



INSIGHTSIAS

SIMPLIFYING IAS EXAM PREPARATION

CYCLONE DANA

A CYCLONE IS A LARGE-SCALE AIR MASS THAT ROTATES AROUND A STRONG CENTER OF LOW ATMOSPHERIC PRESSURE.

21 OCT - 26 OCT 2024

WEEKLY CURRENT AFFAIRS

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GENERAL STUDIES – 1

Topics: Modern Indian history from about the middle of the eighteenth century until the present- significant events, personalities, issues.

1. ARCHITECT OF UNITY: THE LEGACY OF SARDAR PATEL

Context:

The government announced to commemorate the 150th birth anniversary of Sardar Patel with a two-year-long nationwide celebration beginning this year from October 31st.

Pre-independence contributions:

- 1. Early involvement in politics and leadership:** His first major involvement in the freedom struggle came during the *Kheda Satyagraha* (1917), where he played a significant role in supporting farmers against the British colonial government, protesting the collection of taxes during a severe famine.
- 2. Non-cooperation movement (1920–1922):** He successfully mobilized around 300,000 people and raised significant funds for the movement, promoting the use of *Khadi* and boycotting British goods.
- 3. Bardoli satyagraha (1928):** One of Patel's most famous leadership roles came during the Bardoli Satyagraha, where he fought against an unjust increase in land revenue assessments. The success of this non-violent movement earned him the title of "Sardar" (meaning leader).
- 4. Salt march and Civil disobedience movement (1930):** His participation in the *Civil Disobedience Movement* and his call for mass protests against British salt laws resulted in his imprisonment, demonstrating his unwavering commitment to non-violent resistance against colonial rule.
- 5. Indian National Congress Leadership:** Patel played a significant role in the INC, including serving as the President of the INC in 1931. His leadership during the *Karachi session* of the INC was instrumental in ratifying the *Gandhi-Irwin Pact* and passing resolutions on Fundamental Rights and Economic Policy.
- 6. Quit India Movement (1942):** His leadership mobilized a significant portion of the population in support of the movement, even as he faced imprisonment for participating in civil disobedience.

Post-independence contributions:

- 1. Integration of Princely States (1947-1950):** After India gained independence in 1947, one

of Patel's monumental contributions was the integration of more than 560 princely states into the Indian Union.

- 2. Creation of Indian Administrative Service (IAS):** Recognizing the need for an efficient and strong administration in independent India, Patel was instrumental in establishing the Indian Administrative Service (IAS) as a unified civil service framework.
 - He famously referred to the IAS as the "steel frame" of India, essential for the country's governance and development.
- 3. Rehabilitation of refugees:** Post-partition, Patel took significant steps in the rehabilitation of refugees who fled from Pakistan to India. His efforts helped stabilize the situation, ensuring that those displaced were provided with relief and resettlement opportunities.
- 4. Reform of police and judicial system:** As the first Home Minister of India, Patel oversaw the reorganization of India's police forces and laid the foundation for reforms in the judicial system.
- 5. Formation of unified India:** Beyond integrating princely states, Patel played a key role in shaping India's internal governance structure, ensuring that all regions were integrated under a common administrative framework.

Sardar Vallabhbhai Patel's role in the integration of India:

- 1. Integration of 565 Princely States:** After independence, Sardar Patel, as India's first Home Minister and Deputy Prime Minister, was responsible for merging over 565 princely states into the Indian Union. His leadership in persuading these states to join India was critical in preventing fragmentation.
- 2. Diplomatic negotiation:** Patel primarily used diplomacy and persuasion to convince the princely states to accede to India. His strategy was based on offering them benefits like privy purses while ensuring their protection under the new Indian government.
- 3. Use of force in Junagadh and Hyderabad:** When persuasion failed, as in the cases of Junagadh and Hyderabad, Patel did not hesitate to employ military force. The Nawab of Junagadh sought to join Pakistan, but Patel's decisive action led to its integration into India. Similarly, the Nizam of Hyderabad's reluctance to accede was overcome through Operation Polo, which led to Hyderabad's integration in 1948.
- 4. Kashmir accession:** Though Patel was not directly involved in Kashmir's accession due to Jawaharlal Nehru's lead, his broader strategy in integrating princely states set a precedent for handling complex issues like Kashmir.
- 5. Preventing fragmentation:** Patel's vision and strategy ensured India's territorial integrity at a

critical moment when it could have fractured into several smaller, independent nations. His actions were key in shaping modern India's map

Conclusion

Sardar Vallabhbhai Patel's contributions before and after independence were pivotal in shaping the political and territorial structure of modern India. His leadership in the freedom struggle, as well as his vision for a unified and administratively strong India, earned him the title "Iron Man of India."

Insta Links:

1. RSTV-in-depth-sardar-patel\
2. Life-of-sardar-vallabhbhai-patel

PYQ:

1. What was the difference between Mahatma Gandhi and Rabindranath Tagore in their approach towards education and nationalism? (UPSC-2023)



[Topics: Population and associated issues, poverty and developmental issues.](#)

2. VANISHING DEMOGRAPHICS: THE DECLINE OF SOUTH INDIA'S POPULATION

Context:

The Chief Minister of Andhra Pradesh, recently announced plans to incentivize residents to have more children due to concerns about a declining young population in Southern India.

Present trends in South India:

- **Lower fertility rates:** Andhra Pradesh, Tamil Nadu, and Kerala have achieved or are near replacement-level fertility (2.1 children per woman). Andhra Pradesh did so in 2004, and Kerala in 1988.
- **Aging population:** Kerala's 60+ population is expected to rise from 13% in 2011 to 23% by 2036. Andhra Pradesh is also experiencing population aging due to lower fertility rates and higher life expectancy.
- **Population growth:** Southern states will contribute only 9% to India's population growth from 2011-2036, while states like Uttar Pradesh and Bihar will account for a larger share.

- **Migration trends:** Southern states increasingly rely on migration from the North to balance their workforce as the working-age population declines.

Issues with population decline:

- **Aging workforce:** Potential labour shortage due to declining young population. (Ministry of Labor Statistics).
- **Economic strain:** Economic strain due to increased healthcare and social security expenditures. (Ex - Kerala)
- **Political representation:** Slower population growth in Southern states raises concerns about reduced Parliament representation.
- **Labor market imbalance:** Labor market imbalance due to fewer young workers (Ministry of Employment Report).
- **Healthcare burden:** Increased healthcare burden due to rising elderly population. (WHO Report on India).

Impact on India:

- **North-South divide:** As Northern states like Uttar Pradesh contribute more to India's population, the political and economic focus may shift further north, affecting resource distribution.
- **Internal migration:** Migration from Northern to Southern states could alleviate labor shortages but may cause social and cultural tensions (2023 Government Migration Report).
- **Electoral representation:** The BIMARU states (Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh) might gain more political representation at the expense of Southern states, affecting policy priorities.
- **Economic shifts:** Slower population growth in the South, combined with Northern states' higher growth, could shift India's economic balance, impacting national-level decisions (National Population Commission Report).
- **Education and workforce:** Southern states could face a dwindling youth population, leading to fewer entrants in the labor market, affecting industries dependent on younger workers (NITI Aayog Report).

Way ahead:

- **Encouraging migration:** Southern states can ease workforce shortages by attracting workers from Northern India, benefiting from their working-age population.
- **Policy reforms:** Reforming political representation systems to account for differences in demographic transitions, ensuring that states with lower populations are not penalized.
- **Workforce planning:** Invest in automation, technology, and retraining programs to manage the shrinking workforce efficiently (Economic

Survey).

- **Incentivize families:** While direct incentives for childbirth have limited success globally, comprehensive family support programs focusing on healthcare, education, and employment could be more effective.
- **Balanced development:** Focus on equal economic and social development across regions to manage internal migration better and reduce disparities (NITI Aayog).

Case Study: Uttar Pradesh vs. Southern States

- **Fertility and aging:** Uttar Pradesh will reach replacement fertility by 2025, while Kerala did decades ago. By 2036, Kerala's aging population will be 23%, compared to Uttar Pradesh's 12%.
- **Population growth:** Uttar Pradesh will account for 19% of India's population increase by 2036, while Southern states will contribute only 9%.
- **Dependency ratios:** Uttar Pradesh will maintain a more favorable ratio due to its younger population, whereas Kerala will face higher healthcare and social security costs.

Insta Links:

1. Indias-declining-fertility-rate

PYQ:

1. Discuss the main objectives of Population Education and point out the measures to achieve them in India in detail. (UPSC-2021)
2. "Empowering women is the key to control the population growth." Discuss. (UPSC-2019)
3. Critically examine whether growing population is the cause of poverty or poverty is the main cause of population increase in India. (UPSC-2015)



GENERAL STUDIES – 2

Topics: Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources.

1. LEARNING GAPS: INDIA'S LITERACY & NUMERACY STRUGGLE

Context:

The article discusses the challenges faced by Indian schools in achieving foundational literacy and numeracy (FLN) goals, especially among socioeconomically disadvantaged children.

Key Data Points:

- **Foundational Literacy and Numeracy (FLN):** 20% of students in the schools do not achieve FLN by grade 3, this was reduced from 40% earlier.
- **Socioeconomic context:** Over 80% of students in schools come from socioeconomically disadvantaged backgrounds.
- **Educational impact of poverty:** Poverty affects learning outcomes, with students from poor families facing nutritional deficits, less adult care, higher absenteeism due to illness.

Challenges to FLN in India:

1. **Impact of poverty:** Students from poor families often face malnutrition, lack of healthcare, and absenteeism due to economic demands, which directly impacts their learning.
E.g. Many students in rural areas help with family livelihood activities, limiting their school attendance.
2. **Resource constraints:** Most Indian schools lack adequate resources such as trained teachers, learning materials, and individual attention for students with specific needs.
E.g. Government schools in many rural areas suffer from teacher shortages and inadequate infrastructure.

3. **Learning gaps due to absenteeism:** Students from disadvantaged backgrounds often miss school more frequently due to illness, family responsibilities, or other external factors, leading to significant learning gaps.
E.g. Seasonal migration in many states disrupts consistent attendance for children.
4. **Mental health and social exclusion:** Children from marginalized communities often face stress and social exclusion, affecting their ability to focus and perform academically.
E.g. Students from Dalit communities often face social discrimination, impacting their learning environment.
5. **Curriculum and Pedagogy:** The Indian curriculum often doesn't account for the varied learning needs of students, particularly those who require more time and personalized teaching to grasp basic concepts.
E.g. The standardized curriculum doesn't allow much flexibility for students with learning disabilities or those requiring remedial education.

