the Russian invasion in early 2022.
- **India's Rising Global Influence**
  - India is now the **fifth-largest economy** in the world and is poised to become the **third-largest soon**. As a key player in the Indo-Pacific region, India navigates the complex dynamics of a systemic rivalry between China and the United States.
  - This has increased India's global responsibilities and necessitated a more **active engagement** on the international stage.
- **Poland's Strategic Role in Europe**
  - Poland, the **sixth-largest economy** in the European Union and 21st globally, has become a **pivotal player** in **European security**, especially in Russia's aggression in Ukraine.
  - As **NATO's** leading country on the eastern flank and a hub for Western operations in Ukraine, Poland plays a crucial role in shaping the new European security architecture.
- **Economic and Trade Relations**
  - In **2019**, India was Poland's **28<sup>th</sup> largest trading partner**, ranking **40<sup>th</sup> in exports** (0.3%) and **25<sup>th</sup> in imports** (0.8%). However, by **2021**, bilateral trade had reached **US\$ 4.3 billion**, representing a significant

year-on-year **increase of 57%**. This positive trend persisted, with exports from Poland to India reaching EUR 1.5 billion and imports EUR 3.868 billion the following year.

### ● Industries and Investments

- The southern Indian states of **Karnataka, Kerala, and Tamil Nadu** are crucial centres for modern technology and industry. **Indian companies** have invested in Poland, particularly IT, biotechnology, and electronics. These companies employ around **10,000 Polish workers** and invest over USD 3 billion.
- **Polish companies** have also established a presence in India, investing in the automotive, dairy, and packaging sectors.
- The collaboration between companies such as **UFLEX, Tata Consultancy Services**, and others demonstrates the potential for further economic cooperation.

### ● Defence and Security Ties

- Given the changing **global security environment**, Poland and India have the potential to expand their defence and security cooperation significantly.
- India is gradually increasing its **arms purchases** from the West and bolstering its **self-sufficiency** in the defence sector. Poland could play a key role in this transition by offering military equipment and expertise.

### ● Diaspora

- The Indian community in Poland is estimated at approximately **25,000**, consisting of **traders, professionals, and students**. Over 100 Indian restaurants across Poland also mark the Indian presence.

### Potential challenges that could arise

#### ● Diverging Foreign Policy Interests

- India and Poland may have different foreign policy priorities, particularly in their relationships with major powers like the **United States, Russia, and China**.
  - **For example**, India's longstanding **ties with Russia**, especially in the defence sector, might conflict with Poland's position as a **member of NATO** and its strong alignment with Western powers.
  - Such differences could create friction in how both countries perceive and respond to global conflicts, such as the Ukraine war.

#### ● Competition in Emerging Markets

- India and Poland want to expand their economic influence in emerging markets, particularly **IT, green technologies, and manufacturing sectors**.
- This could lead to competition, especially in markets where both countries seek to establish a strong presence.

#### ● Human Rights and Domestic Policies

- Differences in how countries approach **human rights, democracy, and governance** could lead to diplomatic challenges.
- **For example**, Poland, as an EU member, might **align with EU** positions on human rights and democratic governance, which could sometimes contrast with India's positions on these issues, especially regarding its **internal matters like Kashmir** or its handling of **religious and ethnic diversity**.
- **Diplomatic Sensitivities in International Forums**
  - In international forums like the **United Nations** or the **World Trade Organization**, Poland and India may sometimes find themselves on **opposing sides** of debates or resolutions.
  - Poland's membership in the EU and NATO might conflict with India's stance on **non-alignment, sovereignty, and regional conflicts**. Such differences could create diplomatic sensitivities.
- **Environmental Standards and Cooperation**
  - As both countries look to expand industrial and infrastructural cooperation, differences in environmental standards could create challenges.
  - Poland's adherence to **EU environmental regulations** might sometimes conflict with India's industrial and infrastructural **development goals**, leading to potential disagreements in joint projects or trade agreements.

**PEPPER IT WITH:**  
EU, FTA, NATO, WWI,  
European Aviation Hub

**Recommendations for Poland-India Relations**

- **Joint Development in Emerging Technologies:** There is significant potential for collaboration in emerging technologies such as hydrogen-related technologies, green technologies, space sector solutions, and climate-friendly mining.
  - By **pooling resources and expertise**, Poland and India can lead the development of these critical technologies, which are vital for future economic and environmental sustainability.
- **Direct Air Connections:** Poland's aspiration to create a new **European aviation hub** aligns well with India's expanding aviation infrastructure. Passenger traffic is **growing at 15%** annually, and strengthening these air links will further enhance bilateral relations.
- **Collaboration in Maritime Infrastructure:** India's **Sagarmala maritime infrastructure** expansion program offers a significant opportunity for collaboration. The program provides **subsidies** for ecological ports and shipyards, creating a unique opening for Polish companies, particularly those with ship design and construction expertise.

- With **Europe's largest ship design office** and advanced shipyards, Poland could become a key partner in India's maritime development.
- **Investment Opportunities in Land Infrastructure:** India's extensive land infrastructure projects, including roads and rail lines, expanded through **industrial corridors**, present enticing opportunities for Polish investors.
- **Supporting Democratic Principles and International Law:** Poland views it as in India's interest to support the democratic world in its struggle against neo-imperialism and military aggression.
  - Poland's **endorsement** of India's ambitions to secure a **permanent seat** on the UN Security Council underscores the importance of shared democratic values in their partnership.
- **Signing an India-EU Trade and Investment Agreement:** This agreement would strengthen economic ties and enhance Poland's reputation in India as a **key gateway** to the European market.

**Prime Minister Modi's Visit to Ukraine**

**News Excerpt**

Prime Minister Modi made a historic visit to **Ukraine** at the invitation of President Volodymyr Zelenskyy. This marked the **first-ever visit** by an Indian Prime Minister to Ukraine since the two countries established diplomatic relations in **1992**.

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**Key highlights of the visit**

**Political Relations**

- **Elevating Bilateral Relations:** During their discussions, both leaders expressed a mutual interest in elevating the relationship between India and Ukraine from a **comprehensive partnership** to a strategic partnership in the future.

- **Review of Bilateral Engagements:** Notable interactions included meetings at the **G7 Summits in Apulia** (June 2024) and **Hiroshima** (May 2023), the visit of Ukraine's Foreign Minister to New Delhi in March 2024, and multiple discussions between Indian and Ukrainian officials, including the 9th round of **Foreign Office Consultations** held in Kyiv in July 2023.
- **Participation in Key Summits:** The leaders appreciated Ukraine's participation in significant Indian events, such as the **Vibrant Gujarat Global Summit 2024** and the **Raisina Dialogue 2024**, further enhancing mutual understanding, trust, and cooperation.

#### Ensuring a Comprehensive, Just, and Lasting Peace

- **Commitment to International Law:** Prime Minister Modi and President Zelenskyy reiterated their commitment to upholding principles of international law, including respect for the **territorial integrity** and **sovereignty** of states, as enshrined in the **UN Charter**.
- **India's Role in Peace Efforts:** India's participation in the **Summit on Peace** in Ukraine, held in **Burgenstock, Switzerland**, in June 2024, was acknowledged as a positive step toward a peaceful resolution of the conflict.
- **Global Food Security and Humanitarian Initiatives:** The leaders emphasised the importance of ensuring global food security and appreciated efforts like Ukraine's humanitarian **grain initiative**.
- **India's Call for Practical Engagement:** Prime Minister Modi reiterated India's position on the need for sincere and practical engagement among all stakeholders to develop innovative solutions for an early **restoration of peace**.

#### Economic, Scientific, and Technical Cooperation

- **Expanding Economic Ties:** The leaders discussed enhancing cooperation in trade, commerce, agriculture, pharmaceuticals, defence, education, science, technology, and culture.
- **Intergovernmental Commission (IGC):** The Indian-Ukrainian IGC was highlighted as a vital platform for facilitating a stronger economic partnership.
  - The leaders appreciated the review of the IGC during Ukraine's Foreign Minister's visit to India in March 2024 and stressed the importance of early convening the **7th Session of the IGC in 2024**.
- **Cooperation in Agriculture and Pharmaceuticals:** Both sides reaffirmed their desire for greater market access, joint ventures, and cooperation in **testing, inspection, and registration** procedures.
  - The leaders welcomed signing an **MoU** on pharmaceutical cooperation and the successful virtual meeting of the Indian-Ukrainian **Joint Working Group** on Pharmaceutical Cooperation in August 2024.
- **Advancing Scientific and Technological Collaboration:** The leaders noted the successful implementation of agreements on scientific and

technological cooperation, encouraging further exchanges in **ICT, AI, machine learning, biotechnology, green energy, and earth sciences**.

- The 8th Meeting of the **Joint Working Group** on Scientific and Technological Cooperation, held in June 2024, was highlighted as a key milestone.
- **BHISHM Cubes:** India provided Ukraine Bharat Health Initiative for Sahyog Hita & Maitri (BHISHM) cubes under '**Aarogya Maitri**' project.
  - BHISM cubes are innovative portable hospitals and are designed to provide rapid **medical assistance** in emergencies

#### Defence Cooperation

- **Strengthening Defence Ties:** They discussed joint collaborations and partnerships for manufacturing in India and cooperation in emerging defence areas. The sides agreed to hold the 2nd meeting of the Indian-Ukrainian **Joint Working Group** on Military-Technical Cooperation soon.

#### Cultural and People-to-People Ties

- **Cultural Exchanges:** They emphasised sustaining and expanding these exchanges through **scholarships** and educational opportunities.
- **Indian Diaspora:** The Indian side expressed gratitude for Ukraine's support during the **evacuation** of Indian students in 2022 and requested continued assistance in providing easier visa and registration facilities.
- **Ukraine's Reconstruction:** The leaders discussed the potential involvement of Indian companies in Ukraine's reconstruction and recovery efforts.
  - The conclusion of an **MoU on High-Impact Community Development Projects** between the two countries was seen as a positive step towards mutually agreed-upon development projects.
- **Condemnation of Terrorism and Support for UN Reforms:** Both leaders condemned terrorism and extremism in all forms and called for comprehensive reforms of the **UN Security Council** to reflect contemporary global realities.
  - Ukraine reiterated its support for India's bid for **permanent membership** in a reformed and expanded Security Council.
- **Cooperation on Global Initiatives:** India looked forward to Ukraine joining the International Solar Alliance (**ISA**), furthering cooperation on global energy initiatives.

#### India-Ukraine Bilateral Relations

- **Diplomatic Relations:** India and Ukraine share a long-standing relationship underpinned by strong diplomatic, economic, and cultural ties. Diplomatic relations were established in 1992, and both countries have built a multifaceted partnership.
- **Economic and Trade Relations:** Bilateral trade between India and Ukraine has grown significantly over the past

25 years, reaching USD 3.386 billion in the financial year 2021-22.

- **Major Exports from Ukraine to India:** Agricultural products, Metallurgical products, Plastics and polymers.
- **Major Exports from India to Ukraine:** Pharmaceuticals, Machinery, Chemicals, and Food products.
- Several Indian companies, particularly in the pharmaceutical sector, have established a strong presence in Ukraine. The **Indian Pharmaceutical Manufacturers' Association** in Ukraine is a notable example.
- **Cultural Relations:** Indian culture has garnered significant interest in Ukraine, particularly in dance, yoga, philosophy, Ayurveda, and spirituality.
  - Over 30 Ukrainian cultural associations and groups actively promote Indian art forms, especially dance, through festivals and classes.
- **Diaspora:** The Indian community in Ukraine, though small, is vibrant and mostly comprises business professionals and students. Indian professionals are mainly involved in manufacturing, packaging, trading, and the service industry.

#### Evolving Indian Attitudes Toward Ukraine

- **Shifting Diplomatic Language:** At the time of Russia's **annexation of Crimea** in 2014, Indian officials appeared to justify Russia's actions by stating that it had "**legitimate interests**" in Ukraine.
  - However, such messaging is now considered counterproductive in Delhi, as India seeks to project itself as a **global leader** with a balanced and principled foreign policy.
- **India's Strategic Shift:** As an aspiring **economic superpower**, India cannot afford to be perceived as overly aligned with the Kremlin.
  - The visit to Kyiv demonstrated India's openness to engaging more with Ukraine and other regional powers. This reflects a broader strategy to **diversify** its international **partnerships** and **reduce reliance** on any single country, particularly in the defence sector.
- **Role of People-to-People Contacts:** People-to-people connections also strengthen India-Ukraine relations. Ukraine is home to a large community of Indian students and a growing Indian diaspora who have shared **positive life experiences** in Ukraine.
  - These narratives contrast sharply with reports of Indian citizens being lured to Russia to fight in Ukraine, an issue that Modi reportedly raised during his talks with Zelenskyy.

#### Challenges in India-Ukraine Ties

- **Geopolitical Challenges**
  - **India's Relationship with Russia:** India's longstanding and deep-rooted relationship with

Russia, especially in the defence and energy sectors, poses a significant challenge to its ties with Ukraine.

- **Differing International Alignments:** Ukraine is closely aligned with Western powers, particularly the **European Union** and **NATO**, whereas India has traditionally maintained a **non-aligned stance**.
- **Economic Challenges**
  - **Impact of Global Sanctions on Russia:** Global sanctions on Russia can indirectly affect India-Ukraine trade relations. For instance, **Indian businesses** might face difficulties navigating sanctions while trying to maintain economic ties with Ukraine and Russia.
  - **Investment Uncertainties:** The conflict in Ukraine has created uncertainties for potential Indian investments in the country.
- **Diplomatic and Strategic Challenges**
  - **Navigating Ukraine's Expectations:** Ukraine may expect stronger diplomatic and economic support from India in its conflict with Russia. However, India's cautious stance, aimed at balancing its relationships, might not fully meet Ukraine's expectations, potentially leading to diplomatic challenges.

#### Way forward

- **Strengthening Diplomatic Dialogue**
  - **Establish Regular High-Level Consultations:** These meetings can serve as platforms for aligning their positions on global issues, coordinating their diplomatic efforts, and managing any bilateral tensions that may arise, especially concerning their relationships with Russia.
- **Expand Multilateral Cooperation:** Both countries should look for opportunities to collaborate in multilateral forums, such as the **United Nations, G20**, and other international bodies and find common ground on global issues like climate change, peacekeeping, and international security.
- **Enhancing Economic Cooperation**
  - **Ease of Doing Business:** Both countries could enhance the ease of doing business, including simplifying trade procedures, reducing tariffs, and removing non-tariff barriers.
  - **Leverage Ukraine's Reconstruction Efforts:** India could be proactive in Ukraine's post-conflict reconstruction. Indian companies, particularly in the construction, infrastructure, and technology sectors, could be encouraged to participate in rebuilding efforts.
- **Strengthening Defense and Security Cooperation**
  - **Expand Defense Collaboration:** Areas such as drone technology, cybersecurity, and defence manufacturing could be focal points for

#### PEPPER IT WITH:

International Solar Alliance, UN Charter, UN Security Council, Raisina Dialogue

collaboration, aligning with India's push for self-reliance in defence.

- **Conduct Joint Military Exercises:** Both countries could benefit from joint military exercises and training programs that enhance interoperability and share best practices.
- **Promoting Cultural and Educational Exchanges**
  - **Expand Educational Collaborations:** Both countries should explore partnerships between their educational institutions, including student exchange programs, joint research projects, and establishing university branches.
  - **Support for the Indian Diaspora:** It will be crucial to continue supporting the Indian diaspora in Ukraine, including ensuring their safety and facilitating their integration into Ukrainian society.
- **Strengthening Humanitarian Cooperation:**
  - **Collaborate on Humanitarian Aid:** India's experience providing humanitarian assistance can be valuable in supporting Ukraine's needs, and joint efforts could be directed towards health care, refugee support, and food security.
  - **Engage in Peacebuilding Efforts:** This could involve India participating in or facilitating international peace talks, offering a negotiation platform, or providing expertise in post-conflict recovery.

## UN Unveils Blueprint for Global Tax Reform

### News Excerpt:

In response to the urgent need to **reform the global tax system**, the **United Nations** has unveiled the outline of a **new universal tax compact**, a historic step toward reshaping the financial landscape.

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### Why does a New Convention matter?

- The UN tax convention signifies a major shift in **international taxation**, with the potential to fundamentally transform **global financial systems** and how tax revenues are utilised for public benefit.
  - Therefore, the **UN's Ad Hoc Committee**, tasked with drafting the terms for **UN framework convention on international tax cooperation**, has made significant progress by approving a comprehensive set of guidelines for the new treaty.
- Enhanced international tax cooperation is crucial for addressing current tax-related challenges, such as **digitalisation** and the **global operations** of large multinational corporations.
- It also plays a vital role in **mobilising domestic resources** and **using tax policy** to promote sustainable development.

### What will a UN Tax Treaty cover?

- This initiative **aims** to support countries worldwide in fostering economic growth and achieving the **2030**

**Agenda for Sustainable Development**, including its 17 goals.

- The UN framework convention is expected to create an **inclusive, fair, transparent, efficient, equitable, and effective** tax system that supports sustainable development across economic, social, and environmental dimensions.
- It will likely include commitments to **equitable taxation** of multinational companies, tackling **tax evasion and avoidance** by high-net-worth individuals, and ensuring their effective taxation in relevant Member States.
- The framework will also be accompanied by **two legally binding protocols**, one of which will address the taxation of **income from cross-border services** in an increasingly digitalised and globalised economy.

### How can a UN Tax Treaty help the Global South?

- An inclusive tax cooperation framework can effectively address the need to **strengthen domestic resources**, enabling all countries to fund and promote policies that align with the 17 Sustainable Development Goals (SDGs).
- The global tax convention ensures that large **multinationals pay their fair share of taxes**, regardless of where they operate.
- It is expected to generate significant **additional tax revenues** for many countries, particularly those in the Global South, enabling governments to **finance essential infrastructure**, education, health services, and climate action.

### Is there consensus on a Global Tax Treaty?

- While developing countries largely support the initiative, some **industrialised nations disagree**.
- In the recent vote of the Ad Hoc Committee, **110 Member States supported** the terms of reference for the new treaty, **44 abstained**, and **eight countries**—Australia, Canada, Israel, Japan, New Zealand, South Korea, the United Kingdom, and the United States—**voted against** it.

### What are the next steps?

- The Ad Hoc Committee's **terms of reference** will now be **forwarded** to the **UN General Assembly**, which will vote on the proposal during its 79th session starting in September.
- If adopted, a **Member State-led negotiating committee** will be established to draft the convention and its protocols over the next three years.
- The final text would be presented to the General Assembly in **early 2027**, allowing all **193 UN Member States to vote** on the finalised global tax treaty.
- Once approved, the treaty will be opened for **signature and ratification** by all Member States.

#### PEPPER IT WITH:

UN Tax Treaty, DTAA, global minimum effective tax rate, OECD

## 500 days of the Sudan War

### News Excerpt:

As the situation further deteriorates with **no signs** of a **ceasefire agreement** shortly, experts believe that the **Sudan war** could kill millions and become a geo-political nightmare.

### Sudan War:

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- The war broke out in April 2023 due to a vicious **power struggle** between **General Abdel Fattah al-Burhan**, the head of Sudanese Armed Forces (**SAF**), and **General Mohamed Hamdan Dagalo**, the head of Rapid Support Forces (**RSF**).
  - The military generals have locked horns over **Sudan's political future** and its proposed move towards **civilian rule**.
- The roots of the conflict, however, go back to **2019** when the country's long-serving authoritarian **President, Omar al-Bashir, was overthrown** following a countrywide uprising against him.
- Subsequently, the military and civilian groups decided to share power and an agreement was signed. **Abdalla Hamdok** was appointed the **Prime Minister** until elections were held.
- But the new arrangement was short-lived, as **Burhan and Dagalo** carried out a **military coup** in October **2021**, toppling Hamdok's government.
- Burhan became the country's de-facto leader, and Dagalo became the second-in-command. The military generals promised to hold elections in July 2023.
  - However, as the date for polls approached, differences between the two military generals grew — the main sticking points were how the 10,000-strong RSF should be integrated into the army and which authority should oversee that process.

- Tensions came to a boil in April **2023** when **RSF was redeployed** around the country in a move that the army saw as a threat, leading to war. The war in Sudan has been raging for more than 500 days.

### Current situation in Sudan:

- According to UN experts,**
  - Around **25 million people**, half of Sudan's population before the war, need urgent assistance.
  - Nearly **nine million people**, including about 4 million children, are **internally displaced**.
  - Another **20 million children** are out of school.
  - Over half the population of **49.6 million** doesn't have access to **healthcare**.
- The crisis has been **exacerbated by floods**, which took place in the last week of August.
  - The disaster caused a dam breach in the eastern city of Port Sudan — at least 30 people were killed, hundreds more were believed to be missing, and **20 villages** around the dam were **decimated**.
  - Flooding also severely affected the famine-stricken **Darfur region**.
  - It **washed out displacement camps** and disrupted an already hamstrung humanitarian response.

### Possible future effects of War:

- The war could soon become a major geo-political issue. It can easily **spill over** into **neighbouring countries** of **Sudan** as it shares porous borders with seven fragile states, including Chad, Egypt, Ethiopia, and Libya.
- The war can also trigger **mass migration towards Europe**, where countries like Germany and France are already witnessing a huge inflow.
- If the **food scarcity** continues, **6 million to 10 million** could die from starvation by 2027.
- Operations of the Suez Canal**, which are currently being disrupted by attacks by Houthi rebels in Yemen, could be further affected.

### Way forward

- Countries like the **United States** and the **United Kingdom** urgently need to intervene and ensure that a **ceasefire agreement** is soon implemented in Sudan.
- After more than 500 days of pitiless fighting, the damage will take **decades to repair**. But if the world acts now, it is possible to save millions of lives and reduce the chance of calamitous geopolitical aftershocks.

**PEPPER IT WITH:**  
Operation Kaveri, English Channel, Suez Canal,

## Extradition Dilemma: Sheikh Hasina and the India-Bangladesh Relations

### News Excerpt

With former Bangladesh Prime Minister Sheikh Hasina facing **multiple criminal cases** back home, Bangladesh may likely **push for her extradition** from India.

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### Background: Sheikh Hasina's Legal Troubles

- **Multiple Criminal Cases Filed Against Hasina:** Sheikh Hasina has been embroiled in several legal cases since her ouster from power. Charges, including murder, torture, and genocide, were brought against her. These cases have fueled speculation that Bangladesh may seek her extradition from India.
- **Diplomatic Implications:** Touhid Hossain, Bangladesh's de facto foreign minister, hinted in an interview that Hasina's extradition could **diplomatically embarrass** India. He expressed confidence that India would handle the situation appropriately, underscoring the potential **strain on bilateral relations** if such a request is made.



### India-Bangladesh Extradition Treaty

- **Overview of the Treaty:** India and Bangladesh signed an extradition treaty in 2013, later amended in 2016, to facilitate and expedite the exchange of fugitives.
  - The treaty was established to address issues such as the presence of Indian **insurgent groups** in Bangladesh and **Bangladeshi militants** hiding in India. The treaty has been successfully used, most notably in the extradition of United Liberation Front of Assam (ULFA) leader **Anup Chetia** from Bangladesh to India in 2015.
- **Provisions of the Treaty:** The treaty requires both countries to extradite individuals wanted for crimes punishable by a **minimum of one-year imprisonment**, including financial offences.
  - However, for an offence to be extraditable, it must be punishable in both countries (**dual criminality**). The treaty also covers attempts to aid, abet, or participate in such crimes.
- **Exceptions to Extradition:** The treaty allows for exceptions, particularly for offences of a political nature. However, this exemption is limited and does **not** apply to crimes such as **murder, kidnapping, or terrorism**.
  - Given the nature of the charges against Hasina, some of which include murder and enforced disappearance, these exceptions **may not apply**,

complicating her potential claim for political asylum in India.

### Complexities of Extradition

- **Political vs. Criminal Offenses:** While Hasina is a political figure, the charges against her, including murder and torture, fall **outside the scope of political offences** under the treaty. This technically makes her eligible for extradition, although the political implications of such a move are significant.
- **2016 Amendment:** The 2016 amendment to Article 10 (3) to the treaty further complicates the situation by **eliminating the need** for the requesting country to provide **evidence** of the offence committed. An **arrest warrant** issued by a competent court in the requesting country is **sufficient** to initiate the extradition process.
- **Grounds for Refusal:**
  - **Article 7** of the treaty says that "the request for extradition may be refused by the Requested State if the person whose extradition is sought may be tried for the extradition offence in the courts of that State." This is not applicable in Hasina's case.
  - **Article 8** lists multiple grounds for refusal, including cases where an accusation has not been "made in good faith in the interests of justice" or in cases of military offences that are not "an offence under the general criminal law".
  - India has the **option of refusing** Hasina's extradition on the ground that the accusations made against her are **not "in good faith in the interests of justice."** However, this could adversely impact India's relations with Bangladesh's new ruling dispensation.

### Strategic Considerations for India

- **Balancing Diplomatic Relations:** India faces a delicate balancing act. On one hand, it must maintain its long-standing relationship with Sheikh Hasina, a key ally.
  - On the other hand, it needs to cultivate good relations with Bangladesh's ruling party to secure its long-term strategic and economic interests in Bangladesh.
- **Role of Geopolitical Realities:** India and Bangladesh share deep structural linkages, including geographic proximity and intertwined economies. These realities mean that relations between the two countries will continue to evolve, regardless of the current political situation.
  - **India should not rush** into any decision, emphasising that the situation is still developing and that the extradition process is far from immediate.
- **Political Nature of Extradition Decisions:** Ultimately, the decision to extradite will be political and influenced

#### PEPPER IT WITH:

ULFA, The Extradition Act, 1962, Akhaura-Agartala rail link, 1971 Liberation War

by broader national interest considerations rather than legal technicalities alone. Historical precedent shows that countries often **prioritise strategic interests** over treaty obligations in such cases.

## ENVIRONMENT

### Vulture Count 2024

**News Excerpt:**

WWF-India launches a tracking initiative to take stock of vultures.

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**More about news:**

- WWF-India has launched an initiative that involves counting of vultures and raising awareness on the critically endangered bird species.
- WWF-India launches a tracking initiative to take stock of nature's 'sanitation workers'.
- The tracking exercise will involve volunteers who will be trained in birdwatching and documentation.
- **The Vulture Count 2024** follows the success of similar counts conducted in previous years.
- The count will focus on key vulture species, including the white-rumped vulture, red-headed vulture, Indian vulture, bearded vulture, slender-billed vulture, Himalayan griffon, Eurasian griffon, Egyptian vulture, and cinereous vulture.

**Significance of Vulture Count 2024:**

- **Vulture Count 2024** aims to address the crisis by systematically monitoring vulture populations.
- Gathering comprehensive baseline data will help track population trends, identify critical habitats, and assess the impact of environmental changes.
- This information will be vital for developing targeted conservation strategies and policies, and for raising public awareness and support for vulture conservation.
- **Vulture Count 2024** represents a significant opportunity for citizen scientists, bird enthusiasts and local communities to contribute to vulture conservation and to increase awareness about them.
- With the support of dedicated volunteers, it aims to gather crucial data that will guide our efforts in conserving these threatened birds.

**About Vultures:**

- Vultures are large, social raptors that live on every continent except Antarctica and Australia.

- Most vultures are scavengers, feeding primarily on carrion.
- They're thought to have strong immunity to pathogens that would sicken or kill other animals.
- They also have hardcore stomach acid that destroys even the most dangerous bacteria and helps them extract nutrients from their food.
- Despite their value to human and planetary health, vultures are among the most endangered birds in the world.

**Vulture Status in India:**

DRASTIC DECLINE IN VULTURE POPULATION



- In India, vulture populations have fallen more than 99 percent since the 1990s due to the use of a veterinary anti-inflammatory drug, diclofenac.
- The medicine causes fatal kidney failure in vultures that eat the carcasses of treated cows.
- The loss of the vultures has affected the country's human population, too, as cattle were left to rot—resulting in stench and an increase in rabies as feral dogs consume the infected carrion instead and spread the disease.
- Thus India banned the veterinary use of diclofenac in 2006.
- Four of the nine vulture species in India fall under the **'Critically Endangered'** category in the IUCN Red List of Threatened Species.

Species	Resident/ Migratory	Conservation (Global)	Status Conservation (Wildlife Protection Act 1972)	Estimated Population in India
Bearded (BV)	Resident	Near Threatened	Schedule-I	Not available
Cinereous (CV)	Winter visitor	Near Threatened	Schedule-IV	Not available
Egyptian (EV)	Resident	Endangered	Schedule-IV	Not available
Eurasian (EG)	Winter visitor	Least Concern	Schedule-IV	Not available
Himalayan (HV)	Winter/resident	Near Threatened	Schedule-IV	Not available
Long-billed (LBV)	Resident	Critically endangered	Schedule-I	26,500
Red-headed (RHV)	Resident	Critically endangered	Schedule-IV	Not available
Slender-billed (SBV)	Resident	Critically endangered	Schedule-I	1,000
Oriental White-backed (OWBV)	Resident	Critically endangered	Schedule-I	6,000

- Long-billed Vulture
- Slender-billed Vulture
- Red-headed Vulture
- White-backed Vulture

**Importance of Vultures:**

- Vultures are essential to the health of ecosystems, serving as nature's clean-up crew.
- By feeding on carrion, they prevent the spread of diseases that could otherwise affect wildlife, livestock and humans.



- Their role in consuming decomposing animal carcasses helps with nutrient cycling and maintains ecological balance.
- By hoovering up the remains of decaying bodies, they prevent stench, significantly curtail carbon emissions, and eliminate bacteria such as botulism and plague that can be released during decomposition.

**Threats to vultures:**

Vulture populations in India have faced a dramatic decline due to several threats, including:

- The ingestion of toxic **non-steroidal anti-inflammatory drugs (NSAIDs)** like **diclofenac**, commonly used to treat livestock.
- Habitat loss,
- Electrocutation by power lines,
- Food scarcity and
- Human disturbances.

**Action Plan for Vulture Conservation 2020-2025 (APVC)**

The important objectives for the **Action Plan for Vulture Conservation 2020-2025 (APVC)** are:

- Prevent the poisoning of the principal food of Vultures , the cattle carcasses, with veterinary NSAIDs, by ensuring that sale of veterinary NSAIDs is regulated and is disbursed only on prescription and by ensuring that treatment of livestock is done only by qualified veterinarians.
- Carry out safety testing of available molecules of veterinary NSAIDs on vultures.
- There is a need to establish additional Conservation Breeding Centres in the country.
- Four rescue centers have been proposed for different geographical areas like Pinjore in the north, Bhopal in Central India, Guwahati in Northeast India and Hyderabad in South India.
- It is proposed to carry out coordinated nation-wide vulture count to get a better estimate of the size of vulture populations in the country, involving Forest Departments, BNHS, Research Institutes, NGOs, and ordinary citizens.
- It is proposed to have at least one vulture safe zone in each State for the conservation of the remnant populations in that State.

**Conclusion:**

To help the public participate effectively in the count, **WWF-India** will host a virtual orientation session conducted by experts. This session will provide volunteers with essential training and information on identifying vultures in their respective areas. **WWF-India** has also recommended several locations for public participation, making it easier for people from various regions to join the effort.

**PEPPER IT WITH:**

Vulture Safe Zone, non-steroidal anti-inflammatory drugs (NSAIDs), Vulture Conservation and Breeding Centre, Vulture Care Centre

**Controlling Traffic-Related Air Pollution in India**

**News Excerpt:**

India faces severe air pollution, with **83 of the world's 100 most polluted cities.**

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**Air Pollution in India**

- Air pollution has caused **2.1 million deaths in India**, second only to China, and over **99% of the population** breathes air that fails to meet **WHO standards**.
- **Road transport** is a significant contributor to India's **CO2 emissions**, accounting for **12%**, with **heavy vehicles** being major sources of **Particulate Matter (PM) 2.5** and **Nitrogen Oxides (NOx)**.
- **PM2.5 particles** are harmful because they **penetrate deep** into the lungs and bloodstream, causing respiratory and cardiovascular issues.
- **NOx** contributes to **ground-level ozone**, exacerbating **urban air pollution** and **heat**.

**Corporate Average Fuel Economy (CAFE) Norms for Passenger Cars**

- The **Ministry of Power**, in consultation with **BEE**, notified **average fuel consumption standards** for Passenger cars in **2015**.
- These Norms are applicable for the motor vehicles used for the carriage of passengers and their luggage and comprising **not more than nine seats** including driver's seat, and of **Gross Vehicle Weight not exceeding 3,500 kilograms** manufactured or imported for sale in the country.

**Role of Heavy Vehicles**

- **Heavy vehicles** are responsible for **60-70% of vehicular PM emissions** and **40-50% of NOx emissions** in cities.
- With the **transport sector** growing at **9.1% annually**, the **Bureau of Energy Efficiency (BEE)** has proposed new **Corporate Average Fuel Economy (CAFE) norms**, including **CAFE III (2027-2032)** and **CAFE IV (2032-2037)**.
- These norms aim to reduce **CO2 emissions** to **91.7g CO2/km for CAFE III** and **70g CO2/km for CAFE IV**, based on the more accurate **World Light Duty Vehicle Testing Procedure (WLTP)**.
- Although these targets are crucial for promoting cleaner technologies, they **currently exclude heavy vehicles**.

**Scrappage Policy 2022**

- The 2022 vehicle scrappage policy aims to **phase out older, polluting vehicles** by requiring them to pass fitness and emissions tests.
- This policy will be implemented after the **completion of car registration**, at which point the vehicle will be subjected to a fitness test after a specified duration.
- As per the Motor Vehicle Laws, a vehicle is deemed fit for **only 15 years**. Beyond this period, the vehicle tends to pollute the environment more than a newer model.

- In 2022, automated testing was introduced to assess the condition of commercial vehicles.
- From **June 1, 2024, all passenger vehicles older than 15 years** will also undergo the same stringent testing process.
- However, the policy has been slow to take effect in **Karnataka** due to **limited scrapyards** and its **voluntary nature**.
- **In Maharashtra**, incentives for scrapping old vehicles have not yet significantly impacted air quality.

**Bureau of Energy Efficiency (BEE)**

- BEE is a statutory body under the **Ministry of Power (Nodal Ministry), Government of India**.
- It was established by the Government of India on **March 1, 2002**, under the **Energy Conservation Act, 2001**.
- Its mission is to help create **policies and strategies** focused on **self-regulation** and **market principles**, aiming to **reduce the energy intensity** of the Indian economy.
- This involves active **stakeholder participation** to ensure widespread adoption of **energy-efficient practices** across all sectors.

**Way Forward:**

- To effectively **combat air pollution**, existing policies—such as **regular vehicle emissions testing, banning open garbage burning, and controlling industrial emissions**—must be strictly enforced.
- Additionally, **promoting mass transit** is essential for a sustainable reduction in air pollution in India.

**PEPPER IT WITH:**

National Clean Air Programme	Clean Air (NCAP),
National Air Quality Index (AQI),	Air (Prevention and Control of Pollution) Act, 1981

**Credit risk**

**News Excerpt:**

The Union **Ministry of Environment, Forest and Climate Change (MOEFCC)** has issued **detailed guidelines for plantation** under **Green Credits Programme (GCP)**. On the face of it, they seem to encourage **afforestation**.

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**Green Credits Programme (GCP):**

- GCP is an innovative market mechanism.
- Earning credits for environmental actions is the aim of the Green Credits Programme (GCP) unveiled by the Union government in October 2023.
- It has been touted as a first-of-its-kind, **“innovative market-based mechanism”**, promoting activities like **tree plantation, water conservation, sustainable agriculture, waste management, air pollution reduction, mangrove conservation and restoration, sustainable building and infrastructure projects, and identifying environment-friendly products** under a scheme Ecomark.

**Key points:**

- The guidelines issued between February and April this year highlighted that the **Indian Council of Forestry Research and Education (ICFRE)**, Dehradun, will be the administrator of **GCP**.
- Potential investors—which may be companies, organizations or individuals—must apply to the ICFRE Director-General and, upon approval, pay the state forest departments that will create the plantations.
- The forest departments have been directed to identify **“degraded”** land spanning **at least 5 hectares (ha) for plantations**.
- Investing entities are awarded one green credit per tree, two years after the plantation is created and deemed successful.
  - They may use the credits to fulfill their obligations under **corporate social responsibility (CSR) or environmental, social and governance (ESG) norms**.
  - Or they can trade credits to meet compensatory afforestation obligations under the **Forest (Conservation) Act, 1980**, which requires an entity to facilitate a new plantation in exchange for diverting forestland for non-forestry activities.

**Concerns:**

- **Issue of clarity:** It is not clear who will decide the payment for the projects, nor is the methodology for calculation known.
  - The rules also do not say if green credits would be scrapped, returned or stay valid if a plantation fails.
- **Lack of sellers and buyers:** It has only one seller, the forest departments. The buyers, too, are likely to be corporate organizations who want to meet their environmental obligations or seek forest diversion.
  - This raises concerns **about GCP merely acting as a proxy for compensatory afforestation**.
- **Shrinking Forest Area:** GCP may shrink forest area, threatening some of the densest and best protected forests that may be used for mining, industry and infrastructure development.
- **Loss of land:** Experts also raise concerns on MOEFCC’s directions on allocation of **“degraded”** land for plantation. The country lacks **clear legal and ecological parameters to identify such lands**.
  - This means natural openings in forests, grasslands and scrub forests may be incorrectly earmarked as degraded land.
  - People’s Union for Civil Liberties, a human rights body, released a letter saying GCP could **harm critical and unique ecosystems** with ecological services like preserving soil quality and conserving biodiversity.
  - Reserved, **protected and community forests notified under the Indian Forest Act, 1927**, or its equivalent in states, also stand vulnerable to GCP. The

Provisions* in afforestation guidelines	Points lacking in clarity	Expert Concerns
Afforestation to focus on restoring landscapes, not just tree plantation	How projects will help in restoration of landscapes	Projects may destroy ecosystems with unique ecological services
Entities can apply to Indian Council of Forestry Research and Education to invest in projects and pay state forest departments for plantations	How and by whom value of plantation projects will be calculated. How forest departments will decide tree species	Plantations may lead to loss of native tree species and threaten local biodiversity
One credit will be given to the investor per tree planted, two years after a project is initiated and deemed successful	What would happen to green credits' validity in case a plantation fails. It is also unclear whether investors will be able to avail carbon credits for a project, as initially suggested	Potential linkage of carbon credits and green credits may lead to double counting and violate principles of the carbon market
Investors can use green credits for corporate social responsibility and environmental, social and governance obligations; or to meet compensatory afforestation requirements	--	Plantation projects may simply be used as a proxy for compliance with corporate and compensatory afforestation obligations
Forest departments must identify "degraded" land parcels for plantation	What ecological parameters forest departments will follow to allot land	India lacks legal, ecological parameters for identifying "degraded" lands, leaving open grasslands, shrub lands and forestland protected under laws and court orders vulnerable. Land yet to be claimed under Forest Rights Act may be also be diverted

*Note: \*Provisions as per notified guidelines under the Green Credits Programme, accessed by Down To Earth  
Source: Gazette notifications, expert opinions*

rules do not mention that such areas are excluded from afforestation.

- Clearing such lands will also violate the **Forest Conservation (Amendment) Act, 2023**, which does not envisage using notified forests for compensatory afforestation.
- Identifying "degraded" land also poses legal challenges. **For instance**, the Supreme Court ruling in the 1996 case, **T N Godavarman Thirumulkpad vs Union of India**, assured protection to all forest and forest-like areas in the records of Union, state and local governing bodies, as well as unregistered areas.
  - The ruling directed states to classify and record unregistered areas, but little progress has been made so far.
- **Forest rights at risk:** GCP also raises questions on forest rights. Under the **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, (FRA)**, and the **Panchayat (Extension to Scheduled Areas) Act, 1996**, forest-dwelling communities can claim individual or **community forest rights (CFR)** over land they have conserved for generations.
  - About **60,000 villages in Maharashtra, Madhya Pradesh, Jharkhand and Chhattisgarh** could

potentially claim CFR for a total area of **at least 1,83,000 sq km.**

- This could benefit about **62.6 million people.**
- Only a fraction of this area has been recognised so far. The unclaimed land may be fenced off under GCP without consulting local communities.
- **Double counting:**
  - Another concern raised on GCP is its potential linkage with carbon credits (**India's voluntary carbon market allows entities to earn tradable credits for carbon sequestration projects**).
  - Carbon credits are **not mentioned in the afforestation guidelines so far**. Nevertheless, such a linkage could lead to double counting.
  - Double counting occurs when **an environmental benefit, like carbon sequestration from a plantation, is counted in two different systems.**
    - If a project has already been funded through green credits, claiming carbon credits for it essentially means that the environmental benefit accrued from the project is being sold twice.
  - People fail to realize that environmental integrity requires carbon credits to only be earned from a project if it is funded or made viable with money received by sale of credits.

**Way Forward:**

- A two-year period is too short to declare a plantation successful. **An independent third party should audit** these areas for at least up to 20 years.
- **Plantations must be a permanent addition** to the ecosystem, not just for a two-year period.
- The Centre suggested **an entity may be able to avail both green and carbon credits from a plantation.**
- **GCP should recognise the powers of the Gram Sabhas** in these lands under the FRA.

**PEPPER IT WITH:**  
 Net-Zero Export Credit Agencies Alliance (NZECA),  
 Forest conservation Act,  
 International Big Cat Alliance (IBCA)

**Illegal Wildlife Trade: Marine Life at Risk**

**News Excerpt:**

Marine creatures such as seahorses, whales, and sharks are increasingly falling prey to illegal wildlife trade, with enforcement agencies noting a sharp rise in marine life smuggling over the past four years, culminating in particularly alarming seizures in Karnataka in 2024.

**Recent Seizures in Karnataka**

- One of the most notable cases occurred in August 2024, when two passengers from Tamil Nadu were apprehended at Bengaluru's Kempegowda International Airport. They were attempting to smuggle 6,626 dried seahorses to Singapore.

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- This incident highlights the demand for seahorses in Southeast Asian markets, driven by their use in traditional medicine, gourmet cuisine, and as ornamental species for aquariums.
- In another significant operation in November 2022, Chitradurga forest officials seized a variety of illegally traded wildlife, including blackbuck skins, pangolin scales, and a live blackbuck.
- The enforcement agencies have conducted 66 operations across Karnataka from 2023 to July 2024, recovering a wide range of animal parts and live animals, including tiger nails, python skins, elephant tusks, and more.

**Marine Life Smuggling Takes Flight**

- The smuggling of marine life is not limited to the land. In May 2024, a bus conductor's vigilance thwarted an **attempt to smuggle 218 endangered star tortoises**. Subsequent investigations led to the recovery of additional star turtles from a Bengaluru businessman.
- **Despite increased enforcement, a significant portion of marine life smuggling goes undetected.**
- A lack of monitoring mechanisms allows fishermen to capture and sell prohibited species, often feeding into international smuggling networks.

**Impact of Illegal Wildlife Trade**

- Illegal wildlife trade not only **threatens biodiversity** but also **endangers the livelihoods of fishing communities** that depend on these species.
- Reports from various organizations have documented alarming statistics, such as the seizure of over 1,900 kg of pangolin scales in northeastern India between 2012 and 2024.
- Marine species like sea cucumbers, seahorses, seashells, and rays are also frequently trafficked.

**The Growing Trade in Exotic Wildlife**

- The illegal trade in exotic wildlife has seen a **notable increase**, driven by factors like **online trends and gaps in legislation**.
- The **pandemic exacerbated this trend**, as many individuals resorted to hunting and trade to sustain themselves.
- The **rise in the popularity of exotic pets during this period further fueled the industry**, leading to the establishment of unauthorized breeding and selling operations.

**Challenges in Enforcement and Rehabilitation**

- The rapid evolution of illegal wildlife trade, aided by **digital tools and social media**, presents **significant challenges for enforcement agencies**.
- The **primary law enforcement agency**, the **State Forest Department**, is often overstretched, handling various responsibilities in addition to combating illegal trade.

- A key challenge is the **lack of dedicated rescue and rehabilitation centers** for animals rescued from the trade.
- Most of these animals are currently housed in **zoos**, which are **not equipped to handle the unique needs of trafficked wildlife**.
- There is also a **need for a centralized wildlife crime database** to track and prosecute repeat offenders more effectively.

**Public Involvement in Combating Wildlife Trade**

- Curbing illegal wildlife trade requires a collective public effort.
- **Demand for wildlife as pets, status symbols, or for superstitious beliefs drives the market.**
- Many well-meaning individuals may **unknowingly perpetuate the trade by purchasing wildlife as pets**, not realizing the complexities involved in their care and the potential impact on wild populations.
- Supporting conservation efforts that protect wildlife in their natural habitats is a more effective way to show love for these creatures, ensuring they continue to play vital roles in maintaining the balance of nature.

**PEPPER IT WITH:**  
World Wildlife Crime Report, FATF, Zoonotic diseases

**The rise and rise of red sanders mafia**

**News Excerpt:**

**Seshachalam Hills**, one of India's richest biospheres, has become the **hot spot of red sanders smuggling and allied crimes** costing many police, forest officials and mafia members their lives apart from threatening the survival of the endangered tree species.

**About Seshachalam Hills:**

- Seshachalam Hills, one of India's richest biospheres which form the tip of the **Eastern Ghats in Andhra**

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**Pradesh** is considered a floristic hotspot for it houses many endemic and rare species including **five gecko species, 12 species of lizards and 22 species of snakes.**

- Spread over **5,000 square kilometres across Kadapa, Annamayya, Tirupati and Chittoor districts**, besides covering substantial forest cover in **Nellore district in the State**, the Seshachalam Hills is the first biosphere reserve in Andhra Pradesh identified under UNESCO's Man and Biosphere programme in 2010.
  - However, it is **red sanders (Pterocarpus santalinus)**, the tall trees which give one of the world's finest and rarest woods, growing in these hills makes Seshachalam a hotspot of crime and a hub of mafia.
- **Red Sanders (Pterocarpus santalinus) is an endemic tree species to the forests of Seshachalam, Veligonda, Lankamala and Palakona Hills range of Andhra Pradesh** and distributed in the districts of Kadapa, Chittoor, Nellore, Prakasham and Kurnool over an area of 5300.97 Sq.km. Good crop of Red Sanders can be seen on the slopes.

**Statistics of the red sanders:**



- The rich growth of red sanders here, however, began only after **1983** when the Forest Department, following the orders of then Chief Minister of undivided Andhra Pradesh, N.T. Rama Rao took up a massive afforestation programme in the region.
- **Red sanders seeds were sprayed over the Rayalaseema region through helicopters.** However, the seed germination at Seshachalam was the best owing to the hot and dry conditions which made it an ideal climate for the trees to thrive.
- **From the 1980s onwards, the red sanders started attracting the international market, with major players coming from China.**
- **A retired forest ranger recalled the different phases of red sander smuggling.**
  - What began as a cottage industry is now a multi-crore global business. A few individuals used to sell the red sanders logs in small quantum in erstwhile Madras, intended for making toys and transportation to China and Southeast Asian countries.
- **From the 1990s onwards, the Chinese wanted to have the logs for themselves, and they had plans to manufacture toys and furniture themselves.** They wanted huge quantities. Some

middlemen in the timber industry in Tamil Nadu caught the pulse of the demand.

- **When there was a massive manhunt for forest brigand Veerappan in the thick forests of Tamil Nadu, Karnataka, and Kerala between 1990-2000, a large number of woodcutters who worked under him were left with no alternative source of livelihood.** Now, these 'meistries' (organisers) from the north-western districts of Tamil Nadu lured the jobless youth to raid the Seshachalam ranges.
  - **The precious trees, which were copiously present, were ruthlessly cut down and transported to Madras and Tuticorin ports.** Those were the days when the officials, both from the Central and State governments, were not much aware of the red sanders.
  - During the time of Veerappan, it was only the white sandalwood that mattered.
  - **Between 2004 and 2014, the number of trespassers into the Seshachalam ranges from Tamil Nadu used to be a few hundred per day.** The forest and police officials and also the media used to call the trespassers "woodcutters and coolies."
  - **Today, the statistics of the red sanders logs are sold at anywhere between 1 crore to 2 crore per tonne, based on the quality, in the international market.**
- Skilled Malai men exclusively deployed:**
- **Later, the trespassers were promoted to the ranks of "red sanders smugglers."**
    - Each woodcutter used to **get 5,000 per log weighing around 50 kg.** Most of these debt-ridden and impoverished men belonged to the Malai hill tribes inhabiting the forest regions of Tiruvannamalai, Salem, Dharmapuri and Villupuram districts of Tamil Nadu.
    - They are illiterate and begin to work for red sanders smugglers from the age of 20.
  - **The Malai men are preferred by the smugglers for the job as they are adapted to the Seshachalam hills and can jump and sprint fast in case of a police raid.**
    - The Task Force police have many times said that they were awestruck at the agility of these men, and that capturing them was not an easy task.
  - **The Malai men are also resilient and can sustain for days with little food and liquor, making them the ideal smugglers of precious wood.**

S.No.	Name of the Division	Name of the District	Geographical area (In sq.km)	Forest area (In sq.km)	Red sanders bearing area in (sq.km)
1	Kadapa	Kadapa	4110	1645	1286.64
2	Proddatur	Kadapa	7524	1720	929.1
3	Rajampet	Kadapa	3813.64	1228.83	848.03
4	Nellore	Nellore	13076	2791.38	671.17
5	Tirupathi (WLM)	Chittoor	1243.98	811.22	682.57
6	Chittoor (East)	Chittoor	2163.09	1925.93	407.55
7	Giddalur and Markapur	Prakasam	10408	1944.51	283.91
8	Nandyal	Kurnool	2599	1045	212
<b>Total</b>			<b>44937.71</b>	<b>13111.87</b>	<b>5300.97</b>

- **The so-called organisers started deploying the maximum number of workforce from Tamil Nadu districts**, transporting them in specially arranged buses and also sending them in passenger trains.
  - They would alight at **Panapakam, Mungilipattu, and Chandragiri railway stations in Tirupati district and clandestinely enter the forest.**
- **Previously, they used to carry axes and saw blades with them, but later they were readily supplied with the tools on their arrival.**
  - With time, the workforce enjoyed extra benefits such as liquor bottles and provisions to cook inside the forests during their long stays, ranging from two to three weeks.
- **Their modus operandi was to cut down as many trees as possible, dress the logs and carry them to the road points.**
  - Vehicles from autos to trucks and lorries chugged the forest paths to collect the material and transport it to Chennai.
  - With a sudden spurt in the activity, warehouses had come up in Hoskote and Katiganahalli areas of Bengaluru rural district.

#### Blood shed over red wood:

- **On December 15, 2013, two forest officials of Tirupati Wildlife Circle—Deputy Range Officer Sridhar and Assistant Beat Officer David Kumar—were surrounded by a mob of 200 woodcutters deep inside the Seshachalam forests close to Tumburu Theertham waterbody on the Chittoor Kadapa border.**
  - **The duo was brutally done to death with stones and axes**, while another beat officer escaped with critical injuries.
- Following this, the **Andhra Pradesh government (after bifurcation) formed the AP Red Sanders Anti-Smuggling Task Force (APRSASTF)** to give protection to forest officials while on patrol in the forests.
  - **It was this Task Force, which played a crucial role in nabbing Kollam Gangi Reddy**, who faced allegations of red sanders smuggling and was one of the accused in the Alipiri bomb blast case of 2003 wherein Nara Chandrababu Naidu had a narrow escape.

#### The carnage of 2015

- **Red sanders smuggling operatives** - About half a dozen special teams were formed to conduct patrolling not only in Tirupati but all over the Rayalaseema districts, Nellore and Prakasam.
  - **In 2015, the Task Force made a stupendous breakthrough when a team rushed to Assam and prevented a 10-tonne consignment of red sanders logs from entering China.** The goods were brought back to Tirupati.
  - **On April 7, 2015, as many as 20 woodcutters from Tamil Nadu, originally migrants from Wayanad in Kerala**, were reportedly gunned down by the Task

Force at Sachhinodi Banda (loosely translates to a boulder that belonged to the dead) point located deep inside the inhospitable terrain of Seshachalam hills near Tirupati.

- **The human rights groups then alleged that the woodcutters, all belonging to the Dalit community**, were brutally shot at from point-blank range and their bodies were strewn all over the forest location. The National Human Rights Commission (NHRC) also registered a case on this.

#### Past Nine Years:

- **Ever since this “carnage” of woodcutters, there has not occurred even a single casualty in the entire red sanders-rich region in the last nine years.** After a lull of a few months, the woodcutters resumed invading the forest ranges.
- During these nine years, **hundreds of trespassers were arrested and released on bail.**
- **Cutting red sanders has only turned into a picnic, coupled with economic benefit.**
- The forest and police officials to date are afraid of even causing a minor injury to a woodcutter. **Chases have almost disappeared.**
- **The trespassers are not afraid of arrests.**
  - There are critical observations that after the government came to power in 2019, the subject of red sanders smuggling slipped into oblivion. Allegations remained rife that the Task Force could not undertake a single inter-State operation during the period.
- **Unlike the period before the Covid pandemic where 90% of the workforce was from Tamil Nadu districts, in recent years the locals of various villages of Rayalaseema districts have turned into smuggling operatives.**
- Political leaders from top to bottom levels are facing serious allegations of their **involvement in the red sanders smuggling.**
  - The cooperation and coordination between the forest and police departments have also been missed in the last decade.
- **Due to the absence of any scientific mode of surveillance at the check posts.**
  - In the last five years, there was **not a single meeting of the inter-State police and forest officials to tackle the red sanders issue.**

#### The Pushpa impact:

- Ironically, a majority of the officials in the enforcement agencies observed that Pushpa had directly contributed to the entry of more youth into the contraband forest trade.
- Several youths involved in the red sanders errands started growing their beard leaving their hair unkempt and repeating the verbal and physical mannerisms of the hero, which included the viral Pushpa style of walking.

#### Conclusion:

Red sanders is a socio-economic-political subject. Unless the government comes up with a scientific formula to counter the environmental damage, the police and forest officials are helpless.

**PEPPER IT WITH:**  
National Human Rights Council, UNESCO's MAB, CITES

### Biodiversity can increase the resilience of cities

**News Excerpt:**

A conscious focus on land and marine biodiversity could greatly help address the climate issues.

**More about context:**

- Forests are complex ecosystems of diverse organisms that interact with each other.
- At an individual level, all living organisms in the forest are motivated to survive and reproduce.
- Yet, they are all connected and play a critical role in maintaining a fine balance in the larger ecosystem.

**Complex interdependence of the plant and animal kingdom:**

- More than **75 per cent of flowering plants** globally need insects and animals to pollinate them. They cannot multiply without pollinator insects like butterflies and bees.
- Besides the complex interdependence of the plant and animal kingdom, there is the fascinating fungal kingdom, which connects trees and plants. **Fungi**, which include mushrooms, are mostly on the roots of plants and trees.
- Many scientists believe trees talk to each other, through this underground network. Research shows that if a tree gets attacked by a disease, it alerts neighbouring trees.
- Depending on the threat's severity, trees either brace themselves with a protective barrier or disconnect from the infected tree.
- The underground communication network is coined as the "**wood wide web**".

**Role of biodiversity:**

- Every organism in nature plays a critical role in creating a balanced ecosystem.
- A thriving forest ecosystem houses different types of plants, animals, fungi and microorganisms — different from a human-made green park.
- The diversity of the forest builds the resilience and adaptability of an ecosystem.
- A thriving biodiverse ecosystem not only provides for clean air, water and food but also helps us cope with natural disasters, diseases, and climate change.

**Case Study:**

- In the early 20th century, the Yellowstone National Park in the US was in a deplorable condition with a large part of its land barren with dying plants.
- In an experiment to restore its ecosystem, 135 grey wolves, which were heavily hunted and almost extinct, were reintroduced to the park.

- In the years before the re-introduction, the large deer and elk population led to overgrazing, increasing soil erosion and widening of the rivers. This, in turn, set off a chain reaction of further destruction.
- The grey wolf, the park's apex predator, hunted the overpopulated deer and elk population and restored the balance of the original ecosystem.
- The reintroduction of the wolves led to the revival of the thriving national park.

**E.g. Mumbai**

- It is home to remarkable biodiversity. With a thriving biodiverse protected forest, the **Sanjay Gandhi National Park**, within its city limits and large amounts of mangroves and wetlands on its coast, the city has a lot of native land and marine biodiversity.
- Of course, the recent over-concretisation of the island city, with excessive buildings and roads is posing a grave threat to this biodiversity.

**Way forward:**

- Studying trees and organisms that are native to an area is the first step and then reintroducing native plants and organisms to encourage restoration of original ecosystems is one way. And of course, there is protection of forests.
- To counter the coastal erosion, mangroves and natural marine habitats should be protected.
- There should be investment in more sewage treatment plants that treat the waste the city disposes into the oceans and invest in new initiatives like **artificial reefs** that could enhance **marine biodiversity**.
- For land biodiversity, there should be plantations of native species of trees and plants.
- There should be creation of habitat corridors so the organisms can multiply, expanding the ecosystem of the national parks into the city.
- A "**green corridor**" can be created and help reap the benefits of climate mitigation.
  - Medellin in Colombia created a similar network of green corridors. It led to cleaner air and a drop in two degrees of temperature in the city.

**PEPPER IT WITH:**  
BIOSPHERE RESERVES, NATIONAL PARKS, WOOD WIDE WEB

### How Does Methane Contribute to Climate Change?

**News Excerpt:**

Over a 20-year period, **methane traps around 84 times more heat** than **CO2**, the greenhouse gas most commonly associated with burning fossil fuels.

**Methane vs Carbon Dioxide:**

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- While **methane lasts** about **12 years** in the atmosphere, **carbon dioxide (CO2)** remains **for centuries**, continuing to warm the planet.
- This makes **CO2 the primary driver of climate change**, but **methane** still has a **significant impact** during its **shorter lifespan**.
- Despite its short lifespan, methane is responsible for about a **third of global warming** since the **Industrial Revolution**.
- **Methane** is the **second largest contributor to global warming** after **carbon dioxide**.

**Methane:**

- Methane (CH4) is a **colorless, odorless gas** that is the main component of natural gas and a **powerful greenhouse gas**.
- The gas also contributes to the formation of **ground-level ozone**.
- **Ozone is a colourless and highly irritating gas** that forms just above the Earth's surface.
- According to a 2022 report, **exposure to ground-level ozone** could contribute to one million premature deaths yearly.
- **Methane emissions** can originate from **natural sources** like **wetlands**, where thawing permafrost releases methane and CO2 previously trapped in the frozen ground.
- However, **60% of methane emissions** are due to **human activities** such as **agriculture** (including livestock digestion and manure management), **waste decomposition** in landfills, and the **energy sector**.

**Methane Emissions in the Energy Sector:**

- The majority of **methane emissions** in the **energy sector** come from **oil and gas production, transportation, and storage**.
- **Methane leaks** can occur due to **rusty or damaged equipment** or something as simple as a loose screw.
- Additionally, **gas flaring**, a process where operators burn off **excess natural gas** associated with oil production, **converts methane into CO2**, but methane can still escape during the process.
- Sometimes, companies also **release small amounts of methane** directly into the atmosphere, a **practice known as venting**.
- **Flaring and venting** often occur because it is **costly to process and transport** small amounts of gas or for safety reasons to prevent pressure build-up.

**Reducing Methane Emissions:**

- Simple measures like **repairing faulty equipment** can make a significant difference.
- According to the **International Energy Agency**, the **oil and gas industry** could **cut its methane emissions by 75%** by **detecting and fixing leaks**.
- In response to the need to **control methane emissions**, the **European Union** introduced a regulation in May

**Non-tidal wetlands:**

- Non-tidal wetlands are freshwater, found around inland areas, and do not have tidal influxes of water. They are fed by rain, snow, or groundwater.
- **Major ecological functions:**
  - Fish and wildlife habitat
  - Habitat for rare, threatened and endangered species
  - Erosion control
  - Water quality improvement
  - Stormwater/flood control
  - Contribution of organic (plant) material to the food chain
  - Timber production
  - Recreational opportunities and scenic beauty.
- These wetlands play a crucial role in regulating **greenhouse gases**.
- They are vulnerable to degradation from pollution, land use changes, water extraction, and landscape modifications.
- Wetlands, when degraded, could release methane and carbon dioxide into the atmosphere.

requiring **fossil fuel companies** to routinely **measure, report, and reduce methane emissions**.

- Companies must **repair leaks within 15 working days**, and **flaring and venting** are largely **prohibited**, except in cases of safety emergencies or technical impossibilities.

**SCIENCE & TECHNOLOGY**

**EOS-08: ISRO's Innovative Leap in Earth Observation**

**News Excerpt:**

ISRO launched its latest Earth Observation Satellite, EOS-08, using the Small Satellite Launch Vehicle (SSLV)-D3.

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**Objective of EOS-08:**

The mission includes the design and development of microsatellites, enhancing payload compatibility with the microsatellite bus, and integrating new technologies for future operational satellites.

**Payloads and Capabilities:**

EOS-08 is built on the Microsat/IMS-1 bus and carries three primary payloads:

- **Electro Optical Infrared Payload (EOIR):** This payload captures images in the Mid-Wave IR (MIR) and Long-Wave IR (LWIR) bands, both during the day and night. It supports satellite-based surveillance, disaster monitoring, environmental monitoring, fire detection, volcanic activity observation, and industrial and power plant disaster monitoring.
- **Global Navigation Satellite System-Reflectometry payload (GNSS-R):** This payload demonstrates GNSS-R-



# Small Satellite Launch Vehicle

SSLV is capable of launching Mini, Micro or Nano satellites (10 to 500kg mass) into 500km planar orbit.

Design drivers of SSLV are Low cost, low turn-around time, flexibility in accommodating multiple satellites, launch-on-demand feasibility, minimal launch infrastructure requirements, etc.

SSLV is a three-stage launch vehicle with all solid propulsion stages and liquid propulsion-based Velocity Trimming Module (VTM) as terminal stage.

SSLV-D3 is the third developmental flight of SSLV.

The launch demonstrated the repeatable flight performance of SSLV.

based remote sensing capabilities, applicable in ocean surface wind sensing analysis, soil moisture assessment, cryosphere studies over the Himalayas, flood detection, and inland waterbody detection.

- **SiC UV Dosimeter:** This payload monitors UV irradiance at the Crew Module's viewport in the Gaganyaan Mission and acts as a high-dose alarm sensor for gamma radiation.

### Mission Configuration

- The spacecraft operates in a Circular Low Earth Orbit (LEO) at an altitude of 475 km with a 37.4° inclination and has a mission life of one year.
- Weighing approximately 175.5 kg, the satellite generates around 420 W of power and interfaces with the SSLV-D3/IBL-358 launch vehicle.

### Technological Advancements

- EOS-08 represents a significant advancement in satellite mainframe systems through the Integrated Avionics system, known as the **Communication, Baseband, Storage, and Positioning (CBSP) Package**.
- This system efficiently combines multiple functions into a single unit with **cold redundant systems using commercial off-the-shelf (COTS) components** and evaluation boards, **supporting up to 400 Gb of data storage**.
- Key components of the satellite include a **structural panel embedded with PCB**, an embedded battery, a Micro-DGA (Dual Gimbal Antenna), an M-PAA (Phased Array Antenna), and a flexible solar panel for onboard technology demonstration.
- The miniaturized design of the Antenna Pointing Mechanisms enables a rotational speed of 6 degrees per second with a pointing accuracy of ±1 degree.
- The phased **array antenna enhances communication capabilities**, and the flexible solar panel features a foldable solar panel substrate, GFRP tube, and CFRP honeycomb rigid end panel, offering improved power generation and structural integrity.
- A **pyrolytic graphite sheet diffuser plate**, known for its high thermal conductivity of 350 W/mK, reduces mass and serves various satellite functions.

- The mission also introduces a new **method of integrating housekeeping panels** using a hinge-based fixture, significantly **reducing the duration of the Assembly, Integration, and Testing (AIT) phase**.

### Innovative Schemes and Indigenization Efforts

- The EOS-08 mission incorporates additional novel schemes, such as X-band data transmission utilizing pulse shaping and Frequency Compensated Modulation (FCM) for X-Band data transmitters.
- The satellite's battery management system employs SSTCR-based charging and bus regulation, sequentially including or excluding strings at a frequency of 6 Hz.
- The **TM-TC system supports dual modes**, including CDMA and Direct PSK, with miniaturized microstrip filters tailored for data and TM-TC applications.
- Indigenization is evident in solar cell fabrication processes and the use of a Nano-Star Sensor for Microsat Applications.
- The inertial system benefits from reaction wheel isolators that attenuate vibrations and a single antenna interface is used for TTC and SPS applications.
- Thermal management is enhanced with materials like AFE BGA, Kintex FPGA, Germanium Black Kapton, and STAMET (Si-Al Alloy) Black Kapton to handle the thermal properties of COTS components.
- The mission also features an auto-launch pad initialization feature, showcasing its commitment to innovative mission management.

**PEPPER IT WITH**  
SSLV, Low Earth Orbit, CBSP, COTS

## Better Prediction of Solar Cycle

### News Excerpt:

Astronomers have leveraged a century's worth of solar data from the **Kodaikanal Solar Observatory** to develop a novel method for predicting the strength of upcoming solar cycle maxima.

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### Solar Cycle and Solar cycle maxima

- The **Sun's activity follows an approximately 11-year cycle**, fluctuating from minimum to maximum and back.
- A **solar maximum** is the peak of this cycle and it is marked by the highest number of sunspots and solar flares, significantly impacting space weather, Earth's atmosphere, and climate variations.
- Predicting the amplitude of the solar cycle, given its variable strength, remains a major challenge in astrophysics.

### Space weather and its impact:

- Research into the solar cycle and space weather forecasting is a crucial area of study, particularly in India.
- **Space weather** involves the varying conditions within the Solar System influenced by the sun and solar wind.

- Key elements such as **solar wind, coronal mass ejections, and solar flares** can compress Earth's magnetosphere and trigger geomagnetic storms.
- These storms have the **potential to disrupt communication and power grids, damage spacecraft electronics, and endanger astronauts.**
- Consequently, space weather holds a substantial impact on modern civilization.

### Correlation Between Super Granular Lane Widths and Sunspot Numbers

- The study found a positive correlation between the widths of super granular lanes and sunspot numbers.
- Widths of lanes near mid-latitudes during sunspot cycle minima strongly correlate with the amplitude of the following cycle.
- The correlation is weak or insignificant at other times, indicating limited predictive power of lane thickness during those periods.
- This discovery enables the prediction of the **next sunspot cycle's strength approximately 4–5 years in advance.**

#### How is space weather predicted?

- Astronomers employ various techniques to forecast the strength of the next solar cycle, including theoretical calculations based on dynamo models, extrapolations, and precursor methods.
- A commonly used precursor is the **strength of the Sun's polar magnetic field around the sunspot minimum.**
- **Polar faculae** which are bright magnetic features near the polar regions, serve as a reliable proxy for this field.

#### A New Correlation Discovered

- In a recent study, researchers from the Indian Institute of Astrophysics (IIA) in Bengaluru, an autonomous institute of the Department of Science and Technology, identified a correlation between the **width of super granular cells on the solar surface during the minimum year of the solar cycle and the number of sunspots during the subsequent solar cycle maximum.**
- This method promises to aid in space weather forecasting.
- Utilizing **solar chromospheric images** at a 393.3 nm wavelength of Ca-K ion, captured by a century-old telescope at the Kodaikanal Solar Observatory, scientists examined the **super granulations on the Sun's visible surface.**
- These large convective patterns, **each about 30,000 km wide, have lanes approximately 5,000 km thick.**
- The lane thickness varies throughout the solar cycle.

#### PEPPER IT WITH

Solar Wind, Coronal Mass Ejections, Solar Flares, IIA, Solar Chromospheric Images

## Biosurfactants

### News Excerpt:

Cost-effective biosurfactants, a healthier substitute for synthetic surfactants useful for the food industry, can be produced using green substrates from agro-industrial waste.

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### What is a Surfactant?

- Surfactants are molecules that reduce surface tension between two substances, such as oil and water, allowing them to mix and form an emulsion.
- In the food industry, surfactants play a crucial role in processes like **emulsifying fats** in batters, retaining moisture, and acting as dispersing agents.
- They also **improve the texture and shelf life of food products**, making them essential additives in various food items.
- The food industry heavily relies on surfactants for various applications, such as emulsifying fats, improving shelf life, and acting as lubricants and foamers.
- However, the widespread use of synthetic surfactants in food products has raised concerns about their impact on human health.
- These **synthetic additives can alter intestinal barrier permeability, leading to a decline in beneficial gut microbiota.**

### Microbial Biosurfactants:

- Microbial biosurfactants, derived from **various microorganisms**, offer a promising alternative to synthetic surfactants.
- These biosurfactants **possess high emulsification, solubilization, foaming, and adsorption properties**, making them suitable for food applications.
- They are also **stable across a wide range of pH levels, temperatures, and salinity**, further enhancing their utility in food processing.
- One of the key advantages of microbial biosurfactants is their **eco-friendly nature.**
- Unlike synthetic surfactants, biosurfactants **do not have toxic effects and are considered safe for human consumption.**
- This makes them an ideal candidate for replacing synthetic additives in the food industry.

### Applications in the Food Industry:

- Microbial biosurfactants have a wide range of applications in the food industry beyond their traditional roles in emulsifying and stabilizing food products.
- They can be used to remove heavy metals from vegetables, enhancing food safety and reducing health risks.
- Additionally, biosurfactants can boost immunity in fish by protecting against pathogens, thereby supporting aquaculture.

- In food preservation, biosurfactants can act as natural antioxidants, preventing early spoilage and extending the shelf life of products.
- These properties make them valuable for use in bakeries, salad dressings, and other food items where stability and longevity are critical.

**PEPPER IT WITH**  
Microbial Biosurfactants, Genetic Engineering, Recombinant DNA Technologies, Nanotech

**Production and Commercialization Challenges:**

- The **cost-effective production** of these biosurfactants requires the utilization of green substrates from agro-industrial waste, which can be achieved through **advanced techniques like genetic engineering, recombinant DNA technologies, and nanotechnology.**
  - These methods can improve the yield and efficiency of biosurfactant production, making it more viable for industrial use.

- In contrast, there have been **proponents of a stakeholder benefit approach** of corporate governance, which seeks to maximize the benefits of all stakeholders.
- In recent years, corporations with **ostensibly alternative governance models**, leaning towards stakeholder capitalism have become more common.
- Corporations are increasingly getting involved in **products, technologies and services** that cannot be driven solely on the objectives of profit making and have a greater social objective.
- **Generative Artificial Intelligence (AI)** is one such instance, where corporations are seeking alternative governance structures to balance the objectives of generating profit with that of greater social responsibility.

**Risks posed by AI advancements:**

- **Data access issues:**
  - The development of AI technologies requires access to data, which may, in turn, accelerate the ability to utilize personal information to undermine privacy.

For instance, Meta was asked to pause its plans to train its large language models using public content shared on Facebook and Instagram in the European region over concerns raised by the Irish privacy regulator.

In addition to this, it has been noted that human prejudices may find their way into AI systems and lead to algorithmic biases with harmful results.

Recently, Amazon discontinued using a recruiting algorithm after it discovered that it was plagued with gender bias.

- Moreover, researchers at Princeton University conducted an experiment where they used AI software to analyze and link words and found that European names were perceived as more pleasing than their African-American counterparts.
- These examples demonstrate how AI can perpetuate existing biases and create inequality with respect to opportunities, and access.

• **Purpose versus profits:**

- While these companies started out with alternative models, when there was a clash between the company's goals of purpose and its profit-generating machinery, the monetary interests won.
- OpenAI, the creator of ChatGPT, found itself embroiled in a corporate governance debacle last year when the non-profit board of the company fired the CEO of the company due to concerns about the rapid commercialisation of AI products at the cost of compromising user safety.

**Importance of Safety Assessments:**

A research group from IASST, Guwahati, critically analyzed the application of biosurfactants in food industries, highlighting the challenges in the large-scale commercialization of biosurfactants.

For microbial biosurfactants to gain widespread acceptance in the food industry, **thorough safety assessments are essential.**

The study published in the **Journal of Food Control** (Elsevier) highlights the need for **in-depth toxicological studies**, dose assessments, and evaluations of the synergistic effects of biosurfactants with other food components.

**Regulatory approvals** will hinge on the outcomes of these studies, ensuring that biosurfactants are safe for human consumption.

**Conclusion:**

Microbial biosurfactants offer a safer, eco-friendly alternative to synthetic surfactants in food, with the potential to enhance safety and reduce health risks. Ongoing research and industry collaboration are vital for overcoming production and safety challenges.

**Reshape the governance structures of AI companies**

**Why in News?**

The modern corporate governance regimes in capitalistic and neo-capitalistic economies have traditionally favoured the theory of shareholder primacy.

**More about the issue:**

- In modern corporations, the objectives of **profit generation** and wealth creation for the shareholders and investors take primacy over other objectives of the business including the objective of public good.

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- This debacle has raised questions on the viability of public benefit corporate structures in the technological industry, which rely on capital infusion from shareholders and investors with deep pockets, to fund research and innovations.
- From these recent events, it is evident that even in this new age of public benefits corporation, the purported public benefit may be nothing more than disguised profit seeking.
- The present accountability structure is not sufficiently strong to protect against this amoral drift, where the social objectives of a corporation are often subsumed by the broader profit-driven goals as the market enables unrestricted corporate control.

#### Steps Taken by Some Big Companies:

- Recently, **Amazon discontinued** using a recruiting algorithm after it discovered that it was plagued with gender bias.
- To counter the risks posed by **AI advancements, OpenAI, and Anthropic**, have resorted to structures with public good and developing responsible AI as core objectives leading to creation of public benefit corporations.
  - For instance, **Anthropic** is governed by a structure called Long-Term Benefit Trust. This trust is composed of five financially disinterested members who have the authority to select and remove a portion of Anthropic's board.
  - Similarly, **OpenAI** was incorporated as a **non-profit**, but it transitioned into a hybrid design by incorporating a capped profit-subsidary to support its capital-intensive innovation.

- Enhancing **long-term profit gains** of corporations from adopting a public benefit purpose.
- Incentivising **managerial compliance** of such purposes.
- **Reducing compliance costs** of adopting such purposes.
- This would require framing ethical standards for the governance of **AI product** companies, along with providing adequate regulatory backing through reforms in corporate governance norms.
- It is important for the **creators of AI to act responsibly towards all stakeholders.**

#### Will AI buck the trend?

- **Cost reduction-** AI is likely to succeed at replacing labour, particularly in services where digital technologies have struggled to do so in the past. Though the speed and size of this impact are likely to be more modest than many expect today, gradual and cumulatively significant cost reduction (and productivity growth) is a safe bet.
- **Falling prices** - Unless labour-saving technology can be monopolized, it will continue to drive cost competition and deflation. Far from being specific to food production, the effect has been seen in manufactured goods and now looks set to unfold in services. Policymakers may need to watch for and ensure competitive market structures to ensure that AI becomes a deflationary force in the economy.
- **New demand** - Real income gains often drive demand for goods and services that were barely known when a new technological wave began (few would have foreseen the arrival of social media marketers a few decades ago). This demand effect could fall short if consumers retreat

#### Cybersecurity measures

- **Nuclear security** must consider threats emerging through **new-age technologies**. In 2019, a **cyberattack on India's largest nuclear reactor in Kudankulam** showed continued vulnerabilities, highlighting the need for stronger cybersecurity measures.
- The event of an **outright attack on a nuclear facility** is low due to the safety measures in place at nuclear power plants. However, **attackers could employ advanced persistent threats to establish a long-term presence within the systems** that were targeted, **conducting surveillance** and extracting data over extended periods.
- **Phishing, social engineering, and exploiting software vulnerabilities** are **common tactics** used by **non-state actors** to gain initial access. Once inside, attackers **can deploy malware** designed to disrupt **industrial control systems (ICS) or supervisory control and data acquisition (SCADA) systems** that manage nuclear operations.
- **Cyberattacks** can also **add another dimension to insider threats** by providing avenues for blackmailing or radicalizing employees in nuclear installations.
- **India's nuclear security regime**, based on a **risk-informed approach**, has been quite effective in **minimizing risks to a manageable level**. This approach is based on recommendations by the **International Atomic Energy Agency (IAEA)**.
  - It includes **physical protection** (monitoring and securing nuclear materials), **detection** (identifying materials out of regulatory purview), and **emergency response** (regaining control in case a nuclear material poses a threat to the public).
- Essentially, India has taken a **multi-pronged approach** consisting of strong legal measures, **intelligence cooperation across atomic energy and security agencies**, as well as robust **counterterrorism measures** to ensure that terrorists and other non-state actors do not gain access to nuclear and radiological materials.
  - One area that it needs to focus on, however, is **transparency and international policy outreach**, which can be particularly useful in the context of its efforts to integrate with the **global nuclear non-proliferation architecture**.

#### Workable strategy:

- Policymakers need to employ innovative methods of regulating corporations involved in developing AI-based products which balance these conflicting interests.
- **From a strictly economic perspective, this can be done by targeting three key areas:**

That humans lose all comparative advantage seems remarkably unlikely. AI's labour-enhancing properties are as credible as its labour-eliminating ones. But

**PEPPER IT WITH**  
Generative Intelligence, Artificial Cyber security, ChatGPT, OpenAI

and save their income gains. However, the resulting savings glut seems unlikely and directly contradicts the historical record.

**New employment**  
- What if a machine or an algorithm can always meet new demand?

even if Leontief's words turned out prescient and humans went "the way of the horse," that would hardly amount to a macroeconomic dystopia. Instead, the overwhelming deflationary impulse would lay the ground for unparalleled prosperity.

## Liquid Water discovered on Mars for the first time

### News Excerpt:

According to a new study, there could be oceans' worth of liquid water deep in the rocky outer crust of Mars.

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### More About the Study:

- While scientists have long been aware of water ice at the Martian poles, this marks the first discovery of liquid water on the planet.
- The study, titled "**Liquid water in the Martian mid-crust**," was published in the journal **Proceedings of the National Academy of Sciences (PNAS)** by researchers from the **University of California**.

### Significance of the Findings

- This discovery could significantly enhance our understanding of Mars' water cycle, offering insights into the planet's climatic evolution, surface features, and interior structure.
- Moreover, it provides a promising avenue for the ongoing search for potential life on Mars.

### Methodology of the Study

- The researchers utilized data from NASA's Mars Insight Lander, which operated on the Martian surface from 2018 until its retirement in December 2022.
- The lander was equipped with a seismometer that recorded seismic waves generated by Marsquakes and meteorite impacts over a span of four years, totaling more than 1,300 quakes.
- By analyzing the speed of these seismic waves, the researchers could infer the type of material the waves traveled through.
- They employed a geophysical model similar to those used for mapping underground aquifers and oil fields on Earth.
- This model was applied to the data collected by Insight, leading to the conclusion that deep beneath Mars' surface lies a layer of fractured igneous rock, such as granite, with cracks filled with liquid water.

### Key Findings:

- The study identified a water-containing layer located at depths of 10 to 20 kilometers within the Martian crust.
- It is suggested that this water seeped from the surface billions of years ago when Mars had rivers, lakes, and possibly oceans.
- This process is similar to Earth's groundwater infiltration, which occurs when water from the surface seeps into the ground.

- On Mars, this likely happened when the planet's upper crust was warmer than it is today.
- If the measurements taken by the Insight Lander are representative of the entire planet, the researchers estimate that the amount of water trapped in these rock fractures could fill an ocean 1-2 kilometers deep across Mars.

### Implications for Life and Colonization

- While the discovery of liquid water does not confirm the presence of life on Mars, it does raise the possibility of finding a habitable environment.
- Water is essential for life as we know it, and the underground reservoir on Mars could potentially sustain life, similar to deep-sea environments on Earth.
  - However, the discovery poses challenges for plans to colonize Mars.
- Extracting water from such depths—10 to 20 kilometers below the surface—would be a formidable task, making the goal of colonizing Mars more complex.

**PEPPER IT WITH**  
PNAS, NASA, Mars  
Insight Lander

### Conclusion

The discovery of liquid water deep within Mars' crust is a groundbreaking finding that could reshape our understanding of the planet and its potential to support life. While the challenges of accessing this water are significant, the study opens new avenues for exploration and research on Mars.

## First findings from Chandrayaan 3 mission

### News Excerpt:

Scientists in India have released the findings of studies carried out by one of the instruments on the **rover module**.

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### More about news:

- The findings comprise the first analysis of the composition of the topsoil in the **Moon's southern latitudes**, and support the widely-accepted hypothesis that the lunar surface in the immediate aftermath of the Moon's formation was covered by a sea of molten material.
- Findings from one of **Chandrayaan 3's** scientific instruments support the hypothesis of a magma ocean on the Moon in its earliest phase. They also suggest a churn of lunar crust, probably caused by an asteroid hit.
- The data collected by the **Alpha Particle X-ray Spectrometer (APXS)** also contain new information about the elemental composition of the lunar surface that can help to better understand the evolution of the Moon.

### Findings of Alpha Particle X-ray Spectrometer (APXS):

Scientists have reported three key findings:

- The terrain around **Chandrayaan 3's landing site** is fairly uniform;

- The Moon's crust was formed layer by layer, which adds weight to the **lunar magma ocean (LMO) hypothesis**; and
  - The Moon is thought to have been formed after a large asteroid collided with **Earth some 4.5 billion years ago**. Scientists hypothesise that in its early life, the Moon's surface was made up entirely of an ocean of magma.
  - As this ocean cooled over millions of years, **heavier silicon and magnesium rich** minerals such as olivine and pyroxene sank to the lower levels of the lunar crust and its **upper mantle** (which is generally the largest layer inside a planetary body, bounded by the planet's core on the inside and the crust on the outside).
  - Lighter minerals, composed of **calcium and sodium-based compounds**, floated to the top and formed the upper crust.
  - The findings of **Chandrayaan 3's APXS** take this hypothesis a step further.
  - They support a class of models under the umbrella of the **LMO hypothesis** which theorises a stratified lunar crust — where **80-90%** of the upper crust is believed to be composed of iron, magnesium, and sodium-rich rocks, and the lower crust of magnesium-rich rocks.
- Among the different possible scenarios of lunar crust formation within the premise of LMO, the APXS measurements support the models indicating stratified crust formation.
- The **topsoil** around the lunar south pole has a greater-than-expected sprinkling of minerals which compose the lower layers of the lunar crust.
  - The **third APXS finding** is a new discovery — and suggests that some "mixing" of the various levels of the lunar crust might have taken place.
  - The researchers have proposed that this "mixing" could have been caused by the asteroid impact that led to the formation of the **South Pole Aitken (SPA) Basin**, the largest and oldest basin on the Moon.
  - The SPA basin has a diameter of approximately **2,500 km** — equivalent to the distance between **Delhi and Kochi** — and a depth of **6.2-8.2 km**.
  - It is believed to have been formed **4.2-4.3 billion years ago**, when the asteroid hit near the lunar south pole.
  - The researchers theorise that this asteroid impact resulted in the excavation of magnesium-rich material from deeper layers of the Moon, out to the surface of the surrounding areas as ejecta.
  - The **Chandrayaan 3 landing site** was just **350 km** from the rim of the SPA basin.

#### Mangalyaan-2:

- Mangalyaan-2 is the second interplanetary mission of India and the second mission to Mars.

- The probe will be equipped with a hyperspectral camera, a very high-resolution black and white camera, and a radar.
- The study will focus on the Martian atmosphere, environment, and interplanetary dust.
- Mangalyaan-2 will be launched by the rocket GSLV Mk III.

#### Significance of the findings:

- While these findings more or less support what is already known via modeling, imaging, and various hypotheses, they are novel nonetheless. This is primarily because **Chandrayaan 3** landed near the **Moon's south pole**, a first in lunar exploration.
- While the composition of lunar topsoil near the equatorial and mid-latitude regions have previously been studied by earlier Moon missions sent by other countries, this is the first time that such measurements have been carried out near the Moon's poles.
  - This makes **Chandrayaan 3** the first to carry out in situ experiments of any kind at the poles.
- The rover moved within a **50-metre radius** of the landing site, and took readings on different kinds of surfaces, from relatively smooth ones to near the rims of small craters.
- The overall finding, which suggests that the topsoil near the landing site is fairly uniform, is novel.
  - Notably, the uniformity of the surface is unlike that of Earth, where **tectonic plate movements** led to the creation of undulating surfaces.
- With measurements taken at 23 spots along the rover's path, this is the first time that soil measurements on lunar highlands (light coloured, elevated basins on the Moon standing above dark-coloured basins known as maria) have been taken with such high frequency.
  - Other missions — such as the **US's Apollo 16**, **Russia's Luna 20**, and **China's Chang'e 4** — too have sampled the lunar highlands, but sparsely.
- The total observation duration for the **APXS measurements** was about 31 hours, which were spread out over the mission period of 10 days.

#### Impact on future missions

- Scientists believe that the **APXS measurements** will serve as the "first ground truth in the south polar highlands and probably play a key role in the overall understanding of the origin and evolution of the Moon.
- The uniform surface also implies that the region can be used as a calibration point for remote sensing operations, and can thus be used for planning future missions.
- Future missions near the south pole can also evaluate for source-crater pairing of lunar meteorites.
  - Lunar meteorites are meteors that originate from the Moon, ejected upon impact from an asteroid or

**PEPPER IT WITH**  
APXS, LMO,  
Chandrayaan 3,  
Chang'e 4

comet. Caught in the **Earth's gravitational field**, the lunar meteorites eventually end up on Earth.

## Navigation satellite-based tolling

### News Excerpt:

After the announcement of the implementation of **Global Navigation Satellite System (GNSS) based Electronic Toll collection** in India, the **Ministry of Road Transport & Highways (MoRTH)** said that it has developed a **GIS-based software for Real-time monitoring** of the **waiting time at the Toll Plazas**. The system, the Ministry said on 2 September 2024, **will help the NHA officials** to check the **congestion at specific lane level** to ensure free flow of traffic.

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- This **new software** has been developed by **Indian Highways Management Company Limited (IHMCL)**, a company promoted by **National Highway Authority of India (NHAI)**. Initially, this **new technology will be implemented at 100 toll plazas**, which has been identified by NHAI, **for live monitoring**. These toll plazas have been selected on the basis of the **congestion feedback** received through **National Highway helpline number i.e 1033**.

### How will it work?

- The **GIS-based software** will provide the **name and location of the toll plaza** to the officials. "It will also provide **congestion alert** and **lane distribution recommendation**, if the queue of vehicles at a toll plaza is more than the prescribed limit," said MoRTH in a statement.
- The ministry also said that as **the toll plazas have been mapped** across the country at **respective NHA field offices**, the software will help the officials to **get comparative traffic condition analysis on hourly, daily, weekly and monthly basis** for the traffic queue & congestion.
- Apart from this, **the software will provide updates of current weather condition and information about local festivals**. "This will help NHA officials to take **pre-emptive measures** to manage the traffic load and decongest the toll plazas," said MoRTH.
- As of now, the software is being **implemented at the 100 toll plazas**. The Ministry said that this **GIS-based software will be extended to more toll plazas** in a phased manner.

### What is a satellite-based tolling system?

- MoRTH is currently working on **Global Navigation Satellite System (GNSS) based tolling system**, which is expected to replace the current **FASTag toll collection system** and provide a long-term solution for congestion at tolling booths. It will also provide **distance-based tolling** where users will pay only for the stretch they have

travelled on a National Highway and free flow of Vehicles at High Speed.

- On 2 July 2024, Indian Highways Management Company Limited (IHMCL) issued a tender for the construction of free flow GNSS Lanes at toll plazas to implement GNSS based Electronic toll collection.

### How will GNSS work?

- According to IHMCL, the **GNSS-based Electronic Toll Collection (ETC) system** will be implemented with the **existing FASTag ecosystem**. It will be initially used as a **hybrid model** where both **FASTag and GNSS** will operate simultaneously.
- To implement the scheme, dedicated **GNSS lanes** will be available at **toll plazas** to allow **vehicles using GNSS-based ETC** to pass through freely. After **GNSS-based ETC will become more widespread**, all lanes will eventually be **converted to GNSS lanes**. It will have advance reading/identification/enforcement equipment for vehicles so that valid vehicles gets a free flow pass.
- When a **vehicle passes through the toll gates**, the **toll charger will receive pings (distance and time stamp) of GNSS vehicles** through **On Board Unit or OBUs fitted in the GNSS vehicles**. The **OBUs of GNSS vehicles** will be onboarded with the toll charger through **Fintechs**, similar to the issuer banks concept under the current FASTag System. The **payment mechanism shall be similar to the existing FASTag ecosystem**, but would involve automatic debit and obviate the need for the boom barriers at toll plazas.

### How will it help the users?

- The introduction of the ETC system will remove all kinds of time lag that currently people face while passing through the toll plazas. Under the FASTag system, it has been observed that there are still considerable delays in reading the bar code and opening of the boom barrier. These delays sometimes lasts for up to a minute and causes vehicle pile ups. Due to this, many cases of arguments and fights with toll employees have also come to light.
- However, the GNSS tolling system will remove all these kinds of obstructions as there will be no requirement of reader and boom barrier while passing through the toll Plaza. Also, people will be able to pass through the plaza at high speed and the money will be deducted automatically according to the distance travelled on National Highway.

### How does the present system work?

- Currently, the Electronic Toll Collection in India is done through **Radio Frequency Identification (RFID) technology**, commonly known as **FASTag**. **It was launched in India in 2015** and Since February 2021, FASTag has been made mandatory for the payment of user fees at National Highway toll plazas, **with a provision for a 100% penalty for cash or non-FASTag payments**. According to MoRTH, as of March 2024,

more than 98% of user fee payments are made through FASTag at Toll Plazas.

- The National Highway Authority of India is responsible for the development, maintenance and management of the National Highways.

Currently, out of about 1.50 lakh km of National Highways declared by MoRTH, about 70,000 kilometers are managed by NHAI. Apart from this, NHAI collect tolls on these highways as per National Highway Fee (Determination of Rates and Collection) Rules, 2008.

- According to MoRTH, at present toll is collected for approximately 45,000 kilometers of National Highways and Expressways through 1200 toll plazas maintained by NHAI or Concessionaires.

**Amendment of Rule**

- The Ministry of Road Transport and Highways (MoRTH) has amended the National Highways Fee (Determination of Rates and Collection) Rules, 2008 to include provisions relating to GNSS-based electronic toll collection.
- The amendment makes a legal provision to earmark specific lanes to implement GNSS, and mandates the collection of tolls through this new system.
- On 2 July, the Indian Highways Management Company Ltd (IHMCL), a company promoted by the National Highways Authority of India (NHAI) under MoRTH issued a tender to construct free-flow GNSS lanes at toll plazas. The tendering process is currently ongoing.

## GNSS highway toll collection system

- Vehicles equipped with **Global Navigation Satellite System (GNSS)**, the new satellite-based road toll collection system, will be able to travel for free up to 20 km in each direction every day on national highways and expressways, the government has said.
- GNSS is intended to eventually replace FASTag for toll collection on highways.
- The movement of the vehicle will be tracked by satellite, and users will pay toll only for the distance they have travelled, rather than the fixed amounts for set distances that they pay now.

**Toll collection by satellite**

- GNSS will allow toll or highway user fees to be collected without stopping the vehicle at a toll booth boom barrier in order for the FASTag barcode to be read.
- Vehicles can simply pass through designated GNSS lanes which are seen as a long-term solution to congestion and pile-ups at toll plazas. A number of developed countries follow this system for efficiently collecting highway toll.
- For GNSS to work, owners will have to get a non-transferable "on-board unit" (OBU) fitted in their

vehicles. GNSS OBUs could ultimately come factory-fitted in new vehicles in the same way as many showroom owners now attach FASTag stickers to new cars rolling out of their premises.

- In its tender, IHMCL said GNSS lanes will have advance signage, markings, lighting, and equipment so that vehicles can safely cruise through the toll plazas at reasonably high speeds without coming in conflict with the slow-moving FASTag vehicles passing through non-GNSS lanes.
- As a GNSS vehicle passes through the toll gate, the charger will receive a ping (distance and time stamp) through the OBU.
- The payment mechanism will be mediated by fintech companies, and will be similar to the concept of issuer banks in the FASTag system.
- Non-GNSS vehicles entering GNSS lanes will have to pay double the toll as penalty. The new system is expected to reduce or end congestion and delays at toll plazas.
- The FASTag system takes time — up to a minute at times — to read the barcode and operate the boom, a delay that causes pile-ups and arguments at busy plazas.

**What happens to FASTag?**

- IHMCL has said that the GNSS-based electronic toll collection system will be implemented alongside the existing FASTag ecosystem to begin with.
- Both systems will be in use simultaneously; however, as the use of GNSS becomes more widespread, all lanes will eventually be converted to GNSS lanes.
- FASTag, which uses Radio Frequency Identification (RFID) technology, was launched in India in 2015.
- It has been mandatory for the payment of user fee/ toll since February 2021, with a 100% penalty for cash or non-FASTag payments.
- According to MoRTH, as of March 2024, more than 98% of user fee payments at toll plazas were being made through FASTag.
- Toll is collected for approximately 45,000 km of National Highways and expressways through 1,200 toll plazas maintained by NHAI or concessionaires.

**PEPPER IT WITH**  
GNSS, FASTag, RFID, NHAI, IHMCL, Electronic Toll Collection (ETC) system

## INTERNAL SECURITY

### INS Arighaat: India's Second Nuclear-Powered Submarine

**News Excerpt:**

The induction of INS Arighaat, India's second nuclear-powered ballistic missile submarine of the Arihant

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**class**, marks a significant enhancement in India's **nuclear deterrence capabilities** and reinforces its **nuclear triad**.

#### More detail about News:

- **INS Arighaat** was officially commissioned into the **Indian Navy at Visakhapatnam** after undergoing extensive trials over recent months.



- Weighing 6,000 tonnes, **INS Arighaat** joins **INS Arihant**, its predecessor, as a crucial element of **India's nuclear triad**, which encompasses the ability to launch **nuclear weapons from air, land, and sea**.

#### Nuclear Triad Capability:

- India joins a select group of nations with a nuclear triad capability, including the United States, Russia, China, and France.
- The induction of **INS Arihant in 2016** provided India with its first maritime nuclear strike capability. The introduction of INS Arighaat into the Navy will further enhance its nuclear strike capabilities.
- India's land-based nuclear arsenal includes the Agni 2, Agni 4, and Agni 5 missiles, while its air-based capabilities are delivered by fighter jets such as the Rafales, Su-30MKIs, and Mirage 2000s.
- Under its "**No First Use**" policy, India pledges to use nuclear weapons only for retaliation, making its nuclear submarines a strong deterrent due to their ability to survive a nuclear strike and launch a retaliatory attack.

#### About INS Arighat:

- The **INS Arighat** is significantly **more advanced** than its predecessor, INS Arihant, thanks to the **indigenous technological advancements** it incorporates.
- Its construction involved **cutting-edge design and manufacturing technology**, extensive research and development, the use of specialized materials, complex engineering, and highly skilled workmanship.
- Both the **INS Arihant and INS Arighat** are powered by **83 MW pressurized light-water nuclear reactors**, allowing them to stay submerged for extended periods, unlike conventional diesel-electric submarines, which need to surface frequently to recharge their batteries.
- **INS Arighat** has **four launch tubes** in its hump. It can carry **12 K-15 Sagarika submarine-launched ballistic missiles (SLBMs)** with a range of **750 kilometers** or **four K-4 SLBMs** that can reach distances of **up to 3,500 kilometers**.

#### Nuclear Powered Submarine Program:

- India's nuclear-powered submarine program began over three decades ago, involving collaboration between private firms and the Defence Research & Development Organisation (DRDO), with assistance from Russia.
- **INS Arihant was launched in 2009 and was commissioned into the Navy in 2016, becoming India's first nuclear-powered submarine.**
- In October 2022, the Ministry of Defence announced the successful launch of a submarine-launched ballistic missile (SLBM) from INS Arihant in the Bay of Bengal, with "very high accuracy."

#### Nuclear Triad

- A nuclear triad is a three-part military structure that includes land-based nuclear missiles, submarines armed with nuclear missiles, and strategic aircraft carrying nuclear bombs and missiles.
- The rationale behind the triad was that distributing the country's nuclear arsenal across different platforms would increase the likelihood of surviving an attack and successfully retaliating after a first strike.

#### India's Submarine Fleet:

- India is currently building **two nuclear ballistic submarines (SSBNs)** that are larger than the Arihant and Arighaat, each with a displacement of around 7,000 tonnes.
- The **first of these submarines** was reportedly **launched in 2021** and is awaiting commissioning after trials and tests, while the **second is under construction** as part of a classified project.
- The **Indian Navy** operates **16 conventional submarines: seven Kilo-class** (Sindhughosh), **four Shishumar class**, and **five French Scorpène** (Kalvari) class attack submarines.
  - **Kilo-class submarines** - India began acquiring **USSR-developed diesel-electric** Kilo-class submarines in the mid-1980s, which have a lifespan of about 30 years and can operate longer with modern upgrades.
  - **Shishumar class submarines** - These submarines were developed by **Germany's Howaldtswerke-Deutsche Werft (HDW)** and later constructed in India, starting in the 1980s.
  - **Kalvari class submarines** - These were built at **India's Mazagon Dock** in partnership with **France's Naval Group**, with the first submarine, INS Kalvari, being commissioned in 2017, followed by several others.
- To fulfill its operational requirements, the **Indian Navy is authorized to have 18 submarines**, a milestone now achieved with the commissioning of INS Arighaat.
- However, around **30% of the fleet** is typically under **refit (repair and renovation)** at any given time, reducing the number of operational submarines.
- The Navy has implemented **medium refit and life certification processes**, involving extensive repairs and

replacements to extend the service life of aging submarines until new vessels are commissioned.

**Nuclear doctrine and sea-based deterrence:** Instead of the sea leg propelling changes to this system, owing to the very nature of sea-based deterrence, India appears to have adopted the land-suited system of civilian control on its **Sea Based Strategic Deterrence (SBSD)** as well. Hence, India's SSBNs are unlikely to operate like **traditional SSBNs**, which are ever ready to launch a nuclear missile from undetectable areas of operation in the open ocean.

- Growing anxieties about **submarine warfare in the Indo-Pacific** and **India's own foray into it** (with a strong degree of cooperation with regional partners) **necessitates analytical investments** to think through the opportunities and risks inherent in this new field. Such debates, **by touching upon both guiding doctrines** as well as operational resiliency, are likely to assist decision-makers in preparing for a more dangerous world at sea.
- Recent Chinese **'over-reactions'** (in the form of the Galwan stand-off) to India's force development in the conventional domain have indicated that **it is not enough for India to assert the defensive intent** undergirding some of its offensive-oriented capabilities when it comes to China.
- As India seeks to turn the **Bay of Bengal into a 'bastion' for its SSBNs**, China is likely to increase its **surveillance and targeting capabilities in the region**. And it will do so while enhancing maritime relations with both Bangladesh and Myanmar. As China seeks to exploit the US' concern over the risk of nuclear escalation for strategic benefit, **India must ensure that the common pursuit of non-escalation in the nuclear domain** during a military crisis remains just that – a common pursuit.

**Conclusion:**

The induction of INS Arighaat marks a pivotal moment in India's security

**PEPPER IT WITH:**

Nuclear doctrine, Nuclear reactor, SLBM, Nuclear triad.

landscape, significantly bolstering its nuclear deterrence capabilities and further solidifying its membership in the exclusive group of nations with a nuclear triad. This advancement enhances India's ability to launch nuclear strikes from land, air, and sea, ensuring a more resilient response to potential threats.

**GEOGRAPHY**

**World's Oldest Solar Calendar**

**News Excerpt:**

Archaeologists may have unearthed the world's oldest solar calendar at **Göbekli Tepe**, an ancient site in **southern Turkey**.

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**More about the discovery:**

- This discovery revolves around V-shaped symbols carved onto pillars, which researchers now believe **could represent the oldest lunisolar calendar**.
- These markings may also serve as a **record of a catastrophic comet strike** that occurred around **10,850 BCE**, triggering a **mini ice age** known as the **Younger Dryas**.
- The site, dating back roughly 12,000 years to the **beginning of the Holocene epoch**, is one of the **oldest known farming communities**.

**Significance of the discovery:**

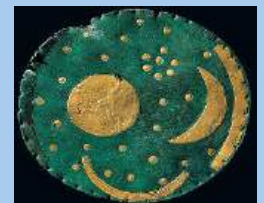
- **Impact of the Comet Strike:** This research is part of a broader debate about the **Younger Dryas impact hypothesis**, first proposed in 2007. The Hypothesis suggests that a **cometary or meteoritic body or bodies hit and/or exploded over North America 12,900 years ago**, causing the **YD climate episode**, extinction of Pleistocene megafauna, demise of the Clovis archeological culture, and a range of other effects.
- **Complexity of Early Cultures:** Some scientists remain skeptical, **citing the lack of a definitive crater or consistent evidence across different regions**. Nonetheless, if scientists' interpretations are correct, it provides compelling support for the theory and offers **new insights into the origins of civilization**.
- **Göbekli Tepe's Significance:** The findings highlight **Göbekli Tepe's role as a major centre of early astronomical and cultural practices**. The site's importance extends beyond its monumental architecture to include its contributions to early science and society.



**Nebra Sky Disk**

**Discovery:** The Nebra Sky Disk was discovered in 1999 near Nebra, Germany, in a burial mound. It dates to around 1600 BC, during the Bronze Age.

**Description:** The disk is a bronze plate, about 32 cm in diameter, decorated with gold symbols. It depicts a detailed representation of the night sky, including the moon, stars, and possibly the sun.



**Symbols:**

- **Stars:** The disk features 30 gold stars, which are thought to represent the Pleiades star cluster.
- **Sun/Moon:** There is a crescent shape, interpreted as the moon, and a large, half-circle shape, possibly representing the sun or a solar boat.
- **Arcs:** Two golden arcs at the edge of the disk might symbolize the horizon or a solar calendar.

**Astronomical Significance:** The disk is believed to represent an early attempt to map the night sky and track celestial events. It is thought to depict the moon's phases, solar cycles, and the position of the Pleiades star cluster.

**Conclusion:**

The **symbols and carvings at Göbekli Tepe**, alongside other ancient artifacts **like the Nebra sky disk from Germany**, suggest a deep-rooted connection between early humans and their **observation of the heavens**, possibly spurred by a catastrophic event.

**PEPPER IT WITH:**

Oldest calendar, Origin of Civilisation, Time keeping.

**Evidences of 'Snowball Earth' in Irish-Scottish Rock Formation**

**News Excerpt:**

A recent study has revealed that a rock formation spanning Ireland and Scotland may provide a rare and crucial record of the "Snowball Earth".

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**Port Askaig Formation**

- The Port Askaig Formation (PAF), **located in the Dalradian Supergroup of Scotland**, is a significant geological formation that offers an extensive record of **Cryogenian glaciation**, particularly in the **Garvellach Islands and Islay**.
- The formation is about 1,100 metres thick and contains five members, including 47 diamictite beds **interlayered with siltstones, dolostones, and sandstones**.
- It is thought to have been deposited between 662 million and 720 million years ago during the **Sturtian glaciation**.
- This glaciation was the **first of two global freezes during the Cryogenian period**, events that are believed to have played a key role in the **emergence of complex life on Earth**.



**Unique Geological Record**

- One section of the Port Askaig Formation, **exposed on the Garvellachs islands** in Scotland, is particularly significant.

- Unlike similar formations in North America and Namibia, this site uniquely captures **the transition from a warm, tropical environment into the snowball Earth conditions**.
- This makes it potentially the **world's most complete record** of this pivotal moment in Earth's history.

**Implications for Understanding Early Life**

- The **Sturtian glaciation, which lasted about 60 million years**, was one of the most extreme cold periods in Earth's history.
- Before this time, life on Earth consisted only of **single-celled organisms and algae**.
- The harsh conditions of the Cryogenian period may have driven these organisms to evolve into multicellular life, leading to the rapid emergence of complex life forms after the planet thawed.

**A Potential Global Geological Marker**

**PEPPER IT WITH:**

Earth's geology, Evolution of life on earth, Glaciation Period.

- The study also suggests that the new age constraints for these rocks could support the designation of the **Port Askaig Formation as a global boundary stratotype section and point (GSSP) for the Cryogenian period**.
- Such a designation, often referred to as a **"golden spike,"** would mark the site as a key reference point in geological history, attracting international interest.

**Glaciation**

- Glaciation on Earth refers to periods when large parts of the planet's surface were covered by glaciers or ice sheets.
- These ice ages have occurred multiple times throughout Earth's history, significantly impacting the climate and the evolution of life.

**Different glaciation periods has been identified by geologist are as follow:**

- **Huronian Glaciation** (2.4-2.1 billion years ago): One of the earliest known, possibly triggered by the Great Oxygenation Event.
- **Cryogenian Period** (720-635 million years ago): Known for the **Sturtian and Marinoan glaciations**, where **ice likely reached the equator**, leading to **"Snowball Earth"** conditions, which was a time period when the entire planet was believed to be covered in ice.
- **Andean-Saharan Glaciation** (450-420 million years ago): Occurred during the late Ordovician and early Silurian periods.
- **Karoo Glaciation** (360-260 million years ago): Took place during the late Paleozoic era.
- **Quaternary Glaciation** (2.58 million years ago-present): The most recent, includes multiple glacial and interglacial cycles.

## Restoring the Banni Grasslands

### News Excerpt:

A recent study titled 'Maximizing ecological value and assessing land suitability for sustainable grassland management in Asia's largest tropical grassland, Western India', assessed the suitability of different areas within Banni for sustainable grassland restoration, with ecological value as the primary focus.

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### Grasslands and Their Importance:

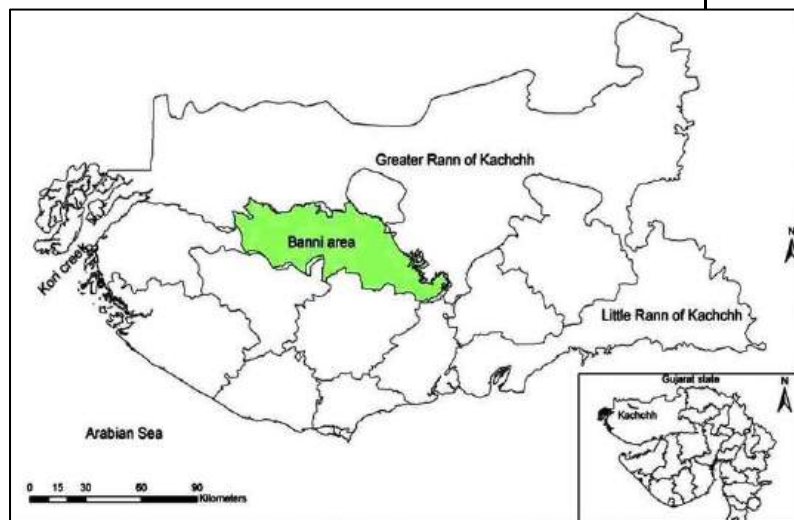
- Grasslands are among the largest ecosystems globally, primarily found in semiarid and arid regions.
- These ecosystems, which include **savannahs, grassy shrublands, and open grasslands**, support a diverse array of unique species and provide numerous ecosystem services.
- These services include **carbon storage, climate mitigation, and pollination**.
- Despite their significance, grasslands face widespread degradation due to **deforestation, overgrazing, agriculture, urbanization, and other human activities**.
- It is estimated that **49%** of the world's grasslands are currently **experiencing degradation**.

### Grasslands in India:

- In India, grasslands cover approximately eight lakh sq. km, accounting for about **24% of the country's total land area**.
- However, these grasslands are increasingly **threatened** by agricultural expansion, tree-based plantation projects, invasive species, and large-scale development projects.
- This situation is **further aggravated** by a focus on **forest conservation** by both governmental and non-profit organizations, **often at the expense of grasslands**.

### Banni Grasslands:

- The Banni grasslands, located in the Kachchh district of Gujarat, are one of India's largest grassland areas.
- Once sprawling over approximately **3,800 sq. km**, these grasslands have now shrunk to about **2,600 sq. km**.



### Classification of Restoration Zones

- The study categorized the Banni grasslands into five zones based on their suitability for restoration:
  - Highly Suitable:** 937 sq. km (36% of the area)
  - Suitable:** 728 sq. km (28% of the area)
  - Moderately Suitable:** 714 sq. km (27% of the area)
  - Marginally Suitable:** 182 sq. km (7% of the area)
  - Not Suitable:** 61 sq. km (2% of the area)
- The first two categories, covering **nearly two-thirds of the Banni grasslands**, can be restored **relatively easily by providing adequate water sources** through irrigation or rainwater harvesting
- Restoration in the **"moderately suitable"** zone is also feasible, though it may **require more effort compared to the "highly suitable" and "suitable" zones**.
- The "marginally suitable" and "not suitable" zones, however, may need **more intensive interventions**, such as **terracing, the use of fertilizers, protection against water runoff and erosion, and managing salt intrusion**.

### Implications of the study:

- This study could serve as a valuable resource for the **National Green Tribunal (NGT)** and policymakers in crafting policies aimed at protecting and rehabilitating degraded grasslands.
- The **detailed assessment of land suitability** provides a robust foundation for developing legal and regulatory frameworks that promote sustainable land use and conservation practices.
- Unlike previous research that focused on **sample plots or single vegetation indicators**, this study offers a **holistic assessment of the Banni grasslands**.
- It incorporates **multiple soil characteristics**, such as nutrient availability, soil acidity, texture, organic carbon content, salinity, water holding capacity, and more.
- Additionally, **satellite data was used to assess land use, land cover, geomorphology, and land slope**.
- This comprehensive approach aims **not only to identify lands suitable for grassland development** but also to **guide sustainable management practices**.

### Conclusion:

The findings of this study highlights the importance of evidence-based recommendations for sustainable grassland management. This includes biodiversity conservation and enhancing the livelihoods of local communities that depend on these grasslands for their livestock. Grasslands, with their role in carbon sequestration and as habitats for various species, are vital in the context of climate change. Protecting and restoring them

**PEPPER IT WITH:**  
 Ecology protection,  
 Environment Degradation,  
 Flora and Fauna conservation.

is essential for preserving biodiversity and ensuring the continued provision of ecosystem services for future generations.

### Global models with La Niña predictions

**News Excerpt:** All leading global agencies were significantly off the mark in their La Niña predictions this year. India had pinned hopes on the influential climate phenomenon to

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drive enhanced rainfall during August-September. Now that a delay in La Niña's onset is imminent, what is the likely impact going to be in the upcoming months? And why did global weather models get their predictions wrong?

**What is La Niña?**

La Niña (or 'The Little Girl' in Spanish) is a phase of what climatologists refer to as the El Niño Southern Oscillation (ENSO), a phenomenon that is a key driver of global natural climate variability. ENSO is characterised by changes in sea temperatures along the tropical Pacific Ocean due to atmospheric fluctuations overhead. These changes alter and interfere with the global atmospheric circulation, and influence weather worldwide.

Occurring in irregular cycles of anywhere between two to seven years, ENSO has three phases — warm (El Niño or 'The Little Boy' in Spanish), cool (La Niña), and neutral.

During the neutral phase, the eastern Pacific (off the northwestern coast of South America) is cooler than the western Pacific (around Philippines and Indonesia).

This is because prevailing trade winds — caused by Earth's rotation, between 30 degrees north and south of the equator — move east to west, sweeping warmer surface water along with them. The relatively cool waters from below rise to the surface to replace the displaced water.

These wind systems weaken in the El Niño phase, leading to lesser displacement of warmer waters off the American coasts. Consequently, the eastern Pacific becomes warmer than usual. The opposite happens in the La Niña phase i.e. trade winds become stronger than usual and push larger quantities of water to the western Pacific.