Way ahead:

1. **Customized learning solutions:** Schools should implement personalized learning plans and remedial education programs, especially for students from disadvantaged backgrounds.
E.g. Focus on skill-based learning to close gaps early.
2. **Enhanced teacher training:** Equip teachers with better training on handling diverse classroom environments and addressing the unique needs of socioeconomically disadvantaged students.
E.g. Include specific training on inclusive teaching practices.
3. **Community involvement:** Strengthen the involvement of communities and parents in supporting children's education, ensuring that learning continues beyond school hours.
E.g. Conduct parent-teacher workshops to educate families on the importance of continuous learning.
4. **Government support and resources:** Increased funding for public schools to ensure adequate infrastructure, teaching materials, and teacher-student ratios.
E.g. Implement policies that ensure proper nutritional support and healthcare for children.
5. **Focus on mental health:** Provide psychological support to children facing stress, social exclusion, and other mental health challenges.
E.g. Implement counseling and mental health programs in schools, particularly in areas with high poverty levels.

Conclusion:

Achieving FLN for all Indian children by grade 3 is essential, but requires a multifaceted approach that

includes addressing poverty, improving school resources, and adopting more inclusive teaching methods.



Insta Links:

1. Foundational-literacy-and-numeracy-report
2. Education-in-mother-tongue
3. Nipun-Bharat-mission

PYQ:

1. Discuss the main objectives of Population Education and point out the measures to achieve them in India in detail. (UPSC-2021)
2. How have digital initiatives in India contributed to the functioning of the education system in the country? Elaborate on your answer. (UPSC-2020)

[Topics: Important aspects of governance, transparency and accountability, e-governance applications, models, successes, limitations, and potential; citizens charters, transparency & accountability and institutional and other measures.](#)

2. FINAL CHOICE: ADVOCATING FOR A DIGNIFIED DEATH

Context:

The Ministry of Health and Family Welfare recently issued draft guidelines for the withdrawal of life support in terminally ill patients, aligning with the Supreme Court's 2018 and 2023 rulings on the right to die with dignity.

What is Euthanasia?

- This involves a physician directly administering a lethal substance to end a patient's life. Euthanasia can be **voluntary, or involuntary**, if the patient cannot consent, such as in a coma.
 - **Active Euthanasia:** Involves deliberately performing an action, such as administering a lethal injection, to end a patient's life at their request.
 - It is an intentional act that directly causes death, often considered illegal in most countries due to ethical and legal concerns.
 - **Passive Euthanasia:** Entails withholding or withdrawing life-sustaining treatment (e.g., stopping ventilation or dialysis) in cases where

the patient is terminally ill, allowing the natural course of illness to lead to death.



Draft guidelines on passive euthanasia:

- **Definition of terminal illness:** Defined as an incurable or irreversible condition with a predictable path to death, ensuring only genuinely terminal cases are considered.
- **Conditions for withdrawal/withholding treatment:** Allows discontinuation if the patient is brainstem dead, or if medical assessment confirms no improvement potential. Informed consent from the patient or surrogate is mandatory, following Supreme Court protocols.
- **Patient autonomy:** Patients have the right to decide on resuscitation or life support; refusal of life support is permitted if the patient is brain dead, and continued care is deemed ineffective.
- **Advance medical directives (Living Will):** Individuals can pre-specify treatment preferences for situations where they lose decision-making capacity, supporting autonomy.
- **Medical board review:** If life-sustaining treatment is deemed unsuitable, the case is reviewed by a primary medical board. A secondary board's approval is required before withdrawing support, adding oversight.

Arguments for euthanasia:

1. **Respect for autonomy:** Recognizes an individual's right to make decisions regarding their own body and quality of life.
E.g. Patients with terminal illnesses should have the freedom to choose dignified end-of-life care.
2. **Reduction of suffering:** Eases prolonged suffering and pain for terminally ill patients.
E.g. Passive euthanasia can prevent unnecessary suffering in end-stage conditions.
3. **Medical resource allocation:** Frees up medical resources for patients with a higher chance of recovery.

4. **Legal framework provides safety:** The SC guidelines and medical boards ensure ethical and well-monitored practice.
5. **Global precedence:** Many countries have adopted euthanasia laws, indicating its social acceptance under strict protocols.

Case Study: Sarco Pod The Sarco Pod, a 'suicide pod' developed for assisted death, recently gained attention after a 64-year-old American woman with an autoimmune condition reportedly used it in Switzerland in September 2024. Operated without medical involvement, the pod allows the user to self-administer nitrogen gas, leading to a painless death within minutes.

Arguments against euthanasia:

1. **Ethical concerns:** Euthanasia can conflict with medical ethics and the Hippocratic Oath to "do no harm."
2. **Potential for misuse:** Could lead to exploitation, especially among vulnerable populations.
3. **Cultural Sensitivity:** Indian cultural and religious values often oppose euthanasia.
4. **Psychological impact on families:** Families may feel pressured to consent even if it conflicts with personal beliefs.
5. **Medical improvements:** Advances in palliative care could alleviate suffering without ending life.

Way ahead:

1. **Strengthen palliative care:** Invest in accessible palliative care to provide comfort to terminally ill patients.
2. **Raise public awareness:** Educate on the distinctions between passive euthanasia, palliative care, and living wills.
3. **Monitor implementation:** Ensure stringent oversight of the guidelines to prevent misuse.

Conclusion:

As Mahatma Gandhi said, "**The highest ethical duty is to minimize suffering.**" Striking a balance between ethical concerns and individual rights is crucial for upholding dignity in end-of-life care.

Insta Links:

1. Right-to-peaceful-death
2. The-ethics-of-Euthanasia

PYQ:

1. Right to Privacy is protected as an intrinsic part of Right to Life and Personal Liberty. Which of the following in the Constitution of



India correctly and appropriately imply the above statement? (UPSC-2018)

- Article 14 and the provisions under the 42nd Amendment to the Constitution.
- Article 17 and the Directive Principles of State Policy in Part IV.
- Article 21 and the freedoms guaranteed in Part III.
- Article 24 and the provisions under the 44th Amendment to the Constitution.

Answer: c)

Topics: India and its neighbourhood- relations.

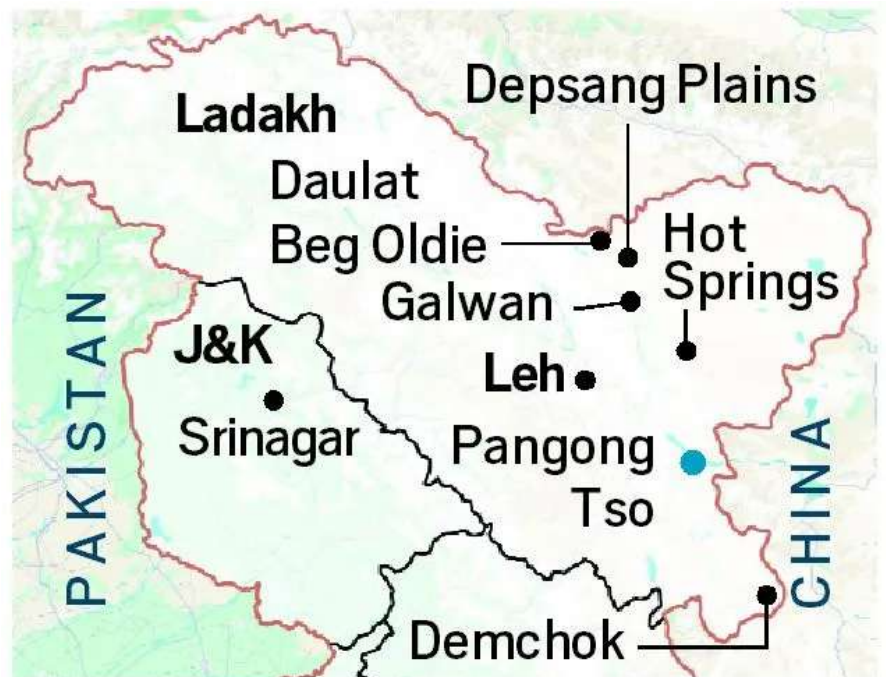
3. BORDER BALANCING ACT: INDIA-CHINA PATROLLING DYNAMICS

Context:

India and China recently announced an agreement on “patrolling arrangements” along the Line of Actual Control (LAC), aimed at resolving lingering border disputes.

Key Points on the India-China Patrolling Agreement:

- **Restoration of patrolling rights:** Indian and Chinese troops will regain patrolling rights in areas of longstanding contention, such as the *Depsang Plains* and *Demchok*, restoring pre-2020 conditions.
- **Three-phase process:** The agreement outlines a phased approach — *Disengagement*, *De-escalation*, and *De-induction* of troops — aimed at reducing troop presence along the Line of Actual Control (LAC) over time.
- **Resumption of grazing rights:** Traditional grazing activities will resume in certain areas, reflecting an effort to return to a status quo that predates recent border tensions.
- **Monitoring and verification:** Both countries agree on close monitoring to prevent the reoccurrence of confrontations, such as the Galwan Valley clash in 2020.
- **Limited areas of engagement:** Current disengagement covers the Depsang and Demchok regions, with previous stand-off points, including *Pangong Tso* and *Galwan*, remaining unchanged.



Challenges in the de-escalation process:

- **Trust deficit:** India remains cautious due to past incidents where China did not uphold previous border agreements fully, emphasizing the need for a “trust, but verify” approach.
- **Diverging interpretations:** Differences in Indian and Chinese statements indicate varying perspectives, with China emphasizing general progress, while India highlights specific de-escalation steps.
- **Sequence of de-escalation:** India’s focus is on disengagement first, while China’s position on the sequence is less clear, possibly complicating the pace and sequence of military withdrawal.
- **Political sensitivities:** India’s stance links border peace with broader bilateral relations, whereas China views the border issue as separate from overall ties, adding diplomatic tension.

WHY LAC OFTEN FLARES UP

23 “disputed and sensitive” areas along the unresolved 3,488-km-long LAC witness aggressive patrolling & face-offs between troops from the two sides

FLASHPOINTS INCLUDE:



Way ahead:

- **Close monitoring:** Maintain stringent checks on patrolling activities to ensure compliance and avoid provocations.
- **Strategic engagement:** Continue dialogues at various diplomatic levels to address boundary issues transparently.
- **Strengthened surveillance:** Enhance infrastructure and surveillance along the LAC to swiftly detect and address potential violations.
- **Promote confidence-building measures:** Initiate regular communication channels and confidence-building measures to rebuild trust.

Conclusion:

The recent agreement represents a cautious yet hopeful step in India-China relations. Sustained efforts toward disengagement and de-escalation, guided by mutual respect and trust, are essential for restoring long-term stability along the LAC. As India emphasizes, maintaining peaceful borders is key to resuming “business as usual” with China.

Insta Links:

1. [India-China-relations](#)
2. [30-years-of-india-china-border-peace-and-tranquility-agreement](#)

PYQ:

1. The China-Pakistan Economic Corridor (CPEC) is viewed as a cardinal subset of China’s larger ‘One Belt One Road’ initiative. Give a brief description of CPEC and enumerate the reasons why India has distanced itself from the same. (UPSC-2018)



GENERAL STUDIES – 3

Topics: Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

1. INDIA ASCENDANT: DAWN OF A NEW ECONOMIC ERA

Context:

At the Annual India Leadership Summit in New Delhi, discussions centered on India’s rising economic influence in comparison to China’s historical dominance. With a projected 7% GDP growth and over 151,000 startups, India’s reforms and digital innovations are driving its rapid ascent.