In India, El Niño is associated with suppressed rainfall during the monsoon season, while La Niña is known to help monsoon activity. The previous El Niño event occurred between June 2023 and May 2024. Prior to that, one of the longest recorded La Niña episodes lasted from 2020 to 2023.

Anthropogenic climate change has exacerbated the impact of both El Niño and La Niña-related hazards, including high temperatures, heavy precipitation and droughts

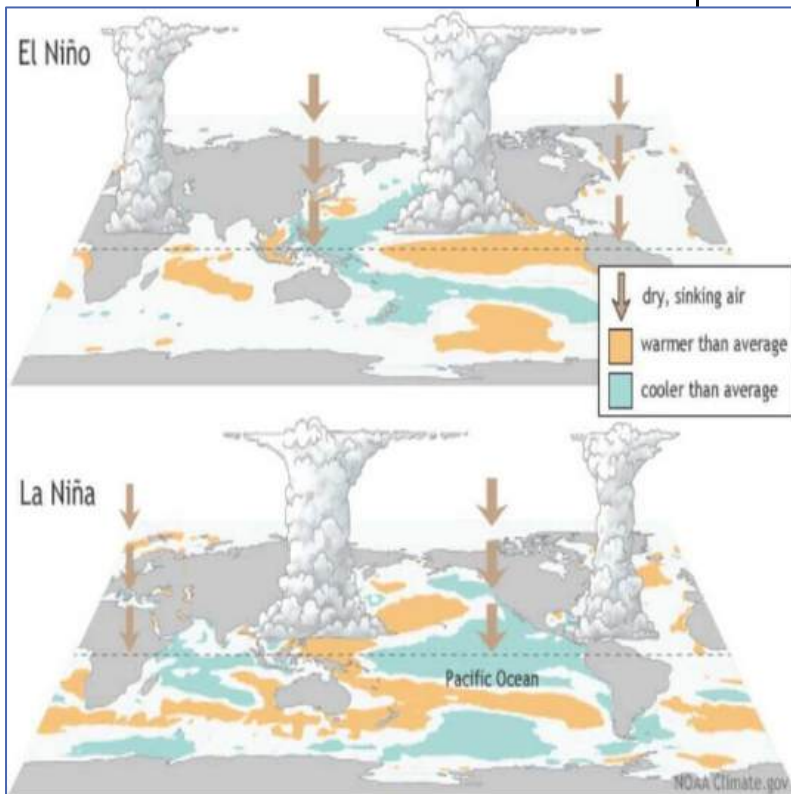
**What did global weather models predict this year?**

One of the strongest El Niño events of all time ended this June, following which ENSO entered the neutral phase. Initial projections made by multiple global weather models suggested that the onset of La Niña conditions would occur around July. But by mid-July, it was clear that La Niña would be delayed.

The India Meteorological Department (IMD) had, since the first stage Long Range Forecast issued in mid-April, maintained that La Niña conditions would emerge during the later half of the June – September monsoon season. And most importantly, La Niña could enhance rainfall in the months of August and September. This year's seasonal prediction was dependent on the emergence of La Niña, resulting in 'above' normal rainfall in the final two monsoon months (more on that later).

**Why were initial predictions off the mark?**

The primary reason cited by weather modellers and meteorologists for the error in predicting La Niña's onset is its severity. Weather models are likely to better pick up signals in cases of strong La Niña (or El Niño) phases, rather than weak ones. Moreover, there are other factors that impact surface and subsurface conditions across the Pacific Ocean. In particular, these include the inter-seasonal variability in the atmosphere, wind and pressure, directly linked to the movement of the Madden Julian Oscillation (MJO), an eastward moving band of rain-bearing winds and clouds. The interplay of different weather systems makes predictions harder.



**How has the delay in La Niña’s onset impacted India’s monsoon?**

**La Niña** is known to enhance the rainfall during the southwest monsoon, India’s chief rainy season which lasts from June to September. Since the monsoon has already reached its fag end, and **La Niña conditions** are yet to emerge in the equatorial Pacific Ocean, the climatic phenomenon will play no direct role in the country’s rainfall at the moment.

But, there are many other factors which affect the rainfall during the monsoon season, and a delayed La Niña onset does not definitely mean an adverse monsoon performance. This has largely been the case so far.

In August, India as a whole recorded nearly 16 per cent surplus rainfall. The forecast for September too is promising, with the IMD predicting a 109 per cent ‘above’ normal rainfall over most geographical areas (where 100 denotes normal rainfall).

Overall in this season, starting from June, India has received rainfall that is 8 per cent more than normal. But, as is expected, there are wide variations in precipitation at the regional level. Almost every state in the east and the northeastern region has seen deficient rainfall, and so have many states in the north and the northwest. Central and south India have, however, received more than normal rainfall till now.

**What does the La Niña outlook look like in the coming months?**

It could influence rainfall during the northeast

**monsoon season** (October – December). Also known as the **winter monsoon**, this is limited to Tamil Nadu, coastal Andhra Pradesh, Rayalaseema, southern interior Karnataka and Kerala. Climatologically, **La Niña does not favour northeast monsoon rainfall. The north Indian Ocean basin** — which covers the Bay of Bengal and the Arabian Sea — sees cyclone development during March to May, and October to December, with peak activity during May and November. During **La Niña** years, climatologically there are **high chances of frequent cyclogenesis**, with storms having above-average intensity, and **longer-than-average life**. This will be something that Met officials and administrators will be watching out for. Lastly, **La Niña years** in the past have typically seen harsher, colder winters.

**PEPPER IT WITH:**  
 Monsson, El Nino, La Nina, Rainfall in India, Climate Change Impact on Monsson.

**Arctic Sea ice can change monsoon patterns**

**News Excerpt:**

New research reveals that less sea ice in the central Arctic leads to lower rain in western and peninsular India but more rain in central and northern India.

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**About India’s National Centre for Polar and Ocean Research (NCPOR):**

- **The National Centre for Polar and Ocean Research (NCPOR)** was established as an autonomous Research and Development Institution of the Ministry of Earth Sciences (formerly Department of Ocean Development), Government of India on the 25th May 1998.
- With a mission mandate that is quite challenging, the Centre is designated as the nodal organization for the co-ordination and implementation of the Indian Antarctic Programme, including the maintenance of India’s permanent station in Antarctica.
- Year-round maintenance of the two **Indian stations (Maitri & Bharati)** in Antarctica is the primary responsibility of the Centre.
- **Maitri (1989) and Bharati (2011)** were established, for carrying out research by Indian scientists in all disciplines of polar research. These stations have been provided with comfortable living accommodations, state of the art laboratories and well-equipped library and communication systems.

**More about the news:**

- Incessant rainfall has wreaked havoc in India’s southeast, leaving many dead in Andhra Pradesh and thousands homeless and at the mercy of floods in Telangana.
- The **Indian Meteorological Department** has also warned of heavy rains in parts of Gujarat, Himachal Pradesh, and Delhi.
- Unpredictable, erratic rainfall has been becoming the norm for the Indian monsoon. Once a bringer of relief and hope to the subcontinent, these rains are now a herald of drought and floods.
- Climate change is an important reason why. However, a closer look into climate models shows the intricate play of surface temperature, pressure gradients, air currents and even sea ice that is responsible for bringing rain to the Indian landmass.
- In a **study** published in the **journal Remote Sensing of Environment**, researchers from **India’s National Centre for Polar and Ocean Research (NCPOR)**, under the **Ministry of Earth Sciences**, and **South Korea’s Korea Polar Research Institute** have found that seasonal changes in the Arctic sea ice affect the Indian monsoon as well.

**About Indian Summer Monsoon Rainfall:**

- The **Indian summer monsoon rainfall (ISMR)** over the Indian subcontinent, from July to September, and with most of the rains recorded in July and August, is one of the most prominent monsoon systems in the world.
- In summer months, sunlight warms the Central Asian and Indian landmass more and faster than the surrounding ocean. This creates a low pressure band at the Tropic of Cancer called the intertropical convergence zone.
- Trade winds blowing from the southeast are subsequently deflected towards the Indian landmass due

to the **Coriolis force** and the low pressure after they cross the equator. As they blow over the **Arabian Sea**, the winds pick up moisture and deposit that as rain over India.

- Over the landmass itself, this southwest monsoon splits into two. The **Arabian Sea** arm brings rain to the west coast while the other arm travels to the **Bay of Bengal** and brings rain to India's eastern and northeastern parts.
- The arms finally converge over Punjab and Himachal Pradesh as the Arabian Sea arm moves inward and the **Bay of Bengal arm** moves along the **Himalaya**.
- The **ISMR** is much more complex than scientists first anticipated. In the last two decades, climate models have shown that the surface temperatures of the Indian, the Atlantic, and the Pacific Oceans affect the ISMR.
- The circum-global teleconnection (CGT), a large-scale atmospheric wave flowing at the mid-latitudes, seemed to significantly influence the monsoon as well.

**Influence of Arctic sea ice on Indian monsoon:**

- In recent years, scientists have also suggested that declining levels of Arctic sea ice, due to climate change, could influence the monsoon's temperament, too.
- In the **new study**, researchers used observational data from **1980 to 2020** and **climate models** to check how the Arctic sea ice levels affect atmospheric circulations that in turn influence the ISMR.
- **The results revealed distinct and at times contrasting patterns.**
  - According to the paper, less sea ice in the central Arctic leads to lower rain in western and peninsular India but more rain in central and northern India.
  - On the other hand, lower sea ice levels in the upper latitudes, particularly in the Barents-Kara Sea region encompassing the Hudson Bay, the Gulf of St. Lawrence and the Sea of Okhotsk, delay the monsoon's onset and render it more unpredictable.
- **Several atmospheric systems also influence this pattern.**
  - The scientists found that when sea ice levels in the Central Arctic increase, the heat transferred from the ocean to the atmosphere triggers a cyclonic circulation at slightly lower latitudes, like in the North Atlantic.
  - This bolsters the **Rossby waves**, fast-flowing streams of air high in the atmosphere created by the earth's rotation and differences in temperature and weather systems that move west to east.
  - The enhanced **Rossby waves** result in high pressure over northwest India and low pressure over the **Mediterranean region**. This in turn strengthens a narrow, concentrated band of wind, called the **Asian jet stream**, over the Caspian Sea, causing the subtropical easterly jet — a jet stream blowing over the Indian subcontinent during summer — to shift northward.

- As a result, an anomalous high pressure region is created over **Central Asia**, disrupting atmospheric stability over the Indian landmass and bringing more rain over western and peninsular India.
- On the other hand, low sea ice over the **Barents-Kara Sea region** triggers a series of air currents that produce an anomalous high pressure over southwest China.
- This correlates with a **positive Arctic Oscillation** — high pressure over the northern Atlantic and Pacific oceans along with a weakening of the CGT, which connects weather events in different parts of the world.
- As sea ice levels decrease in the region, heat rises from the Barents-Kara sea, creating an anticyclonic circulation (calm, clear skies) over northwest Europe. This disturbs the upper atmospheric region over subtropical Asia and India.
- This instability, coupled with high surface temperature of the **Arabian Sea** and the moisture picked up from the surrounding water bodies promotes high rainfall over northeastern India while leaving central and northwest regions of the country without much

**Role of climate change:**

- Climate change, by accelerating the reduction of Arctic sea ice, exacerbates the variability and unpredictability of the **ISMR**.
- **Lower Arctic sea** ice can lead to more frequent and severe droughts in some regions while causing excessive rainfall and flooding in others.

**Conclusion:**

Apart from highlighting the physical pathways in which the Arctic Sea ice affects the Indian monsoon, the current study shows the urgent need to expand research on climate dynamics and for scientists to prepare more accurate forecasts of the ever-changing monsoons.

**PEPPER IT WITH:**  
 Monsoon, Rossby Waves, Climate change Impact, Arctic sea influencing monsoon.

**DISASTER MANAGEMENT**

**Why India's Weather Forecasting Needs an Upgrade**

**News Excerpt:**

The government is planning a major upgrade of the **Indian Meteorological Department (IMD)** to **improve weather forecasting precision**, especially given the **unpredictability** caused by **climate change**.

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**Past IMD Functionality:**

- Traditionally, IMD focused on **rainfall forecasts** during the **monsoon season** and **temperature** updates for **major cities**.
- Weather services were **not widely demanded or trusted** by the general public.

**India Meteorological Department (IMD)**

- The India Meteorological Department (IMD), established in **1875**, serves as the country's **National Meteorological Service** and the principal government agency for meteorology and related fields.
- Currently operating under the **Ministry of Earth Sciences (MoES)**, IMD has several key responsibilities:
  - **Meteorological Observations and Forecasts:** IMD provides current and forecasted meteorological information essential for managing weather-sensitive activities, including agriculture, irrigation, shipping, aviation, and offshore oil exploration.
  - **Severe Weather Warnings:** The department issues warnings for severe weather events such as tropical cyclones, norwesters, dust storms, heavy rainfall, snow, and extreme temperature conditions, which can pose risks to life and property.
  - **Meteorological Statistics:** IMD supplies vital meteorological data for sectors such as agriculture, water resource management, industries, and oil exploration, contributing to various nation-building efforts.
  - **Research and Development:** The department conducts and fosters research in meteorology and related disciplines to advance knowledge and improve forecasting capabilities.

**Change in Demand and Supply:**

- Over the **last decade**, interest in **weather-related information** has surged, including from the general public.
- IMD now provides **extensive daily updates** on various **weather events**, not just rainfall.
- Trust in weather forecasts has increased due to **improved accuracy**.
- The **demand for even more accurate and localized forecasts** continues to grow, particularly due to **extreme weather events** linked to climate change.

**Infrastructure and Technological Improvements:**

- Continuous upgrades in **weather forecasting infrastructure, technology**, and skills are essential.
- The **Monsoon Mission (2012)** aimed to improve **long-range monsoon forecasts** for **economic planning**.
- Other initiatives have enhanced the **observation network**, installed **high-performance computing**, deployed **Doppler radars**, and developed **advanced computer models**.

**Enhanced Capabilities and Public Trust:**

- Improved infrastructure has led to **better forecasts** and **more public-focused information** (e.g., real-time updates, heat wave warnings).
- Success in **cyclone predictions** (e.g., Cyclone Phailin in 2013) boosted IMD's credibility and established **effective evacuation systems**, reducing fatalities.
- IMD's **long-range monsoon forecasts** have been mostly accurate over the last decade.

- Challenges remain in providing **precise forecasts for hyper-local events** and **predicting extreme weather**, which are becoming **more frequent** due to climate change.

**Forecasting Challenges:**

- **Forecasting in the tropics** is more challenging than in higher latitudes due to **greater weather variability**.
- **Larger weather systems** (e.g., monsoons, cyclones) are easier to predict than localized events (e.g., cloudbursts).
- While country-wide **monsoon forecasts** are often accurate, **regional** and **monthly predictions** are less so.
- The IMD has a **high success rate** for **detecting heat waves** but lower accuracy for predicting **heavy rainfall events**.

**Limitations of Current Capabilities:**

- Current forecasting capabilities cover a **12 km x 12 km area**, which is **larger than most cities**, limiting precise intra-city predictions.
- **Experimental forecasts** for **3 km x 3 km grids** are being tested, with the **goal of achieving 1 km x 1 km hyper-local forecasts**.
- Hyper-local forecasts could aid in **activity planning** and **disaster early warning systems**.

**Future Needs and Objectives:**

- Further **infrastructure upgrades** are needed, such as **ocean observation systems** and **high-resolution earth observation satellites**.
- **Some regions** (e.g., eastern and northeastern India) lack adequate **Doppler radar coverage**.
- A significant breakthrough is required in developing **India-specific weather models** that can more accurately simulate local conditions.
- **Global models** currently in use have limitations due to **climate change-induced unpredictability**.
- Developing **customized models** will require intensive research, development, and regional climate change assessments.

**PEPPER IT WITH:**  
Weather Forecasting, Rainfall prediction, Monsoon Mission, IMD.

**The Disaster Management (Amendment) Bill**

**News Excerpt:**

The central government introduced the **Disaster Management (Amendment) Bill** in the Lok Sabha.

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**More about news:**

- Brought in in the wake of climate-induced disasters, the Bill shows much evidence of a further centralization of an already heavily-centralized **Disaster Management Act, 2005**.
- This Act, in its current form, already mandates the creation of many authorities and committees at the national, State and district levels. The proposed Bill



further provides statutory status to pre-act organisations.

- The Bill only strengthens the **top-down approach**, affecting vital cooperative federalism in disaster management.

#### Provisions of the bill:

- **Preparation of disaster management plans:**
  - The Act provides for the constitution of a **National Executive Committee and a State Executive Committee** to assist **NDMA and SDMA** in performing their functions.
  - A key function of these Committees is preparing national and **state disaster management plans**, respectively.
  - **NDMA and SDMA** approve the respective plans and coordinate their implementation.
  - The Bill instead provides that **NDMA and SDMA** will prepare disaster management plans.
- **Functions of NDMA and SDMA:**
  - The Bill adds certain functions for these authorities at their respective levels.
  - These include:
    - Taking periodic stock of disaster risks, including emerging risks from extreme climate events,
    - Providing technical assistance to authorities below them,
    - Recommending guidelines for minimum standards of relief, and
    - Preparing national and state disaster databases, respectively. The databases will contain information on:
      - The type and severity of disaster risks,
      - Allocation of funds and expenditure, and
      - Disaster preparedness and mitigation plans.
  - The Bill also empowers **NDMA** to make regulations under the Act with prior approval of the central government.
- **Urban Disaster Management Authorities:**
  - The Bill empowers the state government to constitute a separate **Urban Disaster Management Authority** for state capitals and cities with a municipal corporation.
  - The **Urban Authority** will comprise the **Municipal Commissioner** as the chairperson, the **District Collector** as the vice chairperson, and other members specified by the state government.
  - It will prepare and implement the disaster management plan for the area under it.
- **Formation of State Disaster Response Force:**
  - The Bill empowers the state government to constitute a **State Disaster Response Force (SDRF)**. The state government will define the functions of SDRF and prescribe the terms of service for its members.
- **Statutory status to existing committees:**
  - The Bill provides statutory status to existing bodies such as the **National Crisis Management**

**Committee (NMC) and the High Level Committee (HLC).**

- The **NMC** will function as the nodal body for dealing with major disasters with serious or national ramifications.
- The HLC will provide financial assistance to state governments during disasters. It will approve financial assistance from the **National Disaster Mitigation Fund**.
- The **Cabinet Secretary** will serve as the chairperson of **NMC**. Minister of the department with administrative control over disaster management will serve as chairperson of the **HLC**.
- **Appointments to NDMA:**
  - The Act provides that the central government will provide **NDMA** with officers, consultants, and employees, as it considers necessary.
  - The Bill instead empowers **NDMA** to specify the number and category of officers and employees, with previous approval of the central government.
  - **NDMA** may also appoint experts and consultants as necessary.

#### Concern:

- **Centralisation as a concern:**
  - The amendment Bill goes on to dilute the wording of the **National Disaster Response Fund** by removing the purposes for which the fund shall be used.
  - One of the major concerns of the **Disaster Management Act** has been the excess centralisation of decision making on funds, especially in situations where the disaster is severe.
- **Restricted definition of 'disaster':**
  - **The Disaster Management Act, 2005** and the proposed Bill fall short as the definition of a disaster (although wide enough to cover the idea of climate-induced disasters) remains restricted and static.
  - This is because the notified list of disasters under the Act restricts the inclusion of climate-induced disasters such as heatwaves which display regional variability and gradation specific to a geographical area.
  - This poses a problem as the very nature of climate-induced disasters is incongruous to the idea of a traditional disaster under the **Disaster Management Act, 2005** and the **proposed Bill**. The incongruity is exacerbated by the localised nature and impact of climate-induced disasters.
- If the Bill claims to be an improvised version of the **Disaster Management Act, 2005**, it does very little in learning from the failures encountered during the implementation of the Act while dealing with past disasters

#### PEPPER IT WITH:

NDMA, SDMA, DM Act 2005, NDRF, SDRF.

## PRE-SHOTS

### POLITY

#### Independence Day Speech of Prime Minister

##### News Excerpt:

Prime Minister addressed the nation from the ramparts of Red Fort on the **78th Independence Day**

##### Highlights from the Speech

##### General Overview

- The primary objective is to put "**Nation First**" and to give priority to national interests in all our actions.
- The dream of a "**Viksit Bharat**" by 2047 is shared by every citizen.
- Modernisation of every sector – **Tourism, MSME, Education, Healthcare, Transport and Agriculture** – by adopting global best practices.
- **Minimizing government** interference in daily life, mandating **annual reforms** in institutions, and focusing on **creating opportunities**, strengthening infrastructure, and enhancing basic amenities.
- Addressing natural disasters is a **priority**, with compassion and support extended to affected individuals.
- This year, we are celebrating the **75th anniversary of the Constitution**, focusing on our **constitutional duties**.

##### Ministry of Defence

- Progressing towards **self-reliance** in defence, emerging as an **exporter** and **manufacturer** of defence equipment.

##### Ministry of Finance

- India's success in the Fintech sector is noteworthy, with a **doubling of per capita income** and significant progress in **employment** and **banking reforms**.
- With ongoing infrastructure development and commitment to becoming the **third-largest economy**, we are prepared to work tirelessly to achieve our goals.

##### Ministry of Agriculture & Farmers' Welfare

- Promoting **natural and organic farming** with substantial budgetary support.
- India has the potential to become a global hub for **organic food**. The revival of **60,000 'Amrit Sarovars'**.

##### Ministry of External Affairs

- **Assuring neighbours**, especially Bangladesh, that India's development is not a threat to them.

##### Ministry of Communication

- **Optical fiber** networks have been installed in 200,000 Panchayats, and work on **6G technology** is underway.

##### Department of Space

- The space sector is evolving with increased **private involvement**. Chandrayaan's success has sparked renewed interest in science and technology.

##### Ministry of Social Justice and Empowerment

- Reforms drive change for the **underprivileged** and **marginalised** communities. The focus is on **inclusive development** and dignity for all.
- Significant strides are being made in **empowering women**, addressing crimes against women, and supporting the **transgender** community.

##### Ministry of Education

- The plan is to add **75,000 new medical seats** in the next five years and transform education to meet 21st-century needs.
- The aim is to position India as a **global education hub** and make higher education more accessible within the country.
- Investing heavily in **research and innovation**, focusing on developing world-class educational institutions.

##### Ministry of Tribal Affairs

- Efforts are ongoing to ensure that tribal communities benefit from government schemes as we approach Bhagwan **Birsa Munda's 150th birth anniversary**.

##### Ministry of Women & Child Development

- The **National Nutrition Mission** and women's self-help groups are central to social transformation. Funding for these groups is increasing, and extended maternity leave supports working women.
- Women are excelling in leadership roles, and there is a push for **swift justice** and fear of consequences for crimes against women.

##### Ministry of Health and Family Welfare

- Committed to creating a '**Swasth Bharat**' with achievements like the rapid **vaccination** drive against COVID-19.

##### Ministry of Environment, Forest and Climate Change

- India is focusing on **green growth** and **green jobs**, with a commitment to **renewable energy** and achieving Paris Accord goals ahead of schedule.

##### Ministry of Commerce and Industry

- The "**Vocal for Local**" initiative and "**One District One Product**" aim to make India a global manufacturing hub. India is also working towards becoming a leader in **semiconductor production** and gaming.

##### Ministry of Railways

- The goal is to make railways a **net-zero** carbon emitter by 2030.

##### Ministry of Jal Shakti

- The **Jal Jeevan Mission** is providing hygienic **tap water** to 12 crore families, promoting clean habits and environmental responsibility.

##### Ministry of Housing and Urban Affairs

- **Four crore homes** have been built for the poor, and three crore more are planned to further this agenda.

##### Ministry of Animal Husbandry

- Aim to address the needs of **fishermen** and **livestock keepers**, ensuring comprehensive development.

##### Ministry of New and Renewable Energy

- India has made significant strides in renewable energy, with ambitious targets for **green hydrogen** and a rise in **electric vehicle** demand.

#### Ministry of Power

- The commitment to **electrifying 18,000 villages** strengthens public confidence. Efforts continue to provide electricity to the remaining 2.5 crore families.

#### Ministry of Road Transport and Highways

- Infrastructure projects are connecting **remote villages** and **border areas**, addressing the needs of marginalised and remote communities.

#### Ministry of Youth Affairs & Sports

- Aim to train youth and become the **skill capital** of the world, with plans to host the **2036 Olympics** in India.

#### Ministry of DONER

- North East India is emerging as a hub for **medical infrastructure**, improving healthcare accessibility.

#### Ministry of Skill Development

- Significant funds are allocated for skill development and **internships**, with the goal of making Indian professionals prominent in the **global job market**.

#### Ministry of Law & Justice

- The move towards a **Secular Civil Code** aims to replace discriminatory laws and simplify legal frameworks.
- To ensure justice and modernise India's legal system, over 1,500 **archaic laws** were abolished, and the **Indian Judicial Code** was introduced.

## UPSC to Implement Aadhaar-Based Authentication

#### News Excerpt:

On August 28, 2024, the Centre granted the Union Public Service Commission (UPSC) **permission to use Aadhaar-based authentication** to verify candidates' identities on a **voluntary basis**.

#### About Aadhaar authentication

- It will be used to verify the identity of the candidates during the registration process on the **"One Time Registration"** portal and at various stages of examinations and recruitment tests using **Yes/No or e-KYC** authentication methods.
  - The decision comes in the wake of a significant incident last month when the UPSC **cancelled** the **provisional candidature** of a **Probationary Officer** for fraudulently attempting the civil services examination beyond his eligibility.
- The UPSC is required to **comply** with the **Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act, 2016**, as well as related rules and regulations set by the Unique Identification Authority of India (UIDAI).
  - Aadhaar is a **12-digit identification number** issued by the UIDAI, based on **biometric** and **demographic data** of eligible citizens.

- In June, the UPSC also decided to implement **facial recognition** and **AI-based CCTV surveillance systems** to curb cheating and impersonation during its exams. A tender was issued to develop two technological solutions:
  - Aadhaar-based fingerprint authentication** (or digital fingerprint capturing) and **facial recognition** of candidates, as well as live **AI-based CCTV surveillance** services, which will be used during the examination process.

## Why is Sanction for Prosecution Needed?

#### News Excerpt:

Recently, the **Karnataka Governor** permitted **investigation** and **prosecution** against Chief Minister Siddaramaiah in connection with alleged **irregularities** in allotting compensatory plots to Siddaramaiah's wife, whose land was acquired by the Mysore Urban Development Authority.

#### Provision for Prosecuting Public Servant:

- In anti-corruption laws, the **sanction** for prosecuting a public servant is **mandatory**. It is designed to **shield public servants** from frivolous and malicious prosecution for decisions made in their official duties.
- According to **Section 197** of the **Code of Criminal Procedure** (CrPC), no court can take cognisance of a case against a public servant without the sanction of an authority competent to remove that person. **Section 197** applies to anyone who "is or was" a public servant.
- Similarly, **Section 6** of the **Prevention of Corruption Act** (PCA) of 1947 required sanction to prosecute a public servant, but only while the person was in office; no sanction was needed once the person left office.
  - With the **2018 amendments** to the **PCA**, government **approval** is now needed even to **initiate** an investigation. The 2018 amendment also extended this requirement to **former public servants**.
- Under both the CrPC and the PCA, state and central governments had the authority to sanction the prosecution of their respective employees. This requirement was maintained in Section 19 of the PCA, 1988.
- Section 218** of the **Bharatiya Nagarik Suraksha Sanhita** (BNSS), which replaced the CrPC, **retains** these sanction provisions.

## Bill to raise women's marriage age

#### News Excerpt

The Himachal Pradesh Assembly passed the **Prohibition of Child Marriage (Himachal Pradesh Amendment) Bill, 2024**, to raise the minimum age of marriage for women from **18 to 21**.

#### Key Provisions of the bill:

- The Bill **amended** the **Prohibition of Child Marriage (PCM) Act**, passed by Parliament in 2006.

- **Section 2(a)** of the PCM Act **defines a “child”** as someone “who, if male, has not completed twenty-one years of age, and if a female, has not completed eighteen years of age”.
- The Bill **eliminates** the distinction based on **age** between “males” and “females”. It defines a “child” as “a male or female who has not completed twenty-one years of age”.
- The Bill also **amends Section 2(b)** of the PCM Act, which **defines “child marriage”** as “a marriage to which either of the contracting parties is a child”.
  - The Bill has added a clause giving it **overriding effect** over “anything contrary or inconsistent therewith contained in any other law including any custom or usage or practice governing the parties”.
    - This means that the new marriage age for women will **apply to everyone in Himachal Pradesh** regardless of what any other law may state or even if the religious or cultural practices of the individuals getting married allow legal minors to get married.
- The Bill **introduces Section 18A** to the PCM Act, which gives the same **overriding effect** to the entire central law and its provisions.
- The Bill also **increases the time period** for filing a **petition to annul** a marriage. Under **Section 3** of the PCM Act, the “contracting party who was a child at the time of the marriage” can file a petition to annul the marriage **within two years** of attaining majority (before they turn 20 for women and 23 for men).
  - The Bill increases this period to **five years**, allowing both women and men to file petitions to annul the marriage **before they turn 23** (the minimum age for marriage at 21 years is higher than the age of majority at 18 years).

#### Bill’s Journey to the Act

- The Bill passed by Himachal Pradesh amends the PCM Act by introducing a different marriage age for women, making it **inconsistent with the Act passed by Parliament**.
- Under **Article 254(1)** of the Constitution, if the **state legislature** enacts a law dealing with a subject in the **Concurrent List** and that law is “**repugnant**” — **inconsistent or contradictory** — with a central law. The repugnant portion of the state law will be “**void**”.
  - The **exception** to this is provided under **Article 254(2)**. If the Bill in question is repugnant to an earlier or existing law made by Parliament, the Bill **must be reserved** for the **President’s consideration** and needs to receive her assent as per **Article 201**.

#### Significance of the Bill

- **Gender Equality:** It raises the minimum marriage age for women to 21, aligning it with men and eliminating gender-based discrimination in marriage laws.
- **Health and Well-being:** By delaying marriage, the bill aims to reduce health risks associated with early

pregnancy and motherhood, improving outcomes for women and children.

- **Educational and Economic Empowerment:** Raising the marriage age allows women to complete their education and pursue careers, fostering social and economic independence.
- **Uniform Applicability:** The bill overrides personal laws and customs, ensuring that the minimum marriage age applies to everyone in Himachal Pradesh promoting a secular and uniform legal standard.
- **Legal Recourse:** The extended window to annul child marriages offers both men and women more time to make informed decisions about their marriages.

## Supreme Court pulled up Rule 170 of Drugs Act

### News Excerpt

Supreme Court, in a case against **Patanjali Ayurveda**, pulled up the **AYUSH ministry** for asking **state licensing authorities** “not to initiate/take any action under” Rule 170 of the Drugs and Cosmetics Act.

### Rule 170 of the Drugs and Cosmetics Act

- In **2018**, the government introduced Rule 170 to govern the **manufacture, storage, and sale of medicines** in the country “specifically for **controlling inappropriate advertisements of Ayurvedic, Siddha, and Unani medicines.**”
- The rule **prohibits** AYUSH drug manufacturers from advertising their products **without approval** and **allotment** of a **unique identification number** from the state licensing authority.
- The manufacturers must submit details such as **textual references** and **rationale** for the medicine from **authoritative books**, indication for use, and evidence of drug **safety, effectiveness, and quality**.
- The rule states that the application will be **rejected** if the manufacturer gives a **false impression** or makes **misleading or exaggerated** claims.
- The rule was introduced after a **parliamentary standing committee** highlighted the problem of misleading claims and the need for the AYUSH ministry to pursue the issue proactively.

### Challenges in regulating AYUSH drugs

- Like allopathic medicines, manufacturers of AYUSH drugs also have to seek a **license** from the drug controller.
  - As per the **Drugs and Cosmetics Act, phase I, II, and III trials** for the **approval** of new allopathic medicines or **equivalence studies** for generic versions must be conducted before a drug is cleared for marketing.
  - However, such trials are **not necessary** for **AYUSH drugs**.
- According to the aforementioned act, most AYUSH drugs **can be approved** simply based on the **rationale** provided in **authoritative texts** of that particular stream.

- **Safety trials** must be conducted **only for formulations** that use around 60 specific ingredients listed in the act, such as **snake venom, snakehead, heavy metals** such as **arsenic** and **mercury**, and compounds such as **copper sulphate**.
- For **licensing of drugs** containing these ingredients and **traditional drugs** used for new indications, **proof of effectiveness** has to be provided as per the Act.

## PMLA's bail concession for women

### News Excerpt

The Supreme Court granted bail to Bharat Rashtra Samithi (BRS) leader **K Kavitha** in graft and **money laundering** cases registered by the Central Bureau of Investigation (CBI) and Enforcement Directorate (ED), respectively, in connection with the alleged Delhi excise policy scam.

### About the Judgement

- The **Delhi High Court** dismissed K. Kavitha's bail plea, noting that she is a "**well-educated and accomplished woman**" with significant achievements in politics and social work. As a result, she could **not** be equated to a "**vulnerable woman who may have been misused to commit an offence**" — the category of women to whom the Prevention of Money Laundering Act, 2002 (PMLA) exception arguably applies.
- The **SC elucidated** that the concession provided to women under the PMLA owes its origin to **Article 15(3)** of the Constitution, which mandates that the state make **special provisions** for women and children, identifying them as **vulnerable groups**.

### Related judicial precedents

- In June 2023, the **Delhi High Court granted bail** to the wife of the Unitech promoter in a money laundering case being investigated by the ED.
  - During the proceedings, the **central agency** argued that the accused was **not** a "**household**" lady but was at the helm of multiple companies and thus did not qualify for the bail concession under the PMLA.
- Dismissing such a contention, the judge pointed out that neither the **PMLA** nor the **Constitution** intended to "**classify women**" based on their education and social standing. He reasoned that beneficial provisions reflective of the "**constitutional spirit**" must be given a liberal interpretation.
  - However, certain qualifiers were added—to be eligible for bail, the **accused must not be a flight risk, nor should they be capable of influencing witnesses or tampering with evidence**.

### Bail Provision and Exception in PMLA

- **Bail Provision:** **Section 45** of the PMLA imposes stringent "**twin conditions**" for obtaining bail in money laundering cases.
  - The **accused has to prove** that he or she is prima facie **innocent** of the offence.

- The **accused** should be able to **convince the judge** that he or she is not likely to commit any offence while out on bail.
  - § These rigorous requirements make the **provision draconian**, virtually making it **impossible** for anyone to **obtain bail** until the trial is completed.
- **Exception:** The proviso to **clause (1)** of **Section 45** allows courts the **discretion** to exempt persons **below 16 years of age, women, the sick** or the **infirm** from these dual conditions for bail.
  - It is **similar** to the exemptions for **women and minors** under other criminal law statutes, such as **Section 437** of the Code of Criminal Procedure, **1973 (CrPC)**.

## Anti-Rape Bill 'Aparajita' 2024

### News Excerpt

The **West Bengal** government has passed the '**Aparajita Woman and Child (West Bengal Criminal Laws and Amendment) Bill 2024**' as a response to the rape and murder of a trainee doctor at R G Kar Medical College and Hospital.

### Key Provisions of the bill

- **Death Penalty for Rape:** The Bill proposes capital punishment for those convicted of rape if their actions result in the victim's death or leave her in a vegetative state.
- **Time-Bound Investigations and Trials:** Investigations into rape cases must be concluded within 21 days of the initial report. Extensions are allowed, but only with written justification by a senior police officer.
- **Fast-Track Courts:** It mandates the establishment of special courts dedicated to handling cases of sexual violence.
- **Aparajita Task Force:** The bill calls for creating a specialised task force at the district level headed by a deputy superintendent of police. This task force will focus on investigating cases of rape and other atrocities against women and children.
- **Stricter Penalties for Repeat Offenders:** The legislation proposes life imprisonment for repeat offenders, with the possibility of the death penalty if the circumstances warrant it.
- **Protection of Victims' Identities:** The Bill includes provisions to protect victims' identities, ensuring their privacy and dignity during the legal process.
- **Penalties for Delaying Justice:** It introduces penalties for police and health officials who fail to act promptly or tamper with evidence. This aims to hold authorities accountable for any negligence in the judicial process.
- **Publication Restrictions:** The Bill imposes strict penalties for unauthorised publication of court proceedings related to sexual offences, with potential imprisonment of 3 to 5 years.

## SOCIAL ISSUES

### FSSAI launches a project to address microplastic contamination in Indian food

#### News Excerpt:

The Food Safety and Standards Authority of India (FSSAI) has embarked on a groundbreaking initiative to combat **microplastic contamination** in the Indian food supply.

#### About Project

- The project is titled **"Micro-and Nano-Plastics as Emerging Food Contaminants: Establishing Validated Methodologies and Understanding the Prevalence in Different Food Matrices."**
- It aims to develop and **standardise methods** for detecting micro and nano-plastics in food products while assessing their **prevalence and potential risks** to consumers.
- The initiative, which began in March 2024, is being conducted in collaboration with prominent research institutions across India, including the **CSIR-Indian Institute of Toxicology Research** (Lucknow), **ICAR-Central Institute of Fisheries Technology** (Kochi), and the **Birla Institute of Technology and Science** (Pilani).

#### Food Safety and Standards Authority of India (FSSAI)

- The Food Safety and Standards Authority of India (FSSAI) was established in **2008** under the aegis of the **Ministry of Health and Family Welfare**.
- Its mandate is to lay down **science-based standards** for articles of food and to **regulate** their **manufacture, storage, distribution, sale and import** to ensure the availability of **safe and wholesome food**.
- The Food Safety and Standards Act (FSSAI), passed in **2006**, is the **primary law governing the regulation of food products**.

### World's First Portable Hospital

#### News Excerpt:

The **Indian Air Force (IAF)** and the **Indian Army** have successfully executed the paradrop of a homegrown portable hospital, **Aarogya Maitri Health Cube**, from 15,000 feet.



#### About Aarogya Maitri Health Cube:

- This hospital, designed as a cube, is **lightweight, waterproof**, and capable of simultaneously **treating up**

**to 200 patients**. The hospital became **fully operational within just 12 minutes** after landing.

- These "cubes" establish **hospital-like facilities**. It is equipped with **advanced medical facilities**, including an **operating theatre, X-ray machines, blood test equipment, ventilators**, and provisions for treating a wide **range of injuries**, such as gunshots, burns, fractures, and severe bleeding.
- It can be deployed using various methods, including **aircraft and drones**. It integrates **artificial intelligence (AI)** and **data analytics** for **effective coordination, real-time monitoring**, and efficient management of medical services in the field.

#### About Project BHISHM

- **Project BHISHM (Bharat Health Initiative for Sahyog Hita and Maitri)** was launched in **February 2022**, prompting the **Defence Ministry** to establish a task force to drive this initiative forward.
- At the **Global South Summit** in January 2023, the **Prime Minister** introduced the **'Aarogya Maitri' project**. India pledged to provide **essential medical supplies** to developing countries impacted by **natural disasters or humanitarian crises**.

### Dhangars of Maharashtra and their demand

#### News Excerpt:

Recently, a large group of **Dhangars in Khamgaon, Buldhana district, Maharashtra**, demanded a **"grazing corridor"** for their sheep and goats.

#### About Dhangars Community

- The Dhangars are a **community of shepherds** residing in several states, including **Maharashtra, Gujarat, Karnataka, and Andhra Pradesh**. They are also known by different names like **Golla and Kuruba**.
- Dhangars have traditionally **herded their animals** along specific routes for generations. However, with the **forest department** marking out **protected areas**, their movement has increasingly been viewed as **encroachment**.
- The Dhangars' lifestyle is deeply **connected to the seasons**, often following the rains and travelling for much of the year.
- The routes they travel are crucial not only for their livelihood but also as a **cultural heritage**. Changing these grazing routes would be **economically unviable** for them.
- The **current population** of the Dhangars is uncertain, but they are believed to number **around 1 crore**, making up about **9% of Maharashtra's population** (according to the **2011 census**). Around **40% of Dhangars** rely solely on herding for their livelihood.

#### Caste and Political Aspects

- **In Maharashtra**, the Dhangars are listed as part of the **Vimukta Jati and Nomadic Tribes (VJNT)** but have long sought **Scheduled Tribe (ST) status**. In **other parts of**

the country, this community is recognised as "Dhangar" and enjoys **Scheduled Tribe reservation**.

- The community's demand for grazing rights is closely tied to their **ongoing struggle for ST status**. It has faced resistance from existing ST communities in Maharashtra, who fear diluting their quota benefits.
- Although the **Forest Rights Act 2006** allows **traditional occupations** such as **grazing**, it benefits mainly **Scheduled Tribes**. The **Dhangars**, classified as a **nomadic tribe**, have not received these benefits.

## Government Banned 156 Combination Drugs

### News Excerpt:

The government has banned **156 fixed-dose combination (FDC) drugs**, including well-known medications like **Cheston Cold** and **Foracet**, which are used for cold, fever, and pain relief.

### About FDC drugs

- Fixed-dose combination drugs contain **two or more active ingredients** in a **single dosage form**, such as a pill or capsule.
- They are designed to **simplify treatment regimens** for conditions like tuberculosis and diabetes, making it **easier for patients** to adhere to their medication schedules.

### Reasons for the Ban:

- The ban aligns with efforts to **eliminate irrational drug combinations** approved **without adequate trials**.
- To **combat antibiotic resistance** caused by the **overuse of antibiotic FDCs**.
- To address **pricing control issues**, companies often use FDCs to **evade price regulations** on essential medicines.
- New regulations require **FDCs** to be treated as **new drugs** and approved by the **central drug regulator**.
- A **parliamentary panel** and **subsequent committee reviews** have identified and recommended banning irrational FDCs.

### Availability and Impact:

- This move marks the **largest crackdown on FDCs since 2018** when 328 such drugs were banned. In total, **499 FDCs** have been banned **since 2014**.
- Manufacturers have been ordered to **halt production and sales** of these banned drugs. However, they may still be available in the market for some time due to ongoing legal challenges.
- Consuming these banned FDCs is unlikely to cause harm immediately, but their **long-term use poses risks**.

## Government plans FMD-free zones

### News Excerpt:

The government plans to establish **Foot and Mouth Disease (FMD)- free zones** in the states where **advanced vaccination** efforts are underway.

### Foot and Mouth Disease (FMD)

- **FMD** is a highly **contagious viral disease** affecting **cloven-hoofed animals** such as **cattle, buffaloes, sheep, goats, and pigs**.
- FMD results in reduced **milk production**, slower **growth rates**, **infertility**, diminished **working capacity** in bullocks, and **trade restrictions** in the international market.
- The primary method for controlling FMD is through **mass vaccination of vulnerable livestock** at regular intervals until the disease incidence decreases, eventually leading to its eradication.

### FMD-free zones:

- The Union government has decided to establish **FMD-free zones** in Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Uttarakhand, Punjab, Haryana, Maharashtra, and Gujarat.
  - This move aims to **expand export opportunities** for Indian animal products and enhance the country's global market presence.
- The Department of Animal Husbandry and Dairy and the Food and Agriculture Organization jointly organised a workshop on '**Animal Infectious Disease Priorities**'.
  - The workshop prioritised **20 major animal infectious diseases**, selected based on their severity, transmissibility, available interventions, impact, prevalence, and national importance.
  - An **action plan** focused on **five critical areas**: coordination, communication, monitoring and surveillance, prevention and control, therapeutics, and socio-economic and contingency planning.

### National Animal Disease Control Programme (NADCP):

- **NADCP**, launched in **September 2019**, aims to **control FMD and brucellosis** by **vaccinating 100%** of the population of cattle, buffalo, sheep, goat and swine **for FMD** and all female bovine calves of 4-8 months of age for brucellosis.
- The programme aims to **control FMD** through **vaccination by 2025** and **eradicate it by 2030**, leading to increased domestic production and exports of milk and livestock products.
- The NADCP is a **Central Sector Scheme** in which the **Central Government provides 100%** of funding to the States and Union Territories.

## Oral cholera vaccine

### News Excerpt:

**Bharat Biotech International Ltd (BBIL)** launched its **Oral Cholera Vaccine (OCV)**, **Hillchol (BBV131)**.

### About OCV Hillchol

- **BBIL** developed the vaccine under licence from **Hilleman Laboratories**, funded by **Merck**, USA, and Wellcome Trust, UK.
- While **Hillchol is not the first Cholera Vaccine**. It can protect against a **new strain of the disease**.

- It also offers a **simplified production process**, which makes it “cheaper” than those currently on the market.
- The **two-dose Hillchol vaccine** is administered with a **14-day gap** between the two doses and is suitable for children **older than one year**.
- It is packed as a **single-dose respule** and should be stored between **plus 2-8°C**.

#### About Cholera

- Cholera is an acute **diarrhoeal infection** caused by eating or drinking **food or water** contaminated with the **bacterium Vibrio cholerae**.
- Researchers have estimated that every year, there are **1.3 to 4.0 million cases** of cholera and **21,000 to 143,000 deaths** worldwide due to the infection.
- It takes between **12 hours and 5 days** for a person to show symptoms after consuming contaminated food or water. Cholera affects both **children and adults** and can kill within hours if untreated.

#### Global cholera statistics

- According to the **World Health Organization (WHO)**, cholera continues to be a major **public health challenge** as the number of reported cholera cases increased by **13%** and deaths by **71%** in 2023 compared to 2022.
- **Forty-five countries** reported cases, and **38%** of the reported cases were among **children under five years of age**.
- The geographical distribution of cholera changed significantly from 2022 to 2023, with a **32% decrease** in cases reported from the **Middle East and Asia** and a **125% increase in Africa**.
- Multiple countries have reported deaths from cholera, which occurred outside of health facilities, known as ‘**community deaths**’.
- **Afghanistan, the Democratic Republic of the Congo, Malawi, and Somalia** reported large outbreaks of **over 10,000** suspected or confirmed cases, with **Ethiopia, Haiti, Mozambique, and Zimbabwe** adding to the tally in 2023.

### New SHe-Box portal

#### News Excerpt

The centre launched a **centralised platform** for registering and monitoring **complaints** of **sexual harassment** of women in the workplace.

#### About SHe-Box portal

- The new She-Box (**sexual harassment electronic box**) portal serves as a **centralised repository** of information related to **Internal Committees (ICs)** and **Local Committees (LCs)** formed across the country, encompassing both the government and private sectors.
- **SHe-box**, hosted on the **Women and Child Development Ministry's website**, also seeks to ensure the “effective implementation” of the **Sexual**

#### Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013.

- It offers a common platform for **filing complaints, tracking their status**, and ensuring that ICs process complaints in a **time-bound manner**. Through a designated **nodal officer**, the portal will enable **real-time monitoring** of complaints.
- The portal will ensure that complaints can be safely registered **without personal information** being publicly accessible.
- Once a complaint is submitted to the ‘**SHe-Box**’, it will be directly sent to the **internal complaints committee (ICC)** of the ministry/department/PSU/autonomous body, etc., concerned, which has jurisdiction to inquire into the matter. The ICC will take action as prescribed under the Act and update the status of the complaint.

#### Significance of the SHe-Box

- It will enhance **women's participation** in the workforce and ensure that workplaces are **safe and secure**, enabling women to thrive and succeed.
- It furthers the government's commitment to creating a safer and more **inclusive working environment** for women across India.

#### About The Sexual Harassment at Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013:

- The Government of India (GoI) has enacted this Act to create a **safe and secure workplace** for women free from **sexual harassment**.
- This Act caters to women working in **organised and unorganised sectors** and establishes a redressal mechanism for disposing of their complaints. **Domestic workers** are also included in its ambit.
- It defines sexual harassment at the workplace in a comprehensive manner to cover circumstances of **implied or explicit promise or threat** to a woman's employment prospects or the creation of a **hostile work environment** or **humiliating treatment**, which can affect her health or safety.

### Queen bee syndrome

#### News Excerpt

The “Queen Bee” Syndrome in the workplace is a rising issue that **hinders** the creation of **inclusive professional environments**.

#### About Queen bee

- It is a term **applied to women** who have succeeded in traditionally **male-dominated fields**; it implies that such women often take on ‘**masculine**’ traits and **distance themselves** from other women in the workplace to succeed.
- A queen bee is likely to treat a female subordinate more **critically**. They tend to **mistreat** them and **hinder** their professional advancement, contributing to **gender inequality** in the workplace.
  - For example, **Margaret Thatcher**, the first female prime minister of the United Kingdom (UK), was



labelled as the queen bee for not promoting other women's careers in her cabinet.

### Are Gender Stereotypes to Be Blamed?

- According to one study, the queen bee syndrome may **partly stem** from long-standing **gender stereotypes**. Women are considered to lack self-assertion and decisiveness, and traditional leadership skills are often seen as synonymous with masculinity.
  - This builds **pressure on professional women** to adopt these qualities perceived to be masculine, especially in work environments where men form the majority.
- High-achieving women then **subconsciously develop** the queen bee syndrome due to the lack of opportunities for women in the professional sector.
- With few top spots available to women, those already on top of the ladder feel the **need to safeguard** their position by exhibiting 'masculine' traits as a form of **self-group distancing**.

## Egg, sperm donors have no parental right on child

### News Excerpt:

Recently, The **Bombay High Court** reiterated that a **sperm or egg donor cannot claim to be a biological parent** of a child born through their gamete and will have no legal right.

### Background:

- The case for the custody of **two children** is set in the context of some rather complicated family dynamics. The twins' parents are currently living apart.
- The **egg donor** is the mother's younger sister, who lives with the twins' father. Just a few weeks after donating her eggs, she had **lost her daughter and husband** in a tragic accident.
- The mother argued that the daughters were **deemed legitimate children** of the couple within wedlock and that all rights of biological parents vest in them.
- She argued the twins are presently in custody of her sister and estranged husband, whom they consider to be their mother and father.

### Law on surrogacy in India:

- The **Surrogacy (Regulation) Act, 2021** and the **Assisted Reproductive Technology (ART) (Regulation) Act, 2021** govern the law on surrogacy in India.
  - Surrogacy is defined as an **arrangement** in which a woman agrees to carry a **pregnancy** that is genetically unrelated to her and her husband, to carry it to term and **hand over the child** to the genetic parents for whom she is acting as a surrogate.
- However, since the surrogacy agreement in this case was signed in 2018, the **2021 Act cannot apply**. Instead, the **2005 National Guidelines on Assisted Reproductive Technologies (ART) Clinics** would apply.

- The 2005 guidelines state that the "donor has to relinquish all parental rights".
- Both the Surrogacy Act 2021 and the Assisted Reproductive Technology (Regulation) Act 2021 **retained the intention** behind the 2005 guidelines that the intending parents are to be considered biological parents of the surrogate child.
- The Surrogacy Act 2021 and subsequent regulations provide for the **prohibition of commercial surrogacy** and promote 'altruistic' surrogacy.

### Altruistic surrogacy:

- It means the surrogacy in which no charges, expenses, fees, remuneration or monetary incentive of whatever nature, except the **medical expenses** and such other prescribed expenses incurred on the surrogate mother and the **insurance coverage** for the surrogate mother, are given to the surrogate mother or her dependents or her representative.
- This provision ensures that surrogacy arrangements in India remain **ethical and transparent** while prioritising the well-being of all parties involved.

## ECONOMY

### RBI Governor Named Top Central Banker Globally

#### News Excerpt:

For the **second consecutive year**, Reserve Bank of India (RBI) **Governor Shaktikanta Das** has been given an **"A+" rating** in the **Global Finance Central Banker Report Cards 2024**.

#### More detail about News:

- **Two other central bank governors: Christian Ketel Thomsen of Denmark and Thomas Jordan of Switzerland** also received the coveted **"A+" rating** in this report.
- This annual report, published by **Global Finance in 1994**, evaluates **central bank governors** in nearly **100 countries** on their performance in controlling **inflation**, promoting **economic growth**, maintaining **currency stability** and managing **interest rates**.

#### About Global Finance Central Banker Report Cards:

- This Report Card evaluates governors of central banks from **nearly 100 major countries**, territories and regions, including the European Union, the Central Bank of the Eastern Caribbean, the Bank of Central African States and the Central Bank of West African States, has been a **standard of excellence** in the financial world.
- Central bankers have been on the front lines in the battle against **inflation** in recent years, primarily **using higher interest rates** as their main tool.
- Governors are graded on a scale ranging **from "A+" for excellent performance to "F" for complete failure**.

#### About Global Finance:

- **Established in 1987**, Global Finance reaches an audience of **50,000 readers** across **193 countries and territories**.
- Its **online platform, GFMag.com**, features insightful analysis and articles, backed by **37 years of expertise** in international financial markets.
- **Global Finance's audience includes senior corporate and financial officers responsible** for making investment and strategic decisions at multinational companies and financial institutions.

## RBI to Introduce Unified Lending Interface

### News Excerpt:

The **Reserve Bank of India (RBI) Governor** announced that the **Unified Lending Interface (ULI)** will soon be launched nationwide.

### More detail about News

- Last August, the RBI introduced a **pilot project** for a **public technology platform** designed to **streamline credit processes, enhance efficiency, lower costs, expedite disbursements, and scale up operations**.
- The RBI Governor proposed naming this platform the **Unified Lending Interface (ULI)**.
- Modeled after the **Unified Payments Interface (UPI)**, which has revolutionized retail payments in India, **ULI aims to transform the lending sector**.
- India's **swift digital progress** has fostered a **digital public infrastructure** that encourages innovation in **payments, credit, and financial services** by **banks, non-bank financial companies (NBFCs), fintech firms, and startups**.

### Need of Unified Lending Interface (ULI):

- Currently, **credit appraisal data** are dispersed across various entities such as **Central and State governments, account aggregators, banks, credit information agencies, and digital identity providers**. This fragmentation creates obstacles for seamless and timely rule-based lending.
- The **ULI platform** will enable a **smooth, consent-based transfer of digital information**, including **state land records, from multiple data sources to lenders**. This will streamline credit appraisals, particularly benefiting **agricultural and MSME borrowers**.
- The **ULI architecture** will feature standardized **Application Programming Interfaces (APIs)** designed for **easy integration, facilitating digital access to diverse data sources**.
- This approach will **simplify technical integration**, provide borrowers with **faster credit access**, and reduce the need for extensive documentation.
- The RBI governor described the **'new trinity' of JAM-UPI-ULI** as a **revolutionary advancement** in India's digital infrastructure.

## Unified Payments Interface (UPI)

### About:

- It was **launched** in India in **2016** by **RBI and NPCI** in collaboration with various banks and payment service providers.
- **NPCI is the regulator** of UPI.

### Objective:

- It was to **simplify digital payments** and **promote financial inclusion** by enabling **easy and convenient money transfers**.
- It is a **real-time payment system** that facilitates **24\*7 and 365 days** fund transfers through **mobile devices** between **bank accounts** in India.
- It allows users to **link multiple bank accounts to a single mobile application**, providing a **seamless and secure platform** for making payments.
- Customers are **not required to enter the details** such as Card no, Account number, IFSC etc.
- The **JAM (Jan Dhan, Aadhar, and Mobile) trinity** is already used by the government to **directly transfer benefits** to beneficiaries' bank accounts.

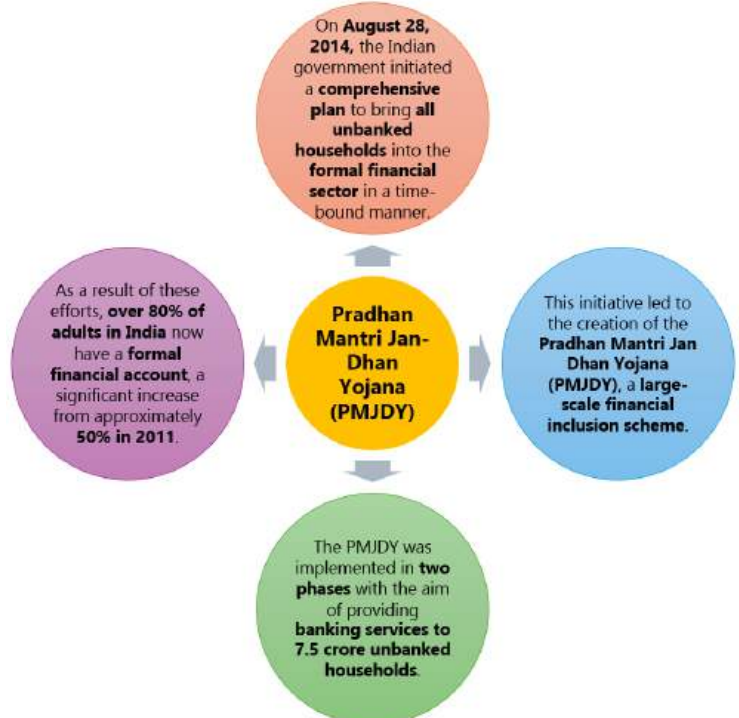
## 10 Years of Jan Dhan Yojana

### News Excerpt:

The **Pradhan Mantri Jan Dhan Yojana (PMJDY)** has reached its **10-year milestone**.

### More detail about News:

- As of Aug 14, 2024, banks have opened nearly **53 crore PMJDY accounts**, with **total deposits** amounting to **Rs 2.31 lakh crore**, which is more than **triple the number of accounts and deposits** compared to **14.7 crore accounts with Rs 15,670 crore** in **March 2015**.
- **Public sector banks** have been instrumental in this effort, accounting for around **78% of these accounts**.



- The **average balance in PMJDY** accounts has also seen a significant rise, increasing **more than fourfold** to **Rs 4,352 in August 2024** from **Rs 1,065 in March 2015**.

#### Promoting Financial Inclusion:

- The initiative has also played a crucial role in **narrowing the gender gap** in **financial account ownership**.
- A detailed analysis of PMJDY data reveals that **81.2% of these accounts** are **active**, **55.6% are held by women**, and **66.6% are in rural and semi-urban areas**.
- **Uttar Pradesh** has the **highest number of PMJDY accounts** at **9.4 crore**, followed by **Bihar** with **6 crores**.

#### Online payments got a boost:

- Over the **past decade**, **Rs 38.49 lakh crore** has been transferred via **Direct Benefit Transfer (DBT)**, **preventing leakages** of **Rs 3.48 lakh crore**.
- Additionally, the program has facilitated **digitalization, e-commerce, and payment systems**.
- As of July 2024, India recorded an impressive **55.7 billion UPI transactions**.

#### Barriers to Financial Inclusion:

- Looking ahead, **four key pillars** have been identified to address the existing barriers to financial inclusion through both **supply-side and demand-side measures**.



- Therefore, it is essential to design **customer-centric products** that cater to the **varying needs of customers** throughout different stages of their lives.

## Cabinet Approves 12 Industrial Nodes

### News Excerpt:

India is set to develop a **network of Industrial Smart Cities** along the **Golden Quadrilateral**, following the government's approval of **12 new projects** valued at **28,602 crore** under the **National Industrial Corridor Development Programme (NICDP)**.

### More detail about News

- These projects aim to reshape India's industrial landscape by creating **world-class greenfield industrial smart cities** that adhere to **'plug-n-play'** and **'walk-to-work'** concepts.
- This initiative is part of the broader goal to **foster robust, sustainable infrastructure** that attracts investment and promotes **balanced regional development**.

### Key Developments:

- **Strategic Expansion:**
  - These projects aim to enhance India's **manufacturing capabilities and economic growth**.
  - **The 12 industrial areas**, spanning across **10 states** and positioned along **six major corridors**, will be in Uttarakhand, Punjab, Maharashtra, Kerala, Uttar Pradesh, Bihar, Telangana, Andhra Pradesh, and Rajasthan.
- **Focus on Investment and Growth:**
  - The **NICDP** is designed to cultivate a **dynamic industrial ecosystem** by encouraging investments from **large anchor industries and MSMEs**.
  - These industrial nodes are expected to play a key role in achieving **\$2 trillion in exports by 2030**, aligning with India's vision of **self-reliance** and **global competitiveness**.
- **Modern Infrastructure and Smart Cities:**
  - The new industrial cities will be developed as **greenfield projects** that meet **global standards**.
  - Built **"ahead of demand,"** these cities will feature **advanced infrastructure** and be designed to support **sustainable and efficient industrial operations**.
  - The projects will also integrate the **PM GatiShakti National Master Plan**, ensuring **multi-modal connectivity** and **seamless movement** of goods, people, and services.
- **Vision for 'Viksit Bharat' and Economic Impact:**
  - The approval of these projects aligns with the vision of **'Viksit Bharat,'** or a **developed India**.
  - By positioning India within **Global Value Chains (GVC)**, the NICDP provides **ready-to-allot land parcels**, facilitating both domestic and international **investments in manufacturing**.
- **Employment Generation and Sustainability:**
  - The **NICDP** is expected to create up to **1 million direct jobs** and an **additional 3 million indirect jobs** through **strategic industrialization**.
  - This will boost **socio-economic development** in the regions where these projects are being implemented.
  - Furthermore, the projects are designed with a focus on **sustainability**, incorporating **Information and communications technology (ICT)-enabled utilities** and **green technologies** to **minimize environmental impact**.

- The approval of these industrial nodes is a significant progress in India's journey to become a **global manufacturing leader**.

#### National Industrial Corridor Development Programme (NICDP)

- NICDP is India's most ambitious **infrastructure initiative**, aimed at creating new industrial cities as "**Smart Cities**" by **integrating next-generation technologies** across various **infrastructure sectors**.
- The Government of India is advancing several **industrial corridor projects** under this programme, designed to develop **futuristic industrial cities** that can compete with the **world's top manufacturing and investment hubs**.
- This initiative is expected to generate **employment opportunities**, stimulate **economic growth**, and contribute to the overall **socio-economic development** of the country.

## India Plans a \$15 Billion Boost for Chip Manufacturing

### News Excerpt:

The **Indian government** is planning to increase its investment in the **second phase** of its **chip manufacturing incentive policy** to **\$15 billion**, up from the **\$10 billion** allocated in the **first phase**.

### More detail about News:

- Earlier in December 2021, the government launched a **chip incentive scheme worth 76,000 crore**, providing a subsidy that covers **50% of a plant's capital expenditure costs**.
- These moves are part of India's broader push to establish a **domestic semiconductor industry**.

### Leading companies:

- **Tata** is leading the way by building **India's first commercial semiconductor fabrication plant** in partnership with **Taiwan's Powerchip Semiconductor Manufacturing Corporation (PSMC)**, with a projected cost of over **91,000 crore**.
- Additionally, the government has approved **three assembly and testing plants**, known as **ATMP (Assembly, Testing, Marking, and Packaging)** and **OSAT (Outsourced Semiconductor Assembly and Test)**, which are simpler to establish compared to fabrication plants.
- The **first of these three plants**, approved in **June 2023**, is being developed by the **U.S.-based Micron Technology**.
- **Tata** is also constructing an **assembly plant in Assam** to cater to specific clients, while the third facility is being built by **C G Power and Industrial Solutions** of the **Murugappa Group**, in collaboration with **Japan's Renesas Electronics**.

### Government's Initiative:

- These projects are expected to cost over **1.48 lakh crore**, with the **central government** contributing nearly **59,000 crore** in **capital expenditure subsidies**.
- Each plant's cost and the corresponding government subsidies have been outlined. **State governments** are also contributing by offering **land and electricity at reduced rates** to make these projects more attractive.

### The status of India and other countries:

- Currently, **India has minimal involvement** in semiconductor chip manufacturing.
- The majority of global chip production is concentrated in countries like **Taiwan and the United States**.
- The **U.S.** has implemented a **chip incentive scheme** worth approximately **\$50 billion**, which is significantly larger than India's.
- The **European Union** has also introduced a similar **incentive program to attract chip manufacturers**.

### Significance of Semiconductor chip:

- **Developing domestic fabrication plants** will bolster **India's economic and strategic goals**, as chips are vital for various industries, from **aerospace to automotive and consumer electronics**.
- In light of **global geopolitical tensions**, particularly the strained relationship between the **U.S. and China**—two major players in the technology sector—India aims to capitalize on government-backed initiatives to strengthen its local industry.

### Challenges and Requirements:

- However, it's important to acknowledge that the **Tata-PSMC fabrication plant** will not produce the **most advanced chips**, as neither company possesses the necessary **cutting-edge technology**.
- The **barriers to entry** in chip manufacturing are substantial, as demonstrated by **China's experience** with its **Semiconductor Manufacturing International Corporation (SMIC)**, which has faced significant challenges despite heavy investment.
- **Advanced chip manufacturing**, especially for smaller node sizes, requires extensive technological innovation, an area where companies like **Taiwan Semiconductor Manufacturing Company Ltd (TSMC)** hold a significant advantage.

### Semiconductors:

- **Semiconductors**, also known as **integrated circuits (ICs)** or **microchips**, are typically made from pure elements like **silicon or germanium**, or from compounds such as **gallium arsenide**.
- Through a process known as **doping**, small amounts of **impurities** are introduced to these pure elements, significantly **altering their electrical conductivity**.
- Semiconductors are crucial in the production of **electronic devices, making them an essential part of modern life**.

## Dynamic pricing model

### News Excerpt:

The UK-based band Oasis said it would add two more shows to its upcoming UK and Ireland stadium tour, citing "phenomenal demand".

#### More detail about news:

The incident has also turned the spotlight on ticketing company Ticketmaster's controversial dynamic pricing model, drawing the attention of the United Kingdom's Competition and Markets Authority (CMA) and the European Commission.

#### What is dynamic pricing?

- **Dynamic pricing** is based on the law of demand in economics. As the demand for an item increase given the supply stays steady, its price will also increase.
- Other factors like the presence of competitors and customer behaviour also influence prices.
- For instance, ride-sharing companies like Uber and Ola use "surge pricing" where increased demand for services (say during peak traffic hours) results in higher charges.
- Airlines also actively use dynamic pricing to charge different passengers different prices for the same seats, depending on when tickets were booked, the popularity of the flight route, and so on.

#### What is Ticketmaster?

- Ticketmaster is a major American ticket sales and distribution company. It manages 82 per cent of the major amphitheatres and 78 per cent of the highest-selling arenas in the US, according to data from the American Economic Liberties Project.
- Following its 2010 merger with Live Nation, then the biggest concert promotion company, the combined Live Nation Entertainment has virtually established a monopoly in the concert world.
- This status has allegedly allowed the company to exploit its market position. A 2018 investigation from The New York Times showed that Live Nation Entertainment pulled shows in 2013 from the Atlanta Gwinnett Centre to punish the venue for switching to a competitor.

## Energy transition Index 2024

#### News Excerpt:

India was placed 63rd in the world on the World Economic Forum's (WEF) 2024 Energy Transition Index.

#### More about the Index:

- In 2024, the World Economic Forum's Energy Transition Index (ETI) recorded the highest global average scores in its history, with a modest 0.2% improvement in system performance and a notable 2% growth in transition readiness.
- Only 28% of countries showed strong improvement in the dimensions with the lowest score, indicating progress towards a more balanced system; in addition, only 17%

of countries balanced the progress in dimensions of the energy triangle.

#### Top 10 Countries Fostering Effective Energy Transition 2024:

- The Energy Transition Index (ETI) 2024, released by the World Economic Forum earlier this year, ranked 120 countries based on their advancements towards a sustainable, affordable, and secure energy future.
- Advanced economies from Northern Europe, led by Sweden, Denmark, and Finland, have made significant progress in transitioning to sustainable energy systems, with high scores in renewable energy deployment, energy efficiency, and environmental sustainability.

#### Where does India rank?

- India has ranked 63rd out of 120 countries in the 2024 Global Energy Transition Index, which is an improvement from its previous position of 67th in 2023.
- India has been advancing in its energy equity, security, and sustainability, particularly in the renewable energy sector, where renewable sources and biomass account for 42% of its power generation capacity.
- India is leading the way towards creating outcomes that may be replicated abroad while making strides in energy fairness, security, and sustainability.
- WEF additionally highlighted and praised India's advancements in clean energy infrastructure, noting that renewable energy and biomass account for 42% of its power production capacity, making it the world's fourth-largest renewables market.

## Inflation under 4%

#### News Excerpt:

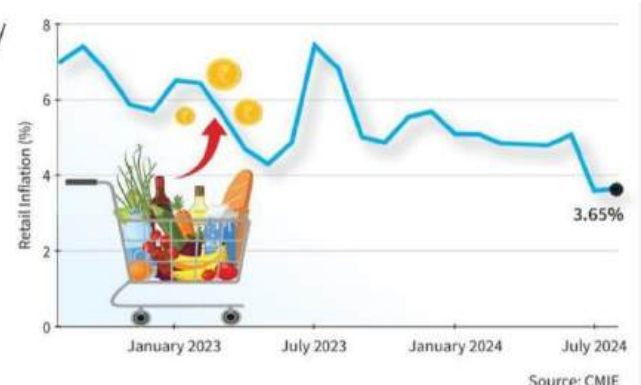
India's retail inflation stayed under the Reserve Bank of India's median target of 4% for the second successive month in August, even as it inched up marginally to 3.65% from an upwardly revised 3.6% in July. August's inflation pace is the second slowest in five years.

#### More about news:

- The latest retail inflation data from the National Statistical Office yet again highlights the challenge in achieving durable price stability.
- Provisional estimates for year-on-year price gains in August show the headline rate based on the Consumer

### Marginally faster

India's retail inflation quickened slightly to 3.65% in August from a revised 3.6% in July. It stayed under the Reserve Bank of India's target of 4% for the second consecutive month



Price Index (CPI) quickened marginally to 3.65%, from July's 3.60%, as a sharp rebound in vegetable inflation led to a wider acceleration in overall food price gains.

- Overall, rural inflation stayed elevated compared to that faced by urban consumers, rising marginally from 4.1% in July to 4.16%, while urban inflation stood at 3.14% in August.

**Vegetable inflation:**

- **Tomatoes** reported the sharpest drop in prices, which declined **47.9%** year-on-year, and 28.8% on a month-on-month basis.
- The **National Statistical Office** said that India's food inflation for August was the second lowest since June 2023.
- Despite the respite in tomato prices, vegetable inflation shot back into double-digits to hit 10.7% after slipping to 6.8% in July.
- The price of spices fell 4.4% from last August, but pulse inflation stayed firm at 13.6%, marking the 15th straight month of 10%-plus price rise.

**Inflation forecast:**

- The central bank had estimated an average inflation of 4.4% in the July to September quarter, but with the first two months averaging just 3.6%, that would mean an inflation pace of 6% in the ongoing month, which may be unlikely.
- Experts anticipate a sharp pickup in consumer price inflation to around 4.8% in September, and range between **4.4% and 4.7%** in the second half of **2024-25**.
- They expressed wariness about the impact of above normal rainfall and the development of La Nina conditions which could pose upside risks to the food inflation trajectory in the near term.
- With **India's GDP** growth undershooting the RBI's estimate of 7.1% in the first quarter, a change in the monetary policy stance could not be entirely ruled out in October.

**Inflation status for rural India:**

- On a month-on-month basis, the **CPI** was flat in August, while the Consumer Food Price Index declined **0.44%**. However, the rural food price index declined just 0.25% while urban food prices dropped 0.9% on a sequential basis.
- The prices of fruits rose 6.5%, while inflation in eggs rose to 7.14% from 6.8% in July. Cereals provided some relief, with inflation easing from over 8% to 7.3% in August. Inflation in personal care and effects cooled to 7.94% in August from 8.44% in July.
- Among the 22 States that the NSO calculates inflation rates for, just seven States outpaced the national average of 3.65%. Bihar clocked the sharpest inflation at 6.62%, followed

by Odisha (5.63%), Assam (5.03%), Uttar Pradesh (4.9%), Haryana (4.12%), and Kerala (4.1%).

**Consumer Price Indices (CPI):**

- Consumer Price Indices (CPI) measure changes over time in the general level of prices of goods and services that households acquire for the purpose of consumption.
- CPI is widely used as a macroeconomic indicator of inflation, as a tool by governments and central banks for inflation targeting and for monitoring price stability, and as deflators in the national accounts. CPI is also used for indexing dearness allowance to employees for increase in prices.
- It is released by the **National Statistical Office (NSO)**.
- **The Central Statistics Office (CSO)**, Ministry of Statistics and Programme Implementation has revised the Base January the **Consumer Price Index (CPI)** from 2010 to 2012 with effect from the release of indices for the month of January 2015.

**AGRICULTURE**

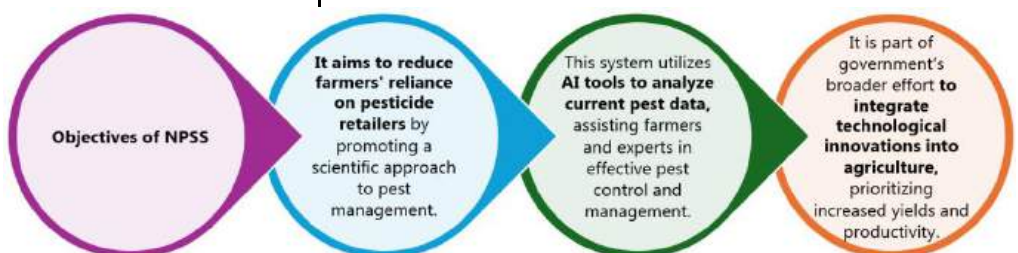
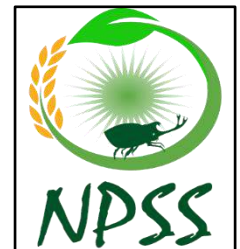
**AI based Pest Control**

**News Excerpt:**

The Union Government has introduced the AI-based **National Pest Surveillance System (NPSS)**, a platform designed to connect farmers with agriculture scientists and experts through their phones to enhance pest control measures.

**Functionality and Benefits**

- NPSS enables farmers to take photos of infested crops or insects and share them **directly with scientists and experts via the platform**.
- This real-time communication facilitates accurate **pest identification and timely intervention**.
- By ensuring the correct pesticide application at the right time, **NPSS addresses the challenge of excessive pesticide use**.
- The system also enhances farmers' confidence and contributes **to increased production while preserving soil health**.
- The NPSS is **expected to benefit around 14 crore farmers** across the country. The technology will be disseminated to states, which will incorporate it into their outreach programs.



- Following successful pilot schemes and trials, the platform is ready for nationwide implementation, with no additional funding required.

## Australia is now the top supplier of lentils to India, ahead of Canada

### News Excerpt:

In 2023, India imported **6.8 lakh tonnes** of lentils from **Canada**, accounting for **45.41%** of its **total lentil imports**, while imports from **Australia** reached **7.7 lakh tonnes**, representing **51.25%**.

### More detail about news:

- **This year, Australian lentil exports** to India surged to 3.6 lakh tonnes, making up **66.3% of India's total lentil imports** between January and July 2024.
- In contrast, **Canada's exports** to India during this period amounted to just 1.4 lakh tonnes, or **26.4% of the imports**.

### Declining Import and Indo-Canada relation:

- The **decline in Canadian lentils** in India's import basket coincided with **deteriorating relations** between **India and Canada in 2023**, primarily over the growing threat of **Khalistani terrorism**, which India considers a national security concern.
- The situation further deteriorated when the **Canadian Prime Minister** accused India of involvement in the assassination of a **Khalistani activist** based in Canada.
- However, experts suggest that the **steady increase in lentil imports from Australia** is primarily due to the **high quality** and **competitive prices** of Australian lentils and has no connection with the strained India-Canada diplomatic relations.
- While the **India-Australia Economic Cooperation and Trade Agreement (ECTA)** was **signed** in **April 2022**, negotiations between **India and Canada** on a **free trade agreement (FTA)** were **halted** in September 2023 due to political tensions.

### Government's Initiative:

- The government's initiative **to procure** an unlimited quantity of pulses at the **minimum support price (MSP)** to encourage pulse cultivation will be crucial in **achieving self-sufficiency** in pulse production.
- As part of the '**Atmanirbhar Bharat**' initiative, the Centre has launched the **e-Samridhi portal** through the **National Agricultural Cooperative Marketing Federation of India Ltd. (NAFED)** and the **National Cooperative Consumers' Federation of India Limited (NCCF)**.
- This portal facilitates the **registration of farmers** adopting **crop diversification**, particularly those growing pulses.
- The government has also assured that it will **procure 100% of the pulses** grown by **farmers registered on the portal at the MSP**, ensuring a secure market and fair prices.

- This initiative aims to encourage greater participation in **pulse cultivation** and support the nation's goal of achieving **self-sufficiency in food production by December 2027**.

### e-Samridhi:

- **Since 2017, e-Samridhi** has played a key role in **NAFED's efforts** to achieve **self-sufficiency in oilseeds and pulses** across India through a nationwide **MSP procurement program**.
- This **Aadhaar-based platform** streamlines everything from **registration to direct payments**, ensuring transparency and traceability for farmers.
- By enabling **real-time tracking, accurate reporting**, and overcoming the limitations of traditional manual systems, e-Samridhi showcases the future of agricultural procurement in India.
- **Accessible via web and mobile applications**, it represents a **digital revolution** in agricultural efficiency and inclusion, enabling direct payments to farmers' accounts.
- The **Government of India** aims to boost domestic production of **Tur (Arhar) and Masur pulses** to eliminate import dependency.
- To achieve this, the government is **pre-registering Indian farmers** interested in cultivating these pulses and offering them at **MSP or predetermined rates for the National Buffer of Pulses**.

## Digital Crop Survey

### News Excerpt:

The Indian government is embarking on a significant digital transformation in agriculture, with the **Digital General Crop Estimation Survey (DGCES)** at the forefront.

### Need for Accurate Crop Data for:

- **Policy Formulation:** Informed decision-making on agricultural policies, such as subsidies, procurement, and market interventions.
- **Trade Decisions:** Assessing the availability of agricultural commodities for domestic consumption and exports.
- **Agricultural Planning:** Optimizing resource allocation and production planning.

### Methodology used so far:

- India has a **long history of conducting agricultural surveys to gather crucial data for policymaking and planning**.
- The **primary responsibility for conducting agricultural surveys** lies with the **Ministry of Agriculture and Farmers Welfare**.
- However, to ensure comprehensive and accurate data collection, the ministry often **collaborates with state governments, agricultural universities, and research institutions**.
- These organizations **play a crucial role in providing local expertise, collecting data from farmers, and conducting field surveys**.

- While the methodology has evolved over time, **traditional methods often involved:**
  - **Field Surveys:** Sending enumerators to farms to collect data on crop areas, yields, and other relevant factors.
  - **Crop Cutting Experiments:** Randomly selecting plots to measure crop yields.
  - **Remote Sensing:** Using satellites to monitor crop growth and estimate areas.
  - **Statistical Analysis:** Employing statistical techniques to analyze collected data and draw conclusions.

### Digital General Crop Estimation Survey (DGCES)

DGCES revolutionizes the way crop production data is collected and analyzed, offering greater accuracy, reliability, and transparency.

- **Digital Data Collection:** Use of mobile devices and tablets to collect data directly from the field.
- **Geospatial Mapping:** Accurate identification of crop areas using GPS and remote sensing techniques.
- **Scientific Yield Estimation:** Conducting crop cutting experiments to determine yields scientifically.
- **Real-Time Data Analysis:** Processing and analyzing data in real-time to provide timely insights.

## Digital Agriculture Mission

### News Excerpt:

The **Union Cabinet** on 2 September 2024 approved the **Rs 2,817-crore Digital Agriculture Mission** for the **creation of Digital Public Infrastructure (DPI)** in the farm sector.

### The DPI Mission:

- The mission to create **Digital Public Infrastructure in the agriculture sector** is like the **government's flagship e-governance initiatives** in other sectors, which have over the years resulted in **digital solutions** such as the **Aadhaar unique ID**, the **DigiLocker document folder**, the **eSign electronic signature service**, the **unified payments interface (UPI) instant money transfer protocol**, and **electronic health records**.
- **Three major components of DPI** are envisaged under the **Digital Agriculture Mission: AgriStack, Krishi Decision Support System (DSS), and Soil Profile Maps**. Each of **these DPI components** will provide solutions that will allow farmers to **access and avail themselves of various services**.
- The mission also aims to create a **tech-based ecosystem**, the **Digital General Crop Estimation Survey (DGCES)**, which will provide **accurate estimates of agricultural production**.

### Pillars of Mission:

- The **Agriculture Ministry** is in the process of **signing Memorandums of Understanding (MoUs)** with state governments for the **creation and implementation of the DPI for agriculture**. **Nineteen states** have come on board so far, a source said.

- The **basic IT infrastructure for implementing AgriStack**, one of the **three DPIs** to be built under the Mission, has been developed and tested on a pilot basis.

### AgriStack:

- The **farmer-centric DPI AgriStack** consists of **three foundational agri-sector registries or databases: Farmers' Registry, Geo-referenced Village Maps, and Crop Sown Registry**, all of which will be created and maintained by **state/ UT governments**.
- **FARMERS' REGISTRY:** Farmers will be given a **digital identity ('Farmer ID')** like **Aadhaar**, which will be **linked dynamically to records of land, ownership of livestock, crops sown, demographic details, family details, schemes and benefits** availed, etc.
- **CROP SOWN REGISTRY:** The **Crop Sown Registry** will provide **details of crops planted by farmers**. The information will be recorded through **Digital Crop Surveys** — mobile-based ground surveys — in each crop season.
- **GEO-REFERENCED VILLAGE MAPS:** The maps will **link geographic information on land records** with their physical locations.

### Krishi DSS:

- The **Krishi Decision Support System**, which was unveiled recently, will **create a comprehensive geospatial system** to unify **remote sensing-based information on crops, soil, weather, and water resources**, etc.
- This information will support **crop map generation for identifying crop sown patterns, droughts/ flood monitoring, and technology-/ model-based yield assessment** for settling crop insurance claims by farmers.

### Soil Profile Maps:

- Under the Mission, **detailed Soil Profile Maps** (on a 1:10,000 scale) of **about 142 million hectares of agricultural land** are envisaged to be prepared.
- **A detailed soil profile** inventory of **about 29 million ha** has already been completed.

### Digital General Crop Estimation Survey (DGCES):

- This will be a major push to improve the existing **crop yield estimation system**, and to make the data more robust, **addressing concerns** that are sometimes raised about the accuracy of **India's agriculture production estimates**.
- Better data will **help government agencies** make schemes and services such as **paperless Minimum Support Price (MSP)-based procurement, crop insurance, and credit card-linked crop loans** more efficient and transparent and develop systems for the balanced use of fertilizers.
- The **digitally captured data on crop-sown area**, along with the **DGCES-based yield and remote-sensing data**, will help improve the accuracy of crop production estimates.



- The data will also **help facilitate crop diversification** and **evaluate irrigation** needs according to the crop and season.
- The **DGCES will provide yield estimates** based on **scientifically designed crop-cutting experiments**, which will be useful in making accurate estimates of **agricultural production**.

## INTERNATIONAL RELATIONS

### Responsible Use of Artificial Intelligence in the Military Domain (REAIM) Summit 2024

#### News Excerpt

The **REAIM Summit 2024**, organised by the **Republic of Korea**, successfully concluded after a two-day event from September 9 to 10, 2024.

#### Key highlights of the Summit

- **High-Level Participation:** The summit gathered government representatives from over 90 countries. The focus was on three key areas:
  - General approaches and priorities
  - Concerns and challenges
  - Prospects for international cooperation
- **National Views on AI Governance:** The participating nations discussed their strategies and concerns regarding using AI in military applications. This exchange of views was essential for understanding the diverse approaches to AI governance and identifying common ground for building future cooperation.
- **REAIM Plenary Sessions: Deepening the Discourse**
  - **Understanding the Implications of AI on International Security:** The first plenary session explored the potential impact of AI on international security, with a particular focus on conflict dynamics and the proliferation of weapons of mass destruction (WMDs).
  - **Implementing Responsible Applications of AI in the Military Domain:** The second plenary session addressed the critical issue of responsibly implementing AI in military contexts. Key principles and measures necessary for the ethical use of AI were identified, and participants discussed how to translate these principles into actionable policies.
  - **Envisioning the Future Governance of AI:** The third plenary session focused on future governance frameworks for AI in the military domain. Participants considered key factors for developing effective governance models and discussed ways to enhance international cooperation on AI.
- **REAIM Talks: Bridging Policy and Technology**
  - **Special Sessions with Industry and Academic Experts:** The first session brought together experts from industry and academia to discuss the essential aspects of AI that policymakers need to understand.

- **Engineering Approaches to Responsible AI:** The second special session focused on technical approaches to implementing responsible AI policies. Technical experts shared insights on engineering solutions that align with the ethical use of AI in military applications, emphasising the need for robust and reliable AI systems.
- **AI Exhibition and Demonstrations: Showcasing Real-World Applications**
  - **Hands-On Experiences with AI Technologies:** Korean companies displayed their cutting-edge AI technologies, allowing visitors to gain firsthand experience with AI applications in the defence sector.
  - **Promoting Responsible AI Development:** These companies could promote their products while learning about global AI governance expectations by engaging with international visitors.
- **Outcome of the Summit: The Blueprint for Action**
  - **Endorsement of the Blueprint for Action:** "Blueprint for Action" was officially endorsed as the outcome document of the REAIM Summit 2024. Supported by 61 states, this document lays a roadmap for establishing norms and governance for AI in the military domain. It emphasises principles such as compliance with international law, human accountability, reliability of AI systems, appropriate human involvement, and improving AI explainability.

### China-hosted FOCAC Summit

#### News Excerpt

Chinese President Xi Jinping pledged **\$51 billion** of funding to **African countries** at the **ninth edition** of the Forum on China-Africa Cooperation (FOCAC) in **Beijing**.

#### Forum on China-Africa Cooperation (FOCAC)

- It was established in **2000** to formalise the **strategic partnership** between China and African nations.
- A summit is conducted **every three years**, with the host alternating between China and an African member.
- The FOCAC counts **53 African nations** as its members – the entire continent **except Eswatini**, which has diplomatic ties with Taiwan against Beijing's "One China" Policy.
- The **African Union Commission**, the continental bloc tasked with ensuring cooperation and economic integration across its member countries, is **also a member**.
- This year's theme is **"Joining Hands to Advance Modernization and Build a High-Level China-Africa Community with a Shared Future."**
  - The summit addressed state governance, industrialisation, agricultural upgradation, and improved cooperation over China's infrastructure financing via the Belt and Road Initiative (**BRI**).

#### China-Africa Relations

- Africa-China trade amounted to **\$282 billion in 2023**, according to the International Monetary Fund (IMF).
- China accounts for **20%** of the region's exports, mainly primary commodities like metals, mineral products, and fuel, and is responsible for about **16%** of African imports, chiefly Chinese manufactured goods, electronics, and machinery.
- Africa is also an **integral partner in the BRI**, which intends to establish cross-border economic, political, and cultural relations through land and maritime routes akin to those of the erstwhile Silk Road.
- China has reportedly **invested over \$120 billion** in supporting infrastructure for the BRI over the past decade.

- Boston University's Global Development Policy Centre noted that **Chinese lending plummeted** from its peak of about \$28 billion in 2016 to around \$1 billion in 2022 and **\$4.6 billion in 2023**.

## PIF Annual Meeting

### News Excerpt

The **Pacific Islands Forum (PIF)** annual meeting was held in **Nuku'alofa**, the capital of **Tonga**.

### Key highlights of the meeting

- The event was attended by more than **1,500 delegates** from around **40 countries**.

- **Climate change** was high on the agenda at this year's annual meeting. Several PIF members are among the world's worst-affected countries, especially due to **rising sea levels**.

- A **World Meteorological Organization (WMO)** report revealed that faster-than-average **sea level rise, ocean warming, and acidification** threaten the Pacific Islands.

- Notably, according to a report by **Nikkei Asia**, the **Pacific Resilience Facility (PRF)** — a regional financing facility established by PIF — is currently **\$380 million short** of its \$500 million target.

- Another issue widely discussed at the summit is the **tussle between China and the US** for influence over the region.

- In recent years, China has deepened its ties with PIF members. **China** has signed **security and policing agreements** with the **Solomon Islands**, particularly setting off alarm bells in Australia and the US.

### About Pacific Island Forum (PIF):

- It is an **intergovernmental** organisation founded in **1971**.

- It comprises **18 members**: Australia, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Kiribati, Nauru, New Caledonia, New Zealand, Niue, Palau, Papua New Guinea, Republic of Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

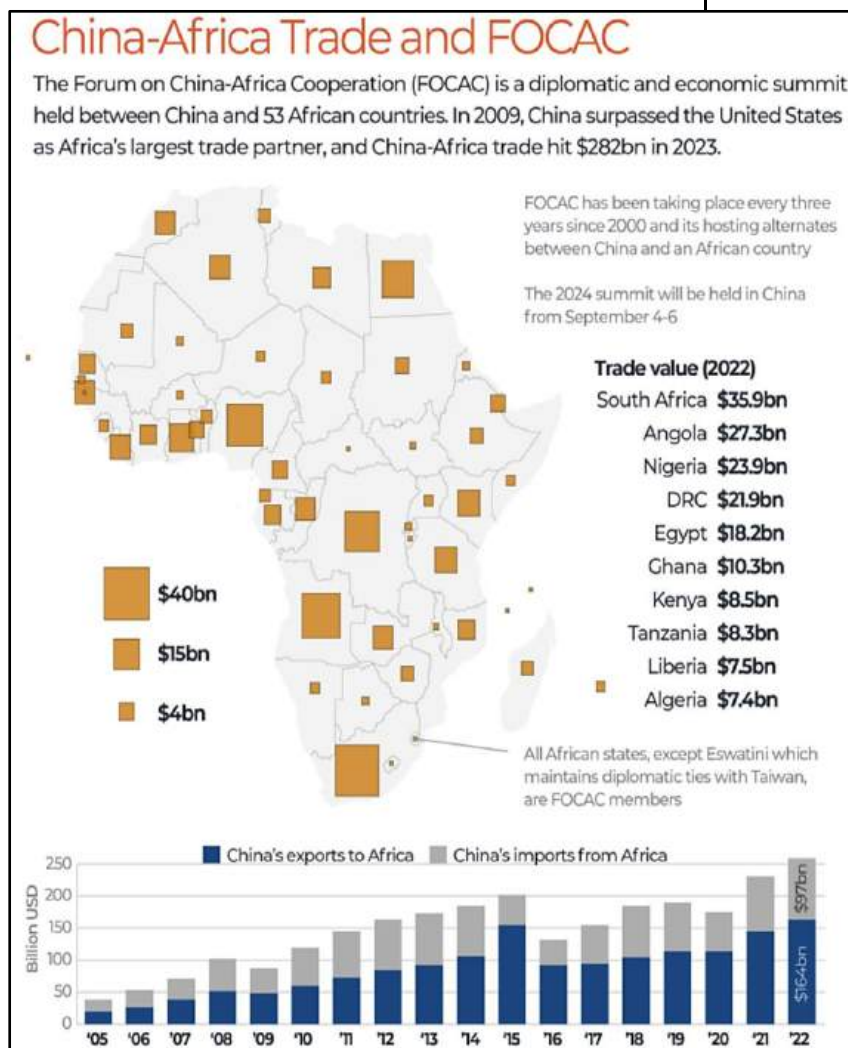
- The PIF aims to push for **economic growth**, enhance **political governance** and

**security** for the region, and strengthen **regional cooperation**.

- Its vision is for a resilient Pacific region of **peace, harmony, security, social inclusion** and **prosperity** that ensures all Pacific peoples can lead - free, healthy and productive lives.

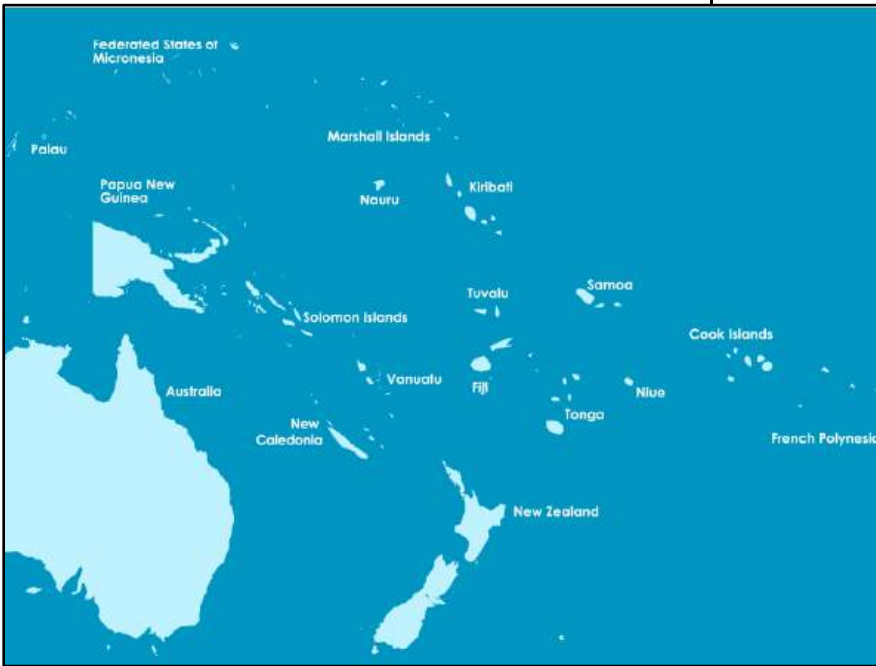
- Pacific Islands Forum Secretariat - **Suva, Fiji**.

- Currently, there are **21 Forum Dialogue Partners**, including **India**.



### Why is the 2024 FOCAC significant?

- The summit comes as China is experiencing a **prolonged economic slowdown** following the pandemic. Bloomberg reports that **China's growth target** for the year looks increasingly **out of reach** as its manufacturers battle deflationary pressures and unemployment challenges.
- President Xi Jinping wishes to **narrow** the country's investment portfolio from big-ticket infrastructure to **"small and beautiful projects."**



## US-India Defence Agreements

### News Excerpt:

India and the US signed a **Security of Supply Arrangement (SOSA)** and Memorandum of Agreement regarding the **Assignment of Liaison Officers** during the Defence Minister's visit to the US.

### Two Agreements signed

- **Security of Supply Arrangement (SOSA):**
  - Under SOSA, India and the US will offer each other **priority support** for goods and services that are crucial to national defence.
  - This agreement will enable both countries to secure the **industrial resources** they need from each other to address unexpected supply chain disruptions and meet their **national security requirements**.
  - SOSAs are **not legally binding**. India is the **18th country** to enter into an SOSA with the US, which also plans to finalise a **legally binding Reciprocal Defence Procurement (RDP)** Agreement with India.
    - RDP Agreements are designed to promote the **standardisation** and **interoperability** of defence equipment between the US and its allies. Currently, the US has agreements with 28 nations.
- **Memorandum of Agreement on Liaison Officers:**
  - This agreement builds on previous efforts to enhance **information sharing** between India and the US. It involves posting **Indian armed forces officers** in key US strategic commands to foster closer military cooperation.
  - India is set to deploy its **first Liaison Officer** to the US Special Operations Command headquarters in **Florida**.

### Milestones in India-US Defence Cooperation:

- The **2013 Joint Declaration on Defence Cooperation** and the **2015 Framework for the US-India Defence**

**Relationship** laid out the foundations for the expanding defence relationship between India and the US.

- The US designated India a **Major Defence Partner** in **2016** and later elevated it to **Strategic Trade Authorization Tier 1** status in **2018**. This status allows licence-free access to a wide range of military and dual-use technologies.
- Under the **2023 US-India Roadmap for Defence Industrial Cooperation**, both nations agreed to advance priority co-production projects, including jet engines, unmanned platforms, munitions, and ground mobility systems.
  - The roadmap identifies priority areas such as Intelligence, Surveillance, and Reconnaissance (**ISR**), Undersea Domain Awareness, Air Combat and Support, munitions systems, and mobility.

### Defence Deals and Sales:

- Major Indian military procurements from the US include **MH-60R Seahawk helicopters**, **Sig Sauer Rifles**, and **M777 ultra-light howitzers**.
- Ongoing negotiations include producing **GE F-414 jet engines** in India for the **LCA MK 2 fighters** and procuring **31 MQ-9B High-Altitude Long-Endurance UAVs**.

## Germany's membership in UN Command

### News Excerpt:

Germany officially joined the U.S.-led **United Nations Command (UNC)** in South Korea.

### About the news

- **Germany** joined UNC on August 2, becoming the **18th member** of the body.



- Germany's membership in UNC follows a **NATO summit in Washington**, at which the alliance agreed to cooperate closely on security with the Indo-Pacific countries of South Korea, Japan, Australia, and New Zealand.
- Germany's entry into the UNC reflects **growing fears in Europe** and the **U.S.** that multiple wars could break out simultaneously worldwide.
- **North Korea** denounced Germany's membership in the UNC, calling the expansion an attempt by the U.S. to create an **Asian version of NATO**.
  - North Korea believes that the move will inevitably aggravate the military and political situation on the Korean Peninsula and the rest of the region.

#### United Nations Command (UNC)

- Following **North Korean aggression** against South Korea, the United Nations Command (UNC) was established on **July 24, 1950**.
  - United Nations Security Council **Resolutions 83 and 84** provided the international legal authority for member states to **restore peace** on the **Korean Peninsula** and designated the **United States as UNC's leader**.
- UNC signifies the world's **first attempt** at **collective security** under the **United Nations** system.

#### North Atlantic Treaty Organization (NATO)

- The foundations of the North Atlantic Treaty Organization (NATO) were officially laid down on **4 April 1949** with the signing of the **North Atlantic Treaty**.
  - It was signed in **Washington, D.C.**, by **12 founding members**. There are **currently 32** members of NATO. These countries are called NATO Allies.
  - The Treaty derives its authority from **Article 51** of the **United Nations Charter**, which reaffirms the inherent right of independent states to individual or collective defence.
- **Collective defence** is enshrined in **Article 5** of the Treaty. It commits members to protecting each other and establishes a **spirit of solidarity** within the Alliance.
- **NATO Headquarters** is the political and administrative centre of the Alliance. It is located in **Brussels, Belgium**.

## India and Malaysia to Upgrade Strategic Partnership

### News Excerpt:

India and Malaysia have elevated their bilateral relationship to a "**Comprehensive Strategic Partnership**" during recent talks held in New Delhi on August 20, 2024.

### Key highlights of the talks

- The upgraded partnership builds upon the "**Enhanced Strategic Partnership**" established in **2015**.
- As part of this renewed collaboration, several agreements and Memoranda of Understanding (**MoUs**) were signed, covering many areas, including **workers'**



**mobility, digital technology, culture, tourism, sports, and education.**

- India has agreed to provide Malaysia with a special allocation of **200,000 metric tons of white rice**, addressing Malaysia's request for additional food imports from India.
- There was also a focus on **emerging sectors** such as semiconductors, fintech, defence industry, artificial intelligence (AI), and quantum technologies.
- India reaffirmed its commitment to the principles of **freedom of navigation and overflight**, as outlined in international law, and advocated for the peaceful resolution of disputes.
- The Malaysian leader praised India's "**unique, multi-aligned approach**" to dealing with global conflicts and expressed a desire for Malaysia to adopt similar strategies.
- A significant part of the discussions revolved around **Malaysia's interest in joining the BRICS** grouping, a request that **India has agreed** to support. The Malaysian Prime Minister has been actively pushing for this membership, seeing it as a strategic move to bolster Malaysia's position in the global economic landscape.

## India and Japan hold '2+2' dialogue

### News Excerpt:

India and Japan engaged in a new round of 2+2 dialogue in **Delhi**, focusing on expanding their **special strategic partnership** in light of increasing regional security challenges.

### 2+2 talks between India and allies:

- The 2+2 dialogue is a format of meeting India's **foreign and defence ministers** and its allies on strategic and security issues.

- The dialogue enables the partners to understand each other better and appreciate each other's **strategic concerns** and **sensitivities**. This builds a stronger, more integrated strategic relationship in a rapidly changing global environment.
- India has 2+2 dialogues with **six countries**: the US, Australia, Japan, Russia, the UK, and Brazil.



#### India-Japan 2+2 Talks:

- This was the third iteration of the '**2+2**' **foreign and defence ministerial dialogue** between the two countries. Both countries decided to hold the **next 2+2 Ministerial Meeting** in **Japan**.
- Based on the discussion at the **Quad Foreign Ministers' Meeting** in Tokyo on 29 July 2024, the ministers valued their cooperation in the Quad and reaffirmed their commitment to further advancing it.
- Both countries decided to boost their defence partnership. They appreciated the progress in transferring the **Unified Complex Radio Antenna (UNICORN)** and related technologies and the early signing of related arrangements.
  - The UNICORN is a **stealth technology** fitted onboard **Indian naval ships**.
- Both also explored future cooperation in **ship maintenance** in India and concurred on deepening bilateral cooperation in **space and cyber**.
- The ministers appreciated the successful completion of the cooperation in **Unmanned Ground Vehicle (UGV)/Robotics**.
- The ministers unequivocally condemned terrorism and **violent extremism** in all its forms and manifestations, including **cross-border terrorism**.
  - They called for concerted **actions against** all UN-listed terrorist groups, including Al Qaeda, ISIS/Daesh, Lashkar-e-Tayyiba (LeT), Jaish-e-Mohammad (JeM) and their proxy groups.

- India and Japan explored the possibility of coordinating respective security strategies and development assistance where mutual interests converge for a **"free, open, and rules-based Indo-Pacific."**

#### Free and Open Indo-Pacific:

- The "Free and Open Indo-Pacific" (FOIP) is a strategic **foreign policy concept** and vision primarily promoted by the United States, Japan, India, and other like-minded countries.
- It refers to a **geopolitical approach** aimed at maintaining a rules-based international order in the Indo-Pacific region.
- The Indo-Pacific region generally encompasses the **Indian Ocean**, the western and central **Pacific Ocean**, and the countries surrounding these waters.
- **Core principles:**
  - Freedom of navigation and overflight
  - Respect for sovereignty and territorial integrity
  - Peaceful resolution of disputes
  - Promotion of free, fair, and reciprocal trade
  - Adherence to international law and norms
- **Objectives:**
  - Ensure regional stability and security
  - Promote economic prosperity
  - Support democratic governance
  - Counter-coercive behaviour from any nation
- The concept gained prominence in response to **China's growing assertiveness** in the region, particularly in the South China Sea and its Belt and Road Initiative.

## Contribution of Indian Americans to the US

### News Excerpt

The "**Small Community, Big Contributions, Boundless Horizons: The Indian Diaspora in the United States**" report, released by Indiaspora, highlights the multifaceted contributions of Indian Americans to the United States.

### Key Findings of the Report

#### Demographic Insights

- The report identifies **5.1 million Indian Americans** representing the Indian diaspora, including those born in India and the U.S., constituting **1.5%** of the total **U.S. population**.
- Approximately **45%** of Indian Americans migrated to the U.S. **after 2010**, while about 30% moved before 2000. The majority are concentrated in **New York** and **California**.

#### Economic Contributions

- Indian Americans contribute roughly **\$300 billion in tax revenues** annually, significantly influencing sales tax, business growth, and employment support.
- Although they comprise only 1.5% of the population, they are estimated to pay about **5-6% of all income taxes** (approximately \$250-300B). Furthermore, their professions indirectly **create 11-12 million American jobs**, showcasing their broader economic influence.

- Indian migrants lead **72 out of 648 unicorn startups** in the U.S., with a collective valuation exceeding **\$195 billion** and employing around **55,000 people**, 13% of all unicorn employees.
- Between **35% and 50%** of all **U.S. convenience stores** are owned by Indian Americans, generating annual revenues of \$350-\$490 billion.



### Leadership and Innovation

- In the past decade, more Indian Americans have become involved. In 2013, they held over **60 notable positions** in the **federal administration**, which has grown to more than 150 by 2023.
  - One such person is **Vice President Kamala Harris**, who made history as the **first woman** to hold that office. She's just one example of how Indian Americans are weaving into the fabric of American society and governance.
- Indian-origin **CEOs**, such as **Satya Nadella** of Microsoft and **Reshma Kewalramani** of Vertex Pharmaceuticals, lead 16 Fortune 500 companies.
  - These leaders collectively **employ 2.7 million** Americans and generate nearly **\$1 trillion in revenue**, underscoring their substantial role in the U.S. economy.

### Academic and Research Impact

- **35 of the top 50 U.S. colleges** have Indian Americans in leading roles, such as **deans, chancellors**, and **directors** like **Dr Neeli Bendapudi**, Penn State's president, the first woman and person of colour to hold that position, and **Arun Majumdar**, the first Dean of Stanford's Doerr School of Sustainability.
- **28 out of the 34 Scripps** Spelling Bee winners were of Indian origin since 2000.

- Scientists of Indian origin **co-authored 13%** of all 2023 journal publications, a notable increase from 11% in 2015.
- Between 1975 and 2019, the share of **U.S. patents** with innovators of Indian origin jumped from around 2% to 10%.
  - Examples include **Navin Varadarajan's** advancements in immunotherapy and **Subra Suresh's** contributions to biomedical devices.

### Cultural Influence

- **Indian festivals** like **Diwali** and **Holi** are now widely celebrated across the U.S., with states like **Pennsylvania** and **New York City** recognising Diwali as an **official holiday**.
- In the **culinary world**, celebrated chefs like **Maneet Chauhan**, Michelin-starred **Vikas Khanna**, and **Srijith Gopinathan** have brought Indian flavours to mainstream American dining. **Roni Mazumdar's** successful restaurants in New York City showcase authentic and innovative Indian dishes.
- **Wellness practices** with Indian roots, like those promoted by **Deepak Chopra**, who popularised Ayurvedic practices and holistic health, have become significant trends in American culture.
  - By 2023, about 10% of Americans were practising yoga, with roughly 36,000 yoga studios nationwide.
- **Bollywood's** influence continues to grow, with stars like **Priyanka Chopra Jonas** making successful transitions to Hollywood and young talents like Mean Girls star **Avantika Vandanapu** gaining fame.
- Traditional elements such as **henna, bindis**, and **lehengas** are becoming mainstream in fashion, with lehengas available at **high-end retailers** like **Nordstrom**.
  - **Designers Falguni** and **Shane Peacock** showcase their glamorous designs worn by celebrities at the New York Fashion Week.
- In literature, authors like **Jhumpa Lahiri** and **Abraham Verghese** have had a profound impact with their explorations of the Indian-American experience.

### Community Engagement

- The **India Philanthropy Alliance**, founded by the Indian diaspora, raises over **\$135 million annually** and impacts more than **70 million people** globally.
- Since 2008, Indian Americans have donated **\$3 billion to U.S. universities** and contribute **\$1.5-2 billion annually to charity**.
- During crises and natural disasters like **Hurricane Harvey** that ravaged Houston and surrounding areas in 2017, Indian diaspora organisations raised over \$2 million for disaster recovery, fielded more than 1,000 volunteers every day, managed a **24-hour helpline** and rescued hundreds of people from floodwaters.

- During the **COVID-19 pandemic**, Indian Americans have stepped up, providing significant commitment to humanitarian efforts in both the U.S. and India.
- Notably, in the U.S., **Gurudwaras** all over the country took active roles in community support and service, including free meal programs that were part of the broader Sikh principle of “**Langar**” or **community kitchen**.

## ENVIRONMENT

### Controversy over Mumbai's salt pans

#### News Excerpt:

Earlier this month, the Centre approved the transfer of **256 acres of salt pan land** in Mumbai to the **Dharavi Redevelopment Project Pvt Ltd (DRPPL)**, a joint venture between **Adani Realty Group** and the **Maharashtra government**, for building **rental housing for slum dwellers**. This invited **criticism from opposition leaders and environmentalists**, who said that the decision to “benefit Adani” would damage the **fragile ecosystem**.

#### What are salt pan lands?

- They comprise **parcels of low-lying lands where seawater flows in at certain times, and leaves behind salt and other minerals**.
- Along with **Mumbai's mangroves** (also at risk due to development), this ecosystem is instrumental in **protecting the city from flooding**.
- According to the **Coastal Regulation Zone (CRZ) notification of 2011**, the ecologically sensitive **salt pans fall under CRZ-1B category**, where **no economic activity is allowed with the exception of salt extraction and natural gas exploration**.
- In all, **5,378 acres of land in Mumbai** have been **designated as salt pan lands**, approximately **nine times the size of the Dharavi slum**. **About 31% of this land** is located in residential and commercial belts, and **roughly 480 acres are encroached** upon, a 2014 study by the state government found.
- The same study found that about 1,672 acres of Mumbai's more than 5,000 acres of salt pan lands are “developable”.
- Nationally, **some 60,000 acres have been demarcated as salt pan lands**, spread across **Maharashtra, Andhra Pradesh, Tamil Nadu, Odisha, Gujarat, and Karnataka**. **Andhra Pradesh (20,716 acres)** boasts the largest expanse of such land, followed by **Tamil Nadu (17,095 acres)** and **Maharashtra (12,662 acres)**.

#### Why are Mumbai's salt pan lands at risk?

- Land is at a premium in Mumbai. **Salt pans are among the last “undeveloped” parcels of land**, thus far **protected by the Ministry of Environment and Forests under the stringent CRZ norms**.

- But this has not stopped state governments from trying to acquire these lands from the Centre, for various development projects.
- Chief among these has been **the development of low-cost housing for Mumbai's slum-dwellers**, a part of former Chief Minister Devendra Fadnavis's plan to create a “slum-free Mumbai”.
- In 2015, **Fadnavis zeroed in on 400 acres of salt pan land** along the **Eastern Express highway in Mulund** to relocate slums under the **Slum Rehabilitation Authority (SRA) scheme**.
- The state government also planned to use much of the remaining 5,000 acres of salt pan land for affordable housing.

#### Why do salt pans matter?

- Environmentalist Stalin D, director of **NGO Vanashakti**, said that **construction over salt pan lands** will result in **flooding in Mumbai's eastern suburbs**.
- **Salt pans are situated in low-lying areas**, and water received during **heavy rain gets accumulated here**.
- Water from Thane creek also flows in during **high tide and gets collected in the salt pans**, preventing **flooding in the eastern suburbs**.
- If the salt pans are covered owing to construction, areas like **Vikhroli, Kanjurmarg, and Bhandup** will definitely go underwater during heavy rain.
- **Salt pans**, which, along with **the mangroves**, stop the city from flooding, also **host various species of birds and insects**.

### 40% Amazon rainforest unprotected

#### News Excerpt:

According to an analysis by **nonprofit Amazon Conservation** Nearly **40% of the areas** of the **Amazon rainforest** have not been granted special government protection, as either nature or indigenous reserves.

#### More about news:

- Scientists agree that preserving the **Amazon rainforest** is critical to combating global warming, but new data published indicate huge swathes of the jungles that are vital to the world's climate remain unprotected.
- The areas lie in the far southwest of the **Amazon in Peru** and the far **northeast in Brazil, French Guiana, and Suriname**, the data show.
- Those parts of the Amazon have the biggest, densest trees and the most continuous canopy cover.
- That means these areas hold the most carbon, which would be released into the atmosphere as climate-warming greenhouse gas if the jungle is destroyed by fire or logging.

#### Results of satellite data:

- **Amazon Conservation** analysed new data from the satellite imaging company Planet that used lasers to get a three dimensional picture of the forest and combined it with machine-learning models.

**Amazon rainforest:**

- The Amazon is a vast biome that spans eight rapidly developing countries—Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, and Suriname—and French Guiana, an overseas territory of France.
- **The landscape contains**
  - About one in 10 known species on Earth
  - 1.4 billion acres of dense forests
  - 20% of the world’s liquid freshwater
  - 2.7 million square miles in the Amazon basin, about 40% of South America
- The Amazon Basin supports the world’s largest rainforest, which accounts for more than half the total volume of rainforests in the world.
- There is a clear link between the health of the Amazon and the health of the planet. The rain forests, which contain an estimated 150-200 billion tons of carbon, help stabilize the local and global climate.
- Deforestation releases significant amounts of this carbon, which is having negative consequences around the world.



- Only aboveground vegetation was considered, and not underground carbon in roots and soils.
- MAAP’s analysis shows that **61% of the peak carbon areas** in the Amazon are protected as indigenous reserves or other protected lands, but the rest generally has no official designation.
- **In Brazil, Suriname and French Guiana, only 51% of peak carbon areas are labeled for preservation. Peru** protects a higher proportion of its critical areas, but some of the areas that have been left unprotected have been earmarked for logging.