Data points from the report:

- **GDP growth projections:** India’s GDP is projected to grow at 7% in FY 2024-25, maintaining its status as the fastest-growing major economy (World Bank, 2023).
- **Market performance:** Indian stock markets delivered a 15% compound annual growth rate (CAGR) over the last five years, while Chinese markets underperformed, with near-zero or negative growth (Ananth Narayan, SEBI, 2024).
- **Digital growth:** UPI transactions surged from 92 crore in FY 2017-18 to 13,116 crore in FY 2023-24, illustrating rapid digital adoption (Digital India, 2024).
- **Startup ecosystem:** India is the third-largest startup ecosystem, with 151,000 recognized startups and a 15x increase in investments from 2015-2022 (Startup India, 2023).
- **Inclusive financial growth:** The PMJDY has facilitated over 53 crore bank accounts, bringing millions into the formal financial system (Government of India, 2024).

Factors pushing India towards a new economic era:

- **Digital revolution:** Initiatives like *Digital India* and UPI have driven India’s shift towards a digital economy, making financial transactions seamless and inclusive (Digital India Initiative, 2015).
- **Strong market performance:** Consistent stock market growth and economic reforms have attracted domestic and international investments (SEBI, 2024).
- **Startup boom:** Government initiatives like *Startup India* have fostered innovation and entrepreneurship, driving job creation and economic diversification (Startup India, 2023).
- **AI and technology integration:** Programs like *AI for India 2.0* are positioning India as a future leader in AI, creating a skilled workforce for the future (Global IndiaAI Summit, 2024).
- **Inclusive growth policies:** Schemes like PMJDY and PMAY-U have promoted financial inclusion and affordable housing, benefitted millions and supported broader economic growth (PMJDY, 2024).

Case Study: India vs. China comparison:

Aspect	India	China
GDP Growth (2024-25)	Projected at 7% (World Bank, 2023)	Projected at 4.8% (World Bank, 2023)
Market Performance (5-Year CAGR)	15% growth in stock markets (SEBI, 2024)	Stagnant/Negative growth (SEBI, 2024)
Digital Finance	13,116 crore UPI transactions (FY 2023-24)	Advanced, but slower transaction growth compared to India
Startup Ecosystem	151,000 startups; 3rd largest globally (Startup India, 2023)	Slower growth due to regulatory crack-downs
Demographics	Younger population with favorable dependency ratio (UN, 2024)	Ageing population, posing economic challenges (UN, 2024)

Limitations faced by India:

- **Infrastructure deficiency:** Despite rapid growth, India still faces significant infrastructure gaps, particularly in rural areas (World Bank, 2023).
- **High unemployment:** Addressing unemployment and underemployment issues is crucial due to the growing working-age population (ILO, 2023).

- **Income inequality:** Despite robust growth, wealth distribution remains uneven, excluding large sections of the population (Oxfam, 2023).
- **Educational gaps:** Despite progress, India's education system struggles with quality and access, especially in rural and underprivileged areas (UNICEF, 2024).
- **Environmental concerns:** Rapid industrialization and urbanization pose risks to sustainable growth (UNEP, 2024).

Way ahead:

- **Skilling programs:** Expand programs aimed at upskilling the workforce, particularly in AI and emerging technologies, to address unemployment and underemployment (AI for India, 2024).
- **Reducing income inequality:** Implement policies that promote inclusive growth and equitable wealth distribution, ensuring that economic benefits reach all sections of society (Oxfam, 2023).
- **Educational reform:** Strengthen the education system by focusing on quality, accessibility, and alignment with market demands, especially in tech-related fields (UNICEF, 2024).
- **Climate-resilient policies:** Prioritize policies that promote sustainable industrialization and urban development to mitigate environmental risks (UNEP, 2024).



Insta Links:

1. [Economic-survey-2024](#)

PYQ:

1. "Industrial growth rate has lagged behind in the overall growth of Gross-Domestic-Product (GDP) in the post-reform period" Give reasons. How far the recent changes in Industrial Policy capable of increasing the industrial growth rate? (UPSC - 2017)
2. Normally countries shift from agriculture to industry and then later to services, but India shifted directly from agriculture to services. What are the reasons for the huge growth of services vis-a-vis the industry in the country? Can India become a developed country without a strong industrial base? (UPSC- 2014)

[Topics: Inclusive growth and issues arising from it.](#)

2. ALL INDIA RURAL FINANCIAL INCLUSION SURVEY (2021-22)

Context:

The latest All India Rural Financial Inclusion Survey (2021-22) indicates a reversal of the declining trend in rural households' dependence on agriculture.

About All India Rural Financial Inclusion Survey (2021-22):

1. **Increase in Agricultural Households:**
 - 57% of rural households were identified as "agricultural" in 2021-22, up from 48% in 2016-17. This includes semi-urban centers with less than 50,000 population. (NABARD's All India Rural Financial Inclusion Survey)
2. **Rise in Agricultural Income:**
 - The average monthly income of agricultural households was ₹13,661 in 2021-22, compared to ₹8,931 in 2016-17. Agricultural households earned more than their non-agricultural counterparts. (NABARD Survey)
3. **Increased Income from Cultivation and Animal Husbandry:**
 - Income from farming activities rose from 43.1% to over 45% in 2021-22. (NABARD Survey)
4. **Impact of COVID-19:**
 - The pandemic-induced economic slowdown caused a shift back to agriculture, which was less affected by lockdowns due to exemptions. (NABARD Survey and PLFS).
5. **Rising Dependence on Agriculture for Employment:**
 - PLFS data shows agriculture engaged 46.5% of India's workforce in 2020-21, rising from 42.5% in 2018-19. (PLFS)

% SHARE OF AGRICULTURAL TO RURAL HOUSEHOLDS

	2016-17	2021-22		2016-17	2021-22
J & K	77	73	Uttarakhand	41	57
Jharkhand	51	69	Karnataka	59	55
Assam	47	67	Telangana	47	55
Uttar Pradesh	63	66	Gujarat	58	54
Chhattisgarh	55	66	Andhra Pradesh	34	53
Rajasthan	63	66	West Bengal	35	49
Madhya Pradesh	58	64	Bihar	47	45
Himachal	70	63	Tripura	39	40
Odisha	58	60	Punjab	42	36
Maharashtra	36	59	Kerala	13	18
Haryana	34	58	Goa	3	18
Tamil Nadu	13	57	All-India	48	57

*Includes only Jammu; **Excludes Ladakh.

Source: NABARD All India Rural Financial Inclusion Surveys, Data (In %)

AGRICULTURE SECTOR'S SHARE OF WORKFORCE (%)


Source: NSSO Employment & Unemployment Surveys (till 2011-12) and Periodic Labour Force Surveys (from 2017-18).

Positives:

- Increased agricultural participation:** More rural households are relying on agriculture for income, potentially revitalizing the sector.
 - Example:** 57% rural households involved in agriculture (NABARD).
- Higher agricultural income:** Agricultural households reported an increase in income, contributing to rural economic stability.
 - Example:** Monthly income increased to ₹13,661 from ₹8,931 (NABARD).
- Resilience during COVID-19:** Agriculture remained resilient during the pandemic, ensuring a livelihood for many when non-farm jobs were scarce.
 - Example:** Agriculture was exempt from lockdowns (NABARD, PLFS).
- Improved farm productivity:** A rise in income from animal husbandry and cultivation reflects increased farm productivity.
 - Example:** Income from farming activities rose to 45% (NABARD).

Negatives:

- Lack of non-farm jobs:** The increased dependence on agriculture reflects a shortage of alternative employment in manufacturing and services.
 - Example:** Only 11.4% of the workforce is employed in manufacturing (PLFS).
- Low marginal productivity:** Agricultural jobs tend to offer low productivity and subsistence-level wages, hindering overall economic growth.
 - Example:** Employment characteristics in

agriculture remain similar to low-wage, informal sectors.

- Income diversification decline:** Agricultural households are now earning less from non-farm sources, which could make them more vulnerable to farming risks.
 - Example:** Reduction in income from non-farm sources across land-size categories (NABARD).
- Economic disparities across states:** States like Bihar, Uttar Pradesh, and Chhattisgarh still have a very high dependency on agriculture, which points to regional economic disparities.
 - Example:** Chhattisgarh, Madhya Pradesh, and Bihar have over 50% of their labor force in agriculture (PLFS).

Way ahead:

- Diversify rural employment:** Promote rural industries and service-sector jobs to reduce over-reliance on agriculture.
- Boost agricultural productivity:** Invest in modern technologies and practices to enhance farm productivity and increase income.
- Strengthen rural infrastructure:** Improve transportation, irrigation, and storage facilities to support the agricultural sector and rural industries.
- Promote skill development:** Implement programs for skill development in rural areas to provide youth with non-farm employment opportunities.

Conclusion:

The survey data highlights a paradox where rural India is increasingly reliant on agriculture despite overall economic growth. While agricultural income has risen, the need for diversification and productivity improvements is essential for long-term rural prosperity.


Insta Links:

- NABARD Report
- Second-all-India-rural-financial-inclusion-survey

PYQ:

- “In the villages itself no form of credit organization will be suitable except the cooperative society.” –All India Rural Credit Survey. Discuss this statement in the background of agricultural finance in India. What constraints and challenges do financial institutions supplying agricultural finance face? How can technology be used to better reach and serve rural clients? (UPSC-2014)

Topics: [Infrastructure](#): [Energy](#), [Ports](#), [Roads](#), [Airports](#), [Railways](#) etc.

3. “TRACKS OF TROUBLE: INDIAN RAILWAYS’ ENDURING CHALLENGES”

Context:

On October 17, eight coaches of the Agartala-Lokmanya Tilak Express derailed in Assam with no casualties. On October 11, a passenger train rear-ended a stationary goods train near Chennai, also with no casualties. Indian trains have been involved in multiple accidents of late.

Key stress factors:

1. **Accidents and safety concerns:**
 - Accidents have reduced from 1,390 per year in the 1960s to 40 in 2023-24, but recent high-profile incidents like the Balasore crash raise serious safety issues.
 - 55.8% of accidents are due to human error, with equipment failure accounting for 6.2%.
2. **Slow implementation of ‘Kavach’ technology:**
 - ‘Kavach’ covers only 2% of the railway network despite being a crucial safety feature designed to prevent collisions. Its high cost and slow implementation hinder wider adoption.
3. **Financial challenges and operating ratio:**
 - The operating ratio for 2024-25 is projected at 98.2%, meaning the Railways spends nearly as much as it earns, leaving little for upgrades.
 - Dependence on Extra-Budgetary Resources has grown, increasing fiscal pressure.
4. **Freight services and revenue imbalance:**
 - Freight accounts for 65% of revenue, but inefficiencies and slow freight movement (26 km/hr in 2016) dampen growth. Coal, which contributes 45% of freight volume, faces decline due to a shift towards renewable energy.
5. **Underinvestment in infrastructure:**
 - Capital outlay for track renewal is inadequate, and the depreciation reserves have shrunk by 96%, weakening the ability to maintain assets.
6. **Passenger services losses:**
 - In 2021-22, passenger services incurred a loss of ₹68,269 crore. Efforts like Vande Bharat trains increase revenue, but rationalising fares is crucial.