**Significance of Amazon:**

- MAAP published an analysis last month showing that the Amazon contained **71.5 billion tonnes of carbon**, roughly double the **global carbon dioxide emissions** for 2022.
- That analysis showed that the **Amazon** just barely absorbed more carbon than it released in the decade leading up to 2022, a positive signal for the world’s climate.
- As the effects of anthropogenic climate change become more stark with each passing day, the Amazon becomes one of the most valuable assets for the planet’s health.
- Scientists believe that if the Amazon becomes an emission source instead of a carbon sink which absorbs carbon from the atmosphere the impact on the planet may be cataclysmic.
- Data published by **Amazon Conservation** are important. It really just gives this overall roadmap in terms of some of the highest carbon areas that are important to protect.

**Namibia plans to kill wild animals**

**News Excerpt:**

Namibia plans to cull hundreds of its most majestic wild animals, including dozens of elephants and hippopotamuses, to provide meat for its 1.4 million people — nearly half the southern African nation’s population — who are reeling under the worst drought in a century.

- This exercise is necessary and is in line with our constitutional mandate where our natural resources are used for the benefit of Namibian citizens.

**How has the drought impacted Namibia?**

- Food availability is usually low in Namibia from July through September, and the situation has been made worse by the drought. Staple crops such as maize have dried up, large numbers of livestock have died, and almost 84% of the country’s food reserves are exhausted, a United Nations spokesman said on 23 August.
- As stocks have diminished, prices have skyrocketed, curtailing access to food for a large number of people.
- Between April and June 2024, an estimated 1.2 million people...in Namibia face high levels of acute food insecurity...and require urgent action to reduce food gaps and protect livelihoods.
- These are the most vulnerable groups...in both urban and rural areas, the Integrated Food Security Phase Classification (IPC) said in a report in July.
- Severe acute malnutrition among children under five has increased, and deaths have been reported in some areas, the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) has said.
- OCHA has also flagged the increased vulnerability of women due to the drought: “As women and girls are required to walk longer distances to collect food and water, their risk of being subjected to gender-based violence also increases.”

**How would the culling of wild animals help?**



- It is **not just for meat** that Namibia wants to cull wild animals. The government fears that **the drought will force the animals** to migrate in search of food and water, which **could bring them into conflict with human populations**.
- The country has a **significant number of wild animals**, including **24,000 elephants**, one of the **largest populations in the world**.
- **The Ministry of Environment, Forestry and Tourism** statement said **it also hopes** that **culling of some animals would reduce the effect of the drought on wildlife**.
- It would help **"in managing the current grazing pressure** and water availability...in some parks and **communal areas** where we feel numbers exceed available grazing and water.

## FSSAI launches a project to address microplastic contamination in Indian food

### News Excerpt:

The Food Safety and Standards Authority of India (FSSAI) has embarked on a groundbreaking initiative to combat the rising issue of microplastic contamination in the Indian food supply.

#### Food Safety and Standards Authority of India (FSSAI)

- On August 23, 2006, the government formally unveiled the Food Safety and Standards Act.
- A number of laws and standards governed the nation's safe food practices before the creation and implementation of the **Food Safety and Standards Act**.
- The Food Safety and Standards Act (FSSAI), passed in **2006**, is the **primary law governing the regulation of food products**.
- This law is also established **to develop and enforce food safety standards** in India.
- The FSSAI selects **state-level food safety authorities**.

### About Project

- The project, titled **"Micro-and Nano-Plastics as Emerging Food Contaminants: Establishing Validated Methodologies and Understanding the Prevalence in Different Food Matrices,"** aims to **develop and standardize methods for detecting micro and nano-plastics in food products, while also assessing their prevalence and potential risks to consumers**.
- The initiative, which began in March, 2024, is being conducted in collaboration with prominent research institutions across India, including the **CSIR-Indian Institute of Toxicology Research (Lucknow)**, **ICAR-Central Institute of Fisheries Technology (Kochi)**, and the **Birla Institute of Technology and Science (Pilani)**.
  - **These institutions will work together to create standardized protocols for analyzing micro and nano-plastics, conduct intra- and inter-laboratory comparisons, and generate crucial data on microplastic exposure among Indian consumers.**

- **The growing concern around microplastic pollution in food has been underscored by a recent report from the Food and Agriculture Organization (FAO)**, which identified microplastics in common food items such as sugar and salt.
  - While the **global prevalence of microplastics is well-documented, there is an urgent need for data specific to India to better understand the implications for human health and safety in the country.**

## India's first 'teal carbon' study

### News Excerpt:

India's first **'teal carbon' study** bets on wetlands to address the challenges of climate adaptation and resilience.

### More about news:

- India's first study on **'teal carbon'**, undertaken at **Keoladeo National Park (KNP)** in **Rajasthan's Bharatpur district**, has highlighted the significance of wetland conservation to address the challenges of climate adaptation and resilience.
- The pilot project sought to develop holistic nature-based solutions to address climate change.
- The comprehensive review at KNP was conducted by researchers from the Central University of Rajasthan, in collaboration with experts from the **U.S. Environmental Protection Agency (EPA)** and **Kenyon College, Ohio, U.S.**
- The review focused on four major teal carbon ecosystems to assess the status and potential role of teal carbon in mitigating climate change.

### Concept of teal carbon:

- The concept of teal carbon is a recent addition to the environmental science pertaining to organic carbon in inland fresh wetlands.
- **Teal carbon** refers to carbon stored in non-tidal freshwater wetlands, encompassing carbon sequestered in vegetation, microbial biomass, and dissolved and particulate organic matter.
- **Teal carbon** being a colour-based terminology reflects the classification of the organic carbon based on its functions and location rather than its physical properties.
- As opposed to teal carbon, black and brown carbon are primarily produced by incomplete combustion of organic matter from sources such as wildfires, fossil fuel combustion, and industrial activities. They contribute to **global warming**.
- At the global level, the storage of teal carbon across the ecosystems is estimated to be **500.21 petagrams of carbon (PgC)**, which is a unit to measure carbon.
  - Peatlands, freshwater swamps, and natural freshwater marshes account for a significant amount of this storage.

### Results of the study:

- The study, carried out in the form of the **KNP's** global review, has depicted the potential of teal carbon as a tool to mitigate climate change if the anthropogenic pollution in the wetlands can be controlled.
- Preliminary results from the research conducted at KNP revealed elevated levels of methane emissions, necessitating the reduction of these discharges through the use of a specialized type of **biochar**, which is a form of **charcoal**.
- Developing this specific biochar, a lightweight black residue comprising carbon and ashes and its research would require sophisticated instruments, such as the **LI-COR device** for real-time ground-based greenhouse gas measurements.
- Ensuring availability of water and selecting suitable vegetation will ensure effective **conservation of wetlands** in the national park, which in turn will sustain the teal carbon pools.
- Teal carbon ecosystem would also contribute to an increase in the ground water level, **flood mitigation** and **heat island reduction**, supporting a sustainable urban adaptation.

## Gross Environment Product Index

### News Excerpt:

Recently, Uttarakhand launched the **World's first Gross Environmental Product Index**.

### More detail about news:

- The ecosystem development in Uttarakhand will now be assessed through the Gross Environmental Product-GEP index.
- **Uttarakhand is the first state in the world** where the development of the ecosystem will be assessed through the Gross Environmental Product Index.
- Simply put, it does not only calculate what services we get from the environment but also what we put back into the environment.

### About Gross Environment Product Index:

- Four pillars of the Gross Environment Product Index: **air, soil, tree and water**.
- **Calculation Method:**

The formula is, **GEP index = (Air-GEP index + Water-GEP index + Soil-GEP index + Forest-GEP index)**

- **When a forest is taken into account, it is not just about counting trees.**
- The (new) trees planted are categorised into three categories with the best (broad-leafed) getting greater weightage than say a (least-preferred) pine.
- The average survival of trees is considered.

- The number of trees felled for any reason is deducted and then the GEP is calculated.
- **Such a counting also means that the current methods of calculating forest cover- where anything green counted by a satellite goes- will have to be refined.**
  - Similarly, for water, a calculation will have to be made of man-made water conservation, storage methods- **for example**, how many amrit sarovars were made.
  - This is different from nature's own methods, e.g. rain that recharges water bodies.
    - **Thus, it measures the contribution of human activities to ecological development.**

### Benefits of GEP:

- **Consider these benefits as various kinds of services, for example,**
  - Provisioning (food, water and timber)
  - Regulating (climate regulation and flood control)
  - Supporting (soil formation and nutrient cycling)
  - Cultural services (recreational and spiritual)
- By translating these diverse contributions into a single monetary value, GEP reflects the true worth of natural capital in sustaining economic and social well-being.
- The GEP index would also increase awareness of the environment. This will help in assessing the contribution to environmental protection.
- GEP can also be released along with GDP in the state. Its assessment will establish better harmony between ecology and economy.

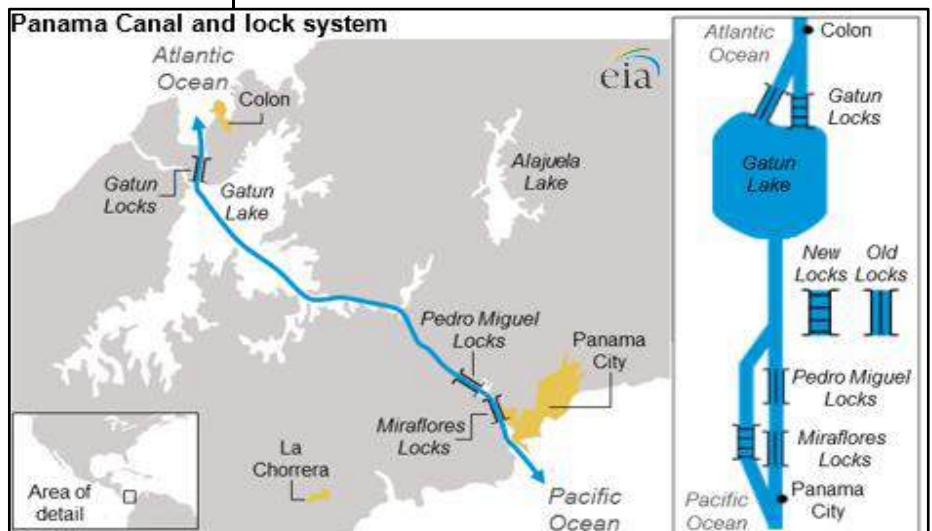
## Panama Canal threatened by climate change

### News Excerpt:

The **Panama Canal**, a vital shipping route connecting the **Atlantic and Pacific Oceans**, is now facing a **serious threat** due to **climate change**.

### About Panama Canal

- The Panama Canal passing through **Central America** was opened on **August 15, 1914**.
- The first ship passed through the **82-km canal**, which is seen as one of history's greatest engineering achievements.



- It significantly **reduces travel time** for ships between the **Atlantic and Pacific Oceans**, saving approximately **12,600 km** on a trip between **New York and San Francisco**.

#### Water crisis in the Canal:

- Usually, **36 to 38 ships** pass through the canal **every day**. However, **last December**, traffic dropped to just **22 ships a day**, with over **160 ships stuck** on both sides of the canal.
- This reduction was caused by a **drought** that **lowered water levels in Lake Gatun**, an **artificial reservoir** crucial to the canal's operation.
- While traffic has since recovered to more than 35 ships daily, experts warn this is **only a temporary reprieve**.
- **Climate change** poses a **long-term threat** to the canal's future.

#### The Canal's Water Elevator System:

- The Panama Canal is a complex system of **locks and elevators designed** to accommodate the **different elevations** of the **Atlantic and Pacific Oceans**.
- The **Pacific is slightly higher than the Atlantic**, so ships must be lifted to navigate from one side to the other.
- This is achieved through a **system of locks**, which act like **water elevators**. The locks are flooded or drained to raise or lower ships to the required sea level.
- The canal's **three sets of locks**, comprising **12 locks in total**, are serviced by **artificial lakes and channels**.

#### Climate Change Threats:

- The Panama Canal relies heavily on **freshwater from Lake Gatun** to operate its lock system.
- Last year, **reduced water levels in Lake Gatun** led to fewer ships passing through the canal, and those that did often had to **reduce their cargo**.
- While **ocean water** could be used in the **lock system**, it would **increase the salinity of Lake Gatun**, which also supplies drinking water to more than half of Panama's 4.4 million residents.
- Although **rainfall has improved the situation** this year, experts warn that this is only a temporary solution. This ongoing issue is a result of the **larger issue of climate change**.
- While **extreme rainfall deficits** are not new to Panama, they have become **more frequent**. Experts warn that as the planet continues to warm, these deficits could become even more common.
- Historically, a significant reduction in rainfall occurred about **once every 20 years**, usually caused by **major El Niño events**.
- However, Panama has experienced severe rainfall deficits **three times in the past 26 years**, indicating a **change in weather patterns**. The **2023 deficit** was unprecedented in the **last 100 years of data**.

## SCIENCE & TECHNOLOGY

### SPACE

#### NASA Launches Satellite to Monitor Methane Emissions

##### News Excerpt:

Recently, a satellite named **Tanager-1**, developed by a **coalition of organizations** including **NASA's Jet Propulsion Laboratory**, was launched aboard a **SpaceX Falcon 9 rocket** from **Vandenberg Space Force Base in California**.

##### More details about the News

- This satellite is designed to detect significant sources of **carbon dioxide** and **methane emissions**.
- The launch of **Tanager-1** comes shortly after the launch of **MethaneSat**, another satellite dedicated to **tracking and measuring methane emissions**, which was launched in early March.

##### Significance of Tracking Methane Emissions

- Methane, although invisible, is a potent greenhouse gas and the second largest contributor to global warming after carbon dioxide, responsible for approximately 30% of global heating since the Industrial Revolution.
- According to the United Nations Environment Programme, methane is 80 times more effective at warming the atmosphere than carbon dioxide over 20 years.
- Additionally, methane contributes to the formation of ground-level ozone, a harmful gas that forms just above the Earth's surface.
- A 2022 report indicates that exposure to ground-level ozone may be linked to one million premature deaths annually.
- Reducing methane emissions is crucial, with fossil fuel operations being a major source, accounting for about 40% of all human-caused methane emissions.

##### About Tanager-1

- Tanager-1 employs advanced imaging spectrometer technology from Jet Propulsion Laboratory to monitor methane and carbon dioxide emissions.
- It works by analyzing light reflected from Earth's surface across numerous wavelengths.
- Different atmospheric compounds, including methane and carbon dioxide, absorb specific wavelengths of light, leaving unique spectral 'fingerprints' that the imaging spectrometer can detect.
- These infrared signatures allow researchers to identify and measure significant greenhouse gas emissions, which could enhance efforts to mitigate climate change.
- The satellite will provide detailed measurements of emissions at individual facilities and equipment on a global scale, covering 130,000 square kilometers of the Earth's surface each day.

- Scientists will use the data to detect gas plumes with distinct spectral signatures of methane and carbon dioxide and trace their sources.

## Polaris Dawn

### News Excerpt:

**Polaris Dawn** will be the **first non-government mission** to perform a **spacewalk**. But not only that — it'll do that **about 700 kilometers (435 miles)** above Earth.

The **highest ever, to compare** the **International Space Station (ISS)** orbits Earth at about **400 kilometers**, where the radiation is less intense. It will also **orbit Earth** through **regions of a highly-charged belt of radiation**. There are two of these "**Van Allen Belts**", an **inner and an outer one**.

### More about the spacewalk

- Astronauts tend to avoid the **hazardous Van Allen Belts**, but they will have to travel through them if humans want to **fly to Mars and survive**. This **privately-funded mission** could be a first step toward that goal.
- The **four astronauts on the Polaris Dawn mission** will test **new spacesuits**, designed by **Elon Musk's company, SpaceX**, to see how well they protect them against the **Van Allen Belt radiation**.
- **SpaceX** is also **providing the spacecraft** — a **Falcon 9 rocket** and **Dragon capsule for the crew** — to reach an **altitude beyond the current record of 1,373 kilometers**, set by **NASA's Gemini 11 mission in 1966**.

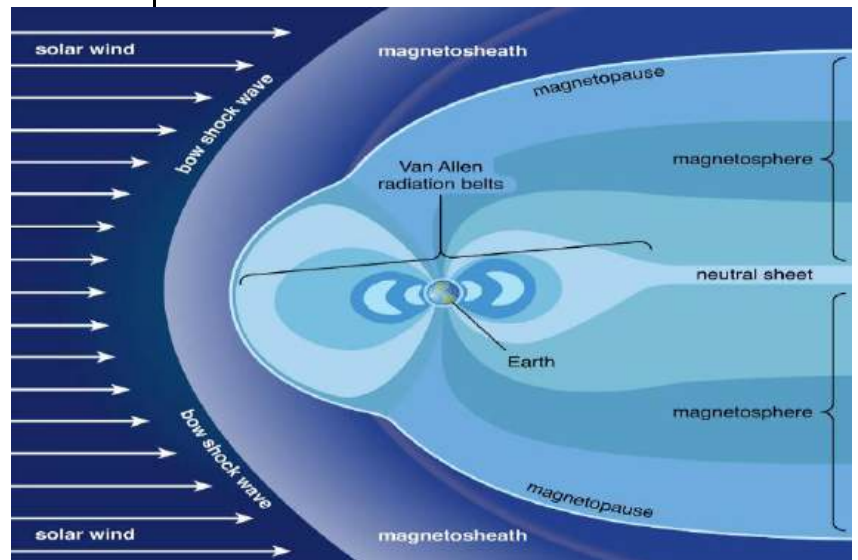
### Polaris Dawn is Isaacman's idea

- Isaacman is a billionaire entrepreneur, who made his money in digital payments and military defense.
- He previously financed and flew on SpaceX's Inspiration4 mission, the first civilian mission to orbit Earth.

### Why are the Van Allen Belts dangerous for humans?

- The Van Allen Belts consist of charged particles locked in place by Earth's magnetosphere, which includes its magnetic field.

- Earth's magnetosphere traps high-energy radiation particles and protects our planet from solar storms and other threats to daily life from space.
- While the outer belt holds high-energy particles from the sun, the inner belt is formed by cosmic rays that interact with Earth's atmosphere. They were discovered by American physicist James Van Allen in 1958.
- The Van Allen Belts range from about 680 kilometers above Earth's surface to what some estimates suggest is about 40,000 kilometers from the surface of the planet. And there's a gap between the first and second belt.
- The inner "proton" zone is centered at about 3,000 kilometers from Earth's surface and the outer "electron" zone is centered about 15-20,000 kilometers from Earth's surface.



- The Polaris Dawn spacewalk will expose the crew to higher levels of radiation than on the ISS. They hope to collect data on the effects of that radiation as a key scientific experiment.
- In 2025, NASA plans to send astronauts beyond the Van Allen Belts to land on the south pole of the moon, and eventually on to Mars. Any data provided by Polaris Dawn will feed into those future missions.

### Planned health research on Polaris Dawn

- **Polaris** intends to use data from the mission to create research **Biobanks** to study the effects of space travel on human biology.
- It will investigate **the effects of space travel** on eyesight and **brain structure** — a **major health risk in space**, known as **Spaceflight Associated Neuro-ocular Syndrome (SANS)**.
- The team also hopes to contribute to **studies into decompression sickness (DCS)**, another **health risk during spaceflight**. DCS occurs **when nitrogen gas bubbles** (or gas emboli) **damage human tissue**.
- **The first test of laser communications in space**
- The crew will test laser communications provided by SpaceX's Starlink satellite network.

## Van Allen Belts

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Starlink is large satellite constellation, eventually consisting of about 12,000 satellites for communication on Earth and in space. It was used early in the Russia-Ukraine war.

- Polaris hopes its communications tests will provide “valuable data for future space communications systems necessary for missions to the Moon, Mars and beyond.”

#### What’s planned for future Polaris missions?

- **Isaacman** has committed to **three missions in collaboration with SpaceX**. This first mission is scheduled to last five days.
- The **second mission will**, they say, “**expand the boundaries of future human spaceflight missions, in-space communications, and scientific research.**”
- And the third mission will be the first crewed test of **SpaceX’s reusable Starship spacecraft**.
- As with any space mission, the **Polaris Dawn** launch on 26 August 2024, may be **delayed due to extreme weather conditions or technical issues**.

## New Discovery in Lightning and Space Weather

### News Excerpt:

In a groundbreaking study published in Science Advances scientists from the University of Alaska Fairbanks reported the discovery of a **new type of whistler wave**, generated by a previously unknown mechanism.

### Magnetosphere and its role:

- The Earth is enveloped by a bubble-shaped magnetic field known as the magnetosphere, which acts as a protective shield against harmful radiation from the Sun and other celestial bodies.
- This magnetic shield is crucial for sustaining life on our planet, as it deflects and traps the high-energy charged particles that the Sun periodically ejects, especially during solar storms.

### Van Allen Radiation Belt:

- The Van Allen radiation belts are two regions of charged particles, primarily electrons and protons, that are trapped by Earth’s magnetic field in the planet’s upper atmosphere.
- These belts are shaped like doughnuts and encircle the Earth, extending from about 1,000 to 60,000 kilometers above the surface.
- They were discovered in 1958 by American astrophysicist James Van Allen.
- The belts play a critical role in protecting Earth from solar radiation, but they also pose a challenge to space exploration, as they contain high levels of radiation that can be harmful to spacecraft and astronauts.

### Lightning and the Magnetosphere

- Lightning strikes on Earth generate electromagnetic waves that travel through the atmosphere.
- Some of these waves, guided by the Earth’s magnetic field, can enter the ionosphere which is a layer of ionized

gas above the atmosphere and travel along magnetic field lines between the Earth’s northern and southern hemispheres.

- These waves, known as whistler waves, often have frequencies within the human hearing range and can be detected as whistling sounds.
- As they move, especially the lower-frequency waves, they lose energy, creating a distinctive declining tone.

### New Discovery in Whistler Waves

- They found that lightning energy injected into the ionosphere at low latitudes could reflect into the magnetosphere, much like light reflecting off a mirror.
- These finding challenges previous assumptions that energy inserted at low latitudes could not escape the ionosphere.

### Implications for Space Weather and Exploration

- This discovery has profound implications for our understanding of space weather, particularly the interaction between lightning and the Van Allen radiation belts.
- The inclusion of this newly identified type of whistler wave **could potentially double the amount of lightning energy entering the magnetosphere**.
- This, in turn, **may necessitate a revision of scientific models that calculate the effects of lightning on the radiation belts**.
- As our exploration of space continues to advance, understanding these complex interactions within the magnetosphere becomes increasingly important.

## Crew Dragon to bring back Williams

### News Excerpt:

The National Aeronautics and Space Administration (NASA) said the two astronauts — Sunita Williams and Barry Wilmore — who have been stuck at the International Space Station (ISS) would return to the Earth in February 2025 on a SpaceX Crew Dragon flight.

- Currently, NASA and SpaceX are working on several items before the launch of Crew Dragon. For instance, they are reconfiguring seats and adjusting the manifest to carry additional cargo.

### What is Crew Dragon?

- Crew Dragon is one of the two variants of SpaceX’s Dragon 2 spacecraft, which is partially reusable.
- The other variant is Cargo Dragon. As their names suggest, Crew Dragon primarily ferries astronauts to the ISS, and Cargo Dragon supplies cargo to the space station.
- SpaceX developed Crew Dragon as part of NASA’s plan to hand over space station flights to American companies after the space agency retired its space shuttle in 2011.
- Crew Dragon’s first mission to the ISS took place in 2020 when it transported four American and Japanese astronauts to the destination.

<b>What are the features of Crew Dragon?</b>	Crew Dragon consists of two parts: a reusable space capsule and an expandable trunk module.
	The capsule is "equipped with 16 Draco thrusters that manoeuvre the vehicle in orbit.
	Each Draco is capable of producing 90 pounds of force in the vacuum of space," according to a report by the BBC.
	The report said the trunk features solar panels, heat-removal radiators, space for cargo, and fins to provide stability during emergency aborts.
	The spacecraft is launched into space atop a Falcon 9 — a reusable, two-stage rocket developed by SpaceX — and docks automatically to the ISS.
	When the astronauts need to return to the Earth, the spacecraft undocks from the ISS. Then, its trunk gets detached from the capsule and burns up in the atmosphere.
The capsule subsequently performs a de-orbit burn — when thrusters are used to reduce the velocity of the spacecraft, allowing it to reenter the Earth's atmosphere.	

- Additionally, the telescope has provided **new data on the rate at which the Universe is expanding**, which has been a topic of debate.
- Two different methods have been used to measure this rate:
  - one based on distant, early-Universe phenomena
  - other on closer, "**local**" celestial objects.

**Humanoid skull for Gaganyaan**

- So far, the spacecraft has done eight crew rotation missions to the space station for NASA.

**James Webb Discoveries**

**News Excerpt:**

The most powerful telescope in space has provided stunning images, but they have also raised significant questions in the field of cosmology.

**About James Webb:**

The James Webb Space Telescope is an infrared telescope.

- It is designed to **observe the universe primarily in infrared wavelengths**, allowing it to **see through dust clouds and detect distant, faint objects from the early universe**.
- The telescope, which was launched in late 2021 and reached its observation point in early 2022.
- It has been **examining the early history of the Universe**, particularly the period when the **first galaxies were forming**.
- Astronomers **expected to see newborn galaxies**, but instead, the telescope has revealed what appear to be fully developed galaxies from a very early stage in the Universe's history.
- This discovery has puzzled scientists, as it challenges existing theories about galaxy formation and the early Universe.



**News Excerpt:** The **Indian Space Research Organisation's (ISRO's)** uncrewed **Gaganyaan mission** in 2025 **will carry the female half humanoid Vyomitra** (literally "space friend").

- The **design for Vyomitra's skull**, fashioned by **ISRO's Inertial Systems Unit** in the **Vikram Sarabhai Space Center in Thiruvananthapuram, Kerala**, was finalised recently.

**What are humanoids?**

- **Humanoids (or half-humanoids)** are **robotic systems** designed to resemble humans — **Vyomitra** comes with movable arms, a torso, a face, and a neck — and function autonomously in space.
- In general, **robotic systems** are used to assist astronauts in performing **repetitive and/or dangerous tasks in space**, like **cleaning of solar panels** or **fixing faulty equipment** located **outside the spacecraft**.
- This **protects astronauts**, and allows them to work on the scientific mission at hand.

**Why will ISRO send a humanoid to space next year?**

- Next year's mission is primarily designed to be a technology demonstration of the Vyomitra.
- It will see the half-humanoid use its robotic arms to perform operations at the crew console, visually monitor various systems inside the crew module, and communicate with the Earth-based mission control team.
- ISRO will evaluate the performance of the robot's technology to measure the likely impacts of space travel on human beings, ahead of India's first crewed mission planned for later in 2025.

**How did ISRO design the humanoid skull for Vyomitra?**

- The recently-designed **Vyomitra skull** will **house the key components of the robot**. It has been made using an **aluminium alloy (AlSi10Mg)** known for its high flexibility, light weight, heat resistance, and **mechanical properties**.
- This alloy is commonly used for **making automotive engines and aerospace components**.
- Crucially, the skull has been designed to be **incredibly sturdy, capable of withstanding some extreme vibrational loads** that are experienced during a rocket launch.
- The **high strength of the aluminium alloy** offers a yield strength of more than **220 MegaPascals (1 MPa = 1 million pascals)**.
- Yield strength refers to the maximum stress that can be applied to a material before it begins to deform permanently.

**What does the data suggest?**

- The new data suggests that the Universe's expansion rate, as measured by the telescope, is **faster than previously thought**, increasing the discrepancy between the two methods.
- This discrepancy leaves astronomers questioning which method is more reliable.
- One method relies on our **understanding of stars**, while the **other depends on our knowledge of the Universe's early history**.
- The early Universe was expected to contain small, developing galaxies, but the telescope's data shows that many of these **galaxies were already large and contained billions of stars** just a few hundred million years after the Big Bang.
- This unexpected finding has led some astronomers to wonder if **there is a fundamental flaw** in our understanding of the Universe.

- The **humanoid skull model** has **dimensions of 200mm x 200mm**, and weighs only 800 grams.
- **AlSi10Mg** is also amenable to the **Additive Manufacturing (or AM) technique**. This is how the **humanoid skull** was created.
- AM enables easy induction of **lattice structures**, as **incorporated in the humanoid skull design**.
- Importantly, it helps in significant reduction of the **overall weight of the final product**.
- Unlike conventional manufacturing techniques, **AM follows a process in which a desired part or product is created in a layered manner, a commonly deployed mechanism in 3D printing**.
- **Sturdy yet flexible, lightweight materials** are often used **to build payloads for space missions**.
- This is because **heavier the payload, more the fuel required to reach space, and larger the rocket needed**.

## Studying Solar Magnetic Field

### News Excerpt:

Indian astronomers have made a significant breakthrough in understanding the sun's complex magnetic fields.

### Innovation in research:

- By analyzing data from the **Kodaikanal Tower Tunnel Telescope**, they have developed a novel method to probe the magnetic field at various depths within the solar atmosphere.
- This research sheds light on the coronal heating problem and the driving forces behind the solar wind.

### The Kodaikanal Tower Tunnel Telescope

- The Kodaikanal Tower Tunnel Telescope, operated by the Indian Institute of Astrophysics (IIA), is a powerful instrument for solar research.
- Its unique design allows for precise observations of the sun's surface and atmosphere.
- The telescope's 3-mirror setup and coelostat system enable it to track the sun accurately and capture high-quality images.

### Importance of Magnetic Fields in the Solar Atmosphere

- The sun's magnetic field plays a crucial role in shaping its behaviour.
- It **acts as a conduit**, transferring energy and mass from the inner layers to the outer atmosphere.
- This process, known as **coronal heating, is a long-standing mystery in solar physics**.
- Additionally, the magnetic field is the **primary driver of the solar wind, a stream of charged particles that flows outward from the sun**.

### Kodaikanal Solar Observatory

- The Kodaikanal Observatory of the Indian Institute of Astrophysics is located in the Palani range of hills in Southern India.
- It was established in 1899. Solar observations at this observatory over the last 100+ years provide one of the longest continuous series of solar data.

- Apart from that, simultaneous observations in different wavelengths make the data a unique one and suitable for multi-wavelength studies.

### A New Approach Using Multiple Spectral Lines

- To study the magnetic field at different heights within the solar atmosphere, the astronomers examined an active region (sunspot) with complex features.
- They simultaneously observed this region in the **Hydrogen-alpha and Calcium II 8662 Å lines** using the Kodaikanal Tower Tunnel Telescope.
- By analyzing data from multiple spectral lines, they were able to infer the magnetic field's stratification at various depths.

### Overcoming Limitations of Traditional Methods

- Traditional methods of inferring the chromospheric magnetic field often rely on the **Calcium II 8542 Å and Helium I 10830 Å lines**.
  - However, these methods have **limitations that restrict their applicability to certain solar features**.
- The new approach developed by the **IIA astronomers addresses these limitations and provides a more comprehensive understanding of the solar magnetic field**.

## Helium Leak

### News Excerpt:

Two **NASA astronauts** aboard **Boeing's Starliner** will stay on the **International Space Station** for months because of a faulty propulsion system whose problems included helium leaks.

### More about news:

- Back on Earth, **SpaceX's Polaris Dawn mission** was delayed because of helium issues on ground equipment.
- Past missions affected by pesky helium leaks include **ISRO's Chandrayaan 2** and **ESA's Ariane 5**.

### Use of helium in spacecraft and rockets:

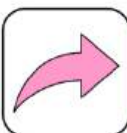
- **Rockets** need to achieve specific speeds and altitudes to reach and maintain orbit.
- A heavier rocket requires more energy, not only increasing fuel consumption but also needing more powerful engines, which are more expensive to develop, test, and maintain.
- **Helium** has a very low boiling point (– 268.9 degree Celsius), allowing it to remain a gas even in super-cold environments, an important feature because many rocket fuels are stored in that temperature range.
- Helium is used to **pressurise fuel tanks**, ensuring fuel flows to the rocket's engines without interruption; and for cooling systems.
- As fuel and oxidiser are burned in the rocket's engines, helium fills the resulting empty space in the tanks, maintaining the overall pressure inside.
- Because it is non-reactive, it can safely mingle with the tanks' residual contents.

### Challenges and Leakage Issues:

- Helium's small atomic size and low molecular weight mean its atoms can escape through small gaps or seals in storage tanks and fuel systems.
- But because there is very little helium in the **Earth's atmosphere**, leaks can be easily detected, making the gas important for spotting potential faults in a rocket or spacecraft's fuel systems.

#### Is it prone to leaks?

## Possible alternatives



Some rocket launches have experimented with gases such as argon and nitrogen, which are also inert and can sometimes be cheaper. Helium, however, is much more prevalent in the industry.



**Europe's new Ariane 6** rocket ditched the helium of its predecessor **Ariane 5** for a novel pressurization system that converts a small portion of its primary liquid oxygen and hydrogen propellants to gas, which then pressurizes those fluids for the rocket engine.



That system failed in space during the final phase of **Ariane 6's** otherwise successful debut launch, adding to the global rocket industry's long list of pressurization challenges.

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- But because there is very little helium in the Earth's atmosphere, leaks can be easily detected — making the gas important for spotting potential faults in a rocket or spacecraft's fuel systems.
- The frequency of helium leaks across space-related systems, some engineers say, have highlighted an industry-wide need for innovation in valve design and more precise valve-tightening mechanisms.

## Earth's third energy field discovered

### News Excerpt:

**Earth's third energy field** known as '**Polar Wind**', which **only existed in theory** so far, has **now been discovered by NASA** after a search that has **lasted 60 years**. **This field is fundamental to understanding** the way **our planet works**.

### More about the field

- The field has been there since the beginning alongside the other two energy fields – gravity and magnetic.
- The scientists said that although the field is weak, it is significant to Earth as it counters gravity and lifts the skies up.
- Polar winds have crucial answers about how Earth's atmosphere evaporates rapidly above the north and south poles.
- They feel that this field of energy may have played a critical role in the evolution of our atmosphere's upper-most layer.

- In the 1960s, several spacecrafts that flew over the Earth's poles had witnessed a stream of particles from the atmosphere flowing into space at supersonic speeds.
- Scientists were aware that sunlight caused particles to leak into space. Regardless, the detected particles did not show any signs that they were heated.
- There had to be something that was drawing these particles out of the atmosphere. However, back then, the technology that was needed to detect an energy field, which can only be sensed over hundreds of miles, was not available.

### How did the scientists discover the field?

- The team of scientists made the discovery based on the observation from a NASA suborbital rocket which was able to measure this planet-wide electric field.
- The measurements given by NASA's Endurance Mission confirmed the existence of this ambipolar field.
- According to NASA, the observations revealed that this energy field has been driving atmospheric escape and shaping the ionosphere – a layer of the upper atmosphere.
- Collinson and his collaborators have been developing sensors for launch aboard the Endurance rocket mission since 2016.
- The team launched the suborbital rocket flight on 11 May 2022, from Svalbard, a Norwegian archipelago.
- Svalbard is the only rocket range in the world where one can fly through the polar wind and make the measurements we needed, Suzie Imber, a space physicist at the University of Leicester, UK, and co-author of the paper, was quoted as saying by nasa.gov.
- The Endurance mission revealed that hydrogen ions, which are in abundance in the polar wind, are pushed into space by an electric field that is 10.06 times stronger than gravity.
- The study also showed that the ambipolar field increases the ionosphere's density by 271 per cent, essentially keeping it denser at greater heights.
- The field acts like a conveyor belt which lifts the atmospheric particles into space.

## GENERAL SCIENCE

### 17th International Earth Sciences Olympiad

#### News Excerpt:

The **Indian student team** achieved remarkable success at the **17th International Earth Sciences Olympiad (IESO)**, held in **Beijing, China**, from August 8-16, 2024.

#### More details about News

- **The 17th IESO** saw participation from teams representing **35 countries**.
- The competition spanned **four categories**: Theory and Practical, Earth Science Project, International Team Field Investigation, and Data Mining.



- The Indian team earned an impressive number of medals: **three gold, two silver, and three bronze.**

**International Geoscience Education Organisation (IGEO)**

- It works to improve **geoscience education worldwide**, enhance its quality, and promote awareness, especially among young people.
- Geoscience education explores the **interactions** among spheres of the Earth – the **geosphere, atmosphere, hydrosphere, and biosphere** – within the dynamic Earth system.

**International Earth Sciences Olympiad (IESO)**

- The IESO was founded at the International Geoscience Education Organization Council meeting in Calgary, Canada in 2003.
- It is an annual educational competition for secondary school students worldwide.
- The competition's goal is to raise awareness of earth sciences through teamwork, collaboration, idea exchange, and competition.
- the competition aims to generate interest among youth in various areas of Earth system science and to promote awareness and discussion with a focus on climate change, environmental challenges, and natural disasters.
- India has been participating in the IESO since 2007 and even hosted its 10th edition in Mysore.

**Lithium brine extraction**

**News Excerpt:**

According to a new study, **Chile's Atacama salt flat is sinking at a rate of 1 to 2 centimetres per year** due to **lithium brine extraction** — a process in which **salt-rich water** is pumped to the surface and into a **series of evaporation ponds** to eventually **obtain lithium.**

- The study, which was published in the **journal IEEE Transactions on Geoscience and Remote Sensing**, was carried out by researchers at the University of Chile.

**What does the new study say?**

- For their study, the researchers at the **University of Chile** analysed the satellite data collected between 2020 and 2023 to see **deformations in the Earth's crust** of **Atacama salt flat** — one of the **largest sources of lithium in the world.**
- The researchers noted that **the worst affected areas** are those where mining companies are doing most of their pumping of **lithium-rich brine.**
- That is happening because the **pumping takes place at a faster rate** than the **recharge of aquifers**, leading to

subsidence, or the downward vertical movement of the **Earth's surface.**

- The affected area measures approximately **8 km north to south** and **5 km east to west**, according to the study.

**What are the fallouts of lithium mining?**

- The brine evaporation method used to produce lithium requires massive quantities of fresh water, which is already scarce, especially in the Atacama Desert.
- In the Atacama, it takes 2,000 tons of water to produce one ton of lithium, according to a 2020 study by Ingrid Garcés, a scientist at Chile's University of Antofagasta. This leaves indigenous communities and wildlife living in the region parched.
- Chemicals such as sulfuric acid and sodium hydroxide that are used for lithium extraction contaminate soil and water, poisoning ecosystems and endangering species.
- A 2022 study found that lithium mining has led to a decline in the number of flamingos in the area — due to a drop in water levels in the Atacama, fewer flamingos are reproducing.

**Small-scale commercial nuclear reactors**

**News Excerpt:**

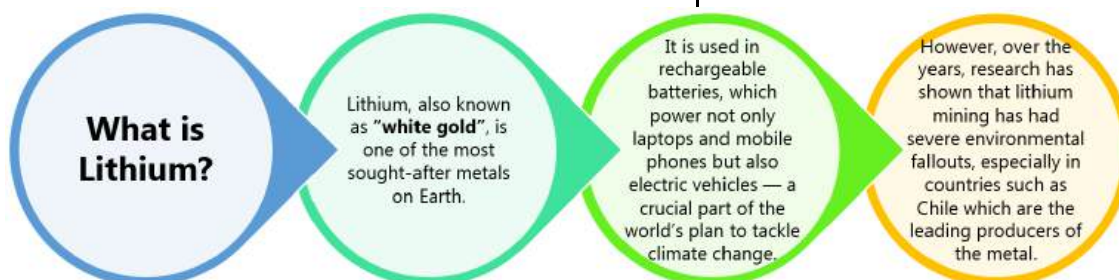
The idea of putting up hundreds, if not thousands, of small-sized nuclear reactors designed for modular expansion so that they could be bulk-produced in factories and brought to the sites in containers, has been engaging the attention of energy experts for some years.

- It is increasingly being realized that achieving net-zero is not possible without nuclear energy.

**More about SMRs**

- In India, both government and industry are keen on small modular reactors (SMRs).
- The Centre's keenness is borne out by Finance Minister Nirmala Sitharaman's reference to 'Bharat Small Reactors' (BSR) in her Budget speech.
- Meanwhile, industry, especially steel, is reported to be examining the nuclear option for green energy.
- India has a head start over other countries in small reactors. It has been operating 15 pressurized heavy water reactors (PHWR) of 220 MW each, accounting for half of India's 6780 MW nuclear power capacity, and 70 percent if one excludes the 2000 MW of Russia-made Kudankulam plants.
- About 70 design concepts of SMRs are floating around but none has the proven safety record of PHWRs.

- Therefore, it is welcome that the government is considering modifying the PHWRs into BSRs — adding 'passive safety' features such as self-cooling and



metal lining on the inner walls of the reactor so that the 'exclusion zone' outside the power plant can be at least halved to half a kilometer.

- The government's intention is to modify the regulatory framework, bringing amendments to the Atomic Energy Act and the Civil Nuclear Liability Damage Act to make way for private participation.
- As the advent of BSRs is a turning point in India's nuclear energy story, it is essential to think it through to get it right.

### Significances

- First, for nuclear power to aid India's net zero ambitions, the country needs both BSRs and large nuclear plants.
- For better focus, a separate company for BSRs would be wise. This company may licence technology, deal with the private industry and push exports of BSRs, leaving the Nuclear Power Corporation of India to pursue the larger nuclear plants.
- Second, steps should be taken to achieve fuel independence. PHWRs throw up more spent fuel than light water reactors.
- Collecting and sequestering it is a massive undertaking and a proliferation risk. Fortunately, a new type of fuel, ANEEL (Advanced Nuclear Energy for Enriched Life), developed by an Indian-owned US company, could provide the solution to the fuel cycle.
- ANEEL, a combination of **High Assay Low Enriched Uranium (HALEU)** and thorium, offers a bouquet of advantages — lesser and proliferation risk-free spent fuel, use of India's abundant thorium, and high burn-up.
- The Indo-US civil nuclear deal could be leveraged for accessing ANEEL.
- Finally, India should not lose sight of the other SMR it has in its arsenal — the 300 MW **Advanced Heavy Water Reactor (AHWR)**, which is technologically superior to PHWRs but with no track record.
- India should quickly build a prototype AHWR. The AHWR program can co-exist with BSRs.

## Deceptive Dark Patterns

### News Excerpt:

A recent report released by the **Advertising Standards Council of India (ASCI)**, in collaboration with Parallel, a product design studio, highlights the use of **deceptive patterns** by many leading **Indian apps**.

### More about the report:

- This study is a limited body of research that aims to serve as a **starting point on this important issue**.
- It has analyzed **12,000 screens across 53 leading Indian apps** in nine different industries, and highlighted the use of one or more of **12 deceptive patterns** in most of these apps.

### What are Deceptive Dark Patterns in Advertising:

- Dark commercial patterns are business practices employing elements of digital choice architecture, in

particular in online user interfaces, that subvert or impair consumer autonomy, decision making or choice.

- This definition is provided by the ASCI's guidelines on this subject, issued in June 2023.

### Advertisement Standards Council of India:

- The Advertisement Standards Council of India is a "voluntary, self-regulatory council" which has been registered as a non-profit company.
- It was established in 1985 under Section 25 of the Companies Act, 1956.
- It has been formed with the objective that all advertising activities in India must be legal, truthful, decent, honest, with a sense of social responsibility, and in line with fair competitive conditions.

### Examples of Deceptive Patterns:

#### • Interface Interference:

- One common deceptive pattern is "Interface Interference," where certain parts of a screen are highlighted using contrasting colors, while other parts are hidden using colors that blend together.
- This can subtly direct users toward a choice in the highlighted section, even if it's not their preferred option.
- The ASCI study found that over 45% of leading Indian apps use this type of interference.

#### • Confirm Shaming:

- Another example is "Confirm Shaming," which uses guilt or social pressure to manipulate users into confirming an action.
- For instance, an app may present users with two choices: "Upgrade now" or "I don't want a smarter software."
- This phrasing is designed to make users feel guilty if they choose the second option.

#### • Basket Sneaking:

- "Basket Sneaking" involves adding an unwanted item to a user's online shopping cart without their explicit consent.
- For example, a donation to a charity might be automatically added to the user's basket, requiring them to remove it if they do not wish to contribute.

### Other Deceptive Patterns

The report identified a total of **12 deceptive** patterns, including:

- **Privacy Deception:** Encouraging users to **unknowingly share more personal data** than they intend to.
- **Drip Pricing:** Gradually **revealing additional fees throughout the purchase process**, resulting in a final price much higher than originally quoted.
- **Subscription Trap:** Leading users into **subscribing to a recurring service without fully understanding the commitment**.

## Importance of Ethical Interface Design

- This study is crucial in **raising awareness** among marketers about deceptive patterns that may inadvertently be incorporated into app interfaces.
- Marketers should familiarize themselves with **guidelines issued by ASCI and the Department of Consumer Affairs, Government of India.**
- Additionally, resources like the **Conscious Patterns** website can help test apps and obtain a "conscious score" to ensure ethical design practices.

### Balancing Business Needs and User Protection

- The **digital world of apps is still relatively new**, and ethical design may not always be a top priority for marketers.
- However, it is essential **for both marketers and designers to prioritize user interests alongside business needs.**

## BIOTECH

### Nanoparticle-based Drug Delivery

#### News Excerpt:

A novel drug delivery method promises to improve the treatment of fungal infections, particularly for patients with asthma, cystic fibrosis, HIV, cancer, or those undergoing long-term corticosteroid therapy.

#### Need for Advanced Drug Delivery

- Current antifungal treatments, such as azole drugs, target the fungal membrane to neutralize infections.
- However, the growing resistance to these drugs has highlighted the need for improved delivery methods to enhance their effectiveness.

- One of the most advanced approaches involves the use of polymeric nanoparticles, which allow for controlled and targeted drug release.

#### Nanoparticle-Based Drug Delivery

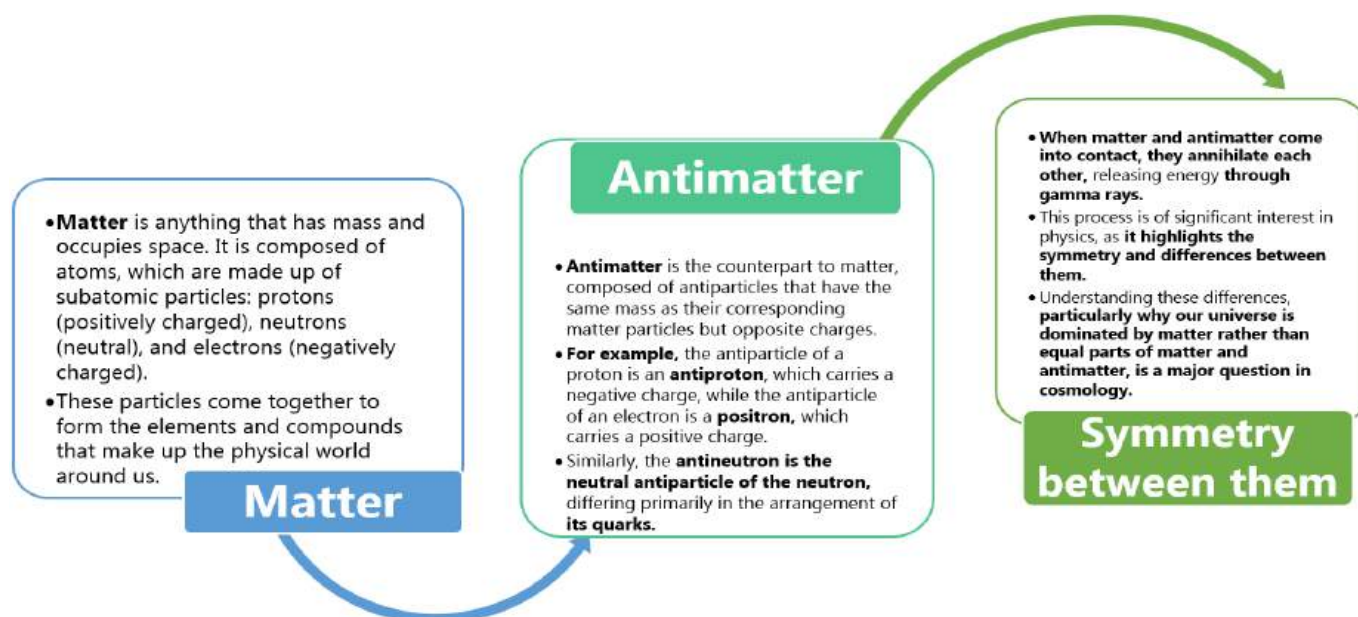
- Researchers have developed a unique nanoparticle-based delivery system using Nikkomycin, a chitin synthesis inhibitor produced by Streptomyces bacteria.
- Chitin**, a key component of fungal cell walls, is **absent in the human body**, making it an ideal target for antifungal drugs.
- By loading **Nikkomycin onto polymeric nanoparticles**, the researchers were able to **disrupt the growth of Aspergillus species**, which causes the fungal infection Aspergillosis.

#### Effectiveness Against Pulmonary Aspergillosis

- The new nano formulation was tested against Aspergillus flavus and Aspergillus fumigatus, common culprits of pulmonary aspergillosis.
- The results were promising, showing that the nanoparticle-based drug delivery system effectively inhibited fungal growth without causing cytotoxic or hemolytic effects.
- This indicates a safer and more efficient treatment option for patients suffering from this serious lung infection.

#### Future Prospects and Commercialization

- The research team is optimistic about the potential applications of this method, particularly in developing inhalation nano formulations for pulmonary aspergillosis.
- The innovation also opens the door to expanding the use of such antifungal nano formulations in other areas. Looking ahead, there is potential for a public-private partnership to commercialize this technology, bringing it to a wider patient base and improving outcomes for those affected by fungal infections.



## India's first quantum computer

### News Excerpt:

After a **delay of nearly four years**, the **National Quantum Mission** is set to take off with **multiple initiatives** including **setting up a grant for start-ups** that need funding ranging ₹10-50 crore, launching **India's first quantum computer** achieving **computation of 6 qubits** over the next few months, and setting up four companies under **section 8 to undertake various activities** under the mission. These companies will be run under **the aegis of premier institutes** like **Indian Institute of Technology** or the **Indian Institute of Sciences**.

### Four verticals

- The mission will be setting up four Section 8 companies across the four verticals of quantum technologies that the mission wants to incubate namely – **computing, communication, measurement and sensing**.
- These Section 8 companies will be run under the aegis of premier institutes like Indian Institute of Technology or the Indian Institute of Sciences.
- The institutes have been shortlisted and the announcements will be made soon. While the mission struggled to spend its previous corpus of funds announced in 2020, since January of this year there is clear momentum in the dispersal of funds.
- The mission has received approximately 385 proposals from scientists, institutes and quantum startups keen to develop cutting edge quantum technologies.
- India's foray into advancing its quantum capabilities has been in the works for nearly four years with limited results.
- The union government announced its plans to dedicate nearly ₹8,000 crore for developing indigenous quantum technologies, however no further progress was made.
- The mission is soon to announce the four thematic hubs of the mission in the coming months. These hubs will run independently as Section 8 companies and will appoint their own CEOs.
- Quantum computers harness the spooky physics of quantum mechanics to unlock computation that is vastly different from even the latest supercomputers.
- The Department of Science and Technology was investing into quantum computing even before announcing the mission as a part of its "Pre NQM" programme called the QuEST.
- In another project, DRDO and TIFR have also been working on building a 6-qubit quantum computer.

### Goal of the mission

- The goal of the mission is to establish a quantum computer with a computation of 20-50 qubits in the next three years, 50-100 qubits in the next five years and 50-1000 qubits in the next 10 years.
- To put these computational capabilities in context, on average internationally quantum computers have processing capabilities of 20-50 qubits at present.

- It is essential for India to have its own homegrown quantum computer. China, for instance, has the highest investment numbers by state into quantum computing surpassing even the US.
- These emerge as big threats for our national security if China ever chooses to use its computing capabilities to target critical infrastructure in India, such as our electrical grids or financial infrastructure.
- The mission is expected to deliver results in the field of quantum communication as well where they will likely lean on private start-ups.

## Project Strawberry

### News Excerpt:

**OpenAI**, the **world's premier artificial intelligence research organisation**, will likely release **its most powerful AI model** this fall (September-November), and could **integrate it into ChatGPT-5**, the **new version of the chatbot** and **virtual assistant** that it **launched in late 2022**.

### More about the project

- The secretive project, on which OpenAI has been working for long, was earlier known as Project Q\* (Q-star), and is now codenamed Project Strawberry.
- It is expected to feature autonomous Internet research and dramatically improve AI reasoning capabilities, and has been billed as OpenAI's push to create Artificial General Intelligence — AI with capabilities similar to that of the human brain.
- OpenAI was reported to have demonstrated a version of the new model to national security officials, seemingly a statement of its commitment to transparency at a time when the rapid development of AI has raised serious security concerns among national governments.

### A wizard at math

- Project Strawberry would be better at math and programming than any existing chatbot, quoting "two people who have been involved in the effort".
- Integration with ChatGPT will make the latter the most powerful AI chatbot there is, the report said.
- ChatGPT has sometimes struggled with math, and experts think the errors could be due to the absence of adequate mathematical information in the training data.
- The Information report said that a demo by Project Strawberry staff had shown that the new AI model is capable of advanced levels of thinking, which allowed it to solve puzzles, including The New York Times 'Connections', a particularly difficult word puzzle.

### Need for training

- The Information said that **Project Strawberry** aims to raise more capital, which OpenAI needs for its next-frontier model, **codenamed Orion**.
- The generation of **high-quality training data for Orion** is believed to be **one of Project Strawberry's key applications**.

- This is significant because **most of the training data** on the Internet has already been used, and there is now a **dearth of information** that is **outside paywalls and authentication** and is free to access to train **AI models**.
- Indeed, OpenAI has been of late making deals with publications to use their content for training.
- **Project Orion**, which is being **designed to outperform GPT-4**, could use a combination of **Project Strawberry** and **high-quality synthetic data** that would likely reduce errors and hallucinations.

## First global 'legally binding' pact on the use of AI

### News Excerpt:

The **United States**, the **European Union**, and the **United Kingdom (UK)** signed the **Council of Europe's convention on artificial intelligence (AI)**, the first "legally binding" international treaty on the use of the revolutionary new technology, on 5 September 2024.

### More about the treaty

- **The treaty**, which **prioritizes human rights** in its approach to the **regulation of public and private-sector AI systems** is seen as the **first real agreement** among the key players in the development of AI, amid concerns that disparate regulations proposed by individual countries could **hinder the evolution of this technology**.
- **The treaty**, officially known as the **Council of Europe Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law**, was opened for signature during a **conference of Council of Europe Ministers of Justice** in **Vilnius, Lithuania**, on 5 September 2024.

### Pact with teeth, responsibility

- The treaty that was drafted over the past 24 months by more than 50 countries adopts a risk-based approach to the design, development, use, and decommissioning of AI systems.
- It covers the use of AI systems in the public sector — including companies acting on its behalf — and in the private sector, and will be applicable across geographies.
- Signatories will be accountable for "any harmful and discriminatory outcomes of AI systems", and will ensure that "outputs of such systems respect equality and privacy rights, and that victims of AI-related rights violations have legal recourse".
- Council of Europe Secretary General Marija Pejčinović said: "The Framework Convention on Artificial Intelligence is a first-of-its-kind, global treaty that will ensure that AI upholds people's rights.
- It is a response to the need for an international legal standard supported by states on different continents that share the same values to harness the benefits of AI while mitigating the risks. With this new treaty, we aim to

ensure responsible use of AI that respects human rights, the rule of law, and democracy."

### Obligations and applicability

**Upon ratification, member states will have to ensure that**

- Their AI systems are "consistent with obligations to protect human rights";
- These systems are not used "to undermine the integrity, independence, and effectiveness of democratic institutions and processes, including the principle of the separation of powers, respect for judicial independence and access to justice";
- Measures are put in place "to protect...democratic processes in the context of activities within the lifecycle of artificial intelligence systems", including individuals' fair access to and participation in public debate, as well as their ability to freely form opinions.

### Few exemptions

- There are a few exemptions in the scope of applicability of the Framework Convention, such as national security and research and development.
- The treaty puts an obligation on parties to address the risks posed by activities within the lifecycle of AI by public and private actors.
- The treaty comes at a time when sovereign governments and smaller multilateral groups have come up with a clutch of new regulations and agreements to oversee AI tools, including the G7 pact on AI (October 2023), Europe's AI Act, and Bletchley Declaration signed by 28 countries (November 2023).

### Issues and concerns with the pact

- Even though the treaty is being called "**legally binding**", there are **concerns** that it **does not contain provisions for punitive sanctions** such as **penalties or fines**. Compliance is primarily ensured through "**monitoring**", which is not much of a deterrent from an enforcement point of view.

## New Hindi language AI model

### News Excerpt:

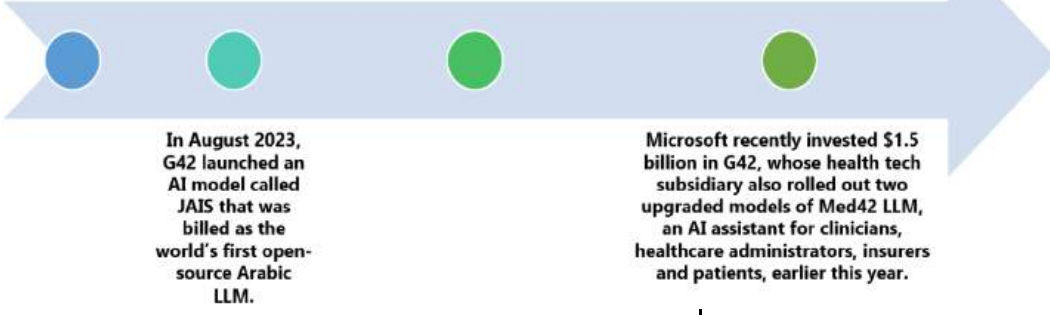
**G42**, an **AI firm based in the United Arab Emirates (UAE)**, has unveiled a new **large language model (LLM)** called **NANDA** that will specifically cater to **Hindi-speaking users**. Named after **one of India's highest peaks**, **NANDA** has been jointly developed by **G42 subsidiary Inception and Cerebras Systems** along with researchers from the **Mohamed bin Zayed University of Artificial Intelligence** in **UAE**.

### More about NANDA

- NANDA will have a parameter count of 13 billion, and has been trained on approximately 2.13 trillion tokens of language datasets, including Hindi.
- The startup introduced the Hindi AI model at the India-UAE business forum in Mumbai during Crown Prince of

With models ranging from 590 million to 70 billion parameters, JAIS set a new standard for linguistic AI which G42 now seeks to replicate for other regions whose languages are still underrepresented.

Flashback



In August 2023, G42 launched an AI model called JAIS that was billed as the world's first open-source Arabic LLM.

Microsoft recently invested \$1.5 billion in G42, whose health tech subsidiary also rolled out two upgraded models of Med42 LLM, an AI assistant for clinicians, healthcare administrators, insurers and patients, earlier this year.

Abu Dhabi, Sheikh Khaled bin Mohammed bin Zayed Al Nahyan's recent State visit to India.

- The model was trained on Condor Galaxy, one of the world's most powerful AI supercomputers for training and inferencing, built by G42 and Cerebras.
- G42 has a strong track record in the development of language and domain-specific LLMs.
- With NANDA, we are heralding a new era of AI inclusivity, ensuring that the rich heritage and depth of Hindi language is represented in the digital and AI landscape.
- NANDA exemplifies G42's unwavering commitment to excellence and fostering equitable AI.

**HEALTH**

**New Sensor for Detecting Cyanide**

**News Excerpt:**

Researchers at the Central University of Kerala have made a major advancement with a **new cyanide sensor** designed to **improve safety in drinking water and food products.**

**About Cyanide**

- Cyanide, a dangerous toxin, is found in various plants, fruits, and microorganisms.
- The World Health Organisation (WHO) limits cyanide in drinking water to less than 0.19 mg/L due to its harmful effects on humans and aquatic life.

from other substances, ensuring accurate results in various environments.

**Significance of Sensor**

This innovation is timely, following a recent cyanide poisoning incident in **Idukki district** where 13 cows died after eating **cyanide-laden tapioca hulls.**

This highlights the need for **reliable cyanide detection**, especially in places like Kerala where **tapioca is a staple food.**

- **Cyanogenic glycosides** in foods like tapioca can release **toxic hydrogen cyanide** when they interact with saliva.
- Overall, this advancement is a major leap in chemical detection technology. It has potential uses in **India and worldwide to safeguard human health from cyanide exposure.**

**Vaccine-Derived Polio Case in Two-Year-Old in Meghalaya**

**News Excerpt:**

Authorities in Meghalaya's West Garo Hills district have raised alarms following the confirmation of a vaccine-derived polio case in a two-year-old child from Tikrikilla.

**More about the case:**

- The child from Tikrikilla was diagnosed with acute flaccid paralysis at a hospital in Goalpara, Assam, more than a

week ago, according to Meghalaya's Chief Minister, Conrad K. Sangma.

- Stool and other samples from the child were sent to testing centers in Kolkata and Mumbai, operated by the **Indian Council of Medical Research's National Institute of Virology, to confirm the diagnosis.**

**What is Cyanide?**

- Released from natural substances in some foods and certain plants (e.g., fruit pits and seeds).
- Used in manufacturing for paper, textiles, plastics, and in photographic chemicals.
- Employed in metallurgy for electroplating, metal cleaning, and gold extraction.
- Used as a gas for pest control in ships and buildings.
- Can be a colorless gas (hydrogen cyanide - HCN, cyanogen chloride - CNCl) or a solid (sodium cyanide - NaCN, potassium cyanide - KCN).

**How People Can Be Exposed to Cyanide**

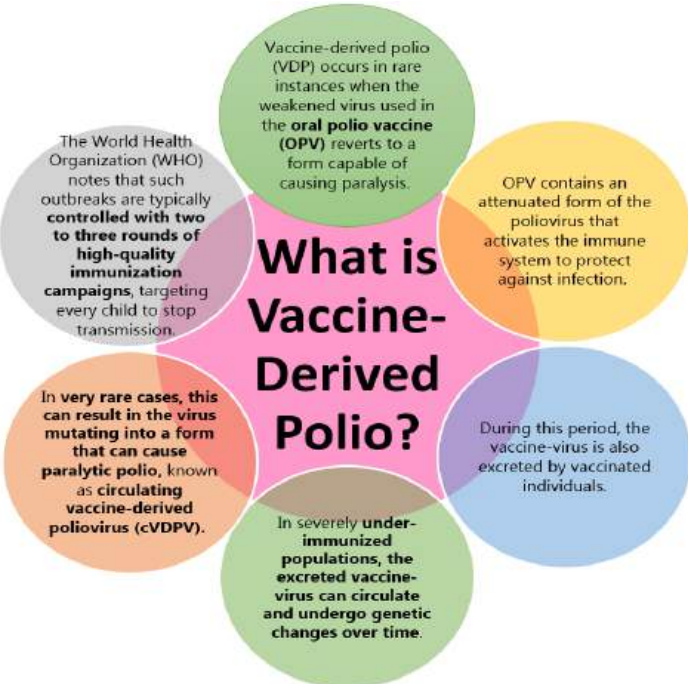
- **Air Release:** Exposure through skin contact, eye contact, or inhalation. Symptoms appear quickly from inhalation, but ingestion of solid or liquid cyanide is also toxic.
- **Water Release:** Exposure through touching or drinking contaminated water. Solid cyanide in water can produce hydrogen cyanide gas.
- **Food Contamination:** Exposure from eating, drinking, or touching contaminated food or drink, especially with solid forms.
- **Gas:** Most dangerous in enclosed spaces; disperses quickly outdoors. Hydrogen cyanide rises, while cyanogen chloride sinks to low areas.

**Food Contaminated with Cyanide**

- Avoid food in plastic, paper, or cloth containers exposed to cyanide.
- Undamaged, sealed glass or metal containers are generally safe; wash the container's exterior before use.
- Avoid food that smells, tastes, or looks unusual.

- Chief Minister Sangma expressed deep concern over the situation, emphasizing that the matter is under close review.
- Health officials in Meghalaya are taking the case seriously, with heightened surveillance and response measures in place to prevent further spread.
- The Union Health Ministry confirmed the development on Tuesday, August 20, 2024. While this is not a case of wild poliovirus, officials stress the seriousness of the situation, given **the implications of vaccine-derived poliovirus in populations with low immunity.**

**India's Polio-Free Status**



- India was **declared polio-free by the WHO in 2014**, three years after the last case of wild poliovirus was reported in the country in 2011.
- The country's successful eradication of wild polio was a significant public health achievement, involving extensive vaccination drives and surveillance systems.
- However, vaccine-derived polio cases present a challenge, as they highlight the importance of maintaining high immunization coverage.
- The **latest case in Meghalaya highlights the need for continued vigilance even in regions considered polio-free.**

**Symptoms and Transmission of Poliovirus**

- Poliovirus infections can lead to a **range of symptoms**, including fatigue, fever, headache, vomiting, diarrhea, constipation, sore throat, neck stiffness, pain or tingling sensations in the limbs, severe headaches, and sensitivity to light (photophobia).
- The virus typically causes acute and short-term infections, with individuals remaining contagious for less than two weeks.
- **Humans are the sole reservoir for the poliovirus, and no vector is involved in its transmission, which**

primarily occurs through the fecal-oral route.

**New Miniature Tool Revolutionizing Plant Genome Editing**

**News Excerpt:**

A team of researchers from the ICAR-National Rice Research Institute and Pennsylvania State University has developed a groundbreaking genome-editing tool, offering new possibilities for agriculture.

**More about the Innovation:**

- This innovative tool is compact enough **to overcome the limitations of existing CRISPR systems in plant genomes**, potentially transforming crop engineering.
- Traditional CRISPR systems, which rely on proteins like Cas9 and Cas12, have been too large for effective use in plant cells.
- The new tool, based on the protein ISDra2TnpB, is derived from the bacterium *Deinococcus radiodurans* and is less than half the size of Cas9 and Cas12.
- This smaller size makes it more suitable for editing plant genomes, addressing a major obstacle in plant biotechnology.

**Applications**

The potential applications of this **miniature genome-editing tool** are vast.

**It can introduce or remove specific genetic traits in crops**, making them more resistant to pests, diseases, and adverse weather conditions.

- o **For example**, the tool could help rice plants become shorter and more resilient during cyclones, reducing damage and improving yields.

The ability to target specific genes also opens the door to removing anti-nutrient factors from food crops, enhancing their nutritional value.

**The Role of *Deinococcus radiodurans***

- *Deinococcus radiodurans*, the bacterium from **which ISDra2TnpB is derived**, is renowned for its extraordinary ability to survive extreme environmental conditions and accurately repair its genome after damage.
- This **resilience and precision make it an ideal candidate for developing genome-editing tools.**

**Features Making TnpB Ideal for Plant Genome Editing**

- The TnpB protein consists of about 400 amino acids, is a transposable element capable of moving within the genome, allowing for precise editing.
- The TnpB-based system offers several advantages over traditional genome-editing tools.
- It uses a piece of RNA to guide the protein to the target DNA sequence, where it can bind and eliminate undesirable sequences.
- The system's smaller size allows it to be more efficiently integrated into plant cells, improving editing accuracy and efficiency.
- Additionally, researchers have optimized the tool by adjusting codon sequences and regulatory elements to enhance its performance in plant cells.

**Overcoming Challenges and Future Potential**

- While the TnpB-based tool shows great promise, its efficiency in certain plant species, **particularly dicots, remains a challenge.**
- Initial experiments showed **lower editing efficiency** in these plants, but researchers believe further refinement will unlock its full potential.
- Despite these challenges, the plant genome editing community is encouraged to explore this system for various crop species, with the hope of enhancing traits like disease resistance, yield, and climate adaptability.

**Zoo pharmacognosy**

**News Excerpt:**

The study published in the May 2024 issue of Nature highlights a growing body of research examining how animals use plants and other natural substances to self-medicate.

**More about the discovery:**

- In a fascinating observation, a **Sumatran orangutan** was recently seen treating a facial wound with a paste made from the local plant **Fibraurea tinctoria** in Indonesia.
- **Dogs** often **chew grass and then vomit to cleanse their stomachs**, a behaviour well-known to many pet owners.

**Fibraurea Tinctoria:**

- Fibraurea tinctoria is a climbing shrub native to Southeast Asia, commonly found in Indonesia, Malaysia, and Thailand.
- It thrives in lowland tropical forests and is often seen in disturbed areas like forest edges.
- The plant has yellowish-brown stems and heart-shaped leaves, and it produces small, yellow flowers.
- It plays an important role in **supporting local wildlife by providing habitat and food sources.**
- It is widely used in **traditional medicine**, especially in Indonesia, where it is known as "**Akar Kunyi.**"
- The plant contains **berberine, a bioactive compound with anti-inflammatory and antimicrobial properties**, making it useful for **treating wounds, infections, and various ailments.**



- Its applications extend to **traditional remedies for jaundice and digestive issues.**

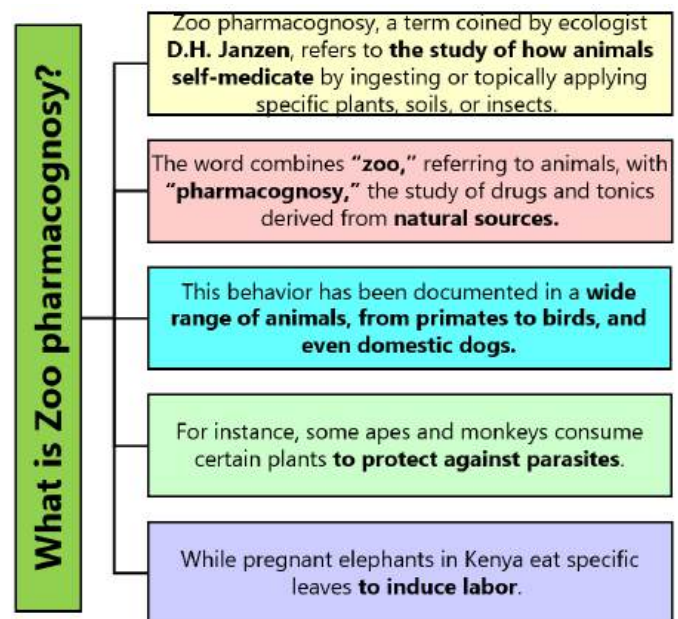
**Sumatran orangutan**



- The Sumatran orangutan (*Pongo abelii*) is native to the rainforests of Sumatra, Indonesia.
- It is a critically endangered primate under the IUCN Red list.
- Distinguished by its long, reddish-brown hair and pronounced facial flanges in males, this species is arboreal, spending most of its life in trees.
- They have a more frugivorous diet compared to their Bornean relatives, feeding primarily on fruits, leaves, and insects.
- Their population is severely threatened by habitat loss due to deforestation, palm oil plantations, and illegal hunting.
- Conservation efforts are ongoing, but only around 14,000 individuals remain in the wild, concentrated mostly in the Leuser Ecosystem.

**Historical Context and Traditional Knowledge:**

- For thousands of years, various civilizations have developed natural medicine systems. The **Zhongyi system in China** dates back 5,000 years, while the Arabian and **Indian Ayurvedic systems have 4,000 and 5,000-year histories**, respectively.
- These systems **utilize plants, fruits, and roots like Rauwolfia serpentina (sarpagandha), holy basil (tulsi), aloe vera, wild garlic, onion, oregano, and camphor.**
- Natural products like coconut and castor oil also play significant roles.
- India's '**Chyavana Prasha,**' based on a formula from the **Charaka Samhita (circa 700 BC), remains popular today.**
- As interest in natural products grows, biochemists and pharmaceutical companies are now exploring new molecules derived from these traditional remedies.



**The Future of Zoopharmacognosy:**

- The field of zoopharmacognosy holds significant promise for the **discovery of new medicines.**



- By studying how animals interact with plants and other natural substances, scientists **can uncover potential new treatments for human diseases.**
- As researchers continue to explore this fascinating area, they may unlock the **secrets of nature's pharmacy**, offering new hope for medical advancements.

## Hayflick Limit

### News Excerpt:

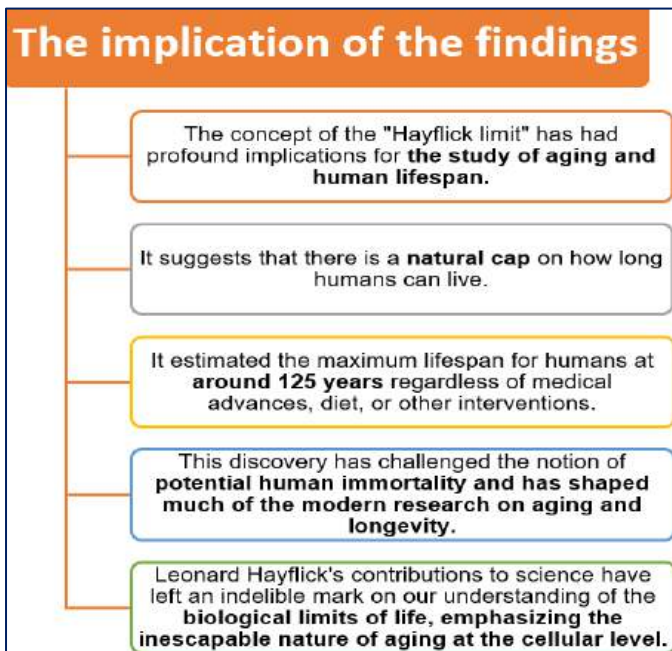
Leonard Hayflick, renowned for discovering the "Hayflick limit", died at the age of 96 due to pancreatic cancer.

### What is Hayflick Limit?

- Hayflick Limit is a concept that states that normal cells can divide only a certain number of times, setting a limit on the human lifespan.
- It has fundamentally changed our understanding of cellular aging and human lifespan, smashing dreams of would-be immortalists everywhere.

### More about the theory:

- In the early 1960s, while working at the Wistar Institute at the University of Pennsylvania, Hayflick, alongside his colleague Paul Moorhead, made a groundbreaking observation.
- They noticed that **normal somatic (non-reproductive) cells could only divide between 40 and 60 times before entering a state of senescence.**
  - **Senescence is a process where cells stop dividing and eventually die.**
- This finding **contradicted the prevailing scientific belief that cells could divide indefinitely** and that aging was primarily caused by external factors such as disease and environmental damage.
- Hayflick's work revealed that **cellular aging** is, in fact, a **built-in process**, with the accumulation of senescent cells contributing to the aging and decline of the body over time.



- He pointed out that the **only cells capable of escaping this senescence are cancer cells, which can divide without limit.**

## Antibody for Covid-19 variants identified

### News Excerpt:

**Researchers have discovered an antibody** that could counter all known variants of the coronavirus that causes Covid-19 and also distantly related ones that infect other animals.

### Antibody for Covid 19

- SARS-CoV-2, the coronavirus causing Covid-19, uses its spike protein to invade and infect another individual, or the host.
- Antibodies, produced by the host in response, bind to the spike protein to block its action and prevent infection.
- The researchers, led by those at The University of Texas in Austin, US, isolated the antibody 'SC27' from the plasma donated by four patients.
- These patients had breakthrough infections, which occur when a vaccinated individual gets infected. The research has been published in the journal Cell Reports Medicine.
- Over the more than four years since the first case of COVID-19 emerged, SARS-CoV-2 has evolved to acquire certain characteristics that make the virus resistant to vaccines and treatments.

### Significant of 'SC27'

- The 'SC27' antibody recognised all these various characteristics of the spike proteins across Covid-19 variants.
- One goal of this research, and vaccinology in general, is to work toward a universal vaccine that can generate antibodies and create an immune response with broad protection to a rapidly mutating virus.
- The small number of individuals analysed may limit the interpretation of the data and leave it unclear how common the SC27-like antibody might be in human populations.
- The researchers used the technology IgG proteomics, or 'Ig-Seq', to study hybrid immunity, which is one's antibody response to both infection and vaccination.
- The discovery of SC27, and other antibodies like it in the future, will help us better protect the population against current and future Covid-19 variants.
 

The researchers also found that hybrid immunity offered increased protection against the disease, compared with infection or vaccination alone.

## PresVu for Presbyopia

### News Excerpt

Mumbai-based Entod Pharmaceuticals has announced that the Drug Controller General of India (DCGI) has **approved its new eye drop**, which reduces

dependency on reading glasses for individuals affected by presbyopia.

### What is Presbyopia?

- Presbyopia is an **age-related condition** in which the eyes gradually **lose the ability to focus** on nearby objects.
- People usually start to develop presbyopia at around the **age of 40**. According to doctors, **spectacles** are one of the most effective ways to manage the condition.

### How does PresVu work?

- The active ingredient in PresVu is **pilocarpine**. The compound **contracts the iris muscles**, which control pupil size and help humans see things clearly. This enables one's eyes to **focus better** on nearby objects.
  - Pilocarpine has been used as the **first-line therapy for cataracts**; its property of temporarily improving the **depth of focus** has been known for quite some time.
- PresVu uses "**advanced dynamic buffer technology**" — a base solution — to **adapt to the pH level** (a scale used to measure how acidic or basic a substance is) of tears.
  - This ensures that the eye drop has consistent **efficacy and safety** for extended use, considering that such drops will be used for years at a stretch.
  - However, it should **not** be used by people with **iris inflammation**. Regular use of PresVu may lead to **itching and redness, eyebrow pain, and eye muscle spasms**.
- PresVu is a **prescription-only medicine** whose effects will likely last **four to six hours**.
- The drug has also been tried for presbyopia in other countries. The **United States Food and Drug Administration approved** a pilocarpine eye drop for presbyopia in 2021.
- In **India**, the government decides on the ceiling price of pilocarpine in 4% and 2% concentrations. PresVu has pilocarpine in **1.25% concentration**.

## A1, A2 milk and milk products

### News Excerpt

The Food Safety and Standards Authority of India (FSSAI) directed Food Business Operators (FBOs) not to market their milk and milk products "**in the name of A1 and A2.**" Later, it withdrew this advisory.

### Is A2 milk better than regular milk?

- While some studies have suggested that A2 milk is healthier, there is still no consensus.

- A 2012 paper suggests a link between the consumption of A1 beta-caseins and various health problems such as type-1 diabetes, coronary heart disease, and autism. It says that those who consumed primarily A2 milk seemed to be less susceptible to these conditions.

## Difference between A1 and A2 milk

A1 and A2 are two genetic variants of beta-caseins, differing in their amino acid sequence.

A1 contains histidine, one of the nine essential amino acids that the body uses to produce histamine, the chemical that enables the body to regulate its reaction to inflammation and allergies.

The FSSAI states that the A1 and A2 milk classifications are essentially linked to differences in the protein structure (beta-casein).

A2 contains proline, a non-essential amino acid that is an essential component of collagen and important for the proper functioning of joints and tendons.

More than 80% of all proteins in cow's milk belong to a class called caseins. Among these, beta-caseins are the second largest component.

Milk from different cow breeds has differing quantities of A1 and A2 beta-caseins. Most milk contains both these beta-caseins, but A2 milk contains only the second one.

Generally, milk and milk products branded as A2 tend to be charged at a premium and considered healthier.

### What was the basis for FSSAI's advisory?

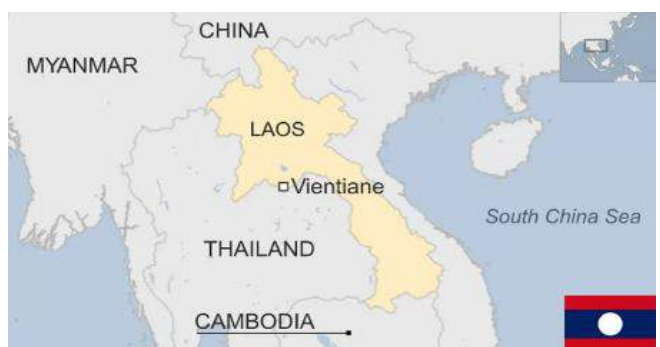
- FSSAI's advisory had nothing to do with the paucity of scientific evidence regarding the A1 and A2 classification. It had to do with the fact that current FSSAI standards do not recognise the A1 and A2 differentiation.
- The milk standards specified in the Food Safety and Standards (Food Product Standards and Food Additives) Regulations, 2011, do not mention/recognise any differentiation of milk based on A1 and A2 types.
- Thus, all food business operators, including e-commerce sites, were directed to remove all claims related to A1 and A2 proteins from their product labels.
- Its withdrawal came from criticism of FSSAI's decision, even in government circles.

## INTERNAL SECURITY

### 'Operation Kavach – 5.0'

#### News Excerpt:

The **Delhi Police have intensified its action against drug trafficking in the national capital**, under the banner of '**Operation Kavach – 5.0**'. In its latest operation, the police officers arrested **74 narco-offenders during a series of coordinated raids conducted at 325 locations** on the night of 31 August and 1 September 2024.



### More about the Operation

- In the **raids held across 15 districts**, the Delhi Police seized **108.93 grams of heroin, 66.28 kilograms of ganja, 1.1 kilograms of charas, and 16 grams of MDMA.**
- **The aggressive action against trafficking of illegal substances** has forced many drug traffickers to go underground, with major players now avoiding the transportation of large quantities of narcotics into Delhi.
- Instead, **traffickers have resorted to transporting smaller amounts** through cars and trains, often employing women and children as decoys to avoid detection.
- The operation has also highlighted a **shift in drug trafficking patterns**, with reports suggesting that traffickers are **now setting up storehouses outside the city limits** due to increased police vigilance in Delhi.
- Apart from enforcement efforts, **the Delhi Police have appealed to parents, teachers, and community leaders** to play an active role in preventing drug abuse.
- The police emphasized the **importance of educating the youth** about the **adverse consequences of drug addiction** and the need for collective action to prevent them from falling prey to **narcotic substances.**

## 47 Indians Rescued from Cyber Scam Centers in Laos

### News Excerpt:

The **Indian Embassy in Laos** announced on August 31, 2024, that **47 Indians** who were trapped in **cyber scam centers** in the **Bokeo province** have been rescued.

### More detail about News:

- So far, the Indian mission has successfully rescued **635 Indians** from similar situations in **Laos** and arranged for their safe return to India.
- Indian authorities have been warning citizens about **fraudulent job offers** in **Laos** and advising them to conduct thorough checks to avoid falling victim to such scams.
- The Embassy also recommends that individuals carefully review the **detailed advisory** available on its official website or contact the Embassy directly if they have any concerns.
- Recently, the **National Investigation Agency (NIA)** conducted raids in multiple locations across **Haryana, Delhi, and Rajasthan**, targeting individuals and travel agents involved in **trafficking vulnerable young Indians** to the **Golden Triangle SEZ** in **Laos.**

### Human Trafficking:

- Last month, during the **ASEAN meeting in Vientiane**, the **External Affairs Minister** met with his counterparts from **Laos, Cambodia, and Thailand** to discuss the issue of **Indian citizens being trafficked** through cyber scam centers.
- The External Affairs Minister urged for the **swift return of these individuals.** It is believed that hundreds of

Indians are currently trapped in these three countries, lured by gangs running cyber scams under the guise of attractive job offers.

### Golden Triangle Special Economic Zone (GTSEZ)

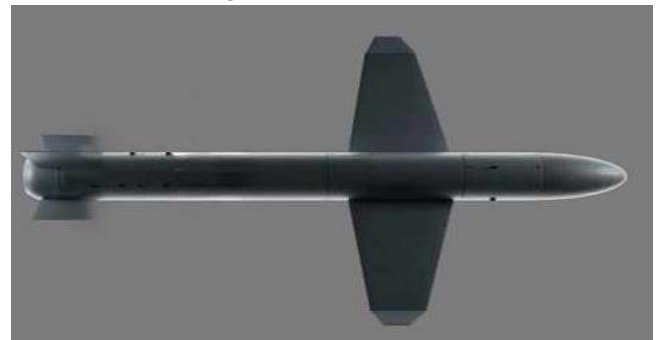
- GTSEZ was established in 2007 as a joint venture between the Laotian government and private investors from China.
- The primary investor is the Kings Romans Group, a company registered in Hong Kong.
- The group has secured a 99-year lease on 3,000 hectares of land to develop it into an international casino and entertainment complex.
- However, since its inception in 2007, the zone has grown primarily through illicit activities, bringing about significant moral concerns.

## Ukraine's Palianytsia

### News Excerpt:

**President Volodymyr Zelenskyy**, confirmed the existence of a new homegrown long-range weapon — a missile-drone hybrid — which can strike deep into Russia.

- The Palianytsia was used for the first time on 24 August 2024 to target a Russian military installation, officials said without providing further details.



### What is the Palianytsia?

- The **Palianytsia** was born out of necessity, **with its development** starting some 18 months ago.
- Currently, **the United States** and **other Western allies** provide **long-range weapons to Ukraine** but restrict **their usage deep into Russian territory** out of fears of further escalation.
- The **Institute for the Study of War** said that Russia was **"leveraging sanctuary space in deep rear areas"** for military infrastructure.
- It estimated at least 250 militarily significant targets in Russia were **within range of the ATACMS missiles**, but **current restrictions allow Ukraine to strike only 20 of them.**

### Possibly, a game-changer

- The **Palianytsia with a 700-km range, comparable to the ATACMS**, will allow Ukraine to bypass western restrictions.
- Ukraine's technology minister, **Mykhailo Fedorov**, told The Associated Press that **"this will be a game changer"**

because Ukraine will be able to “**strike where Russia doesn’t expect it today**”.

- He added: “It’s impossible to produce **enough air defense systems** to protect such a **large territory [Russia]**... [the Palianytsia] opens up the possibility of operating deep behind enemy lines.
- The missile has a **solid-fuel booster** that accelerates it, followed by a **jet engine**, a specialist told The AP.

**Each missile costs less than \$1 million**, and the military is turning to the private sector **to bring down production costs further**.

## Global Proliferation of Suicide Drones

### News Excerpt:

**Suicide drones**, also known as **loitering munitions**, have emerged as a **critical component** in **modern warfare**, offering countries a **strategic advantage** in both **offensive and defensive operations**.

- These **unmanned aerial vehicles (UAVs)** are designed to **carry explosives** and are intended to **crash directly into enemy targets**, effectively acting as **precision-guided missiles**. Unlike traditional drones that return after surveillance or strike missions, **suicide drones are a one-way weapon, sacrificing themselves** in the process of destroying the target.

### Global Proliferation of Suicide Drones

- **Israel:** Israel is a pioneer in the **development of suicide drones**, with its **HAROP drone** being one of the **most well-known in the world**.
- The **HAROP** is a **loitering munition** that **can fly over 1,000 kilometers** and is designed to seek out and **destroy radar systems**.
- It has been **exported to various countries**, including **India and Azerbaijan**, and has been used in conflicts like the **Nagorno-Karabakh war**.
- **United States:** The **U.S. military** has **integrated suicide drones** into its arsenal, with systems like the **Switchblade drone**, developed by **AeroVironment**.
- The **Switchblade** is a **portable, tube-launched drone** that provides **infantry units** with a precision-guided strike capability.
- It has been used **in operations in Afghanistan** and more recently supplied to Ukraine for its defence against Russian aggression.
- **Russia:** **Russia** has also **invested in loitering munitions**, with the **Lancet-3** being a prominent example.
- **Iran:** **Iran’s drone program** has seen significant growth in recent years, with **suicide drones being a key component**.
- The **Shahed-136** is one of **Iran’s notable loitering munitions**, capable of long-range strikes.
- **China:** China has developed its **own line of suicide drones**, such as the **CH-901**. These drones are part of **China’s broader efforts to modernize its military** and enhance its strike capabilities.

- The **CH-901** has been marketed internationally, with potential buyers in the Middle East and Africa.

## Ceasefire pact with Niki group extended

### News Excerpt:

**The Centre government recently extended the ceasefire agreement** with a **break-away faction of the Naga insurgency group NSCN** for another year.

The **NSCN (K) Niki group** is led by **Niki Sumi** against whom the **National Investigation Agency (NIA)** had announced a **reward of Rs 10 lakh for allegedly killing 18 Indian Army soldiers** in Manipur in 2015.

### More about the agreement

- The **ceasefire agreement** is in operation between the **government** and the **National Socialist Council of Nagaland (K) Niki group** and it was decided to extend the pact for a **period of one year** with effect from **8 September 2024 to 7 September 2025**. This **agreement** was first signed on 6 September 2021.
  - The government had **signed a framework agreement** with the **major Naga group NSCN-IM** on 3 August 2015 in presence of Prime Minister Narendra Modi to find a permanent solution.
  - **The framework agreement** came after over **80 rounds of negotiations spanning 18 years**, with the **first breakthrough made in 1997** when the ceasefire agreement was sealed after **decades of insurgency in Nagaland** which started soon after **India’s independence in 1947**.
  - **However**, the **talks with the NSCN-IM** are currently going nowhere as the group has been insisting for a **separate Naga flag and constitution**, a demand rejected by the central government.
  - Separately, the government is also **holding peace parleys** with splinter groups of the NSCN after entering into ceasefire agreements.
  - The groups which have entered into **ceasefire agreements** are: **NSCN-NK, NSCN-R, NSCN K-Khango** and **NSCN (K) Niki**.

## Storm Shadow missiles

### News Excerpt:

The **United States and United Kingdom** have both **agreed to review Ukraine’s request** to lift **restrictions on the use of their long-range missiles**, including **Storm Shadow missiles**, in **Russian territory**.

- But the **growing indications from the West** that it may approve **Ukraine’s desire to use these weapons** deep inside Russian territory have also sparked a terse response – and threat – from Russian President Vladimir Putin.

**Would long-range rockets make a big difference for Ukraine?**

**What are Storm Shadow missiles?**

- The Storm Shadow is a long range, air-launched cruise missile. This means missiles are launched from military aircraft in the air rather than from the ground. They can hit targets up to 250km (155 miles) away.
- Used from Ukraine’s airspace, they could strike deep into Russian territory. If restrictions on the use of Storm Shadow missiles – provided by the UK but developed and manufactured using US components – are lifted, Russian targets in locations such as Kursk, Millerovo and Rostov could be easier to strike.
- The Storm Shadow was developed by a Franco-British collaboration. They are manufactured by a joint venture which includes Italy.
- Each missile costs \$1m and they are capable of damaging or destroying Russian military infrastructure, including weapon storage sites and bunkers.
- They could also intercept and lessen the impact of Russia’s military attacks on Ukraine’s civilian infrastructure.
- The UK confirmed that it had sent Storm Shadow missiles to Ukraine in May 2023. However, they were provided to Kyiv with the condition that Ukraine make use of long-range missiles within its own borders only and not fire them into Russian territory.

- While they could give Ukraine an edge, they would not necessarily be enough to defeat Russia, experts say.

**GEOGRAPHY**

**Why Cyclones in the Arabian Sea Are Not Common**

**News Excerpt:**

The **Arabian Sea** experiences **fewer cyclones** compared to other regions, despite the **considerable moisture** it contributes to the **summer monsoon**.

**Influencing Factors:**

- **Oceanic Tunnels:**
  - The region has a unique climate influenced by ‘oceanic tunnels’ that connect it to the **Pacific and Southern Oceans**.

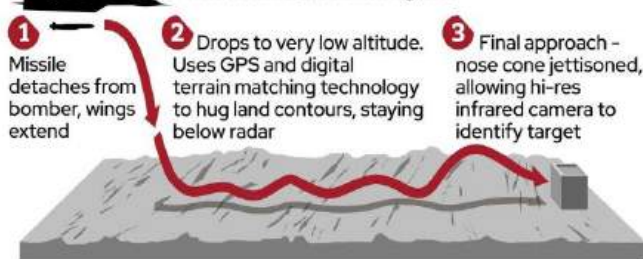
- The **Pacific tunnel** introduces **warm water into the upper layers** of the **Indian Ocean**, while the **Southern Ocean tunnel** brings in **cooler waters from deeper layers**.
- **Pre-monsoon Season:**
  - During the **pre-monsoon season**, the **Arabian Sea warms quickly** as the Sun moves to the Northern Hemisphere.
  - Meanwhile, the **Bay of Bengal becomes even warmer**, generating **atmospheric convection and rainfall**, which leads to the onset of the monsoon over Kerala by mid-May.
- **Post-monsoon period:**
  - In the **post-monsoon period**, the **northeast monsoon** brings **substantial rainfall** to various Indian states.
  - These **wind patterns** and **sea surface temperatures** play a crucial role in **cyclogenesis** throughout the year and contribute to the significant difference in cyclone activity between the Arabian Sea and the Bay of Bengal.
- **Climate Change Impact:**
  - Climate change is intensifying the **distinctiveness of the Indian Ocean**.
  - **Increased heat from the Pacific** and **warmer waters** from the Southern Ocean are causing rapid warming in the Indian Ocean.
  - This warming is **impacting the heat absorption** in the Pacific and the sinking of dense waters in the North Atlantic, making the Indian Ocean a key player in the broader pattern of **ocean warming during climate change**.
- **Cyclone Formation Dynamics:**
  - During the monsoon, **strong south-westerly winds**, known as the **low-level jet**, cause **intense evaporation** and **mixing of cooler subsurface waters** with the surface.

**Storm Shadow cruise missile**

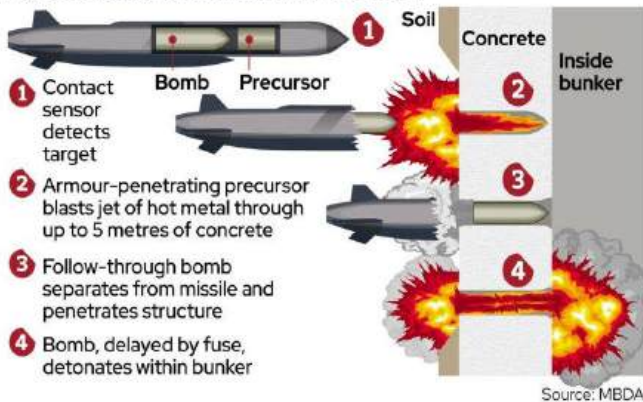
The Storm Shadow cruise missile is armed with a penetrating warhead capable of destroying hardened and buried targets from long range



**How Storm Shadow navigates**



**High penetration tandem cumulative warhead**



- Long-range missiles could provide Ukraine with new tactical capabilities such as the ability to strike distant targets.

- This cooling effect makes the **Arabian Sea cooler** compared to the pre-monsoon period.
- **Cyclone Seasons:**
  - Cyclone activity in the **North Indian Ocean** is split into **pre-monsoon and post-monsoon seasons**, unlike other regions with a **single cyclone season**.
  - The **Arabian Sea's lower convective activity** during the **pre-monsoon** and **cooling effect** of the northeast monsoon during the **post-monsoon period** contribute to fewer cyclones compared to the Bay of Bengal.
- **Recent Developments:**
  - Recent years have seen a **slight increase in Arabian Sea cyclones**, with the rare occurrence of **Cyclone Asna** in August 2023, marking the first such cyclone in August since 1981.
  - This cyclone originated from a **strong land-based depression transitioning** to the **warm Arabian Sea**, an unusual phenomenon.
  - Historically, **low-pressure systems** form over the **Bay of Bengal** and travel through the **monsoon zone**, contributing significantly to seasonal rainfall.
- **Current Climate Trends:**
  - The **warm 2023-2024 season**, influenced by **global warming, El Niño**, and possibly **underwater volcanic activity**, has brought **unexpected extreme weather events** worldwide.
  - The **monsoon's behavior** has also been atypical, with **irregular rainfall patterns** across India.
  - The **unusual development of cyclones** and **low-pressure systems** underscores the unpredictable nature of climate change and its impact on weather patterns.

## Waterspouts

### News Excerpt:

A luxury yacht carrying 22 people sank off the coast of Sicily, Italy, after being struck by a violent storm suspected to be a waterspout which claimed the life of at least one person, with six others still missing.

### What is a Waterspout?

- A waterspout is a large, rotating column of air and mist that forms over a body of water.
- While they share similarities with tornadoes, **waterspouts are generally weaker and typically last around five minutes**.
- They can occasionally **persist for up to ten minutes**.
- On average, a waterspout measures about 165 feet in



diameter and can generate wind speeds of up to 100 kilometers per hour.

- Waterspouts are more **commonly observed in tropical waters**, but they **can form anywhere given the right conditions**.
- They typically occur when there are **high levels of humidity and the water temperature is relatively warmer as compared to the air above**.

### There are two main types of waterspouts:

- **Tornadic Waterspouts:** These are essentially tornadoes that form over water or move from land to water. They are associated with severe thunderstorms and are often accompanied by **high winds, rough seas, large hail, and frequent lightning**. These waterspouts **can be large and potentially destructive**.
  - The storm that struck the yacht near Sicily is believed to have been a tornadic waterspout, which is known for its potential to cause significant damage.
- **Fair-Weather Waterspouts:** These waterspouts form over water **during calm weather conditions**. They are **typically smaller and pose less of a threat** compared to their tornadic counterparts.

### Increasing Frequency of Waterspouts

- Experts have noted that the frequency of waterspouts has been rising in recent years, likely due to increasing ocean temperatures.
- Warmer sea surfaces create conditions that are more conducive to the formation of waterspouts.
  - For example, **recent studies have indicated that waterspouts are more likely to occur when sea surface temperatures are significantly higher than historical averages**, as was the case in the region near Sicily at the time of the incident.
- As ocean temperatures continue to rise, the likelihood of such extreme weather events may also increase, posing greater risks to those at sea.

## Goa's land use law raises red flags

### News Excerpt:

The Goa state's **Town and Country Planning (TCP) department** that approved a **change in land use** over the past 18 months, converting "**green zones**" into "**settlements**" — allowing **construction activity for both residential and commercial purposes**, pushing up the land's value manifold.

- There has also been controversy around **the amendment of the TCP Act** by introducing **Section 17 (2)** that eases the process of "**correction**" of "**green zones**" marked in the Regional Plan 2021 into "**settlements**," opening the gates to construction.

### What's the process for "correction" under 17(2)?

- A written form along with a **fee (Rs 500 to Rs 50,000, depending on the area)** and documents (survey plan, ownership document, site plan, report of a professional,

etc) are submitted by an applicant to the **Chief Town Planner (CTP) planning** for “rectification.”

- The **CTP scrutinizes the proposal** and **submits a report with analysis**, including a report from a registered professional.
- The CTP may consult agencies such as **PWD, District Collector, agriculture or forest department, depending on the property**. The **TCP department** also conducts a site inspection.
- The proposal and the **CTP scrutiny report** are sent to a **nine-member expert committee**, headed by CTP, for scrutiny, verification and recommendation.
- The expert committee gives its recommendations. The proposal is then **submitted for a decision to the Secretary, TCP department and TCP minister**.
- After the government’s approval, a fee is levied for correction. Finally, the modification is notified in the **Official Gazette** and land zoning is changed to reflect **the new zone**.

#### Why do people want to change land use from ‘green zone’ to ‘settlement’?

- Once land is classified as a “**settlement**”, both **residential and commercial construction activity can be carried out**, enabling the owner to **build a house**, residential complex, villas or hotels.
- **Paddy land cannot be used for construction activity**; it has to be used only for **farming or agricultural purposes**.
- On orchard land, only a farmhouse of a specified area can be built, and on the remaining patch, no construction can take place.
- As a result, **when a plot is rezoned to a settlement**, its value appreciates. In Anjuna, for instance, a **1,900 sq m plot earmarked** as an orchard under the **Regional Plan 2021** was purchased for **Rs 74 lakh in December 2022**.
- Once it was converted to settlement, in June 2023, the plot was sold for Rs 6.8 crore to a builder.

#### What are the concerns being flagged?

- **Urban planners and activists** argue that in the garb of “**rectifying errors**,” an unprecedented expanse has been cleared for construction.
- This means destruction of hill slopes, fields and **natural cover in favour of real estate lobbies** and a speculative housing market for “second homes” for the urban elite.
- Says activist Claude Alvares: “**How demarcation of a hill slope** – which is based on **Survey of India topography sheets** – can be considered an ‘error’ is simply beyond imagination.”
- It has led to **unbalanced development by destruction of hill slopes**, fields and natural cover to favour **real estate lobbies**.
- Through changes to the land use map, the protection accorded in **the regional plan to eco-sensitive zones** (orchards, forests, no-development slopes, natural cover) is being undone.

## ART & CULTURE

### Violent Clash in Namdhari Sect in Haryana

#### News Excerpt

A **violent clash** between **two rival factions** of the **Namdhari religious sect** erupted in Rania over agricultural land in Haryana’s Sirsa district.

#### About Namdharis

- **Origins:**
  - The Namdhari Sikhs, also known as **Kukas**, are a distinct group **within the Sikh community**.
  - Their origins trace back to **Satguru Balak Singh Ji**, who Guru Gobind Singh Ji blessed and later passed on the spiritual leadership to Satguru Ram Singh Ji.
- **Leadership:**
  - The Namdhari movement traces its roots to **Satguru Ram Singh Ji**, who was born in the village of Raiyaan, **Punjab**, into a humble family of a carpenter.
  - Witnessing the decline of Sikh values and the treachery of contemporary powers, Satguru Ram Singh Ji sought to **rejuvenate the Sikh Khalsa and combat British colonial rule**.
  - On April 12, 1857, the auspicious day of **Baisakhi**, he baptised **five chosen Sikhs**, marking the inception of the **Namdhari Sant Khalsa** and initiating a resistance movement against British rule.
- **Practices:**
  - They are characterised by their unique dress code of **white attire** and round **white turbans**.
  - The Namdharis emphasised strict adherence to Sikh tenets, promoting **vegetarianism, abstinence from alcohol and drugs**, and a simple, honest way of life.
  - Today, Namdhari Sikhs remain committed to their spiritual practices, which include daily recitations of the **Sikh scriptures, meditation, and community service**.
  - Namdhari Sikhs regard the **Guru Granth Sahib** as the **Supreme Gurbani** but also believe in a **living human Guru**.
  - The Namdharis’ sprawling headquarters is located at **Bhaini Sahib** near **Ludhiana**, where Ram Singh was born.
- **Resistance:**
  - Under Satguru Ram Singh Ji’s leadership, the Namdharis **opposed British colonial policies**. They participated in **direct actions**, including the **rescue of cows** from slaughterhouses, which led to severe reprisals from the British.
  - Successive Satgurus continued to lead the community, each contributing to the spiritual, social, and **cultural advancement** of the Namdharis.
- **Later Developments:**
  - **Satguru Jagjit Singh Ji**, who led the community for over five decades, expanded their **global presence** and influence, emphasising service to humanity and

the promotion of **Sikh devotional music** and Indian classical music.

## National Sports Day 2024

### News Excerpt

National Sports Day, celebrated annually on **August 29th**, marks the **birth anniversary** of **Major Dhyan Chand**, one of the greatest field **hockey** players in history.

### Legacy of Major Dhyan Chand

- Major Dhyan Chand, born as Dhyan Singh on August 29, **1905, in Allahabad**, India, began his hockey career with the British Indian Army regimental team.
- Dhyan Chand's most notable contributions came during the **1928, 1932, and 1936 Summer Olympics**, where he played a crucial role in securing **India's first Olympic gold medals** in hockey.
- His remarkable performance on the field earned him the titles of **'Hockey Wizard'** and **'The Magician,'** and he became synonymous with the sport. From **1926 to 1948**, his career is remembered as one of the most illustrious in hockey history.
- In **1956**, in recognition of his unparalleled contributions to Indian sports, Dhyan Chand was awarded the **Padma Bhushan**, India's third-highest civilian award.
- To further honour his memory, the government of India declared his birth anniversary **National Sports Day** in **2012**.

### Significance of National Sports Day

- National Sports Day is a day to remember **Major Dhyan Chand's achievements** and **inspire** individuals of all ages to participate in **physical activities**.
- The day encourages cultivating a sports culture in India, emphasising the importance of **discipline, teamwork, and national pride**.
- The Indian government uses National Sports Day to launch various sports **schemes and initiatives** to promote sports at the grassroots level.
  - For instance, the Prime Minister announced the **Khelo India movement** in **2018**, one such initiative aimed at **revitalising sports culture** in India by

identifying and nurturing young talent.

- On National Sports Day, the **President of India** often presents prestigious **sports awards**, including the **Major Dhyan Chand Khel Ratna Award**, the highest sporting honour in the nation.
- Across India, schools, colleges, and sports institutions organise various events to mark National Sports Day. These include **inter-school** and **inter-college competitions, sports festivals, and exhibitions** encouraging participation in various sports.
- **Public awareness campaigns** are an integral part of National Sports Day celebrations. These campaigns highlight the importance of sports and physical activity and encourage communities to embrace a **healthier lifestyle**.

## Evidence of Dockyard at Lothal

### News Excerpt

A recent study by the **Indian Institute of Technology-Gandhinagar (IITGn)** offers fresh evidence **confirming** the dockyard's existence in Lothal.

### About Lothal

- **Location:** Gujarat, India
- **Features:**
  - **Dockyard:** One of the world's earliest known dockyards, indicating maritime trade and engineering prowess.
  - **Bead Factory:** Extensive bead-making workshops suggest thriving craft industries.





- **Warehouse:** Large warehouse for storage of goods, highlighting trade activities.
- **Drainage System:** Advanced drainage system similar to other major Harappan sites.
- **Granaries, Rice husk, Double burial** (male and female together).

### Controversy surrounding Dockyard

- Lothal, a prominent site of the Harappan Civilization, has long been considered a **key centre for trade and commerce**, possibly due to its strategic location near the **Sabarmati River** and the **Gulf of Khambhat**.
- The presence of a large basin measuring **222 x 37 meters** led early archaeologists to hypothesise that it could have been a dockyard, crucial for **maritime trade**.
- Some archaeologists have **criticised** the hypothesis of a dockyard at Lothal, arguing that the basin was **merely an irrigation tank** rather than a facility for docking ships.

### Key findings of the study

- A recent study titled "**Sabarmati and its connection with the Harappan port Lothal and the Nal corridor: A study using multi-sensor data, cloud-computing and multi-platforms**" sought to investigate the historical geography of Lothal and its connection to the Sabarmati River.
- The researchers employed a combination of early **maps, satellite imagery**, and digital elevation models (**DEMs**) to study the region's topography and paleochannels—ancient riverbeds.
- The study revealed that the **Sabarmati River**, which now flows 20 kilometres away from Lothal, once ran much **closer to the site** during the Harappan period.
- This discovery **aligns** with the hypothesis that **Lothal's location** was strategically chosen for its **proximity** to a **major river**, which is crucial for facilitating trade.
- The researchers identified a **travel route** connecting **Lothal to the Nal Sarovar wetland** and the **Little Rann of Kachchh**, leading further to another Harappan site, **Dholavira**.
- The findings suggest that traders could have travelled by boat from **Lothal to Dholavira within two days**, supporting the idea that **Lothal was a key node** in a larger inland network connected to the Rann of Kutch.
- The study posits that traders during the Harappan era likely travelled to Gujarat through the Gulf of Khambhat, transported goods to Lothal, and then moved them to destinations like **Mesopotamia**.

### About Dholavira

- **Location:** Gujarat, India
- **Features:**
  - **Water Management:** Elaborate water harvesting and management system by building dams and channelling water into connected reservoirs.
  - **Unique City Layout:** The city is divided into three parts – the citadel, the middle town, and the lower town.

- **Signboard:** An inscription on a large signboard with ten symbols indicating early writing or symbolic communication.
- **Monumental Architecture:** Evidence of large stone structures and well-planned streets.

## Saragarhi Day

### News Excerpt

**September 12, 2024**, marks the 127th anniversary of the Battle of Saragarhi, widely regarded as one of the finest **last stands** in global military history.

### About Saragarhi

- Saragarhi was a vital **communication post** between **Fort Lockhart** and **Fort Gulistan**, two strategically important forts in the rugged **North West Frontier Province** (now in Pakistan).
  - These forts, originally built by Maharaja Ranjit Singh and later renamed by the British, housed many British troops.
- Saragarhi served as the critical link for communication between these forts, making it a key position for maintaining **control over the region**.
- On the day of the battle, Saragarhi was manned by **21 soldiers** from the **36th Sikh (now 4 Sikh) Regiment**, along with a **non-combatant named Daad**, a Pashtun who performed various tasks for the troops.

### Battle of Saragarhi

- A large force of over **8,000 Afridi and Orakzai tribal militants** advanced towards the fort. The tribal forces aimed to **cut off communication** between Fort Lockhart and Fort Gulistan, thereby **isolating** the British forces stationed there.
- The soldiers at Saragarhi faced several challenges besides being vastly **outnumbered**. They had limited ammunition, with each soldier having only around 400 rounds.
- **Sepoy Gurmukh Singh**, responsible for communication, had to operate the heliograph communication system alone, a task typically handled by three men. Despite these odds, the soldiers maintained their resolve and fought bravely.
- Despite being heavily outnumbered, these soldiers, **led by Havildar Ishar Singh**, held their ground for seven hours, displaying **unparalleled bravery**. Their heroic stand remains a symbol of courage and sacrifice in military history.

### Recognition and Legacy

- The news of the Battle of Saragarhi was greatly admired in Britain. Breaking the tradition of **not giving gallantry medals posthumously**, Queen Victoria **awarded the 21 soldiers** of the 36th Sikh Regiment (excluding the non-combatant Daad) the **Indian Order of Merit**, the highest gallantry award given to Indian soldiers at the time, **equivalent to the Victoria Cross**.

- Each soldier's family was also awarded **two 'marabas'** (50 acres of land) and **Rs 500**.
- The British built an **obelisk at the battle site** using **bricks** from the burnt fort and commissioned **gurdwaras** in Amritsar and Ferozepur in their honour.
- In **2017**, the **Punjab government** declared September 12 as **Saragarhi Day**, a public holiday to honour the martyrs.
- Additionally, the **Khyber Scouts regiment** of the **Pakistani army** continues to salute the Saragarhi memorial near Fort Lockhart.
- The battle has also **inspired cultural works**, including the Bollywood film *Kesari*, starring Akshay Kumar, which loosely depicts the events of Saragarhi.

## Hindi Diwas 2024

### News Excerpt

Hindi Diwas, also known as National Hindi Day, is celebrated annually on 14th September to commemorate the adoption of Hindi as one of India's official languages.

### Historical Background

- In **1918**, Hindi scholars and activists, recognising the need for a common language to unify the nation, formed the **Hindi Sahitya Sammelan** (Hindi Literary Conference).
  - This organisation was pivotal in **promoting Hindi** as a national language, advocating its use in **education, literature, and administration**.
- Following India's independence in 1947, the **Constituent Assembly** faced the challenge of choosing an **official language** that could communicate across the country's **diverse linguistic landscape**.
- On **September 14, 1949**, the Assembly adopted Hindi, written in the **Devanagari script**, as one of the official languages under **Article 343** of the Constitution.
  - It is important to note that the Constitution of India does **not** grant the status of a "**national language**" to any language.
  - This decision aimed to promote Hindi as the nation's **lingua franca**, facilitate communication, and simplify administration.
- The **first Hindi Diwas** was celebrated in **1953**. Since then, Hindi Diwas has been observed annually on **September 14th**.

### Significance of Hindi Diwas

- The observance of Hindi Diwas highlights the language's role in uniting India's **diverse linguistic and cultural regions**.
  - Hindi is the **third most spoken** language in the **world**, following **English** and **Mandarin Chinese**.
- Hindi Diwas aims to raise **awareness** about the importance of the Hindi language and commemorate its adoption as one of India's official languages.
- It reflects the nation's commitment to **preserving and promoting** Hindi as a vital aspect of its **heritage**.

- The day is also intended to encourage using Hindi in both official and personal spheres, **countering** the increasing **dominance of English**, particularly in administrative and educational settings.
- One of the highlights of Hindi Diwas celebrations is the presentation of awards to individuals and organisations that have significantly contributed to promoting Hindi.
- The **President** of India awards the **Rajbhasha Gaurav Puraskar** and **Rajbhasha Kirti Puraskar** to ministries, departments, public sector units, banks, and citizens for their exceptional work in promoting the language.