About Kavach system:

- **Indigenous development:** Kavach is an Automatic Train Protection (ATP) system developed by the Research Design and Standards Organisation (RDSO) under Indian Railways, in collaboration

with Medha Servo Drives Pvt Ltd, HBL Power Systems Ltd, and Kernex Microsystems.

- **Functionality:** It uses electronic devices and Radio Frequency Identification (RFID) installed in locomotives, signalling systems, and tracks to communicate using ultra-high radio frequencies. These systems control train brakes and alert drivers based on pre-programmed logic.
- **Field testing:** Field tests for Kavach on passenger trains began in 2016, showing promising results in preventing collisions and enhancing safety.
- **Applications:**
 - Prevents Signal Passing At Danger (SPAD) and overspeeding by alerting the loco pilot.
 - Automatically applies brakes when it detects another train within a predefined distance.
 - Provides signals to the loco pilot ahead of time, useful in low-visibility conditions.
 - Automatically controls train speed if the pilot fails to respond.
 - Assists in driving during harsh weather conditions like dense fog.

Potential solutions:

1. **Improving safety with ‘Kavach’ and signalling upgrade:**
 - Prioritising the completion of Kavach across high-density routes and upgrading signalling systems could prevent future accidents and improve operational safety.
2. **Strengthening financial health:**
 - A better balance between passenger fares and freight rates, fare rationalisation, can address financial gaps. Expanding premium services and curbing losses from subsidised services is also essential.
3. **Infrastructure upgradation:**
 - Increasing investment in track renewal and wagon replacements will enhance efficiency and reduce accidents. Funds should also be allocated for capacity expansion and completing the DFC projects.
4. **Leveraging technology and data:**
 - Introducing AI-based systems for real-time monitoring of tracks, improving training, and better staff management could improve both safety and efficiency.

Conclusion:

Addressing these stress factors requires a comprehensive approach that includes investments in technology, safety improvements, financial reforms, and sustainable growth strategies. A well-balanced strategy between affordability and profitability is crucial for securing the future of India’s key public transportation system.

Insta Links:

1. Railway-accident-data-2019-2024
2. Reforms-in-India-railway

PYQ:

1. With reference to bio-toilets used by the Indian Railways, consider the following statements: (2015)
 1. The decomposition of human waste in the bio toilets is initiated by a fungal inoculum.
 2. Ammonia and water vapour are the only end products in this decomposition which are released into the atmosphere.

Which of the statements given above is/are correct?

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

Answer: d)



4. FUELLING THE FUTURE: INDIA'S ETHANOL BLENDING DRIVE

Context:

India's rising energy demands and dependency on imported oil have led the government to focus on sustainable alternatives like ethanol blending. This initiative, which aims to reduce fossil fuel use and carbon emissions, is a major step toward energy security.

About Ethanol Blending Program:

- **Origin:** Launched in 2003 as a pilot project, ethanol blending was formalized through the Ethanol Blended Petrol (EBP) program to support energy needs and environmental goals.
- **Aim:** Reduce reliance on imported oil, improve energy security, lower carbon emissions, and boost rural income by supporting sugarcane farmers.
- **Target:** Achieve 20% ethanol blending in petrol by 2025, advancing the original target of 2030 in response to increased capacity and demand.
- **Ministry:** Led by the Ministry of Petroleum and Natural Gas, with support from the Department of Food and Public Distribution and Ministry of Environment, Forest, and Climate Change for sustainable biofuel production and integration into the energy landscape.



	<p>1st Generation Biofuel</p> <ul style="list-style-type: none"> • It has High Carbon Content. • Made from Edible Items. Eg- <u>Sugar, Corn, Starch</u> etc.
	<p>2nd Generation Biofuel</p> <ul style="list-style-type: none"> • Greenhouse Gas content less than 1st Generation Biofuel • Made from leftover of Food Crops. Eg- <u>Rice Husk, Wood Chips</u> etc.
	<p>3rd Generation Biofuel</p> <ul style="list-style-type: none"> • It is Carbon Neutral in. (CO₂ Emitted = CO₂ Sequestered) • Produced using Microorganisms. Eg- <u>Algae</u>
	<p>4th Generation Biofuel</p> <ul style="list-style-type: none"> • Made from '<u>Genetically Engineered Crops</u>'. • They are Carbon Negative.

Key achievements:

- **Ethanol blending growth:** Ethanol blending has surged from 1.53% in 2014 to 15% in 2024. The government is targeting 20% blending by 2025.
- **Increased ethanol production capacity:** Ethanol production capacity has more than doubled in four years, reaching 1,623 crore litres in 2024.
- **Foreign exchange savings:** The program has saved ₹1,06,072 crore in foreign exchange and reduced CO₂ emissions by 544 lakh metric tons.
- **Economic impact:** Oil Marketing Companies (OMCs) have paid ₹1,45,930 crore to ethanol distillers and ₹87,558 crore to farmers, promoting rural prosperity.

Challenges:

- **Feedstock availability:** Limited feedstock options, such as sugarcane, restrict the scale of ethanol production.

- **Infrastructure gaps:** Insufficient infrastructure for ethanol storage, transportation, and blending poses logistical challenges.
- **Technological constraints:** Need for technology advancements in ethanol production to ensure efficient use of diverse feedstocks, including lignocellulosic biomass.
- **Regulatory and inter-state barriers:** Variations in state regulations and taxation can hinder smooth ethanol trade across state borders.

Key measures:

- Pradhan Mantri JI-VAN Yojana **(Modified):** Expanding the scope to include advanced biofuels and extending the timeline till 2028-29.
- **Roadmap for blending:** A comprehensive plan for achieving 20% ethanol blending by 2025, ensuring efficient implementation.
- **Tax reductions:** GST on ethanol reduced to 5%, making it financially attractive for producers and consumers.
- **Interest subvention:** Subsidies provided to enhance ethanol production capacity.
- **Free movement of ethanol:** Changes in regulations to facilitate smooth inter-state movement of ethanol.

Conclusion:

India's commitment to ethanol blending represents a transformative approach to energy security, environmental sustainability, and economic development. With a significant increase in ethanol production capacity and blending percentages, the government is making substantial strides towards its ambitious target of 20% blending by 2025.

Insta Links:

1. Ethanol-blending-programme-in-India
2. Ethanol-a-savior-that-gives-savings

PYQ:

1. According to India's National Policy on Biofuels, which of the following can be used as raw materials for the production of biofuels? (UPSC-2020)
 1. Cassava
 2. Damaged wheat grains
 3. Groundnut seeds
 4. Horse gram
 5. Rotten potatoes
 6. Sugar beet

Select the correct answer using the code given below:

- (a) 1, 2, 5 and 6 only
- (b) 1, 3, 4 and 6 only
- (c) 2, 3, 4 and 5 only
- (d) 1, 2, 3, 4, 5 and 6

Answer: a)

2. Given below are the names of four energy crops. Which one of them can be cultivated for ethanol? (UPSC-2010)
 - (a) Jatropha
 - (b) Maize
 - (c) Pongamia
 - (d) Sunflower

Answer: b)



Topics: Science and Technology- developments and their applications and effects in everyday life Achievements of Indians in science & technology; indigenization of technology and developing new technology.

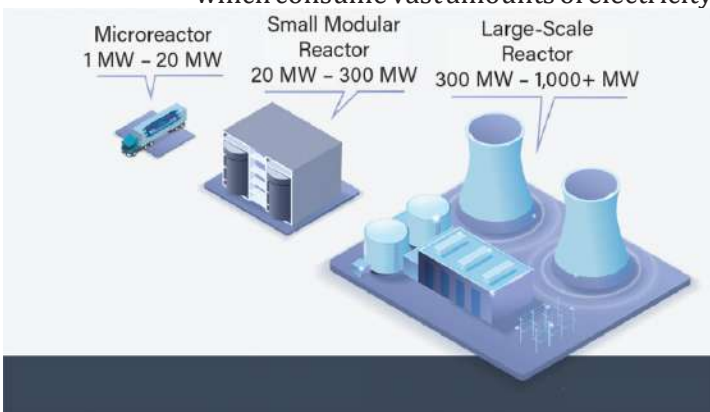
5. SMALL MODULAR REACTORS & TECH FIRMS

Context:

Google announced a partnership to purchase nuclear energy from Small Modular Reactors (SMRs) developed by Kairos Power. This move reflects tech companies' increasing interest in nuclear energy to power data centers and other operations with clean energy.

Key Points:

- **Google's SMR Agreement:**
 - Google signed an agreement to buy nuclear energy from SMRs developed by Kairos Power.
 - The SMRs will supply 500 MW of carbon-free energy by 2035, supporting Google's data centers and AI development.
- **Other companies involved:**
 - **Microsoft:** Signed a 20-year power purchase agreement with Constellation to add 835 MW of carbon-free energy to the grid.
 - **Amazon:** Partnered with Energy Northwest, X-energy, and Dominion Energy for SMR projects to power data centers.
 - **OpenAI:** CEO Sam Altman backed the nuclear startup Oklo, aiming to build a commercial microreactor by 2027.
- **Why nuclear energy?**
 - Nuclear energy is seen as a reliable, round-the-clock, and carbon-free energy source.
 - It's being used to offset the rising energy demands of AI models and data centers, which consume vast amounts of electricity.



- **SMR advantages:**
 - **Lower costs:** SMRs have potentially lower building and operational costs compared to traditional nuclear reactors.

- **Scalability:** SMRs have compact designs and can be deployed in areas unsuitable for large nuclear plants.
- **Carbon-free:** Nuclear energy provides clean energy without greenhouse gas emissions.

Positives of tech companies in nuclear energy:

1. **Clean energy transition:** Tech companies' investment in nuclear power supports the shift away from fossil fuels, contributing to global decarbonization efforts.
E.g. Google's deal helps offset the carbon emissions of its energy-hungry data centers.
2. **Energy reliability:** Nuclear energy provides a continuous power supply, unlike intermittent renewable sources like solar or wind.
E.g. Microsoft's investment in SMRs ensures a steady supply of energy to its operations.
3. **Technological innovation:** By partnering with nuclear startups, tech companies are driving innovation in energy technology, including the development of SMRs and microreactors.
E.g. OpenAI's backing of Oklo aims to make microreactors commercially viable by 2027.
4. **Global leadership:** U.S. government supports tech companies' nuclear ventures to re-establish leadership in nuclear technology, ahead of competitors like China and Russia.
5. **Sustainability commitments:** Nuclear energy aligns with companies' goals to achieve carbon neutrality and reduce global emissions.
E.g. Amazon's partnerships aim to reduce emissions across its logistics and data center operations.