## GOVERNMENT SCHEMES

### Unified Pension Scheme (UPS)

#### News Excerpt:

On **August 24**, the **Union Cabinet** approved the **Unified Pension Scheme (UPS)**, which guarantees government employees a **pension after retirement**. This scheme will become **effective on April 1, 2025**.

#### Key features of the UPS:

- **Assured Pension:**
  - This pension will be 50% of an employee's average basic pay during the last 12 months before retirement, provided the employee has at least 25 years of service.
  - For shorter service periods, down to a minimum of 10 years, the pension amount will be reduced proportionately.
- **Assured Minimum Pension:**
  - For those retiring with at least 10 years of service, the UPS guarantees a minimum pension of Rs 10,000 per month.
- **Assured Family Pension:**
  - In the event of a **retiree's death**, their immediate **family will receive 60%** of the retiree's last drawn pension.
- **Inflation Indexation:**
  - All three pensions will **include dearness relief**, calculated based on the **All India Consumer Price Index** for **Industrial Workers**, similar to what is provided to current employees.
- **Lump Sum Payment at Superannuation:**
  - In addition to gratuity, retirees will receive a **lump sum amounting to 1/10th of their monthly emolument** (pay + dearness allowance) for every six months of completed service.

#### Why Was the NPS Introduced in 2004?

- The NPS replaced the Old Pension Scheme (OPS) on January 1, 2004, as part of the government's efforts to reform pension policies. It applied to all government employees joining after that date.
- The OPS offered a fixed pension equal to 50% of an employee's last drawn basic pay, along with a dearness allowance (DA) to offset inflation.

- The NPS aimed to address the OPS's fundamental issue: it was unfunded, with no specific corpus set aside for pensions.
- Over time, this led to unsustainable levels of government pension liabilities, exacerbated by increasing life expectancy due to better healthcare.

## From NPS to UPS

NPS eliminated a **guaranteed pension** and required both the employee and the government to contribute to the pension fund.

Employees contributed 10% of their basic pay and dearness allowance, while the government initially contributed 14%, now increased to 18%.

The NPS offered various schemes with different risk profiles, allowing employees to choose from low to high-risk options managed by nine pension fund managers.

These contributions were invested in equities and other market-linked securities by nine pension fund managers overseen by the Pension Fund Regulatory and Development Authority (PFRDA).

The lack of a guaranteed return led to opposition from government employees.

Due to these concerns, the Government formed a committee led by Cabinet Secretary TV Somanathan in 2023. The committee's recommendations led to the announcement of the UPS.

### Who Can Avail the UPS?

- The UPS will take effect **on April 1, 2025**, but will also apply to those who have retired **under the NPS since 2004**.
- The UPS is likely to be **more advantageous** for nearly all employees compared to the NPS, though **employees may choose to stay with the NPS if they wish**.
- Currently, the **UPS is for central government employees**, but state governments can adopt it if they choose to.

### Impact of UPS

- The new UPS will cost the government approximately **Rs 6,250 crore** in its **first year**, largely to **bridge the gap** between the **guaranteed 50% salary** as pension and the returns generated from the pension fund's investments.
- An **additional Rs 800 crore** is expected to cover arrears for employees who retired under the NPS since 2004.
- Moreover, the **UPS prevents states** from reverting to the **Old Pension Scheme (OPS)**, as some have done in the past.
- Some states, such as **Rajasthan, Chhattisgarh,**

**Jharkhand, Punjab, and Himachal Pradesh, reverted to the OPS last year.**

- The **UPS blends features** from both the **OPS and NPS**, offering a **guaranteed pension, inflation indexation, a family pension, and a minimum pension**, while **maintaining a contributory, fully funded model**.
- This scheme is expected to **benefit over 23 lakh central government employees**, and states are anticipated to adopt it as well, despite the potential financial strain.

## Vigyan Dhara Scheme

### News Excerpt:

The **Union Cabinet**, chaired by the Prime Minister, **approved** the continuation of the **three umbrella schemes**, which were merged into a **unified** central sector scheme, namely **'Vigyan Dhara'** of the Department of Science and Technology (DST).

### Background and Components of Vigyan Dhara:

- DST was implementing three central sector umbrella schemes to promote Science, Technology, and Innovation (STI) in the country.
  - **Science and Technology (S&T) Institutional and Human Capacity Building**
  - **Research and Development**
  - **Innovation, Technology Development and Deployment.**
- These three schemes have been merged into the unified Vigyan Dhara scheme.

### Objective of Vigyan Dhara:

- The primary objective of the 'Vigyan Dhara' scheme is to promote **S&T capacity building, research, innovation, and technology development**, with the aim of strengthening the country's Science, Technology, and Innovation ecosystem.
- The scheme endeavours to promote research in areas such as **basic research** with access to **international mega facilities, translational research in sustainable**

## Overview of the Scheme

Focused interventions will be undertaken to enhance **women's participation** in Science and Technology (S&T), with the ultimate goal of achieving **gender parity** in S&T and Innovation (STI).

The **scheme** would reinforce the government's efforts to promote innovations at all levels, from **school to higher education**, and for **industries and startups** through targeted interventions.

The **scheme** plans to provide **internships for 11th and 12th-grade students** and **fellowships** for graduate and postgraduate research.

Significant support will be extended to increase **collaboration** between **Academia, the Government, and Industries**.

All the programs proposed under the 'Vigyan Dhara' scheme would be aligned with **DST's five-year goals** for realising the vision of **Viksit Bharat 2047**.

The scheme's research and development component will be aligned with the Anusandhan National Research Foundation (**ANRF**).

Implementation of the scheme would follow the **globally prevailing yardsticks** while aligning with national priorities.

The proposed outlay for implementing the unified scheme 'Vigyan Dhara' is **Rs. 10,579.84 crore** during the **15th Finance Commission period** from 2021-22 to 2025-26.

energy, water, etc. and collaborative research through international bilateral and multilateral cooperation.

- Bio-based chemicals and enzymes,
- Functional foods and smart proteins,
  - Precision biotherapeutics,
  - Climate-resilient agriculture,
  - Carbon capture and utilization, and
  - Advanced marine and space research.

## Anusandhan National Research Foundation (ANRF)

The Anusandhan National Research Foundation (ANRF) was established with the Anusandhan National Research Foundation (ANRF) 2023 Act.

ANRF will forge **collaborations** among industry, academia, government departments, and research institutions and create an interface mechanism for the participation and contribution of industries and State governments, in addition to the scientific and line ministries.

The ANRF aims to **seed, grow and promote** research and development (R&D) and foster a culture of research and innovation throughout India's **universities, colleges, research institutions, and R&D laboratories.**

ANRF will act as an **apex body** to provide **high-level strategic direction of scientific research** in the country as per the National Education Policy (NEP) recommendations.

With the establishment of ANRF, the Science and Engineering Research Board (SERB) established by an act of Parliament in 2008, has been **subsumed** into ANRF.

• This policy will also enhance the government's initiatives of achieving a '**Net Zero**' carbon economy and promoting '**Lifestyle for Environment**.'

• It will guide India toward rapid '**Green Growth**' by supporting a '**Circular Bioeconomy**.'

• The BioE3 Policy aims to create a **more sustainable, innovative, and adaptable future** in response to global challenges, setting forth a **Bio-vision for a developed India** (Viksit Bharat).

### Significance of the merger:

- The merger of the schemes into a single scheme would enhance **efficiency in fund utilisation** and establish **synchronisation** among the sub-schemes/programs.
- Implementation of the scheme will **strengthen** the country's **S&T infrastructure** by fostering **well-equipped R&D labs** in Academic Institutions.
- It will also contribute to building a critical **human resource pool** to strengthen the science and technology landscape and expand the country's R&D base, improving the **Full-Time Equivalent (FTE)** researcher count.

## Scheme to Enhance Biotechnology Manufacturing

### News Excerpt:

On August 24, 2024, the **Union Cabinet** approved a new initiative aimed at boosting **biotechnology-based manufacturing**, known as the **BioE3 (Biotechnology for Economy, Environment, and Employment) Policy** for Fostering High-Performance Biomanufacturing.

### More detail about News:

- This initiative, led by the **Department of Biotechnology, Ministry of Science and Technology**, aims to ignite **technological change** similar to the revolution that took place in the **IT industry** in the **1990s**.
- It focuses on **high-performance biomanufacturing**, which involves creating a range of products—**from medicines to materials**—addressing **agricultural and food-related challenges**, and promoting the production of **bio-based goods** through **advanced biotechnological methods**.

### About BioE3 Policy:

- The BioE3 Policy is set to target several key strategic sectors to meet national priorities.
- The policy is structured around six main thematic areas:

## Expansion of AB PM-JAY approved

### News Excerpt:

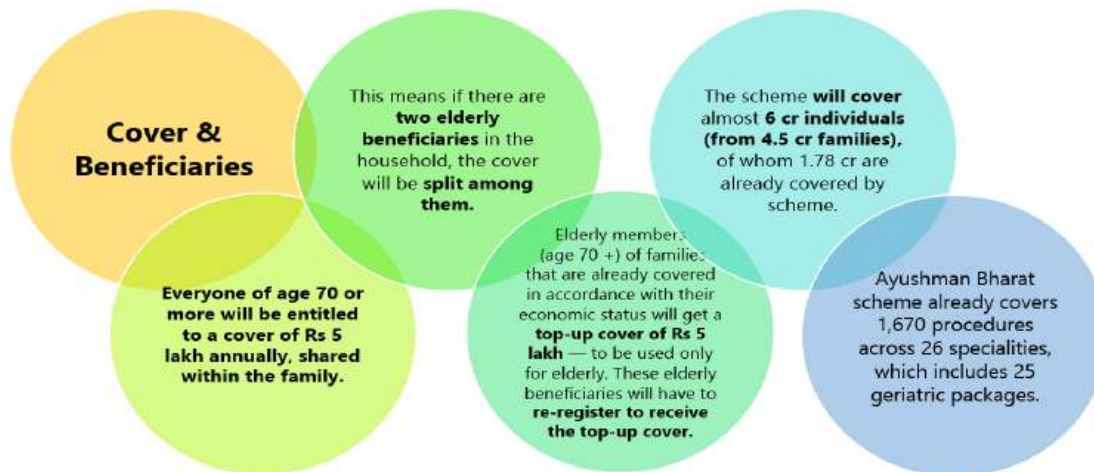
The Union cabinet approved the expansion of the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PM-JAY) health cover to all Indians of age 70 years and older irrespective of their income. The registration for the expanded insurance scheme was likely to begin within a week.

### What is AB PM-JAY?

- AB PM-JAY is already the world's largest public health insurance scheme.
- It provides free cover upto Rs 5 lakh annually to all members of eligible families — estimated to comprise the bottom 40% of the population economically — irrespective of age.
- Expansion of the cover to the country's entire elderly population now the first complete age-cohort to receive coverage under the scheme.

### Register for scheme

- Those eligible for the **expanded cover will be able to register themselves** and get the **Ayushman Bharat card** as soon as the new module is added to the existing portal.
- **Beneficiaries can register either through the government's Ayushman App** or at the **Ayushman Bharat** counter at any government **health facility**.
- Anyone who has **turned 70 as per their Aadhaar** can register for the new health cover.
- There will be **no exclusions or waiting period of pre-existing conditions**.
- Beneficiaries will be **able to utilise their policy** as soon as they complete their **eKYC**.
- The portal will also be **face-authorisation-enabled**, to ensure that even elderly persons whose fingerprints are difficult to read or have changed over time can avail the benefits.



Just over 20% of India's population above the age of 60 is currently covered by any government, employer-provided, or personal insurance scheme, according to the India Ageing Report 2023.

- Women make up the larger share of the elderly population — a survey by NITI

**Those already covered**

- Some 80-lakh people are separately covered under various government health schemes — the Central Government Health Scheme (CGHS), Ex-Servicemen Contributory Health Scheme, or cover provided to family members of defence and railway personnel, etc.
- Those who are covered under these government health schemes will have the option of choosing either Ayushman Bharat or continuing with their existing coverage.
- People who are covered under the **Employees State Insurance Corporation (ESIC)**, however, will be eligible to have both their existing cover and Ayushman Bharat.
- This is because premiums for ESIC are paid by the insured and their employer, not the government.
- **People who have their own privately purchased insurance cover will be eligible to have the Ayushman Bharat cover as well.**

**Why scheme matters**

- Making health cover universal over the age of 70 is very significant as India's population ages.
- More Indians are likely to need health facilities in the coming years, and much of the population is currently under-covered by health schemes.
- At the time of the 2011 census, only 8.6% of India's population was over the age of 60 years.
- This is expected to increase to 19.5% by 2050, according to the government's Longitudinal Ageing Study in India (LASI).
- In terms of numbers, Indians over the age of 60 are likely to be 319 million in 2050 — up more than three times from the 103 million in 2011.
- The rate of admission among the elderly already covered under the scheme has been more than 7% — double the 3-4% admission rate for the younger people covered under the scheme, according to officials.
- The elderly remain largely uncovered by any health scheme.

Aayog found that 58% of the elderly are women, and 54% among them are widows.

This presents a substantial challenge because they may not have healthcare support. This scheme will be of immense help to women, especially those who are widowed.

**New Foster Care Guidelines in India**

**News Excerpt:**

**The Women and Child Development (WCD) Ministry** has recently revised India's Model Foster Care Guidelines, introducing significant changes that allow single individuals to foster and adopt children.

**What is Foster Care?**

- Foster care is a system where a child is placed with a family or individual, either relatives or unrelated persons, **for temporary care and support.**
- The goal is to provide a stable environment for the child **until they can return to their biological family or be adopted.**
- **Foster care often involves children without suitable guardians or those with special needs.**

**Key Changes in Foster Care Rules**

- Under the updated guidelines, individuals aged between 35 and 60 years can now foster children, irrespective of their marital status.

Central Adoption Resource Authority	CARINGS
<ul style="list-style-type: none"> <li>• CARA is a statutory body of the Ministry of Women &amp; Child Development, Government of India.</li> <li>• It functions as the nodal body for adoption of Indian children and is mandated to monitor and regulate in-country and inter-country adoptions.</li> <li>• CARA is designated as the Central Authority to deal with inter-country adoptions in accordance with the provisions of the Hague Convention on Intercountry Adoption, 1993, ratified by Government of India in 2003.</li> <li>• CARA primarily deals with adoption of orphan, abandoned and surrendered children through its associated /recognised adoption agencies.</li> </ul>	<ul style="list-style-type: none"> <li>• Child Adoption Resource Information &amp; Guidance System (CARINGS) is an online platform, building bridges and creating links through a robust web-based management system.</li> <li>• It has been designed to bring transparency in the adoption system and also curtailing delays at various level.</li> </ul>

- This marks a significant departure from the 2016 guidelines, which restricted foster care exclusively to married couples.
- The revised rules now permit unmarried, widowed, divorced, or legally separated individuals to foster children.
- Single women are allowed to foster and adopt children of any gender, while single men can only foster and adopt male children.
- The mandatory fostering period before adoption has been reduced from five years to two years.
- This change applies to both single individuals and married couples, offering a faster route to adoption for foster parents.

#### Age Criteria for Foster Parents

- The revised guidelines establish specific age criteria for fostering.
- For single foster parents, the minimum age is set at 35 years, with a maximum age limit of 55 years for fostering a child aged 6 to 12 and 60 years for fostering a child aged 12 to 18.
- While the 2016 guidelines required both spouses to be over 35 years old, the new rules stipulate that the 'composite age' of a married couple must be at least 70 years to foster a child aged 6 to 12 or 12 to 18 years.

#### Online Registration for Foster Parents

- Prospective foster parents can now register online through the **Child Adoption Resource Information and Guidance System (CARINGS)**, a platform previously used by adoptive parents.
- The 2024 guidelines also introduce a **dedicated online portal for document submission, streamlining the review process by District Child Protection Units.**

#### Adoption Laws and Processes

- Adoption laws in India differ based on religious backgrounds.
- For Hindus, the **1956 Hindu Adoption and Maintenance Act** governs adoption, requiring specific conditions to be met.
  - A **male must be of sound mind, a major, and financially capable** to adopt, with his wife's consent unless exceptional conditions apply.
  - A Hindu **woman must also meet these criteria, and if married, the adoption requires her husband's consent.**
- **Non-Hindus**, however, **do not have full adoption rights** and must opt for guardianship under the **1980 Guardian and Ward Act.**
  - This act does not confer the same legal status as adoption, and the relationship lasts **until the ward turns 21.**
  - Similar to Muslim laws in India, Parsi laws don't recognise adoption laws.
  - However, Parsis can adopt a child from an orphanage with the court's permission under the **Guardian and Ward Act of 1980.**

- Christianity also does not recognise adoption as it pertains to personal law. Christians can adopt a child from an orphanage following the **same legal procedures as Muslims and Parsis.**

#### Impact and Implications

- This progressive shift in policy aligns with **broader amendments to child protection laws**, providing **more inclusive opportunities for individuals** who wish to foster or adopt, regardless of their marital status.
- The inclusion of single individuals in foster care is expected **to encourage more people to consider fostering.**
- Although **foster care is intended to be temporary, it plays a crucial role in providing stability for children** until their biological families are able to take them back.

## MISCELLANEOUS

### Eri Silk

#### News Excerpt:

The **North Eastern Handicrafts and Handlooms Development Corporation (NEHDC)** has achieved a significant milestone by earning the prestigious **Oeko-Tex certification** for its **Eri Silk**, a vegan silk variety.

#### More detail about news:

- This certification, which is a stringent standard ensuring that textiles are **free from harmful substances** and produced under **eco-friendly conditions**, underscores the **ethical and sustainable production methods** of Eri Silk.
- This accomplishment enhances the reputation of Eri Silk as a **Geographical Indication (GI) product** of **Assam**, emphasizing its authenticity and regional significance.
- It also opens doors for its expansion into the **global export market.**

#### OEKO TEX STANDARD 100:

- This is a certification label that guarantees that textiles have been tested for **substances harmful to human health**, ensuring their safety from the **yarn stage to the finished product.**
- Any item displaying the STANDARD 100 label has successfully passed **rigorous safety tests** for harmful substances.

#### About Eri Silk:

- Eri silk is a protein fiber obtained from the cocoons of the *Samia Cynthia Ricini* moth, also known as the *Philosamia Ricini* moth.
- This 100% natural silk is one of the four major types of silk produced globally.
- Predominantly found in Meghalaya and other northeastern states of India, Eri silk is also classified as Vanya (wild) silk.
- Eri silk yarn is known for its unique properties, making it an **all-weather fiber.**
- Its **isothermal qualities** keep it cool in summer, while its thermal properties provide warmth in winter.

- Eri silk's natural properties make it **gentle on the skin, avoiding irritation or itchiness.**
- It is **hydrophilic**, meaning it **readily absorbs water**, and is known as the **most absorbent silk**, working exceptionally well with natural dyes.
- The production process of Eri silk yarns and fibers in villages boasts the **smallest carbon footprint** in the global textile industry.
- Another distinct feature of Eri silk is that **every stage of its production**, from silkworm rearing to weaving, occurs **within a village ecosystem.**

**NEHHDC:**

- Incorporated in 1977, the North Eastern Handicrafts and Handlooms Development Corporation (NEHHDC) is dedicated to fostering and promoting the indigenous crafts of the northeastern region of India.
- The organization aims to connect local craftsmen with potential markets and consumers, thereby creating economic, cultural, and social opportunities for artisans while adding cultural value for buyers.
- NEHHDC operates under the administrative control of the Ministry of Development of North Eastern Region (DoNER), Government of India.

**Sakthan Thampuran**

**News Excerpt:**

**Minister of State for Tourism and Thrissur MP Suresh Gopi** on 7 September 2024 pledged **to replace a statue of Sakthan Thampuran** that was knocked over by a state transport bus in June with a **new bronze statue** if the Kerala government did not do so within 14 days.

## Who was Sakthan Thampuran?

**Raja Rama Varma Kunjipillai** or **Rama Varma IX**, better known today as **Sakthan Thampuran**, ruled over the **Cochin kingdom from 1790 to 1805**. He was born in 1751 to **Ambika Thampuran** and **Chendose Aniyan Namboodiri** of the Cochin royal family, but was raised by an aunt who called him **Sakthan**, meaning 'powerful'. The word thampuran is believed to be **an appropriation of the Sanskrit samrat**, meaning emperor.

**The Cochin kingdom**, which was part of the **Late Chera Empire**, covered the regions between **Ponnani in Malappuram** and **Thottappally in Alappuzha** in today's Kerala.

**Strategist and ruler**

- **Sakthan Thampuran** became heir apparent in 1769 as an **18-year-old**. He advised his king **to maintain friendly relations** with both **the Dutch and the English**, who were vying for a larger share of trade in the region.

- Sakthan is said to have **orchestrated Mysore's attempt** to invade the Travancore kingdom, which had established relations with **the English East India Company**. This would result in the **Powney treaty** which freed **the Cochin kingdom** from its allegiance to Mysore, and helped formalise its relations with the British.
- **Sakthan Thampuran** put an end to the institution of the **Yogiatirippads** — the erstwhile spiritual heads of **the Vadakkumnathan and Perumanam temples**, who had conspired against the previous Cochin king in his wars against the **Calicut Zamorin** — and entrusted temple management to the government.
- He built a **fearsome reputation for himself**, and is said to have largely freed his kingdom of crime.

**Thrissur and Pooram**

- **Sakthan Thampuran** transferred the seat of the **Cochin kingdom** from Thrippunithura to **modern-day Thrissur**. The **Thekkinkadu Maidanam** and the surrounding Swaraj Round became the basis for the city's elaborate road system and infrastructure.
- The king encouraged merchants of **all religions and British officials** to relocate to the city. He also overhauled and firmed up the **kingdom's finances**, personally overseeing revenue management.
- **Sakthan Thampuran** started the **Thrissur Pooram in 1797** as **an alternative to the Arattupuzha Pooram**, then the largest temple festival in the state. The **Thrissur Pooram** was conceived as an opportunity for **the major temples in Thrissur** to come to pay their respects to **Lord Shiva**, the presiding deity at the **Vadakkumnathan Temple**.

**Port Blair renamed as Sri Vijaya Puram**

**News Excerpt:**

**Port Blair**, the **capital city of Andaman and Nicobar Islands**, will now be known as '**Sri Vijaya Puram**', Union Minister Amit Shah said on 13 September 2024. **The decision of changing the name** was inspired by **"to free the nation from colonial imprints"**. **Sri Vijaya Puram** symbolises **the victory achieved in our freedom struggle and the A&N Islands' unique role in the same."**

**How did Port Blair get its name?**

- The city of Port Blair is the entry point of the Andaman and Nicobar Islands. It was named after Archibald Blair, a naval surveyor and lieutenant in the Bombay Marine.
- Blair was the first officer to carry out a thorough survey of the Andaman Islands.
- After joining the Bombay Marine in 1771, Blair set out on a survey mission along the coasts of India, Iran, and Arabia next year.
- By the late 1780s, he had participated in a number of survey missions, including those in the Chagos

archipelago, Diamond Harbour located in the south of Calcutta, and along the Hooghly River.

- In December 1778, Blair left for his first surveying voyage to the Andamans from Calcutta, along with two ships, Elizabeth and Viper.
- The expedition, which lasted till April 1779, took him around the west coast of the island, thereby sailing north along the eastern coast he reached the natural harbour which he initially named as Port Cornwallis (after Commodore William Cornwallis, Commander-in-chief of the British Indian Army).
- Later the island was renamed after him. Blair was immediately aware of the significance of his discovery and wrote a detailed report of his survey, which was received very positively by the East India Company (EIC) officials.
- The Revolt of 1857 resulted in a large number of prisoners for the British, prompting the immediate renovation and resettlement of Port Blair as a penal colony.
- Most of the convicts received life imprisonment at Port Blair. Several of them were hanged, while many died due to disease and the degrading conditions in the region.
- With the strengthening of the Indian Independence Movement in the late 19th century, a huge cellular jail was established here by 1906. Popularly known as Kaala Paani, it housed several freedom fighters, including Veer Damodar Savarkar.
- Meanwhile, Blair had already returned to England in 1795 and is known to have read an account of the Andaman Islands before the Royal Society of London in 1799.

## PHILOSOPHY OF THE MONTH

### The Intersection of Genetics, Intelligence, and Society: A Philosophical Inquiry

In contemporary discourse, the relationship between **genetics and intelligence** has provoked significant philosophical and ethical questions about merit, equality, and social structures. The assertions put forth in books like *'The Bell Curve'* by Richard Herrnstein and Charles Murray challenge traditional views on education, talent, and success. They posit that **intelligence, as measured by IQ, is largely inherited and varies among racial and ethnic groups due to genetic differences.**

This thesis presents us with a potential paradox: while we have made strides in advocating for meritocracy—where skill and talent are recognized through achievements—there are concerns that an overemphasis on genetic predispositions might undermine these foundational values.

At the heart of the debate is the idea that intelligence, often seen as a key determinant of an individual's socioeconomic outcomes, **might overshadow efforts we traditionally associate with success: hard work, education, and personal agency.** This is particularly relevant in a nation like India, where merit-based assessment has begun to gain traction alongside a history of social stratification tied to caste and economic status. If intelligence is indeed significantly determined by genetic inheritance, **how does one reconcile this view with the belief that perseverance and education can lead to upward mobility?**

In philosophy, this tension can be approached through various lenses, **including determinism versus free will.** Deterministic views suggest that inherent traits—such as intelligence—predetermine an individual's path, potentially negating the value of personal effort and choice. On the other hand, **advocates for free will argue that individuals possess agency, enabling them to overcome genetic predispositions** through education and hard work. The philosophical implications of such discussions **raise questions about justice and equality,** challenging the assumption that everyone has an equal opportunity to succeed.

Moreover, the implications of **findings in genetics** and the advances in DNA research necessitate a mindful approach, especially when considering their potential misuse in justifying socioeconomic disparities. The **idea that genetic differences can systematically predict success may reintroduce forms of discrimination, undermining the principle of equal opportunity enshrined in democratic societies.** It recalls historical missteps when pseudoscientific theories were employed to rationalize social hierarchies.

Conversely, the significance of achievers like **Venkataraman (Venki) Ramakrishnan,** who brought honor to India through his groundbreaking research, serves as a **counter-narrative.** His journey underscores the importance of educational opportunities and the role of institutions in nurturing talent—reminding us that intelligence and capability can flourish under the right circumstances, irrespective of genetic predisposition.

**Conclusion:** As we grapple with the implications of **genetic determinism versus meritocracy, we must engage in nuanced discussions about identity, capability, and societal structure.** The promise of progress through education, combined with the potential pitfalls of genetic interpretations, calls for a philosophical inquiry that transcends mere scientific discourse.



## THEMATIC ESSAYS

1. If everyone is thinking alike then no one is thinking.
2. You are the artist of your own life, Don't hand the Paintbrush to anyone else.

## CONTEMPORARY ETHICS CASE

Q. You are currently posted as the District Social Welfare Officer (DSWO) in the West Champaran district of Bihar. You currently hold the charge of implementing a central government social service scheme to support old and destitute women. On one fine day, an old and illiterate woman comes to you to take advantage of the scheme's benefits. However, she has no documents to show that she fulfils the eligibility criteria, but after meeting and listening to the plight of the women, you feel that she certainly needs support. Your inquiries also show that she is destitute and living in a pitiable condition. Now, you are in a two-state of mind as putting her under the scheme without the necessary documents would be a violation of the rules, but in the meantime, denying her the support would be inhuman. In this context, answer the following questions.

- (a) Discuss the ethical issue involved in the case.
- (b) Critically examine the options available to you as DSWO.
- (c) What option will you adopt and why?



(Answer in 250 words) 20

## PROTECTED AREAS IN NEWS: INDIA

### Chokramudi hills

#### News Excerpt:

Chokramudi Hills, which transformed into a breathtaking blue carpet as **Neelakurinji (Strobilanthes kunthiana)** bloomed in 2014, is facing a serious threat of encroachment ahead of the next anticipated flowering season in 2026.

#### About Chokramudi hills:

- Chokramudi is located between **Bison valley and Munnar**.
- Chokramudi Hills, also known as Chokramudi Peak, is a picturesque hill station located in the Idukki district of Kerala, India.
  - It offers stunning views of the surrounding **tea plantations, Anamudi Peak, and the Idukki Dam**.
- **Here are some key highlights of Chokramudi Hills:**
  - **Elevation:** 7,200 feet above sea level
  - **Location:** Eravikulam National Park, Idukki district

- **Trekking:** Offers a moderate-level trek with breathtaking views
- **Sunrise:** Known for its spectacular sunrises
- **Flora and Fauna:** Home to diverse flora and fauna, including tea plantations, forests, and wildlife
- **Nearby Attractions:** Located near other popular tourist destinations like Munnar, Devikulam, and Chinnakanal.

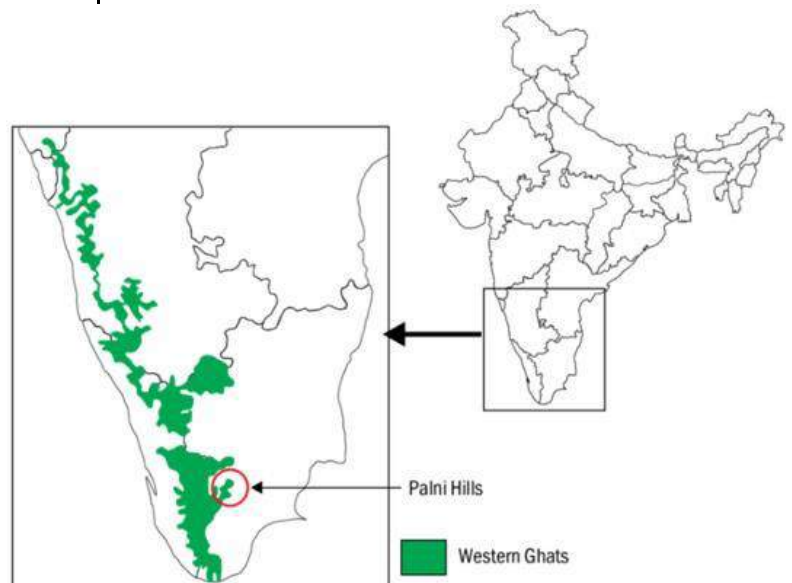
### Palani Hills

#### News Excerpt:



A new species of jumping spider, **Carrhotus piperus**, has been identified in the lower Palani Hills of Tamil Nadu.

#### About Palani Hills:

- Palani Hills is a hill range located in the southern Indian state of Tamil Nadu.
- It is part of the **Western Ghats mountain range** and is home to several popular tourist destinations, including the **Palani Hills Temple and the Kodaikanal hill station**.
- **Key points about Palani Hills:**
  - **Elevation:** The highest peak in the **Palani Hills is Kodaikanal Peak**, which reaches an altitude of 8,639 feet (2,634 meters).
  - **Religious Significance:** The Palani Hills are home to several Hindu temples, including the Palani Hills Temple, which is dedicated to Lord Murugan.
  - **Tourism:** The Palani Hills are a popular tourist destination, attracting visitors for their natural beauty, religious significance, and pleasant climate.
  - **Biodiversity:** The region is known for its diverse flora and fauna, including several endemic species.
- **Kodaikanal:** Kodaikanal is one of the most sought-after hill station destinations in Tamil Nadu and the whole of India. Located at about 7000 ft above the sea-level, Kodaikanal was established as a destination by British bureaucrats and Christian missionaries in the year of 1845.



## SPECIES IN NEWS

SPECIES	ABOUT										
<p><b>Malabar Tree Toad</b>  <b>News Excerpt:</b>                      According to a study conducted by a concerned group of citizens and scientists, Climate change may decrease the distribution range of the <b>Malabar Tree Toad (MTT)</b> by up to <b>68.7 percent of the current estimated distribution in India's protected areas (PAs)</b>.</p> <div style="text-align: center;">  <p><b>Malabar Tree Toad</b></p> <table border="1" style="width: 100%; border-collapse: collapse; background-color: #e0f2f1;"> <tr> <td style="padding: 2px;">Name</td> <td style="padding: 2px;">Malabar Tree Toad</td> </tr> <tr> <td style="padding: 2px;">Scientific Name</td> <td style="padding: 2px;"><i>Pedostibes tuberculosus</i></td> </tr> <tr> <td style="padding: 2px;">Continent</td> <td style="padding: 2px;">Asia</td> </tr> <tr> <td style="padding: 2px;">Diet</td> <td style="padding: 2px;">Carnivore</td> </tr> <tr> <td style="padding: 2px;">Status</td> <td style="padding: 2px;">Endangered</td> </tr> </table> </div>	Name	Malabar Tree Toad	Scientific Name	<i>Pedostibes tuberculosus</i>	Continent	Asia	Diet	Carnivore	Status	Endangered	<p><b>Key Points:</b></p> <ul style="list-style-type: none"> <li>The current estimated species distribution in <b>PAs decreased its range to 68.7 percent from 33.5 percent between 2061 and 2080</b> in multiple models, if eight future climate change scenarios — including high emissions — were considered.</li> <li>But in case of low emissions scenarios, the distribution range of the species increased <b>from 1.9 per cent to 111.3 per cent in PAs</b>, according to the study published recently in the Nature journal.</li> <li>Project head of <b>the Amphibian Recovery Project at non-profit Wildlife Trust of India</b>, who was part of the study, remarked that the study <b>is a first for India in that the distribution modelling of a species from the amphibian-reptile category</b> and an endangered amphibian species has been conducted by including citizen science.</li> <li><b>Restricted and discontinuous distribution</b> along with climate change can limit the dispersal and persistence of MTT populations, thus enhanced surveys of MTT habitats within and outside the PAs of the Western Ghats are an important step in safeguarding the persistence of MTT populations.</li> <li><b>Climate change is one of the major reasons for biodiversity loss</b> and such distribution modelling can help understand the distribution of any species and help initiate effective conservation steps.</li> </ul> <p><b>About Malabar Tree Toad:</b></p> <ul style="list-style-type: none"> <li><b>MTT is endemic</b> to India's Western Ghats and the only species in the monotypic genus <b>Pedostibes</b>.                             <ul style="list-style-type: none"> <li>Meaning, <b>it is the only arboreal species in India</b>, having the unique capability to climb trees and dwell unlike the majority of the toads in the region that are ground-dwelling.</li> </ul> </li> <li>It was first discovered in <b>1876</b> and the species was not sighted for more than 100 years.</li> <li>It was later rediscovered in 1980 at <b>Silent Valley National Park in Kerala</b>.</li> <li>MTT is a tree toad, it comes to the ground to breed in water pools at the edges of the streams generated during the monsoon, implying that precipitation and moisture provide the necessary conditions for MTT to breed.</li> </ul>
Name	Malabar Tree Toad										
Scientific Name	<i>Pedostibes tuberculosus</i>										
Continent	Asia										
Diet	Carnivore										
Status	Endangered										
<p><b>Owflies</b>  <b>News Excerpt:</b>                      A rare species of owlfly has been rediscovered after 75 years from Kerala by researchers.</p> <div style="text-align: center;">  </div>	<p><b>More detail about the news:</b></p> <ul style="list-style-type: none"> <li>The findings have been published in the international scientific journal Zootaxa.</li> <li>The research was conducted with financial assistance from the Council of Scientific and Industrial Research, New Delhi.</li> </ul> <p><b>Key Findings:</b></p> <ul style="list-style-type: none"> <li>The rare owlfly species <b>Glyptobasis dentifera</b> has been rediscovered after 75 years in Kerala, India.                             <ul style="list-style-type: none"> <li>The rare owlfly species was rediscovered from <b>Pudunagaram in Palakkad district, Ramavarmapuram in Thrissur district, Vazhayur in Malappuram district, Pallikkunnu in Kannur district, and Chinnar Wildlife Sanctuary in Idukki district</b>.</li> </ul> </li> <li>Another species, <b>Glyptobasis cornuta</b> was discovered in <b>Nepal</b> for the first time.                             <ul style="list-style-type: none"> <li>This species was previously reported from India from States such as <b>Chhattisgarh, Odisha, Madhya Pradesh, and Himachal Pradesh</b>.</li> </ul> </li> </ul> <p><b>About Owlflies:</b></p> <ul style="list-style-type: none"> <li>Adult owlflies have <b>large eyes</b> and <b>crepuscular habits</b>, hence, the common name owlfly.</li> </ul>										

- They come under **Order Neuroptera**, which includes **holometabolous insects** while the **dragonflies** come under **Order Odonata**, which includes **hemimetabolous insects**.
- Adults of owlflies are **misidentified as dragonflies** by non-taxonomists because of their morphological resemblance.
- Owlflies can be easily distinguished by their **long distinct antennae**.
- More in-depth and concentrated studies will give a way for discovering new species and new distributional records of owlflies in India

**Habits and Habitat of Owlflies:**

- During the day, adult owlflies can be found **perching on blades of grass** in areas with **lateritic soils**, as well as in village households surrounded by dense vegetation.
- They **become active at dusk and take flight**, often being attracted to artificial lights at night.
- In Kerala, the **adult flight period of owlflies** is primarily observed during **September, October, and November**.

**Orangutan Adoption Plan for Palm Oil Importers**

**News Excerpt:**

Malaysia has unveiled a new conservation initiative allowing companies that import palm oil to adopt orangutans.

**How will the Adoption plan work?**

- These adopted **orangutans will remain in their natural habitats** within Malaysia and will not be sent abroad.
- This revised version of the conservation scheme was announced by the country's Minister of Plantations and Commodity.

**Initial Controversial Proposal:**

- Earlier in May, the government had proposed sending orangutans abroad as trading gifts to address concerns about the impact of palm oil production on their habitats.
- This plan faced significant backlash from conservation groups, who raised alarms about the welfare of these critically endangered primates.

**Focus on Habitat Preservation:**

- In response to the criticism, the government revised the plan to keep **the orangutans within their natural habitats**.
- The updated approach seeks to engage countries and companies purchasing Malaysian palm oil in **efforts to preserve and monitor the forests where these orangutans live**.
- Malaysia has pledged to **halt deforestation**, emphasizing that **54% of the country remains forested**.
- The government has committed to ensuring that this figure does not fall below 50%.
- The funds generated from the adoption program will be directed to **non-governmental organizations and local government bodies in Sabah to monitor the safety and well-being of the orangutans**.

Type of Orangutan	IUCN Status	Range/Country	Distinct Features
Bornean Orangutan	Critically Endangered	Borneo (Malaysia, Indonesia)	Larger body size, darker <b>red-brown fur</b> , distinct <b>cheek flanges</b> in adult males
Sumatran Orangutan	Critically Endangered	Sumatra (Indonesia)	Smaller, <b>lighter-colored fur</b> , longer face, more pronounced <b>beard in males</b>
Tapanuli Orangutan	Critically Endangered	Sumatra (Indonesia)	Smallest population, <b>frizzier hair</b> , distinctively smaller skull, and <b>flatter face</b>

## Honeybee Communication

### News Excerpt:

Honeybees possess one of the most intricate forms of non-human communication, known as the "waggle dance."



### What is the Waggle Dance?

- The waggle dance involves a bee moving in a figure-eight pattern, with a central "waggle run" where the bee waggles its abdomen.
- This dance allows bees **to communicate vital information about the location, distance, and quality of resources** such as food, water, and nesting sites to their hive mates.
- **The angle of the waggle** run in relation to the sun communicates **the direction** of the resource, while the **length of the run conveys the distance**.
- The **number of repetitions and the speed of the dance** indicate the **quality of the resource**.
- The waggle dance is a **complex behavior** that has fascinated scientists due to its **precision and the way it evolves within bee colonies**.
- This dance is typically performed in the **darkness of the hive, amidst a crowd of jostling bees**, making it a challenging behavior to execute correctly.

### Social Learning in Honeybees

- While the waggle dance is **instinctual**, research has shown that bees also learn to refine their dance through **social interaction**.
- A study led by James C. Nieh and his colleagues explored **this aspect by conducting an experiment where young bees were raised in isolation**, without the opportunity **to observe experienced dancers**.
- **These bees made more errors in their initial dances compared to those raised with older, experienced bees**.
- However, as **the isolated bees gained more experience, they improved**, although they continued to struggle with distance communication, suggesting that certain aspects of the dance are **fine-tuned through social learning**.

### The Significance of Dance Dialects

- One of the study's intriguing findings is the concept of "dance dialects."
- These dialects are variations in the waggle dance that correspond to local environmental conditions.
- Bees from different regions, or even different colonies, may develop unique dialects based on the distribution of resources in their area.
- The study suggests that bees deprived of social learning may develop their own dialects, which could be a way for colonies to adapt to new environments.

### Implications for Understanding Animal Communication

- This research provides the first known example of complex social learning of communication in insects.
- It suggests that honeybee communication is not only instinctual but also culturally transmitted within colonies.
- The study opens up new avenues for exploring how environmental factors influence language learning in animals and how collective knowledge is passed down through generations.

## India's first tagging of Horseshoe Crabs

### News Excerpt:

India's first tagging of horseshoe crabs was kicked off by the Zoological Survey of India and Odisha Forest Department.

### More about news:

- **The Zoological Survey of India (ZSI)** and the **Odisha Forest Department** have joined hands to tag horseshoe crabs along the State's coast to understand the population and habitat utilisation for its conservation and management.
- Horseshoe crabs are one of oldest living creatures on the Earth, and a valuable species medicinally.
- This follows reports of a dwindling population of horseshoe crabs along the Odisha coast. In the first two days, scientists affixed tag, the first such effort in the country, on 70 horseshoe crabs.



- Scientists will tag horseshoe crabs over the next three years in collaboration with State's Forest Department.

#### About horseshoe crabs:

- Horseshoe crabs have been around for more than 300 million years, making them even older than dinosaurs.
- They look like prehistoric crabs, but are actually more closely related to scorpions and spiders.
- The horseshoe crab has a hard exoskeleton and 10 legs, which it uses for walking along the seafloor.
- The horseshoe crab species found around the United States (*Limulus polyphemus*) lives in the Atlantic Ocean along the North American coastline. Horseshoe crabs can also be seen along the East and Gulf coasts of the United States and Mexico.
- There are three other species of horseshoe crab worldwide, which are located in the Indian Ocean and the Pacific Ocean along the coast of Asia.
- India is home to two species of horseshoe crabs — **Tachypleus gigas** and **Carcinoscorpius rotundicauda (mangrove)** — and both the species are found along the northeastern coast of India, especially along the Odisha and West Bengal coast. This is an extremely important species.
- While Odisha has both **Tachypleus gigas** and **Carcinoscorpius rotundicauda**, the **Carcinoscorpius rotundicauda** are seen in the Sundarbans mangroves of West Bengal.

#### Threats to Horseshoe crabs:

- **Destructive fishing practices** are major threats to horseshoe crabs.
- There are reports of illegal smuggling of the species from the Odisha and West Bengal coasts.
- Though the crab is not consumed by people, its death is primary caused by **fishing nets**.
- Horseshoe crabs are a **Schedule 2 species under the Wildlife Protection Act, 1972**.
- The **American horseshoe crab (*Limulus polyphemus*)** is listed as **Vulnerable**, there are three Asian species, the **tri-spine horseshoe crab (*Tachypleus tridentatus*)** is Endangered, the **coastal horseshoe crab (*T. gigas*)** and **mangrove horseshoe crab (*Carcinoscorpius rotundicauda*)**, are listed as Data Deficient.

#### Russian spy whale

##### News Excerpt:

Recently, Hvaldimir, a beluga whale suspected of being a Russian 'spy', was found dead in Norway.



#### Important Points:

- Hvaldimir was a **male beluga**.
- It was first spotted off the Norwegian coast in **2019**.
- Beluga whales tend to move in groups and typically live further north, in **colder Arctic waters around Greenland, Canada, Alaska, northern Norway, and Russia**.
- Adding to the intrigue around Hvaldimir was a harness that it wore, which said "**Equipment St Petersburg**" in Russia.
- The harness had a camera mount. This led to speculation that Hvaldimir was a Russian spy, sent on a reconnaissance mission to the Nordic coast, and earned Hvaldimir his name — '**hval**' is the Norwegian word for whale, '**dimir**' is a play on Vladimir [Putin].
- The beluga whale is listed in the IUCN/The World Conservation Union's **near-threatened category**.

### MAP CONNECT: WORLD

**UTQIAGVIK:**  
The 'Alaska Triangle' located close to the northern coastal city of Utqiagvik has remained a mystery after disappearance of many people.

**POLTAVA:**  
At least 51 people have been killed and 271 others injured in a Russian missile strike on the city of Poltava in central Ukraine.

**NUSEIRAT:**  
An Israeli strike on a UNRWA school-turned-shelter has killed at least 18 people and injured over a dozen others in Nuseirat, Gaza.

**LOS ALAMOS:**  
Los Alamos, where the American atomic bomb was born under the Manhattan Project, currently has plutonium levels similar to the site of the Chernobyl nuclear disaster.

**MADERIRA RIVER:**  
Residents near the Amazon tributary, Madeira River are facing unprecedented challenges as water levels drop to historic lows amid a severe drought.

**RAPA NUI:**  
Rapa Nui, also known as Easter Island, never experienced a ruinous population collapse, according to an analysis of ancient DNA from 15 former inhabitants of the remote island in the Pacific Ocean.

**AMAZON RIVER:**  
The Amazon River basin is experiencing an unprecedented drought, with water levels plummeting to historic lows.

**BAMAKO:**  
An elaborate attack by an Al Qaeda affiliate in Mali's capital Bamako killed around 70 people recently.

**MERA PEAK:**  
British man has set a new Guinness World Record for the highest altitude skIBASE jump, leaping 18,753 feet off a cliff on Mera Peak in Nepal.

**SALALAH:**  
Indian Army contingent departed to participate in 5th edition of Exercise AL NAJAH, from 13th to 26th September 2024 at Rabkoot Training Area in Salalah, Oman.

**MAP NOT TO SCALE**

## SNAPSHOTS: THEMES OF THE MONTH

### Down to Earth Snapshot

#### I am seeing the birth of de-globalisation

##### Introduction

- The article reflects the personal narrative and broader **historical developments** experienced by the author as **India transitioned** from a period of **isolationism** and self-reliance to **globalisation** and is now witnessing a return to **deglobalisation**.

##### Childhood and Deglobalisation (1970s)

- The author refers to being a child of deglobalisation, recalling when socialist leader **George Fernandes expelled Coca-Cola** from India in 1977, marking a Swadeshi victory.
- During the 1960s and 70s, India had **limited exposure to foreign products**, with a strong emphasis on becoming self-reliant in manufacturing, a goal that had mixed results.

##### Food Sovereignty and the Green Revolution

- A significant focus is placed on India's experience with food shortages in the mid-1960s, particularly the 1966 drought. The **U.S. food aid under PL-480** was withheld, forcing Prime Minister Indira Gandhi to plead for shipments, which became a point of national humiliation.
- The author describes the **societal emphasis on frugality** during their upbringing, with parents encouraging children not to waste food due to widespread hunger.
- This event shaped the author's understanding of the importance of food sovereignty, leading to the **Green Revolution**.

##### Deglobalisation and Localisation of the 1960s

- India was largely inward-looking during the author's youth. Economic growth, famously termed the "**Hindu growth rate**" (below 4% annually), was stagnant, and trade was only 8% of India's GDP by the late 1960s.
- The **Cold War** and **Space Race** (e.g., Yuri Gagarin's mission) were significant global events, but India focused on local development and self-sufficiency.
- It was 'inconsequential' when the Science Advisory Committee of Lyndon B. Johnson, in 1965, released the report "**Restoring the Quality of Our Environment**," which, for the **first time**, gave a definite verdict on the warming of the Earth's atmosphere by carbon dioxide generated by human activities.

##### Globalisation and the 1990s

- By the 1990s, the world shifted towards globalisation, with India embracing liberalisation under the then **Finance Minister Manmohan Singh's** 1991 budget. This allowed foreign investments, opening India to global trade.

- This was almost a decade after the **Maruti factory** was established in Haryana's Gurgaon (now Gurugram).
- The author recounts the rise of environmental concerns during this time, culminating in the **1992 Earth Summit** in **Rio de Janeiro**, where global discussions on climate change began to take shape.

- The establishment of the **World Trade Organization (WTO)** in 1995, with contested **rules on trade and patents**, sparked protests in India and other developing countries, marking a growing tension between globalisation and local interests.

##### Liberalisation and Environmental Concerns

- The author acknowledges the consequences of liberalisation, particularly concerning environmental degradation, as India's **rapid industrialisation and motorisation** led to increased pollution.
- By the mid-1990s, cities like Delhi experienced severe **air quality deterioration**, and conflicts arose between development needs and environmental sustainability.

##### WTO Protests and the Collapse of Globalisation

- The **1999 Seattle protests** against the WTO marked a global discontent with the neoliberal trade regime. The author highlights how protesters from rich and poor nations opposed the impacts of untamed globalisation on jobs and biodiversity.
- The author notes that in the late 1990s and early 2000s, the world missed an opportunity to address globalisation's negative impacts. This failure led to rising **protectionism** and nationalist sentiments.

##### 2000s to Present: Deglobalisation and Re-globalisation

- The rise of populist leaders like **Donald Trump** and the growing tensions between the **U.S. and China** signal a **new phase of deglobalisation**. Trump's trade war and the **U.S.'s withdrawal** from international agreements (like the Paris Climate Accord) illustrate the retreat from global cooperation.
- The **COVID-19 pandemic** is presented as a tipping point. The interconnectedness of global trade and travel contributed to the virus's rapid spread, while nations retreated into isolation, competing for resources like masks and vaccines.

##### Impact on Trade and the Environment

- The author critiques the global trading system for exacerbating environmental harm, noting how wealthier countries **outsourced** their most **polluting industries** to the developing world.
- The shift towards deglobalisation, particularly the protectionism of countries like the U.S. under Trump and the EU's **Carbon Border Adjustment Mechanism (CBAM)**, raises questions about how countries will balance environmental sustainability with economic competition.

**India's Green Transition and Challenges**

- The author highlights India's solar industry as an example of its efforts to build local capacity but warns of challenges in balancing domestic production with cost competitiveness. The growing tension between globalisation and localisation is evident in the **green initiatives**.
- The narrative closes by reflecting on the author's journey from a post-colonial era of deglobalisation through the rise of globalisation in the 1990s to the current moment of re-globalisation, in which nations increasingly seek to control their own economic and environmental futures.

**Reflection on Democracy and the Future**

- The article concludes by reflecting on the **state of global democracy**, where nationalist and **protectionist policies threaten** to undermine multilateral cooperation.
- The author stresses the importance of **strengthening democratic institutions** to address global challenges such as climate change, trade inequality, and the rising power of authoritarian regimes like China.

**Conclusion**

- This article provides a deeply **personal perspective** on how India's experience of **globalisation has evolved** alongside broader global trends of economic liberalisation, environmental degradation, and the return of protectionism.

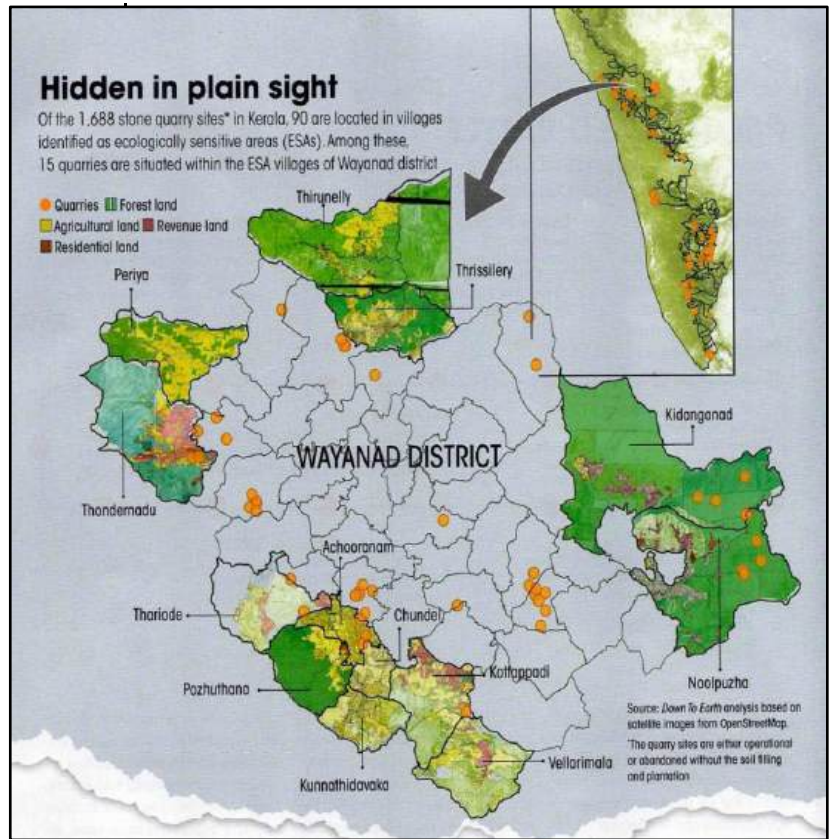
**Destined to crumble**

**Introduction**

- On July 30, **Wayanad experienced landslides** due to receiving **6% of its annual rainfall** within a few hours. The disaster, which claimed over 400 lives, was exacerbated by years of exploitation of an ecologically **fragile region**, systematically weakening the natural defences of the area in the Western Ghats.

**Impact of Quarrying on Landslide Susceptibility**

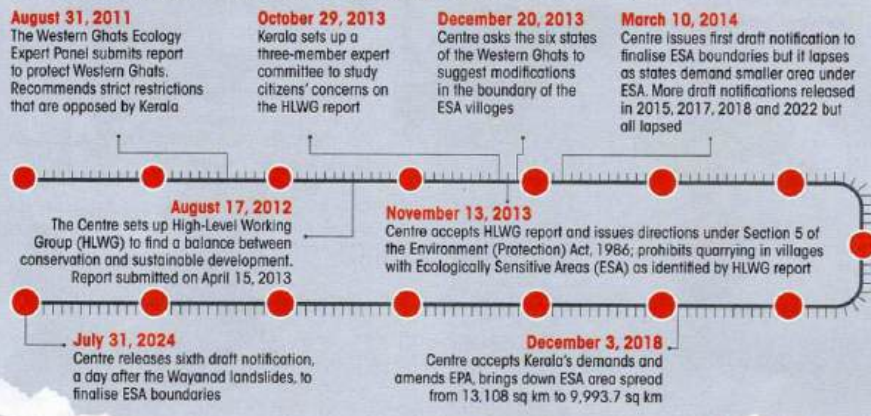
- **Increased Vulnerability Due to Quarrying**
- Quarries, especially those not restored after abandonment, destabilise the landscape by leaving behind pits and failing to restore **vegetation**.
- Quarrying activities allow **water to seep** into rock fractures during monsoons, increasing pressure on the soil, which can lead to landslides.



- **World Weather Attribution Report**
- It highlighted that quarrying for building materials likely contributed to the increased **susceptibility** of the region's **slopes** to landslides.
- **Environmental Protections and Policy Failures**
- **2013 Kasturirangan Report Recommendations**
- The Kasturirangan committee identified **4,156 villages** across 59,940 sq km in the Western Ghats as Ecologically Sensitive Areas (**ESAs**) and recommended a **ban** on environmentally damaging activities like quarrying and mining.

**PROTRACTED BATTLE**

Even after a decade of establishing a legal framework to ban mining in the Western Ghats, India is yet to finalise the boundaries of ecologically sensitive areas to implement it



- The Union Environment Ministry **accepted** these recommendations in November 2013 and issued **directives** under the Environment Protection Act (EPA) to prohibit new quarrying and mining in ESAs.



- **Delays in Implementing ESA Protections**
- **States** sharing the Western Ghats (including Kerala) have delayed finalising ESA boundaries.
- **Six draft notifications** have been issued since 2013, but states continue to **demand further reductions** in the ESA areas.

### Opposition to ESA Designation and Dilution of Regulations

- **Local Resistance to Conservation Policies**
  - Locals fear that declaring the area ecologically sensitive would lead to **government takeovers** of plantations and agricultural restrictions.
- **Livelihood Concerns**
  - Many oppose conservation policies because they believe these restrictions would **eliminate jobs**, especially in activities like quarrying.
- **Kerala's Opposition and Reduction of ESA Areas**
  - After protests in Kerala, it sought the ESA areas to **exclude human-inhabited areas, agricultural lands, and plantations**.
- The Union Environment Ministry **accepted** Kerala's recommendations, reducing ESA areas from 13,108 to 9,993.7 sq km in 2014.
- Further amendments reduced the total ESA area to 56,825 sq km in 2018, a nearly **5% reduction** from the original recommendation.
- **Kerala's Dilution of Mining Laws**
  - In 2017, Kerala amended its **Minor Minerals Concession Rules, reducing the minimum distance** for quarrying with explosives from 100 m to **50 m** from essential buildings and forestland.
- Quarry operators **resisted National Green Tribunal** (NGT) orders mandating greater distances between quarries and forest areas, resulting in ongoing challenges to the regulations.

### Non-Compliance and Law Enforcement

- **Lack of Restoration in Quarry Sites**
  - Many quarry operators in Kerala do not comply with regulations to **backfill pits** or **replant trees** after quarrying operations end.
  - A 2017 **Comptroller and Auditor General** (CAG) report found that most quarries still needed to fulfil these restoration obligations, leading to destabilised landscapes.
- **Inadequate Oversight**
  - The Department of Mining and Geology, along with the **Kerala State Pollution Control Board**, has not maintained adequate data on tree planting or the closure of quarries, leading to widespread rule violations.
  - Of 27 quarries inspected in Kerala, 21 were violating the rules.

### Way forward

- **Inclusive Conservation**
  - Conservation policies need to **balance environmental protection** with the **livelihoods** of local communities.

- Instead of focusing solely on banning activities, policies should **involve local communities** and **incentivise** them to participate in conservation efforts.
- **Green Growth Package and Sustainable Livelihoods**
  - The Kasturirangan report recommended a **green growth package** that would compensate for conserving nature through **debt-for-nature swaps** and payment for ecological services.
  - Development strategies should promote **green livelihoods**, such as sustainable agriculture (coffee and tea plantations) and eco-tourism, to provide economic growth while protecting the environment.

### Climate cost of food, nutrition

#### Introduction

- The Reserve Bank of India's **(RBI) August 2024 bulletin** highlights the significant role climate change plays in driving up food prices. **Erratic weather** and **extreme climatic events** disrupt the food supply, leading to sustained food inflation. This makes **food inflation "endemic,"** meaning it is a persistent problem that can't be managed with conventional price control mechanisms.

#### Dual Impact of Climate Change on Farmers and Nutrition

- **Impact on Farmers' Income**
  - Farmers, especially small and marginalised ones, suffer income losses due to crop damage caused by extreme weather events.
  - These crop losses disproportionately affect India's poor farming population, reducing their earnings and livelihood security.
- **Impact on Nutrition and Diet**
  - High food prices due to climate disruptions limit access to nutritious food, affecting people's overall diet.
  - Poor nutrition, particularly in economically disadvantaged groups, is a major concern. People are unable to afford a balanced diet, which worsens health indicators.

#### Rising Food Inflation: Statistical Overview

- **Sharp Increase in Food Inflation**
  - Between 2016 and 2020, food inflation averaged 2.9%. This figure more than doubled to 6.3% in the 2020s.
  - The RBI study attributes this rise to overlapping supply shocks due to climate events such as irregular monsoons and rising temperatures, which impact crop growth.
- **Persistent Food Inflation Since 2020**
  - From June 2020 to June 2024, food inflation exceeded 6% for 57% of the months, indicating the consistent disruption caused by climate change.

- The RBI report emphasises that this inflation is no longer sector-specific or localised but a broad and enduring problem.

### Global Insights on Climate Change and Inflation

#### • International Findings

- Researchers from the Potsdam Institute for Climate Impact Research and the European Central Bank predict that global warming will accelerate inflation, particularly in developing countries like India.
- They estimate that food inflation in India will rise by 2% by 2035, with overall inflation increasing by 1%.

#### • The Cost-of-Living Crisis

- Since 2021, the world has been grappling with a "cost of living crisis," with climate change at the core of rising prices for essential goods, including food.
- As food prices rise, people consume less, impacting their overall nutrition and health, particularly in marginalised populations.

#### Impact on Poverty and Nutrition

- Limited Studies on Food Prices and Poverty
  - Few studies have examined the correlation between rising food prices and poverty levels, though anecdotal evidence suggests a link.
  - In India, climate change has resulted in significant crop damage, affecting food availability and farmers' income.

#### • Impact on Child Growth and Health

- According to Derek Headey and Marie Ruel from the International Food Policy Research Institute, food inflation directly impacts child malnutrition and stunting.
- A 5% rise in food prices in the prenatal period increases the risk of stunting by 1.6% and severe stunting by 2.4%, highlighting the long-term effects of malnutrition caused by food price shocks.

#### Conclusion

- Climate change has permanently **altered** the **dynamics of food production and pricing**, making food inflation a persistent issue. Addressing this challenge requires climate resilience strategies in agriculture and policy measures that ensure equitable access to affordable, nutritious food.

### Untapped Potential

#### Introduction

- Although the **Pradhan Mantri Kisan Urja Suraksha Evam Utthaan Mahabhiyan Yojana** (PM-KUSUM) scheme offers a great opportunity for farmers to switch from diesel and electric pumps to **solar-powered alternatives**, implementation hurdles have left many, reluctant to participate.

#### PM-KUSUM Scheme

- Launched in **2019**, the PM-KUSUM scheme aims to **replace diesel and electric irrigation pumps** with solar-

powered alternatives and boost India's renewable energy capacity.

- Initially set to end in 2022, it has been **extended to 2026** due to **low participation**, with only 33% of the target to install 1.4 million solar pumps has been achieved.
- The scheme has three components:
  - **Component A:** Installing solar plants on farms to sell electricity to state discoms.
  - **Component B:** Replacing diesel and electric pumps with solar pumps (the most popular component).
  - **Component C:** Installing solar microgrids and solarising existing grid-connected pumps.

#### Significance of PM-KUSUM

- According to the **World Bank**, if **just 25%** of India's 8.8 million diesel water pumps were replaced with solar pumps, it would **reduce 11.5 million tonnes** of carbon emissions annually.
- The **CSE report** highlights several advantages of solar pumps, including freeing farmers from erratic and time-bound electricity supply and requiring **less maintenance** compared to diesel and electric pumps.
- Solar pumps offer long-term **cost savings** and **energy security**, which could help improve **agricultural productivity**.

#### Key Challenges

##### • Varied Approaches Across States

- States have adopted different approaches to implementing PM-KUSUM, with more successful states like Rajasthan and Haryana using a decentralised approach.
- In **Rajasthan**, different agencies handle each component, with the horticulture department playing a key role in disseminating information to farmers. This has led to higher awareness and better customer service.
- In contrast, **Punjab's** centralised approach has hindered progress. The Punjab Energy Development Agency handles all components, which requires specialised knowledge in different areas.

##### • High Initial Costs

- The high upfront costs associated with solar pumps and panels are a significant barrier to participation. Even with subsidies covering a large part of the costs, rising solar equipment prices have deterred small and marginal farmers.
- For example, in **Rajasthan**, the cost of submersible solar pumps increased from ₹1 lakh in 2019 to ₹2 lakh, making it difficult for farmers to afford the system.
- In **Chhattisgarh**, the **Saur Sujala Yojana** has kept farmer contributions stable, which has helped maintain participation.

##### • Financing Difficulties

- Farmers face difficulties securing loans for the scheme, leading to many dropping out mid-way. In **Chhattisgarh**, 10 out of 26 developers initially awarded projects dropped out due to financing issues.
- Farmers also expressed concerns that the scheme does **not cover additional costs**, such as borewell installation and labour.
- **Poor After-Sale Service**
  - One key feature of **component B** is five years of free after-sale service, but many farmers report **inadequate support**.
  - Solar panels have been stolen, and **replacement panels take months**, forcing some farmers to return to diesel pumps.
  - Farmers in **Punjab** are concerned that solar pumps are **less efficient** than electric pumps, especially for **water-intensive crops** like paddy, which require round-the-clock irrigation.

### Conclusion

- The PM-KUSUM scheme holds great promise for farmers and the environment but faces several implementation challenges, including **high initial costs**, **financing difficulties**, and **poor after-sale service**. Addressing these issues through better-decentralised approaches, **financing options**, and improved service delivery could help the scheme succeed, benefit farmers and the environment, and contribute to India's renewable energy and **carbon reduction goals**.

## Kurukshetra Snapshot - Budget 2024-25

### Future-proofing the Rural Indian Economy

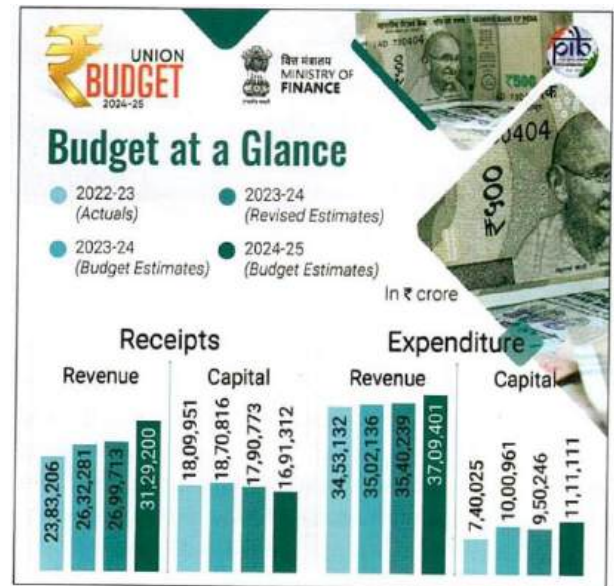
#### Introduction:

- According to the **Economic Survey 2022-23**, **65% of India's population** lives in **rural areas**, and **agriculture** is the main source of livelihood for **47%** of the population. In the financial year 2011-12, agriculture contributed 18.1% to India's GDP. However, by **2022-23**, this had declined to **around 15%**. This decrease is expected to continue due to increasing urbanisation and industrialisation, meaning more people are moving away from farming towards urban jobs and industries.

#### Core Challenges in Rural India

- **Illiteracy**: Many rural people lack access to education, leading to low literacy rates and further hindering economic and social progress.
- **Caste and Gender Discrimination**: Deep-rooted social issues, such as caste-based discrimination and gender inequality, limit access to opportunities for many individuals in rural areas.
- **Limited Market Access**: Farmers struggle to reach profitable markets due to poor infrastructure, leaving

them dependent on middlemen who often exploit them by offering low prices.



- **Grain Storage and Supply Chain Deficiencies**: The shortage of proper storage facilities and inefficient supply chains affect industries that rely on agricultural products like sugar, rice, and jute.
- **Pseudo Employment**: There is a phenomenon of "pseudo employment," where more people are employed to perform tasks that could be done by fewer individuals, indicating inefficiency and underemployment in rural areas.
- **Lack of Basic Amenities**: Access to health infrastructure, drinking water, electricity, and communication systems remains poor in many villages, exacerbating the rural population's struggles.

#### Vision and Priorities of the Budget

- The **Union Budget 2024-25** is a strategic action plan designed to lay a strong foundation for an **Atmanirbhar (self-reliant) Bharat** and a **Viksit (developed) Bharat**. With a clear focus on "**Sabka Saath, Sabka Vikas, Sabka Vishwas, Sabka Prayas**", this budget addresses the needs of India's rural heartland, focusing on four key demographic groups: **the Poor (Garib), Women (Mahilayen), Youth (Yuva), and Farmers (Annadata)**.
- The **Rural Development Ministry's budget** has been increased to **1.77 lakh crore**, up from ₹1.57 lakh crore in FY2024, reflecting a 12% increase. In FY2025, the Government is expected to spend 5.58% of its total Budget on rural development. The budget emphasises enhancing **rural demand** by investing in trade, industry, and **entrepreneurship**.

#### Agriculture Support

- **Pradhan Mantri Kisan Samman Nidhi (PM-Kisan)**: ₹60,000 crore allocated for the Pradhan Mantri Kisan Samman Nidhi. This scheme provides direct income support to farmers to alleviate some of the financial pressures they face.

- **Land Registry:** The announcement of bringing 6 crore farmers and their land under the purview of land registry has been made in the budget. With the help of this, GIS mapping, digitisation, ownership rights, registration of farmers and the identification of the land will be done.
- **Kisan Credit Card (KCC):** KCC will be issued in 5 more states on an extensive basis, where it is still not distributed among eligible farmers so that farmers deprived of this facility can take advantage of this.
- **Digital Public Infrastructure (DPI):** A plan to implement DPI in the agriculture sector within three years to connect farmers and their land to a digital network, improving access to services and information.
- **Fertiliser Subsidies:** ₹1.19 lakh crore allocated to subsidise the cost of urea, reducing the burden on farmers and improving crop yields.
- **Natural Farming and Bio-Research:** Plans to promote natural farming with a goal of having 1 crore farmers practice it within two years. Ten thousand bio-research centres are also being set up to encourage organic methods and reduce dependence on harmful pesticides and fertilisers.

#### Employment and Skilling Initiatives

- The budget lays out a robust plan for **job creation and skilling**, particularly focusing on rural youth, with the goal of creating opportunities for **4.1 crore youth** over the next five years.
- **Scheme A: First Timers:** This scheme provides one-month wages in three instalments (up to ₹15,000) to **first-time employees** entering the formal workforce. It targets youth earning less than ₹1 lakh per month and is expected to benefit **210 lakh youth**.
- **Scheme B: Job Creation in Manufacturing:** This scheme incentivises additional employment in manufacturing sectors by offering support for **first-time employees' EPFO contributions**. It is expected to benefit **30 lakh youth**.
- **Scheme C: Support to Employers:** Employers hiring additional workers will be reimbursed up to **3,000 per month for two years** toward EPFO contributions, incentivising the hiring of **50 lakh additional employees**.
- **Internship Opportunities:** The government will facilitate **1 crore internships** in the next five years, providing **5,000 per month** as an allowance and a **one-time assistance of 6,000**. This will help youth gain practical business experience.
- **Skilling in Industrial Training Institutes (ITIs): 1,000 ITIs** will be upgraded to focus on outcome-based training, aligning their curricula with industry needs. **20 lakh youth** will be skilled over the next five years.
- **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA):** Allocated ₹86,000 crore to provide 100 days of employment to rural families. This

scheme offers critical income support, particularly during crises like the COVID-19 pandemic, which saw MGNREGA provide work to many rural youths.

- **Pradhan Mantri Employment Generation Programme (PMEGP):** Allocated ₹2,300 crore to the loan-linked subsidy scheme that aims to create self-employment opportunities in rural and urban areas by supporting small enterprises and preventing the migration of rural youth to urban centres.

#### Housing and Infrastructure Development

- **Pradhan Mantri Awas Yojana (PMAY):** ₹2.2 lakh crore allocated over the next five years to provide affordable housing. This scheme targets the poor and lower-middle-class segments, ensuring they have access to basic housing facilities, which is essential for overall well-being and integration into the economic mainstream. The government will also invest Rs. 10 lakh crore to boost this sector.
- **Pradhan Mantri Gramin Sadak Yojana:** Under the Pradhan Mantri Gramin Sadak Yojana, there is a plan to connect small and big villages to the paved roads of cities and to give it a concrete shape, a provision of Rs. 19,000/- crore has been made in the budget.
- **Road and Highway Development:** ₹1.15 lakh crore for road construction and ₹1.68 lakh crore for the National Highway Authority of India. These investments will improve connectivity in rural areas, helping farmers transport their produce to markets more efficiently, thus ensuring better prices.
- **Vibrant Village Program:** With ₹1,000 crore allocated, supporting rural areas' digital transformation.

#### Water and Sanitation

- **Jal-Jeevan Mission:** ₹70,000 crore was allocated for the mission, which aims to provide clean drinking water to every rural household. This initiative is crucial, as many areas in rural India still lack access to safe drinking water, causing health problems.
- **Swachh Bharat Mission:** ₹12,000 crore dedicated to maintaining cleanliness in villages and cities. This initiative not only promotes sanitation but also helps in reducing health expenses by preventing diseases that thrive in unhygienic conditions.

#### Healthcare and Nutrition

- **National Health Mission:** ₹28,000 crore to improve healthcare facilities, especially for children, women, and underprivileged rural populations. Improved health leads to better productivity and a stronger economy.
- **Saksham Anganwadi and Nutrition 2.0:** ₹21,200 crore for nutrition support to children, adolescents, pregnant women, and lactating mothers. Malnutrition is a major issue in rural areas, and this program is designed to combat it through improved nutrition strategies.

- **Pradhan Mantri Jan Arogya Yojana (PMJAY):** This scheme is dedicated to improving the health of the deprived or weaker sections of the society. Therefore, to ensure that maximum number of people can avail the benefits of this scheme, the Government has made a provision of Rs. 7,300 crore in the budget.
- **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY):** 2.05 lakh crore has been allocated to ensure no person goes hungry. Under this scheme, 81.35 crore beneficiaries will receive **35 kg of food grains per month per Antyodaya Anna Yojana (AAY) household** and **5 kg per person for Priority Households (PHH)** for the next five years with effect from 01 January 2024.
- **Self-Help Groups (SHGs) and Rural Women**
- The **Lakshpati Didi** initiative, part of the **DAY-NRLM (Deendayal Antyodaya Yojana - National Rural Livelihoods Mission)**, targets increasing income for **Self-Help Groups (SHGs)**. The aim is to enable **3 crore women** to earn a sustainable income of **1 lakh per year** through multiple livelihood activities and value chain interventions.

#### Small and Medium Enterprises (MSME) Sector

- **Pradhan Mantri Mudra Yojana (PMMY):** A loan program divided into three categories: Shishu, Kishor, and Tarun. The **Tarun loan limit** has been increased from ₹10 lakh to ₹20 lakh to encourage entrepreneurship.
- **MSME Loans and E-commerce Hubs:** Entrepreneurs in the MSME sector will be provided with **collateral-free loans**. Public sector banks are tasked with in-house assessment of loan needs, ensuring faster loan disbursement.
- An **e-commerce hub** will also be created for MSMEs to sell products in the international market.
- **Tax reforms** and the **removal of Angel Tax** aim to stimulate the startup ecosystem, attracting investments, and providing employment opportunities, especially in rural areas.

#### Support for Artisans and Workers

- **Pradhan Mantri Vishwakarma Yojana:** **4,800 crore** has been allocated to support artisans and craftsmen in the unorganised sector, helping them become economically self-reliant through financing.
- **Labour Portals:** Efforts to integrate the **Shram portal** with other key platforms will simplify the process for workers to address employment-related problems.

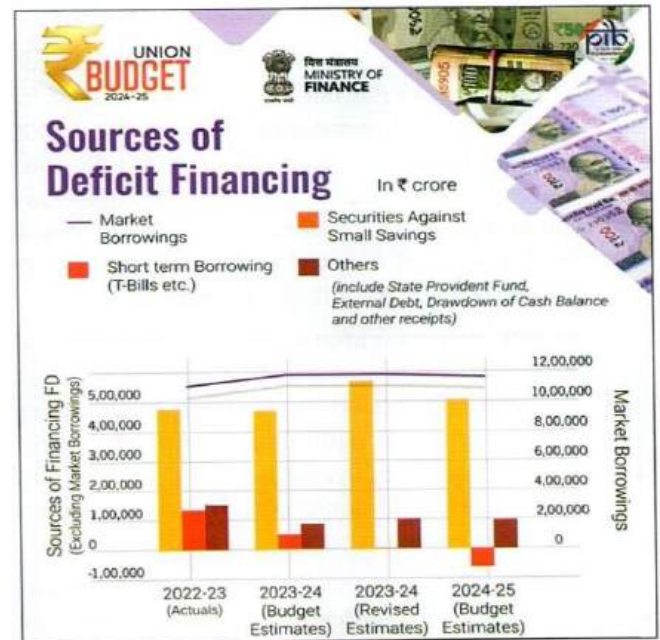
#### Higher Education and Entrepreneurship

- **Loans up to 10 lakh** will be provided for higher education in domestic institutions. **E-vouchers** will be given directly to **1 lakh students** annually for interest subvention.
- The **Anusandhan National Research Fund** will be launched for basic research and prototype development,

with **1 lakh crore** allocated to encourage private-sector-driven innovation.

#### Digital Transformation and Technological Advancement

- Initiatives like **Digital India, BharatNet**, and the **National Digital Health Mission** aim to expand digital infrastructure, promoting literacy, governance, and e-commerce.
- **Digital vouchers** will be provided for education and entrepreneurship loans, helping students and entrepreneurs access funds easily.



#### Financial Management and Economic Outlook

- **Revenue Collection:** An estimated ₹43.86 lakh crore in revenue is expected, including Rs. 11.87 lakh crore from income tax, Rs. 10.62 lakh crore from goods and services tax (GST) and Rs. 10.20 lakh crore from corporation tax and proposes to borrow Rs. 16.91 lakh crore to meet other expenses, will taking the total reserves with the government to Rs. 60.71 lakh crore.
- **Borrowing:** India has borrowed 83% of its GDP (₹161 lakh crore), which is lower compared to developed countries like the US (121%) and Japan (261%). This indicates that the government has some fiscal space for development spending.
- **Fiscal Deficit:** The fiscal deficit has been estimated to be 4.9% of GDP in the financial year 2025, which will amount to Rs. 16.13 lakh crore, whereas in the interim budget, which was presented in February 2024, the fiscal deficit was estimated to be 5.1% of GDP. This suggests the government is making progress in controlling its spending while supporting growth initiatives.

#### Hidden Gems in the Budget

- **Private sector-driven R&D** with **1 lakh crore** allocation.

- **Solar Power** budget increased from ₹5,000 crore to ₹10,000 crore.
- **Production Linked Incentive (PLI) for Pharma** doubled from ₹1,200 crore to ₹2,100 crore.
- **Semiconductor development** allocation doubled from ₹3,000 crores to ₹6,900 crores.
- **Three major economic railway corridor projects:** These include energy, mineral and cement corridors, port connectivity corridors, and high-traffic density corridors aimed at boosting rural trade and industry.
- **Airport and Metro Expansion:** Expansion of existing airports and development of new ones, as well as expanding metro and **NaMo Bharat systems**, will improve regional connectivity and create job opportunities.

#### Economic Survey 2023-24:

- The **Economic Survey 2023-24**, recently presented to the Indian Parliament, highlights the resilience of the Indian economy over the last decade (2014-2024).

#### Key Insights from the Economic Survey 2023-24:

- **Growth Performance:**
  - Over the last decade, the Indian government has undertaken several reforms to promote sustainable growth. These include:
    - § **Insolvency and Bankruptcy Code (IBC):** This framework was created to address bad loans and improve the banking sector's health.
    - § **Goods and Services Tax (GST):** A nationwide tax reform that has streamlined tax collection and boosted revenue.
    - § **Infrastructure Development:** Investment in both physical and digital infrastructure has been significantly ramped up.
  - The survey estimates that India is on track to become the **third-largest economy** in the world. In 2024, India's economy is projected to reach **\$3.6 trillion**, a huge leap from its valuation of less than \$300 billion in 1993.
  - The **IMF** forecasts India to remain the fastest-growing major economy in the world, with growth rates of **7%** in FY24 and **6.5%** in FY25, far outpacing the global average.
- **Focus on Bottom-Up Reforms:**
  - Moving forward, the survey emphasises the need for **bottom-up reforms** that strengthen governance and improve the overall implementation of reforms. This will involve closer engagement between the **central and state governments**, leveraging cooperative federalism to ensure that the structural reforms of the last decade yield long-term benefits.

#### Structural Reforms Driving Growth:

- **Land Reforms:**
  - **Rural and Urban Land Management:** The government plans to improve land administration, planning, and management. Urban and rural land

records will be digitised using **Geographic Information System (GIS) mapping**.

- The **Unique Land Parcel Identification Number (ULPIN)** or **Bhu-Aadhaar** will be assigned to all lands. This will facilitate credit flow to farmers and streamline agricultural services.
- The **Digital Agriculture Mission** will create a digital registry for over **90 million farmers**, integrating land records with Aadhaar, helping with crop insurance, credit distribution, and direct cash transfers.
- **Labour Reforms:**
  - The integration of the **e-Shram portal** with other employment and skilling portals will create a unified database for job roles and connect job aspirants with employers.
  - **Shram Suidha Portal** (launched in 2014) provides a simplified platform for labour law compliance, and the **Samadhan Portal** allows workers to file disputes and claims online.
  - The government will revamp these portals to ensure ease of compliance for industry and trade and improve the overall labour market.
- **Financial Sector and Investment Promotion:**
  - The government plans to introduce a **financial sector vision and strategy document** to guide its development over the next five years.
  - A new **climate finance taxonomy** will be developed to support green transition initiatives and help India meet its climate goals.
  - Reforms in **Foreign Direct Investment (FDI)** and **Overseas Investments** will simplify regulations and facilitate investment inflows.
  - The government will introduce a **Variable Capital Company** structure to provide flexible financing options, especially for leasing of aircraft, ships, and private equity funds.
- **Pension Reforms:**
  - A new **National Pension System (NPS)-Vatsalya** scheme will be introduced, allowing parents and guardians to contribute to a pension fund for minors. This fund will seamlessly transition into a regular NPS account when the minor comes of age.
  - A review of the existing NPS system is underway to address concerns while maintaining fiscal prudence.
- **Adoption of Technology and Ease of Doing Business:**
  - Public investment in **digital infrastructure** and innovations by the private sector has greatly improved Indian citizens' access to resources, services, and markets.
  - The **Jan Vishwas (Amendment of Provisions) Bill, 2023**, aims to decriminalise 183 provisions across 42 Central Acts, promoting ease of doing business by reducing the risk of imprisonment for minor offences.

- The government will continue to work on improving data governance, collection, and processing through sectoral databases, including those developed under the **Digital India Mission**.
- **Next-Generation Reforms:**
  - The government will implement reforms across key factors of production: **land, labour, capital, entrepreneurship, and technology**.
  - It plans to incentivise **competitive federalism**, encouraging states to adopt reforms faster through a **50-year interest-free loan scheme**.
  - New initiatives will also promote **climate finance, FDI, and entrepreneurship** to drive economic growth and make India a global leader.

**Conclusion**

- The **Budget 2024-25** is a comprehensive roadmap designed to propel India’s economic growth and transform the country into a **Viksit Bharat** by 2047. Through a balanced mix of **policy reforms, infrastructure investments, job creation, skilling initiatives, rural development, and technology-driven innovation**, the budget aims to **unlock the potential** of India's economy, ensuring that **no one is left behind**.
- The budget prioritises **rural development** and the empowerment of key demographic groups, leveraging digital technologies and fostering **public-private partnerships** to ensure **sustainable, inclusive growth**. By addressing both short-term and long-term goals, the budget is poised to steer India through global economic challenges and lead the country toward a prosperous, self-reliant future.

**Yojana Snapshot - Union Budget 2024-25**

**2024-25 Union Budget**

- The 2024-25 Union Budget focuses on the welfare of **Garib (poor), Mahilaayen (women), Yuva (youth), and Annadata (farmers)**. The core goal is to drive economic growth and employment by targeting various sections of society with a mix of welfare measures and growth-driven initiatives.
- Nine Priority Areas and Their Allocations:



**Priority 1: Productivity and Resilience in Agriculture (Allocation: Rs 1.52 lakh crore):**

- **Agriculture Contribution:** Provides livelihood support to 42.3% of the population and contributes 18.2% to India's GDP.

**Key Initiatives:**

- **Transforming Agricultural Research:** Allocation of funds for new high-yielding, climate-resilient crop varieties.
- **Natural Farming (Bhartiya Prakratik Krishi Paddhati):** Aims to support **1 crore farmers** under natural farming over the next two years and establish **10,000 bio-input resource centres**.
- **Self-Sufficiency in Pulses and Oilseeds:** Aim is to reduce the gap in pulse production, which currently stands at 4.4 million tonnes, and decrease dependence on imported edible oils.
- **Vegetable Production and Supply Chains:** India is the second-largest producer of fruits and vegetables globally. The plan is to develop large-scale clusters for vegetable production and promote Farmer Producer Organisations (FPOs), cooperatives, and startups for vegetable supply chains.
- **Digital Public Infrastructure (DPI) for agriculture:** To conduct a digital crop survey in **400 districts** and expand farmer registries by adding details of **6 crore farmers** and their lands.
- **Shrimp Production:** Support for setting up **nucleus breeding centres** for shrimp broodstock and shrimp export.

**Priority 2: Employment and Skilling (Allocation: Rs 2 lakh crore):**

- **Prime Minister’s Package:** Targets to benefit **4.1 crore youth** over five years, with various employment-linked incentive schemes.
  - **Employment Linked Incentive Scheme-A (for First Timers):** Benefits **2.1 crore youth** with salaries up to Rs 1 lakh per month, offering one month’s salary (up to Rs 15,000) paid in three instalments.
  - **Employment Linked Incentive Scheme-B (Job Creation in Manufacturing):** Benefiting **30 lakh youth** by offering salary incentives. The government will pay 24 per cent of the wage or salary for the first two years, 16 per cent in the third year, and 8 per cent in the fourth year. The scheme covers employees with salaries up to Rs 1 lakh per month, but incentives for those earning over Rs 25,000 are capped at Rs 25,000/month. This subsidy is in addition to Scheme-A benefits.
  - **Employment Linked Incentive Scheme-C (Support to Employers):** Incentivizes employment for **50 lakh people**, covering additional employment in all sectors.
- **Skilling Initiatives:**
  - **New Scheme for Skilling and ITI’s Upgradation:** Outlay of Rs **60,000 crore** to skill **20 lakh youth** over

five years. The scheme will upgrade 1,000 ITIs in a hub-and-spoke model with industry collaboration, aligning course content with industry needs and introducing new courses for emerging demands.

- **Internships at Top Companies:** Provides **Rs 5,000 monthly allowance** for one year for one crore youth aged 21-24 through internships.
- **Education Loans:** Rs **10 lakh education loans** for **1 lakh students**, with **3% interest subvention**.

### Priority 3: Inclusive Human Resource Development and Social Justice

- **Purvodaya Scheme:** Targets the eastern part of India for human resource and infrastructure development.
- **Women-Led Development:** Allocation of **Rs 3 lakh crore** to schemes benefiting women and girls, particularly in health, nutrition, and education.
- **Pradhan Mantri Janjatiya Unnat Gram Abhiyan:** Covers **5 crore tribal people** across **63,000 villages** to improve tribal communities' socio-economic conditions.
- **India Post Payment Bank:** Expansion with over **100 branches** in the North East.
- **Increased Funding for Education, Healthcare, and Housing:** The budget raises the allocation for education by 12 per cent to Rs 1.2 lakh crore. Healthcare funding has increased by 15 per cent to Rs 3.8 lakh crore. To address housing needs, the central government will support constructing three crore additional houses under the PM Awas Yojana.

### Priority 4: Manufacturing and Service (Allocation: Rs 1.5 lakh crore for MSMEs):

- **Credit Guarantee Scheme:** Allocation of **Rs 9,812 crore** for MSMEs to acquire machinery and equipment without collateral or third-party guarantees.
- **MSME Credit Assessment Model:** Public sector banks will develop a credit assessment model based on the digital footprints of MSMEs for better credit assessments.
- **Enhanced Scope for Mandatory Onboarding in TReDS:** The budget reduces the turnover threshold for mandatory onboarding on the TReDS (Trade Receivables Discounting System) platform from Rs 500 crore to Rs 250 crore, unlocking working capital for MSMEs by converting trade receivables into cash.
- **Industrial Parks:** The government will develop investment-ready 'plug and play' industrial parks with complete infrastructure in 100 cities in partnership with states and the private sector.
- **Production Linked Incentive (PLI) Scheme:** Allocation of **Rs 2 lakh crore** to boost manufacturing in industries like electronics, automobiles, textiles, and pharmaceuticals.
- **Bolstering Startups:** To spur investments in startups and promote ease of doing business, the budget proposes abolishing the 'Angel Tax' on all classes of investors.

### Priority 5: Urban Development:

- **Affordable Housing:** Rs **10 lakh crore** investment to build **1 crore houses** for the urban poor and middle-class families.
- **Transit-Oriented Development:** Development plans for **14 large cities** with populations over 30 lakh to integrate economic growth and transit systems.
- **Water Supply and Sanitation:** Partnerships with states to improve water supply and solid waste management in **100 large cities**.

### Priority 6: Energy Security:

- **Renewable Energy Projects:** Rs 1.5 lakh crore has been allocated for renewable energy projects, including solar, wind, and green hydrogen.
- **PM Surya Ghar Muft Bijli Yojana:** Provides **free electricity up to 300 units** per month for **1 crore households** through rooftop solar plants.
- **Pumped Storage Policy:** A policy will be introduced to promote pumped storage projects for electricity storage, facilitating the **integration** of renewable energy with its variable and intermittent nature.
- **Small and Modular Nuclear Reactors:** Partnering with the private sector for the development of advanced nuclear technologies.
- **Advanced Ultra Super Critical Thermal Power Plants:** Fiscal support will be provided for setting up an 800 MW commercial plant using AUSC technology as a joint venture between NTPC and BHEL.

### Priority 7: Infrastructure

- **Capital Expenditure:** Rs **11,11,111 crore** for government infrastructure investments.
- **Private Sector Investment:** Encouraged through viability gap funding and enabling policies.
- **Pradhan Mantri Gram Sadak Yojana (PMGSY) Phase IV:** Connectivity for an additional **25,000 rural habitations**.
- **Tourism Infrastructure:** The central government will support state governments in developing iconic tourist destinations.

### Priority 8: Innovation, Research and Development

- **Research and Development:** To enhance R&D, the government will operationalise the 'Anusandhan National Research Fund. Additionally, the budget proposes creating a Rs 1 lakh crore financing pool and establishing a mechanism to spur private sector-driven research and innovation on a commercial scale.
- **Venture Capital Fund:** Rs **1,000 crore** to promote the space economy with a fivefold growth target over 10 years.

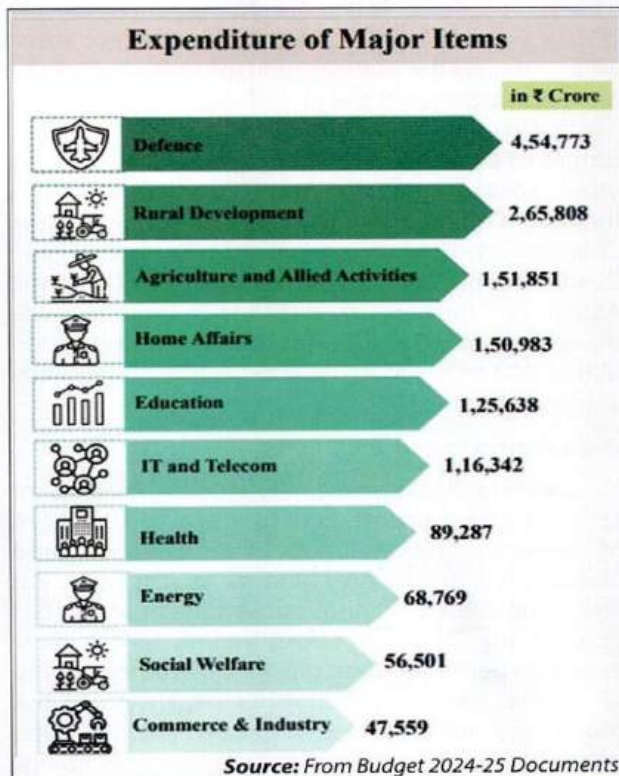
### Priority 9: Next Generation Reforms

- **Land-Related Reforms:** The budget proposes allocating part of the 50-year interest-free loan to state



governments to implement reforms for better land management in rural and urban areas.

- **Foreign Direct Investment (FDI) Simplification:** Rules and regulations will be streamlined to attract more foreign capital.
- **Promotion of Indian Rupee:** Focus on overseas transactions being conducted in Indian Rupee to facilitate easier international trade.



- The Union Budget 2024-25 aims to foster inclusive economic growth, address the needs of the most vulnerable sections of society, and promote long-term sustainability. With major investments in agriculture, employment, skilling, manufacturing, and infrastructure, the budget seeks to create a virtuous cycle of development, employment generation, and economic prosperity.

- Let's take a closer look at key priorities

### Priority 1 (Productivity and Resilience in Agriculture)

- **Integration of Digital Technologies:**
  - **Digital Empowerment:** The government is focused on using digital technology to empower farmers, aiming to improve the efficiency, productivity, and sustainability of agriculture.
  - **Scope of Implementation:** This digital strategy includes conducting digital crop surveys and integrating over six crore farmers and their land details into digital registries within three years, enhancing the accuracy and accessibility of agricultural data.

### Components of the Digital Public Infrastructure (DPI)

- **Agri Stack:** This foundational component consists of three major registries that include data on farmers, village maps, and crops. These registries facilitate easy access to geo-tagged farm plots and crop data, streamlining various administrative processes.
- **Krishi Decision Support System (DSS):** This system integrates and stores crucial agricultural data such as remote sensing information, weather forecasts, and soil conditions. It also includes information on government agricultural schemes and their beneficiaries, aiding in better decision-making and policy implementation.
- **Krishi Mapper (KM):** A geospatial mobile application that supports land-based schemes, providing detailed mappings such as soil fertility and profiles. It's also used in crop estimation surveys to measure crop yields accurately through experiments on selected plots.

### Objectives and Benefits

- **Improved Information Access:** By creating a comprehensive digital database, the government aims to make information about farming practices, land records, and farmer profiles easily accessible.
- **Enhanced Decision-Making:** With better data on weather patterns, soil health, and crop performance, farmers can make more informed decisions that lead to increased productivity and efficiency.
- **Policy Implementation:** Accurate and real-time data will aid in the effective implementation of government schemes and ensure that benefits reach the intended recipients promptly.
- **Inclusivity and Support:** The DPI is designed to be open-source, open-standard, and interoperable, ensuring that it can be accessed widely and benefit all farmers, including those in remote areas.

### Priority 2 (Employment and Skilling)

#### Potential Impact of Employment Linked Incentive (ELI):

- **Socio-Economic Benefits:** The **First Timers Scheme** and manufacturing incentives will help **formalise employment**, offering job security and social security to a large section of the workforce. By encouraging first-time employees to join the formal sector, the scheme also works toward **reducing informal employment**.
- **Boost to Manufacturing:** The initiatives targeting the manufacturing sector aim to create a **skilled workforce**, increase productivity, and make India a global hub for manufacturing, in line with the **Make in India** initiative. This will drive long-term **economic growth** and help India compete globally in industries like electronics and textiles.
- **Support for SMEs:** Financial incentives for employers, particularly SMEs, will lower the cost of hiring, making it

easier for small businesses to scale up and create jobs. This will stimulate economic activity across supply chains and contribute to **job creation** in sectors heavily reliant on labour.

- **Increased Social Security:** By tying incentives to EPFO contributions, the government is promoting greater social security coverage for workers, helping to create a more **inclusive economy** with benefits like **health insurance, pension, and job security** for employees.

### Priority 3 (Inclusive Human Resource Development and Social Justice)

#### Potential Impact

- **Socio-Economic Transformation:** Investments in **education, skilling, and employment** will create a more competitive and capable workforce, which in turn will enhance productivity, innovation, and investment. This will contribute to sustained economic growth and help lift millions out of poverty.
- **Social Equity and Justice:** The emphasis on **social justice** ensures that the benefits of economic growth are equitably distributed. By addressing the needs of **women, tribal communities, and historically underserved regions**, the government aims to reduce regional and socio-economic inequalities, fostering **social cohesion and stability**.
- **Long-Term Prosperity:** The combination of **inclusive policies** and **social justice** measures is essential for achieving long-term national prosperity. Without addressing disparities and empowering all segments of society, sustainable development cannot be realised.

#### Challenges and Considerations:

- **Implementation and Governance:**
  - Successful implementation of the ambitious proposals requires **robust governance** and effective **coordination between central and state governments**.
  - Ensuring that funds reach the intended beneficiaries efficiently is crucial, necessitating strengthened **transparency** and **accountability** mechanisms to prevent corruption and leakage of resources.
- **Role of the Private Sector:**
  - The success of **skilling** and **employment** initiatives will depend heavily on the **participation of the private sector**. Industries must collaborate in designing **curricula**, providing **internships**, and creating **job opportunities** for a skilled workforce.
  - Fostering an environment conducive to **public-private partnerships** is key to ensuring that businesses invest in human resource development.
- **Structural Reforms:**

- Addressing **labour market rigidities** and improving the **ease of doing business** is critical for the success of these initiatives.
- Reforms aimed at enhancing **labour market flexibility** and investing in both **physical and digital infrastructure** will create a supportive environment for sustainable growth.

### Priority 6 (Energy Security)

#### Challenges in Renewable Energy Adoption

- **Intermittency and Dispatchability:** Renewable energy sources like solar and wind are not consistently available, leading to challenges with grid stability and the need for reliable power supply systems.
- **Land and Water Requirements:** The expansion of renewable energy and clean fuels increases the demand for these critical resources, which are limited in availability in India.
- **Dependency on Critical Minerals:** The technologies necessary for renewable energy and battery storage rely on minerals such as graphite (China 79 per cent), cobalt (DRC 70 per cent), rare earths (China 60 per cent), and lithium (Aus 55 per cent), creating a geopolitical and supply chain vulnerability.
- **Supply Chain Concentration:** The processing and supply of these critical minerals are heavily dominated by China, making global supply chains susceptible to geopolitical tensions and disruptions.
- **Environmental and Health Risks from Waste:** Recycling of solar PV panels, which have a lifetime of 25-30 years, poses significant environmental and health risks due to the potential release of toxic metals into the environment.
- **Shift in Import Dependencies:** As India moves away from petroleum, there is a new dependency on imported solar panels and critical minerals, which have complex and vulnerable supply chains.

#### Way Forward for Energy Security and Sustainability

- **Diversification of Energy Sources:** It's crucial to supplement renewable energy with other non-fossil fuel resources like nuclear, biofuels, and hydrogen to minimize risks associated with renewables.
- **Development of Domestic Capacities:** Building domestic capabilities for the production and processing of critical minerals to reduce import dependency and enhance self-reliance in energy resources.
- **Promotion of Cleaner Coal Technologies:** Initiatives such as coal gasification, carbon capture and storage (CCS), coal bed methane (CBM), and coal beneficiation are promoted to mitigate emissions from coal usage.
- **Integration of Renewable with Other Clean Technologies:** Pairing renewable energy sources with

nuclear power, bio-fuels, and green hydrogen can address intermittency issues and provide more stable energy production.

- **Government Financial Support for Clean Energy Transition:** Providing financial incentives and support to micro and small-scale sectors to adopt cleaner energy technologies will facilitate a broader transition to sustainable practices.
- **Focus on Environmental Protection in Waste Management:** Developing safe recycling processes for solar PV waste to prevent environmental contamination and protect human health.

## EPW Snapshot

### The Middle-income Trap

#### Introduction

- The World Bank is shifting its focus towards aiding middle-income economies in transitioning to the high-income group. This shift is evident in its flagship **World Development Report (WDR) for 2024**, titled "**The Middle-Income Trap**", which attempts to formulate a credible strategy to assist over a hundred middle-income countries in achieving high-income status.

#### Reasons for Focusing on Middle-Income Countries

- **Convergence Theory Falling Short:** Traditional neoclassical growth theories posited that poorer countries pursuing market-based policies would grow faster than developed economies, eventually converging with them. However, this convergence is proving to be elusive.
- **Technological Lag:** Middle-income countries struggle to keep pace with rapid technological advancements in high-income economies.
- **Increased Competition:** They face stiff competition from poorer countries, producing cheaper products that affect their global market share.

#### Statistical Overview

- **Number of Middle-Income Countries:** According to the World Bank, currently, there are **108 middle-income countries** with per capita incomes ranging from \$1,136 to \$13,845.
- **Population and Economic Contribution:**
  - Home to **6 billion people**.
  - Account for **two-thirds of the global poor**.
  - Produce **over one-third of global output**.
  - Contribute about **two-thirds of global carbon emissions**.

### Challenges Faced by Middle-Income Countries

- **Ageing Populations:** Many are dealing with demographic shifts that strain resources.
- **Debt Burdens:** High levels of national debt limit economic flexibility.
- **Geopolitical and Trade Frictions:** Increasing global tensions create hurdles for sustained growth.
- **Decelerating Growth Rates:** Growth has slowed from an annual average of **6% in the 2000s to 4% in the 2020s**. Since the early 1990s, only **34 countries** have transitioned to **high-income status**, representing a mere **4%** of the population.

### World Development Report 2024's Approach

- **Analytical Delving**
  - The WDR 2024 examines the middle-income trap in greater detail, aiming to propose actionable strategies.
  - **Definition:** The report identifies the middle-income trap as a slowdown in growth due to the inability to develop new economic structures that sustain high growth.

### Strategies to Escape the Middle-Income Trap

- **Investments:** Boosting capital investments to stimulate economic growth.
- **Infusion of New Technologies:** Integrating external technologies and ensuring their widespread adoption.
- **Innovations:** Fostering innovation to enhance productivity and value addition.
- **Expected Outcomes**
  - **Dynamic Enterprises:** Encouraging businesses that can adapt and compete globally.
  - **Productive Workforce:** Developing skills and education to increase labour productivity.
  - **Energy-Efficient Economy:** Building infrastructure and industries that are environmentally sustainable.

### Warnings and Projections

- Without significant changes, it could take:
  - **China:** Over **10 years** to reach just a quarter of the U.S. per capita income.
  - **India:** Up to **75 years** to achieve similar progress.
- **Necessary Transitions for Middle-Income Countries**
  - **Investment and Technology Infusion:** Attracting foreign capital and expertise. Implementing policies that facilitate business operations and technological adoption.
  - **Focus on Innovation:** Adjusting existing policies and institutions to promote innovation. Encouraging

businesses to move up the value chain through advanced processes and products.

### Role of High-Income Countries' Policies

- **Curtailing Incumbent Power:** Enforcing regulations to prevent monopolies and promote fair competition. Building robust institutions to implement and uphold these laws effectively.
- **Fiscal Realignment:** Redirecting fiscal priorities to nurture startups and innovative companies. Utilising economic downturns as opportunities to implement necessary policy and institutional reforms.

### Conclusion

- Transitioning from a middle-income to a high-income economy is a complex and challenging process that requires significant strategic changes. The World Bank's WDR 2024 highlights that proposed strategies involve investments, technology infusion, and innovation.

## Keeping the Indian Rupee Stable

### Introduction

- The Indian rupee has maintained a relatively stable movement in recent times. This stability was largely due to the **Reserve Bank of India (RBI)** intervention in the **non-deliverable forward (NDF) market**. Although the RBI does not disclose daily data on rupee intervention to avoid speculation, monthly data reveals consistent intervention in both the spot and forward markets.

### Recent Trends (2022-2024)

- **September 2022 to September 2023:** The rupee exhibited **range-bound** movement between **80.45** and **83.26** during this period.
- **October 2023 to December 2023:** The range narrowed further, fluctuating between **82.75** and **83.48**. This narrowing range indicated increased stability.
- **January 2024 to June 2024:** The rupee's movement widened slightly, ranging from **82.64** to **83.73**.

### INR Movement Compared to Other Emerging Market Currencies

- The rupee's movement is compared to other emerging market currencies, such as the **Brazilian real (BRL)**, **Chinese renminbi (CNY)**, **South African rand (ZAR)**, and **Indonesian rupiah (IDR)**.
- Besides BRL, the emerging market currencies—IDR, ZAR, CNY, and INR—have **sharply depreciated since 2022**. While these currencies have been more stable from 2023 onwards, the movement in **INR is most stable**.
- The **rupee's volatility** has been the **lowest** among these currencies, followed closely by the Chinese renminbi. This demonstrates the RBI's effective measures to curb volatility.

### RBI's Intervention Strategy

- **Managed Float Regime:** India operates under a **managed float regime**, where the RBI intervenes in the foreign exchange market to control "**excessive volatility**" but does not aim to directly guide the value of the rupee. Interventions are carried out through selected public sector banks, maintaining confidentiality to avoid speculation.
- **Shift to Forward Market Interventions:** The RBI has increasingly shifted its interventions from spot markets to **forward markets**, particularly in the post-pandemic period.

### Impact on Volatility

- The RBI's interventions have successfully contained volatility in both the appreciating and depreciating phases of the rupee.
- The rupee's **appreciating spells** have allowed the RBI to build up its reserves, while the **depreciating phases** have seen more dollar sales to support the rupee.

### Impact on Businesses

- **Forward Market Interventions:** Influencing forward premiums affects the hedging decisions of importers and exporters. **Importers** hedge more during depreciating phases, leading to more future import decisions. **Exporters**, however, may hedge less optimally due to downward pressure on premiums.

### Future Liabilities

- A noteworthy spike in **long-term liabilities** occurred post-pandemic, indicating that some forward swaps were either carried forward or replaced with new swaps.
- In **2024**, both long-term and short-term liabilities sharply declined, suggesting that some of these liabilities were addressed to avoid future burdens.

### Conclusion

- The RBI has stabilised the Indian rupee through spot and forward market interventions. While forward market interventions have proven useful in managing volatility and ensuring rupee stability, long-term costs are related to increased liabilities and potential distortions in business hedging behaviour. Going forward, the central bank must carefully monitor the build-up of future liabilities and balance the needs of businesses with its intervention strategy to ensure sustained currency stability.

## Bangladesh and South Asian Regionalism

### Introduction

- The abrupt collapse of the Awami League government in Bangladesh and the subsequent flight of Prime Minister **Sheikh Hasina** to India exposed the fragility of South Asian governments and the unpredictability of political realities in the region. Bangladesh's "**Monsoon**

**Revolution**” is the latest in a series of political upheavals across South Asia, which signal broader regional turbulence.

### Similar Events in the South Asia

- **Afghanistan:** August 2021 saw the chaotic U.S. military withdrawal, leading to the Taliban's return to power.
- **Myanmar:** A military coup in February 2021.
- **Sri Lanka:** Widespread protests led to a government change in July 2022.
- **Maldives:** A government shift through elections in November 2023.
- **Nepal:** Political realignment in July 2024.

### Bangladesh "Monsoon Revolution"

- **Internal Dissent in Bangladesh**
  - **Popular Discontent:** The fall of the Awami League government reveals deep-seated public alienation. Symbolic acts, such as the demolition of statues of **Sheikh Mujibur Rahman** and the cancellation of national holidays commemorating his assassination, point to growing dissatisfaction.
  - **Comparison to 1971:** The overthrow of Sheikh Hasina is seen as a **"second liberation,"** comparable to Bangladesh's independence in 1971, reflecting the extent of opposition to the Awami League.

### Impact on India

- **Perception of India:** Sheikh Hasina's government was closely associated with India, and many Bangladeshis believe that her long tenure was partly due to Indian support. Attacks on Bangladesh's Hindu minority added to the perception that the government served Indian interests.
- **Public Sentiment:** Anti-India sentiments are not uncommon in smaller neighbouring countries, and while India should not try to eliminate this sentiment, it must carefully navigate it in its diplomatic strategies.

### India's Approach to the Crisis

- **Pragmatism and Patience:** India must show pragmatism, patience, and flexibility in its dealings with the new interim government in Bangladesh. These qualities were successfully applied in dealing with the **Taliban regime** in Afghanistan and **President Mohamed Muizzu's** government in the Maldives.

### Decline in South Asian Regionalism

- **SAARC's Decline:** The **South Asian Association for Regional Cooperation (SAARC)** has been dormant since 2016, largely due to India-Pakistan tensions.
- **BIMSTEC's Challenges:** The **Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)** also faces hurdles, particularly

the ongoing civil war in Myanmar, weakening the organisation's efficacy.

### Chinese Influence in the Region

- **China's Growing Role:** The collapse of regional mechanisms like SAARC has created a vacuum that China is attempting to fill, as evidenced by the recent **China-South Asia Cooperation Forum** meeting in Kunming, which sought to establish a regional cooperation template excluding India.

### Conclusion

- The political crisis in Bangladesh, combined with broader regional instability, underscores the challenges facing Indian diplomacy. While bilateral approaches remain crucial, India must strengthen regional mechanisms to address emerging South Asian challenges. Pragmatism and adaptability will be key as India navigates this political flux and changing regional dynamics.

### The Politics of Symbolism

#### Introduction

- The **43rd Indravelli Martyrs' Day** commemorates the ongoing Adivasi struggles for **"Jal, Jangal, and Jamin"** (water, forest, and land). Interestingly, the **Telangana Chief Minister**, whose party (Indian National Congress) was responsible for the original incident, launched his **Lok Sabha** election campaign from the Indravelli martyrs' memorial in 2024. This dual use of Adivasi symbols by both the community and political entities exposes the contradictions within the state's handling of Adivasi's struggles.

#### Adivasi Revolts in Telangana

- **Ramji Gond:** Leading a revolt in **1860**, Ramji Gond's struggle against the British in the Adilabad district remains a powerful symbol in Adivasi history. His rebellion inspired later movements, including that of **Kumaram Bheemu**.
- **Kumaram Bheemu:** Bheemu's dream of establishing a **Gond Raj**, or independent Adivasi rule, in the **Jodeghat** region shook the Nizam's government. His movement aimed to **reclaim** Adivasi political sovereignty and protect their cultural identity.

#### Indravelli Incident (April 20, 1981)

- It marked a significant turning point in Adivasi's resistance. A public meeting organised by **Girijana Rythu Coolie Sangham**, a front organisation for **People's War Group (PWG) Naxalites**, aimed to discuss Adivasi issues. However, the police abruptly cancelled the meeting and imposed **Section 144 CrPC**, resulting in a massacre of Adivasis.

#### Transforming Narratives into Symbols

- **Commemorating the Indravelli Incident**

- **Initial Memorial Construction:** The **Andhra Pradesh Rythu Coolie Sangham (APRCS)** proposed building a memorial to commemorate the martyrs, but this effort was met with resistance from the state. Despite police threats and surveillance, a **53-foot column** with a red flag was inaugurated.
- **State Repression:** The memorial was demolished twice, reflecting the state's discomfort with the growing political significance of the **Indravelli martyrs**.

### Symbolism of Kumaram Bheemu

- **Statues and Memorials:** The first bust of Bheemu was installed at **Jodeghat** in **1985**. Bheemu's symbolism became central to Adivasi's identity and resistance, and his image was used to negotiate with the post-colonial state.
- **State Co-optation:** For the Telangana government, celebrating Bheemu's resistance against the Nizam became a convenient way to engage with Adivasi politics while sidelining the memory of the **Indravelli resistance**.
- **Political Appropriation of Adivasi Symbols**
  - **Role of the Telangana Movement:** During the **Telangana separate state movement**, Bheemu's vision of self-rule was incorporated into the movement's ideological framework. The Telangana Rashtra Samithi (TRS), led by K Chandrasekhar Rao,

used Bheemu's slogans of **Jal, Jangal, and Jamin** to build popular support for the movement.

- **Adivasi Symbols in Electoral Politics:** The **Bharatiya Janata Party (BJP)** celebrated **Ramji Gond** and **Kumaram Bheemu**, incorporating their struggles into an anti-Muslim narrative. This strategy helped the BJP expand its influence in Adivasi regions, including twice winning the **Adilabad Lok Sabha seat**.

### Sub-alternization of Adivasi Politics

- **Representation Without Power:** Adivasis may hold political office, but their roles are often symbolic. Genuine political empowerment remains elusive, with Adivasi leaders having limited influence over decision-making processes.
- **Loss of Independent Politics:** Political parties have appropriated Adivasi symbols to build constituencies, often diluting Adivasi-independent politics.

### Conclusion

The politics of Adivasi symbols and memorials reveal a complex interplay between recognition, representation, and marginalisation. The challenge for Adivasis lies in reclaiming these symbols and using them to assert their political agency, independent of state control. The rise of Adivasi political movements like the **Bharat Adivasi Party** offers hope for a future where Adivasi voices are recognised and empowered.