Challenges:

1. **Public perception and trust issues:** Nuclear energy has a controversial reputation due to accidents like Chernobyl and Fukushima, making public acceptance a challenge.
E.g. The nuclear energy push is met with skepticism by environmental groups such as *Friends of the Earth*.
2. **High costs and delays:** Despite lower operational costs, the construction of nuclear reactors, including SMRs, remains expensive, with potential delays and budget overruns.
E.g. Oklo's microreactor may face delays, pushing its commercial launch beyond 2027.
3. **Safety concerns:** Despite technological advances, the potential for accidents or malfunctions in nuclear reactors raises significant safety concerns.
E.g. The Three Mile Island accident in 1979 still lingers as a reminder of the risks associated with nuclear power.
4. **Nuclear waste management:** Long-term management of nuclear waste is a persistent challenge, and unresolved waste disposal issues

raise environmental concerns.

E.g. Current nuclear projects have yet to fully address the sustainability of waste management solutions.

- 5. Vulnerabilities to natural disasters:** Nuclear infrastructure, if located in disaster-prone areas, poses additional risks during events like tsunamis or earthquakes.

E.g. Fukushima demonstrated the vulnerability of nuclear plants to natural disasters beyond human control.

Conclusion:

Tech companies’ adoption of nuclear energy offers **a carbon-free, reliable solution** for growing energy needs, but concerns over safety, high costs, and nuclear waste persist. While innovations like SMRs hold promise, balancing opportunities and risks will be crucial for a sustainable energy future.



Insta Links:

1. Bharat-small-reactors
2. Nuclear Energy

PYQ:

1. In India, why are some nuclear reactors kept under “IAEA safeguards” while others are not? (UPSC-2020)
 - (a) Some use uranium and others use thorium
 - (b) Some use imported uranium and others use domestic supplies
 - (c) Some are operated by foreign enterprises and others are operated by domestic enterprises
 - (d) Some are State-owned and others are privately owned

Answer: b)

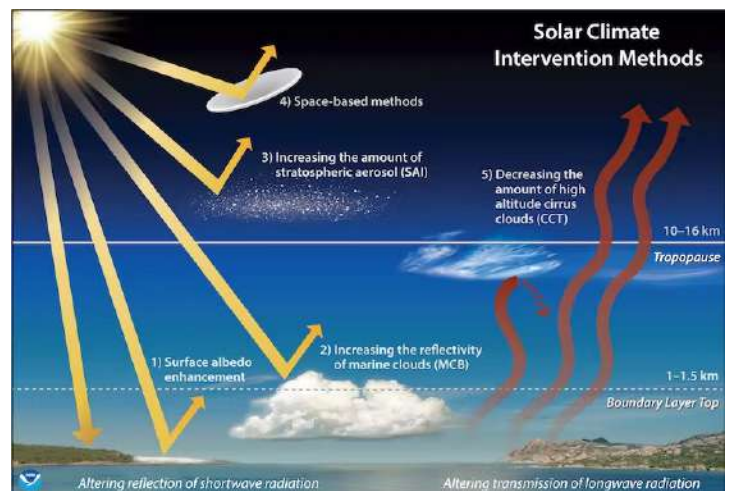
6. SOLAR RADIATION MANAGEMENT

Context:

A new study proposes spraying diamond dust in the upper atmosphere as a geoengineering method to cool the Earth and combat global warming. This method is based on reflecting solar radiation back into space, an approach known as Solar Radiation Management (SRM).

About Solar Radiation Management (SRM):

- **Definition:** SRM involves scattering reflective materials in the atmosphere to reflect sunlight and reduce the amount of heat that reaches the Earth’s surface.
- **Materials used:** Besides diamonds, other proposed materials include sulfur dioxide, calcium carbonate, and sodium chloride. Each has varying degrees of reflectivity and risks.
- **Inspiration from nature:** SRM mimics the effects of volcanic eruptions, such as the Mount Pinatubo eruption, which cooled the Earth by 0.5°C in 1991 by releasing sulfur dioxide.



Spraying diamond dust: How it works?

- **Mechanism:** Diamond dust, when sprayed into the upper atmosphere, scatters sunlight and reflects solar radiation back into space, preventing it from reaching the Earth’s surface.
- **Material choice:** Diamonds are considered ideal because they have high reflectivity, meaning they can effectively reflect a significant amount of sunlight.

- **Process:** The dust would be dispersed into the stratosphere, mimicking the natural cooling effects of volcanic eruptions, which scatter particles that reduce sunlight reaching Earth.
- **Scale:** To achieve a global temperature reduction of 1.6°C, approximately 5 million tonnes of diamond dust would need to be sprayed annually.

Advantages of spraying diamond dust:

- **High efficiency:** Diamonds are highly reflective, making them more efficient than other materials like sulfur or calcium carbonate in scattering sunlight.
- **Conceptual potential:** This method offers a potentially fast-acting solution to temporarily reduce global temperatures and buy time for more sustainable solutions.
- **Nature-inspired:** The method draws from volcanic eruptions, which have been observed to reduce global temperatures naturally through particle dispersion.
- **Minimal carbon footprint:** Unlike fossil fuels, using diamonds for SRM does not contribute directly to carbon emissions, aiding the fight against climate change.

Limitations of spraying diamond dust:

- **Implementation challenges:** The technology and logistics for spraying millions of tonnes of diamond dust annually are not yet feasible, with high costs and infrastructure required.
- **Unintended consequences:** Large-scale geoengineering may disrupt weather patterns, affect rainfall, and potentially cause harm to ecosystems and biodiversity.
- **Temporary solution:** SRM addresses symptoms of global warming but does not eliminate greenhouse gases or halt climate change at its source.
- **Ethical concerns:** Manipulating the Earth's climate system on such a large scale raises ethical issues, especially regarding impacts on agriculture, wildlife, and human populations.

Conclusion:

Spraying diamond dust into the atmosphere as part of Solar Radiation Management presents a theoretically promising but challenging solution to combat global warming. While it offers a rapid, temporary fix but unintended environmental impacts, must be carefully considered before implementing such geoengineering measures.

Insta Links:

1. Climate-change-and-associated-issues
2. Solar-radiation-management

PYQ:

1. Which of the following statements is/are correct about the deposits of 'methane hydrate'? (UPSC-2019)
 1. Global warming might trigger the release of methane gas from these deposits.
 2. Large deposits of 'methane hydrate' are found in Arctic Tundra and under the sea floor.
 3. Methane in atmosphere oxidizes to carbon dioxide after a decade or two.

Select the correct answer using the code given below.

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Answer: d)

2. 'Climate change' is a global problem. How India will be affected by climate change? How Himalayan and coastal states of India will be affected by climate change? (UPSC-2017)



Topics: [Conservation related issues, environmental pollution and degradation, environmental impact assessment.](#)

7. BUDGET WOES CLOUD COP-29 CLIMATE SUMMIT

Context:

The United Nations Framework Convention on Climate Change (UNFCCC) faces a severe budget shortfall, impacting its ability to conduct essential climate negotiations and support the 2024-25 climate agenda, including the COP-29 summit.

Payment System in UNFCCC:

The UN Framework Convention on Climate Change (UNFCCC) operates on a two-tier funding system:

- **Core budget:** Mandatory contributions from member countries, calculated based on economic size and capacity.
- **Supplementary fund:** Voluntary donations to cover additional needs, including event-specific activities like COP events, and targeted programs such as funding for diplomats from lower-income countries.

Member countries can specify how supplementary funds should be allocated, though these preferences are generally non-binding.

Current issues:

- **Delays and shortfalls:** Major contributors like the U.S. and China have delayed payments, leading to a €57 million shortfall in 2024, affecting UNFCCC's ability to run operations.
- **Operational disruptions:** Financial strain has forced UNFCCC to reduce activities, such as cutting regional events and limiting travel funding for poorer nations.
- **Increasing reliance on voluntary contributions:** With budget needs rising, the reliance on voluntary donations grows, introducing unpredictability in funds availability.
- **Inefficiency and limited transparency:** Constraints and delays in supplementary funds impact project planning and create inefficiencies.

Impact of budget shortfall on UNFCCC:

- **Reduced global climate action:** Funding shortages limit UNFCCC's ability to organize effective climate negotiations, slowing global progress on emission reduction and adaptation efforts.
- **Limited developing nations' representation:** Lack of subsidies restricts poorer nations' participation, reducing their voice in critical climate decisions at COP summits and related

forums.

- **Operational cuts:** Key climate events like regional summits are canceled, impeding momentum for regional climate commitments and investment mobilization.
- **Staffing challenges:** Budget gaps result in short-term contracts for UNFCCC staff, impacting stability and operational efficiency in climate action tasks.
- **Uncertain climate investments:** Funding delays from major contributors discourage potential investors, complicating global climate finance flows needed for substantial climate action.

Way ahead:

- **Timely obligatory contributions:** Strengthen compliance to ensure core budget payments are completed promptly to avoid operational disruptions.
- **Flexible supplementary fund management:** Streamline voluntary fund processes, enabling smoother allocation and reducing dependence on earmarked spending requests.
- **Increase core budget contributions:** Seek higher obligatory funding levels, adjusted for increasing climate action needs, to reduce over-reliance on voluntary funds.
- **Budget transparency and efficiency:** Implement UN audit recommendations to ensure resource optimization, cost-effective project execution, and improve fund allocation accountability.

Conclusion:

Ensuring reliable funding for UNFCCC is essential for unified climate action and accountability; as climate envoy Jennifer Morgan noted, a functioning secretariat is crucial for impactful negotiations.

Insta Links:

1. [Important-outcomes-of-cop28](#)
2. [International-conventions](#)

PYQ:

1. Describe the major outcomes of the 26th session of the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). What are the commitments made by India in this conference? (UPSC-2021)
2. Explain the purpose of the Green Grid Initiative launched at the World Leaders Summit of the COP26 UN Climate Change Conference in Glasgow in November 2021. When was this idea first floated in the International Solar Alliance (ISA)? (UPSC-2021)



CONTENT FOR MAINS ENRICHMENT

Topic in News	Usage in Answers
<p>1. MINING DUST FOR CARBON CAPTURE</p>	<p>Context: Alt Carbon, a Darjeeling-based company, accelerates the natural process of rock weathering to capture carbon dioxide (CO₂) by using crushed basalt, a type of volcanic rock rich in minerals like calcium and magnesium.</p> <p>Process:</p> <ul style="list-style-type: none"> • Crushed basalt, a type of volcanic rock, is spread over land to increase surface area, accelerating natural weathering processes. • Atmospheric CO₂ reacts with minerals in the basalt, forming bicarbonates that are washed into oceans where carbon is stored for long periods. • This speeds up the natural carbon capture process, which normally takes thousands of years, making it efficient in 2-4 years. <p>Location:</p> <ul style="list-style-type: none"> • Basalt-rich regions like the Deccan Traps in Maharashtra and Gujarat, as well as Jharkhand and West Bengal (Rajmahal Traps), are ideal for sourcing the basalt rock. <p>Environmental Benefit:</p> <ul style="list-style-type: none"> • Apart from capturing carbon, basalt also acts as a soil enhancer, improving fertility and benefiting agricultural productivity. <p>Scale:</p> <ul style="list-style-type: none"> • For every 3-4 tonnes of basalt dust, 1 tonne of CO₂ can be sequestered over a few years. <p>Usage in Carbon Credits:</p> <ul style="list-style-type: none"> • Companies can purchase carbon credits generated from this process to offset their emissions voluntarily. <p>Usage in UPSC Syllabus:</p> <ol style="list-style-type: none"> 1. GS Paper 3 – Environment and Ecology: <ul style="list-style-type: none"> ○ Climate change mitigation ○ Sustainable development ○ Carbon credit markets 2. GS Paper 2 – Governance: Environmental policies
<p>2. GOOGLE'S VIOLATION OF ANTITRUST LAWS</p>	<p>Context: In 2020, <i>Epic Games</i> made a bold move that challenged the status quo of the app economy by introducing a direct payment option within its popular game, <i>Fortnite</i>. This bypassed the hefty commissions charged by both Google's Play Store and Apple's App Store, which typically take a 15-30% cut of all in-app purchases. In retaliation, Google removed <i>Fortnite</i> from the Play Store, leading to a long legal battle. Epic argued that Google's exclusive agreements with developers and mandatory billing system were anti-competitive practices, and after years of litigation, a U.S. jury ruled in December 2023 that Google had indeed violated antitrust laws. This resulted in a pivotal injunction requiring Google to open its Play Store to third-party apps and alternative payment options, reshaping the landscape of digital marketplaces and app distribution.</p> <ul style="list-style-type: none"> • GS Paper 3 - Economic Development. <ul style="list-style-type: none"> ○ Regulation and Anti-Trust Laws ○ Innovation and Growth ○ Entrepreneurship: The case exemplifies how unchecked corporate dominance hampers small businesses, linking to <i>Inclusive Growth</i> and <i>Market Dynamics</i>. • GS Paper 4 - Ethics, Integrity, and Aptitude. <ul style="list-style-type: none"> ○ Business Ethics ○ Fairness and Accountability ○ Moral Leadership: The role of leadership in ensuring ethical business conduct can be tied to <i>Leadership</i>, emphasizing <i>Empathy</i> and <i>Accountability</i> in governance.

3. JOINT SURVEY BY SAFDARJUNG HOSPITAL AND AIIMS

Context: A joint nationwide survey conducted by doctors from Safdarjung Hospital and AIIMS revealed that more than half of the healthcare workforce in India feels unsafe at their workplace, with nearly three-fourths having faced threats while on duty.

Data point from survey:

- 57% of healthcare professionals feel unsafe at work.
- Nearly 50% lack proper duty rooms with basic amenities.
- 90% of institutions lack weapon screening.
- 75% have insecure hospital boundaries.
- 62% find emergency alarm systems inadequate.
- 70% of state-run healthcare workers dissatisfied with emergency alarms and security in high-risk areas.
- 63% of state government colleges dissatisfied with the number of security personnel.

Source of data: Joint survey by Safdarjung Hospital and AIIMS, published in *Epidemiology International*.

Usage in UPSC syllabus:

1. **General Studies Paper II (Governance, Constitution, Polity):**
 - Topics like workplace safety regulations, government healthcare policies, and infrastructure in public institutions.
2. **General Studies Paper III (Security Issues):**
 - Discuss security infrastructure in critical sectors like healthcare and the effectiveness of security personnel in public institutions.
3. **General Studies Paper IV (Ethics in Governance):**
 - Ethical issues related to the safety and well-being of healthcare professionals, their working conditions, and accountability in public institutions.

4. AMAZON FUTURE ENGINEER PROGRAM

Context: The National Education Society for Tribal Students (NESTS), in collaboration with Amazon, has launched the third phase of the Amazon Future Engineer Program in 50 Eklavya Model Residential Schools (EMRS).

Amazon Future Engineer Program - Phase 3:

- **Target Schools:** Implemented in 50 EMRS schools across Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Odisha, Telangana, and Tripura.
- **Focus Areas:** Orientation and training in emerging technologies like blockchain, artificial intelligence, block programming, and coding.
- **Teacher Training:** Four-day workshops are held for teachers to enhance their ability to teach modern technology.
- **Student Engagement:** Students in classes 6-9 will be introduced to computer science fundamentals, and Class 10 students will participate in project-based virtual sessions.
- **Objective:** To prepare tribal students for careers in STEM by integrating modern technological literacy into the curriculum.

Relevance in UPSC syllabus:

- **GS Paper 2 (Governance and Social Justice):**
 - **Education and Development**
 - **Tribal Welfare**
- **GS Paper 3 (Science and Technology):**
 - **Technology in Education**
 - **Innovation and Skill Development**

5. I4C STUDY

Context: The Indian Cyber Crime Coordination Centre (I4C), under the Union Home Ministry, has projected significant economic losses from cyber frauds in the coming year.

Key Findings from the I4C Study:

- **Projected losses:** India is expected to lose over ₹1.2 lakh crore due to cyber frauds in the next year, equivalent to 0.7% of the GDP.
- **Mule bank accounts:** A major contributor to these scams, with approximately 4,000 mule accounts identified daily, serving as intermediaries for money laundering.
- **ATM hotspots:** 18 ATM hotspots identified across India where fraudulent withdrawals are prevalent. International withdrawals have been traced to ATMs in Dubai, Hong Kong, Bangkok, and Russia.
- **Scam origins:** Many scams have been traced to China or Chinese-linked entities, while “scam compounds” in countries like Cambodia, Myanmar, Laos, and Azerbaijan operate like call centers, tricking unsuspecting victims.
- **Cryptocurrency:** Much of the defrauded money is converted into cryptocurrency before being taken out of the country.

Relevance to the UPSC Syllabus:

- **Internal Security:** Cyberfraud and its implications
- **Governance:** Role of institutions like I4C in preventing financial fraud and coordinating cybersecurity measures.
- **International Relations:** Cross-border cybercrime and India’s collaboration with other countries to tackle international financial fraud networks.

6. LOCALIZED WEATHER FORECASTING

Context: The Ministry of Panchayati Raj, in collaboration with the India Meteorological Department (IMD), is launching a new initiative to provide localized weather forecasting to gram panchayats.

Key points on collaboration:

- **Daily weather forecasting:** Gram panchayats will receive daily weather updates and have access to hourly forecasts to enhance their preparedness for natural disasters.
- **Focus on farmers:** The initiative is designed to help farmers by providing accurate weather data, enabling them to adopt sustainable agricultural practices and mitigate risks from climate change.
- **Digital access:** The forecasts will be available on digital platforms like e-Gram Swaraj and the Meri Panchayat mobile app, ensuring easy access for local authorities and the rural population.
- **Climate resilience:** The initiative aims to make rural areas more climate-resilient by promoting awareness and preparedness at the grassroots level.

Relevance to UPSC Syllabus:

- **Governance:** This initiative can be linked to **e-governance** efforts in rural development
- **Agriculture and Climate**
- **Science and Technology.**

7. “BREAKING CHAINS: PAKISTAN’S WOMEN’S STRUGGLE”

Context: In Lahore, 21-year-old Khadija Shabbir found herself at the forefront of a protest sparked by an alleged assault case on her college campus. Although authorities dismissed the incident as a “hoax,” she and her peers felt compelled to act, voicing concerns over persistent harassment that has long been ignored. The allegations, though unverified, struck a chord among Pakistani students facing harassment daily in a society where addressing such issues is often taboo. As the protests gained momentum, Khadija felt a shared sense of frustration with fellow students. The movement soon became a call not only for justice in this alleged case but also for broader systemic change—a plea for safety, respect, and the basic right to pursue an education without fear.

Relevance in UPSC syllabus:

- **General Studies Paper I (Indian Society):** Explores themes of social empowerment, gender issues, and the challenges faced by women in patriarchal societies.
- **General Studies Paper II (Governance):** Addresses the role of institutional mechanisms, such as emergency helplines and judicial committees, in ensuring women’s safety and security.
- **General Studies Paper IV (Ethics):** Demonstrates ethical concerns surrounding trust in public institutions, citizens’ rights, and police accountability in sensitive issues.

8. AI-POWERED CHATBOT ON CPGRAMS

Context: The Indian government is set to introduce an AI-powered chatbot on the Centralised Public Grievance Redress and Monitoring System (CPGRAMS) to streamline grievance lodging processes.

Data information:

- **Total grievances:** 19.45 lakh grievances filed by November 30, 2023.
- **User registration:** 17.37 lakh citizens registered on CPGRAMS from 2019-2023.
- **Average disposal time:** Grievances in 2023 were resolved on average within 17 days.

Grievances received (DARPG’s annual report, 2023):

Entity	Grievances Count
Department of Financial Services (Banking)	1.61 lakh
Ministry of Labour and Employment	1.50 lakh
Department of Agriculture and Farmers Welfare	1.15 lakh

Grievances by state (DARPG’s annual report, 2023):

State	Grievances Count
Uttar Pradesh	2.31 lakh
Gujarat	45,062
Assam	41,837

9. A SILENT CRISIS

Context: In Jharkhand's rural pockets, a silent crisis unfolds as residents struggle with inaccessible bank accounts frozen due to KYC (Know Your Customer) formalities. Villagers like Urmila Oraon, who recently spent two days waiting in line only to be turned away, are among the many facing hardships in Latehar and Lohardaga districts. While local surveys by activists like Jean Drèze show that 60% of households in surveyed areas have at least one frozen account, the reality feels far more widespread.

Bhola Oraon, whose account remains locked due to mismatched spellings in his documents, feels the weight of the system's rigidity. For three years, Bhola has been unable to access his own funds, a story mirrored by many who must navigate convoluted procedures, rampant corruption, and overcrowded banks. In a bid to cope, some, like Somwati Devi's husband, have even chosen to open entirely new accounts to bypass the unending queues and administrative gridlocks.

Meanwhile, rural bank branches are overwhelmed, often seeing only 30 applications processed per day against a backlog of over 1,500. This crushing bottleneck has left many, particularly pensioners and women dependent on government aid, in a state of financial limbo.

Relevance in Essay Topics:

- **Financial inclusion and digital access:** Highlights the challenges faced by rural populations in accessing financial services and the digital divide in formal banking processes.
- **Challenges in governance and public service delivery:** Illustrates systemic issues like bureaucratic delays, corruption, and the unintended consequences of regulatory policies.
- **Social and economic inequality:** Emphasizes the impact of administrative hurdles on vulnerable communities and their economic rights.
- **Role of technology in governance:** Examines the limitations of digital initiatives in rural settings and the importance of accessible, user-friendly technology.

10. LIB TECH STUDY ON MN-REGA

Context: Recent data from a Lib Tech study reveals significant deletions from the **MGN-REGS registry**, largely attributed to the Aadhaar-Based Payment System (ABPS). This trend has left many rural workers ineligible, limiting their access to guaranteed employment.

Key Data Points:

- **Worker deletions and additions (April-September 2024):**
 - **84.8 lakh** workers removed, with **Tamil Nadu (14.7%)** and **Chhattisgarh (14.6%)** having the highest rates of deletion.
- **Historical deletions:**
 - Over **eight crore** workers were removed during FY 2022-23 and FY 2023-24.
 - In Andhra Pradesh, **15% of deletions** were found to be wrongful, per Lib Tech's ongoing studies.
- **Aadhaar-Based Payment System (ABPS) impact:**
 - ABPS eligibility requires Aadhaar linkage to the job card and bank account, with name matching.
 - **27.4%** of all registered workers (6.7 crore) and **4.2%** of active workers (54 lakh) remain ineligible for ABPS.
- **Decline in person days:**
 - There was a **16.6% decline** in person days generated, dropping to **153 crore days**.

Relevance to UPSC syllabus:

- **GS II (Governance & Social Justice):** Highlights the implementation challenges of Aadhaar in welfare schemes and social security measures.
- **GS III (Economic Development):** Relevant to discussions on rural employment schemes, labor force dynamics, and economic migration.
- **Essay Paper:** Serves as a case study on digital governance and financial inclusion challenges in India's welfare schemes.

FACTS FOR PRELIMS

GS-1

Art & Culture

1. NATIONAL MISSION FOR MANUSCRIPTS

Context:

The Union Ministry of Culture has announced plans to revitalize the National Mission for Manuscripts (NMM) by potentially transforming it into an autonomous body named the National Manuscripts Authority.

About National Mission for Manuscripts (NMM):

- **Established:** Founded in 2003 under the Ministry of Culture to address India's manuscript preservation needs.
- **Objective:** The mission seeks to identify, document, conserve, and make accessible India's manuscript heritage, estimated to include 10 million manuscripts.
- **Achievements:**
 - Prepared metadata for 52 lakh manuscripts.
 - Digitized over 3 lakh manuscript titles, though only about one-third are accessible online.
 - Conserved approximately 9 crore folios through preventive and curative measures.
- **Scope:** Covers diverse themes, languages, scripts, and calligraphies; represents one of the largest manuscript collections worldwide.

Insta Links:

1. National-mission-for-manuscripts

Society

2. KOROWAI TRIBE

Context:

Indian vlogger Dheeraj Meena visited the jungles of Indonesia to meet 'human eating' Korowai tribes and documented his interaction with the tribal community.

About Korowai Tribe:

- **Location:** The Korowai tribe inhabits the southeastern region of Papua, Indonesia.
- **Forest connection:** The tribe has a profound bond with the forest, which provides them with food through hunting and gathering.

- **Isolation:** Until the mid-1970s, the Korowai had almost no interaction with the outside world.
- **Treehouses:** They are known for building treehouses elevated 8-15 meters above the ground, with some as high as 45 meters.
- **Social structure:** The tribe practices equality, with no formal hierarchy, valuing harmony among members.
- **Cannibalism history:** Historically, they practiced cannibalism for spiritual and social reasons, but this has largely ceased in recent times.

Insta Links:

1. Tribes-in-news

3. DOLI DEATHS

Context:

Andhra Pradesh Home Minister stated that the government would take measures to eliminate the issue of "doli deaths" in the Agency by enhancing road connectivity to the remote villages of Alluri Sitharama Raju (ASR) district.



About Doli Yatra Protest:

- **Objective of the yatra:** The tribal community organized the 'doli yatra' to demand proper road connectivity to hilltop villages, including Pedagaruvu, Pithrigedda, and Jajulabandha.
- **Reason for protest:** Due to the lack of roads, around 300 Kondh tribe members face difficulties accessing healthcare, often carrying sick or pregnant individuals in makeshift dolies over long distances.
- **Community initiative:** In 2020, the villagers built a road using pooled resources, but it was destroyed by rains, worsening their transportation challenges.
- **Health risks:** The lack of connectivity has resulted in numerous deaths as patients fail to reach hospitals in time.

About Kondh Tribe:

- **Cultural division:** Kondhs are divided into two main groups – hill-dwelling and plain-dwelling – and are further classified into various clans.
- **Traditional lifestyle:** Historically, the Kondh tribe were hunter-gatherers, relying on forest resources for their livelihood.
- **Language:** They primarily speak Kui, a Dravidian language, and use the Odia script for writing.
- **Scheduled tribe status:** The Kondh tribe has been recognized as a Scheduled Tribe (ST) in eight Indian states: Andhra Pradesh, Odisha, Jharkhand, Chhattisgarh, Bihar, Madhya Pradesh, Maharashtra, and West Bengal.
- **Social structure:** Kondhs follow a clan-based system, with strong community ties and traditional village governance structures.
- **Religion:** They practice animism, with a deep connection to nature and forest deities, though many have also embraced Hindu rituals over time.

Insta links:

1. Tribes in news

Geography

4. CYCLONE DANA

Context:

The India Meteorological Department (IMD) has forecasted the formation of Cyclone “Dana,” expected to intensify into a severe cyclonic storm by Wednesday, October 23, 2024. The cyclone is set to affect Odisha and West Bengal with wind speeds of up to 120 km/h.

Cyclones and their features:

- **Definition:** A cyclone is a large-scale air mass that rotates around a strong center of low atmospheric pressure.
- **Formation:** Cyclones develop over warm ocean waters (above 26.5°C) due to the rapid upward movement of warm air, which condenses to form clouds and releases energy, fueling the system.
- **Wind Speed:** Cyclonic storms are categorized based on wind speeds, with severe cyclonic storms typically reaching wind speeds between 89 and 117 kmph.
- **Impact:** Cyclones bring torrential rain, high-speed winds, and storm surges, leading to flooding, destruction of infrastructure, and displacement of communities.

About naming cyclones:

- **Origin:** The naming of cyclones in the Indian Ocean region was initiated by WMO/ESCAP in 2000, comprising countries like Bangladesh, India, and others, with 169 names released in

2020.

- **Member countries:** Bangladesh, India, the Maldives, Myanmar, Oman, Pakistan, Sri Lanka, and Thailand.
 - In 2018, Iran, Qatar, Saudi Arabia, UAE, and Yemen were added.
- **Purpose:** Naming cyclones simplifies communication, making it easier for the public, media, and authorities to track storms and prepare for them.
- **Guidelines:**
 - Must be short, easy to pronounce, and neutral to politics, religion, and culture.
 - No name can be repeated or offensive.
 - Each country provides 13 names, which are used sequentially.
- **Naming process:** Each member country suggests 13 names, and the list rotates when a new cyclone forms. The names must be short, easy to pronounce, neutral (politically, culturally, and religiously), and not offensive.
- **Recent cyclone and nations which gave name:**

Cyclone name	Country
Remal	Oman
Asna	Pakistan
Dana	Qatar

Insta links:

1. How-are-cyclones-formed-and-named
2. IMD-releases-new-list-of-cyclone-names

GS-2

Centre – State Relations

5. INDUSTRIAL ALCOHOL

Context:

In a significant ruling, a nine-judge Constitution Bench of the Supreme Court upheld the right of State legislatures to regulate industrial alcohol as an “intoxicant” under the ambit of “intoxicating liquor” as mentioned in the State List of the Constitution’s Seventh Schedule.

- This judgment comes after multiple States challenged the Centre’s position that industrial alcohol fell under the exclusive control of the Union government, as per Entry 52 of the Union List.

About lists in news:

- **State List (Entry 8):** Grants States the authority to regulate “intoxicating liquor” and activities like production, possession, transport, and sale.
 - The Supreme Court extended this

definition to include industrial alcohol, recognizing its potential for misuse affecting public health.

- **Union List (Entry 52):** Pertains to industries that require Union control in the public interest.
 - The Centre argued that this gave it exclusive jurisdiction over industrial alcohol, but the Court ruled that the State’s authority under Entry 8 still stands.

About industrial alcohol:

- Industrial alcohol **refers to ethanol** used primarily for industrial purposes, such as manufacturing, fuel production, or chemical applications.
- Unlike potable alcohol, industrial alcohol is **denatured with toxic chemicals** to make it unsuitable for human consumption.
- It plays a critical role in sectors like **pharmaceuticals, cosmetics, and fuels.**

Feature	Absolute Alcohol	Denatured Alcohol
Composition	Pure ethanol (minimal or no additives)	Ethanol with high concentration of toxic additives
Safety	Drinkable but highly dangerous in high amounts	Poisonous, unfit for consumption due to toxic additives
Additives	May contain trace impurities	Contains substances like methanol, rendering it toxic
Applications	Medical and laboratory use (sterilization, chemicals)	Industrial applications (fuel, cleaning solvents)
Smell & Taste	Characteristic alcoholic odor, slightly sweet taste	Foul odor, bitter taste due to additives
Taxation	Higher taxes due to its purity and potential for drinking	Lower or tax-exempt since it’s unsuitable for drinking

Cases and judgement:

1. **ITC Ltd v. Agricultural Produce Market Committee (2002):**
 - The Supreme Court affirmed that states are not subordinate to the Centre, emphasizing the need to maintain a constitutional balance of powers between them.
2. **Synthetics & Chemicals Ltd v. State of Uttar Pradesh (1989):**
 - A 7-judge Bench ruled that states’ powers under Entry 8 of the State List are limited

to regulating “intoxicating liquors,” leaving the regulation of industrial alcohol to the Centre.

3. **Ch Tika Ramji v. State of UP (1956):**
 - The Court upheld a state law regulating the sugarcane industry, confirming that states can legislate in industries even when central laws exist, reinforcing federal principles.

Insta links:

1. Liquor-policy-issues-in-the-liquor-industry
2. Federalism-in-India

Constitutional and non-constitutional bodies

6. NATIONAL PHARMACEUTICAL PRICING AUTHORITY

Context:

The NPPA recently increased the ceiling prices of eight essential drugs by 50%, citing “extraordinary circumstances” to ensure these medications remain accessible.

Rules and Laws for price revision:

- **Para 19 of DPCO 2013:** Allows the government to revise drug prices during extraordinary circumstances.
- **Essential Commodities Act:** Empowers price regulation to ensure availability and affordability.
- **Annual Price Revision:** Ceiling prices are typically revised based on the previous year’s Wholesale Price Index (WPI).
- **Extraordinary Circumstances:** Invoked when market conditions make price regulation necessary to maintain drug availability.

About National Pharmaceutical Pricing Authority:

- **Origin:** NPPA was established on **August 29, 1997**, to regulate the prices of pharmaceutical drugs and medical devices, implementing the provisions of the Drugs (Prices Control) Order (DPCO).
- **Ministry:** It operates under the Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers.
- **Governing law:** NPPA’s authority comes from the DPCO, 2013 and the Essential Commodities Act, ensuring availability and fair pricing of essential drugs.
- **Functions:**

- Price regulation; Control and regulate the prices of essential drugs and medical devices to ensure they remain affordable.
- Enforcement; Implement and enforce the provisions of the DPCO regarding the pricing of pharmaceutical products.
- Monitoring availability; Ensure that essential medicines are available and address shortages when necessary.
- Data collection; Gather information on drug production, imports, exports, and market shares of pharmaceutical companies.
- Advisory role; Provide the government with recommendations on drug price revisions and policy changes related to pharmaceuticals.
- Legal matters; Handle legal cases and disputes arising from pricing and availability issues.

Insta links:

1. NPPA
2. India-pharmacy-of-world

Judiciary

7. STATUE OF LADY JUSTICE

Context:

Recently, a new statue of Lady Justice was unveiled at the Supreme Court of India, replacing the older version that symbolized British colonial influence.

Features of the New Justice Statue:

- **Traditional attire:** The new statue is dressed in a saree, replacing the Western attire to reflect Indian cultural heritage.
- **Eyes open:** Unlike the traditional blindfolded Lady Justice, the new statue's eyes are open, symbolizing that justice is not blind in India but sees everyone equally, recognizing the country's social diversity and challenges.
- **Scales of justice:** The statue continues to hold scales in one hand, symbolizing the weighing of evidence impartially and maintaining fairness in judgments.
- **Constitution in hand:** The sword has been replaced with the Indian Constitution in the statue's other hand, emphasizing the Constitution's supremacy in India's legal system over the use of force or punishment.
- **Decoloniality:** The shift from colonial symbols like the blindfold and sword represents an attempt to indigenize and decolonize judicial imagery, aligning the statue with the principles of Indian

jurisprudence and values.



Insta Links:

1. 75-years-of-the-supreme-court-of-India/
2. Judicial-Reforms-in-India

Governance

8. ESHRAM-ONE STOP SOLUTION

Context:

Union Minister Dr. Mansukh Mandaviya is set to launch the **eShram-One Stop Solution**, a platform designed to streamline access to various social security and welfare schemes for unorganized workers in India.



About e-Shram:

- **Origin:** Launched on August 26, 2021, to provide a comprehensive database of unorganized workers and serve as a platform for accessing welfare schemes.
- **Aim:** To act as a One-Stop Solution for unorganized workers, integrating information and facilitating easy access to social security and welfare schemes.
- **Nodal ministry:** Ministry of Labour & Employment.
- **Features:**

- **Integration:** Combines information from 12 central schemes to ensure unorganized workers benefit from multiple government initiatives.
- **Platform:** Serves as a centralized database and mediator to simplify the process of identifying eligible workers and saturating scheme benefits.
- **Enrolment success:** Over 30 crore unorganized workers have registered on the platform as of October 2024.
- **Social impact:** Improves awareness among unorganized workers regarding available welfare schemes, contributing to better coverage and support for this vulnerable sector.

Insta Links:

1. e-shram-portal
2. Indias-Informal-Labour-Force

9. BIMA SUGAM

Context:

Bima Sugam, an ambitious digital insurance platform developed under the Bima Trinity initiative by the Insurance Regulatory and Development Authority of India (IRDAI), is poised for launch.

About Bima Sugam:

- **Organization & Ministry:** Developed by the Insurance Regulatory and Development Authority of India (IRDAI), under the Ministry of Finance.
- **Aim:** To streamline and democratize the insurance process, enhancing accessibility and transparency across India.
- **This initiative is part of** Bima Trinity, which also includes **Bima Vistaar** and **Bima Vahak**, showcasing India’s push for modernized insurance solutions.
- **Features:**
 - **Digital marketplace:** Functions as an all-in-one platform, allowing life and non-life insurance companies to sell products like an e-commerce site.
 - **Unified platform:** Offers end-to-end digital services, including policy purchase, renewal, claims settlement, portability, and grievance redressal for life, health, and property insurance.
 - **Paperless & integrated:** Promotes a paperless ecosystem by storing policies electronically and integrates with government databases for seamless operations.
 - **Bima Vahaks Portal:** A special portal to onboard Bima Vahaks, women-centric

- intermediaries, to distribute insurance products in rural areas.
- **Inclusivity & Efficiency:** Aims to ensure insurance access to all, improving ease of use and transparency in the sector.

Insta links:

1. Bima-Sugam
2. Bima-Trinity

International Relations

10. INTERNATIONAL CONTAINER TRANSSHIPMENT PORT

Context:

A quarter century after Kamarajar Port was named the country’s 12th major port, the mega international container transshipment port (ICTP) at Galathea Bay in the Great Nicobar Island in the Bay of Bengal has been notified as the 13th major port.



About Galathea Bay:

- **Location:** On Great Nicobar Island, part of the Andaman and Nicobar Islands in the Bay of Bengal.
- **Strategic importance:** Near the Malacca Strait, handling 35% of global sea trade, critical for Indo-Pacific maritime logistics.
- **International Container Transshipment Port:** Designed as a major transshipment port for cargo from India’s east coast, Bangladesh, and Myanmar.
- **Development:** Planned in four phases, with Phase 1 operational by 2028, starting with 4 million TEUs, and reaching 16 million TEUs by 2058.
- **Cost:** ₹41,000 crore total, with Phase 1 costing ₹18,000 crore.
- **Environmental sensitivity:** Requires careful development due to the region’s ecological vulnerability.
- **Economic impact:** Expected to save \$200-220 million annually by reducing India’s reliance on foreign transshipment ports.



Insta links:

1. VadHAVAN-port-India's-first-mega-port
2. Shipping-and-sea-ports

11. KARTARPUR CORRIDOR

Context:

India and Pakistan have agreed to extend the validity of the agreement on the Kartarpur corridor by five years.

About Kartarpur Corridor:

- **Connects important shrines:** The corridor links Darbar Sahib Gurdwara in Pakistan, the final resting place of Guru Nanak Dev, to Dera Baba Nanak shrine in India's Punjab.
- **Visa-free movement:** Indian pilgrims can visit the gurdwara without a visa, requiring only a permit.
- **Commemorative initiative:** It was inaugurated on November 12, 2019, during the 550th birth anniversary of Guru Nanak Dev.
- **Operational year-round:** The corridor operates throughout the year, with up to 5,000 pilgrims allowed to visit daily under the agreement.
- **Passenger terminal:** The fully air-conditioned terminal near Dera Baba Nanak has over 50 immigration counters to accommodate the pilgrims.

Insta Links:

1. Kartarpur-corridor

12. KAZAN DECLARATION

Context:

The 16th BRICS Summit saw the leaders adopt the Kazan Declaration: 'Strengthening Multilateralism For Just Global Development And Security'

16th BRICS Summit, 2024:

- **Host:** The 16th BRICS Summit was hosted by **Russia in Kazan** from October 22 to October 24, 2024.
- **Theme:** "Strengthening Multilateralism for Just Global Development and Security".
- **Participants:** Leaders of BRICS nations (Brazil, Russia, India, China, and South Africa) along with new partner countries including Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE.
- **Objective:** Discussing economic cooperation, multilateralism, geopolitical concerns, and the interests of the Global South.

Kazan Declaration - Key outcomes:

Key Area	Highlights
Geopolitical Concerns	Call for peaceful resolution to the Ukraine conflict through diplomacy.
	Concerns over the humanitarian crisis in Palestine and condemnation of violence in Gaza, West Bank, and Lebanon.
Global Governance & Multilateralism	Emphasis on the reform of global financial architecture and multilateralism.

	Support for the continued functioning of the G20 and a reformed, responsive global financial system.
Economic Cooperation	Promotion of local currencies for cross-border payments to reduce trade barriers.
	Agreement to explore the establishment of a BRICS Grain Exchange and a BRICS Cross-Border Payment System.
Pandemic Preparedness & Health	Support for the BRICS R&D Vaccine Center and Early Warning Systems for infectious diseases. Addressing antimicrobial resistance and enhancing healthcare collaboration.
Environmental Conservation	Support for India's Big Cats Conservation initiative and collaboration on protecting endangered species.
Expansion & Partnerships	Welcoming new BRICS partners from Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE, expanding the bloc's influence in the Global South.

Insta links:

1. Turkeys-bid-to-join-brics
2. 15th-brics-summit

GS-3

Indian Economy

13. WORLD ECONOMIC OUTLOOK

Context:

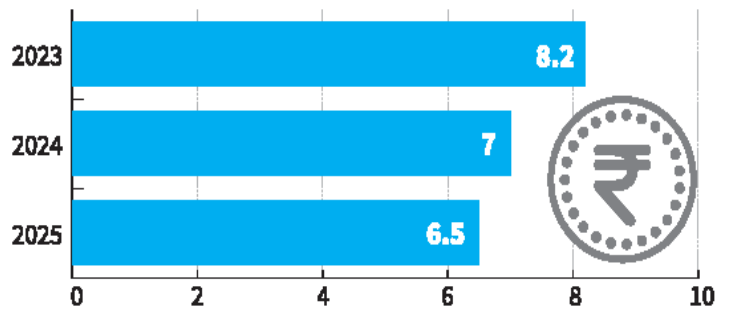
The International Monetary Fund (IMF) has released its World Economic Outlook (WEO) at the Annual Meetings in Washington, projecting growth rates and economic trends globally.

Data from World Economic Outlook:

- **India's growth:**
 - Projected growth for FY 2024-25: 7%
 - Projected growth for FY 2025-26: 6.5%
 - Decline from 8.2% in 2023 attributed to the normalization of demand after the pandemic.

Growth decelerates

The chart shows India's growth rate in 2023 and its projected growth rates in 2024 and 2025, as per the International Monetary Fund's World Economic Outlook report



- **Global growth:**
 - Expected global output growth: 3.2% for 2024 and 2025.
- **Inflation:**
 - Global inflation: From 9.4% in Q3 2022 to an expected 3.5% by end of 2025.
- **Risks identified:**
 - Geopolitical tensions, particularly the Russia-Ukraine war and conflict in West Asia.
 - Growing protectionism and tight monetary policies.
 - Sovereign debt issues and weak economic activity in China.
- **IMF recommendations:**
 - **Triple policy pivot:**
 - **Monetary policy neutrality:** Gradually shift to neutral stances in monetary policies.
 - **Build fiscal buffers:** Reinforce fiscal policies after years of expansive measures.
 - **Structural reforms:** Focus on productivity growth, coping with demographic changes, climate transition, and increasing resilience.

14. WORLDSKILLS 2024

Context:

Union Minister for Skill Development and Entrepreneurship, will felicitate WorldSkills 2024 winners for their outstanding achievements at a competition that was held in France.

About WorldSkills 2024:

- **Event:**
 - **47th edition** of WorldSkills 2024 took place in **Lyon, France**.
 - It is a **biannual competition** of

international skilling.

- It is considered the largest global competition for skills, often compared to the **Olympic Games for vocational skills**.
- **Team India:**
 - India sent its largest-ever contingent with **60 participants**, competing in 52 skill categories.
- **Medals and achievements:**
 - India secured **4 Bronze medals** in **Patisserie, Industry 4.0, Hotel Reception, and Renewable Energy**.
 - Additionally, **12 participants earned Medallions of Excellence**, showcasing India's rising prominence in the global skills arena.
 - **Best of Nation Award:** Ashwitha Police won the award for Patisserie and Confectionery, marking her as the top performer from India.
- **Significance:**
 - The event aligns with India's goal to become a global hub for skilled talent, emphasizing its growing expertise in various vocational domains.
 - This year's participation also marked a breakthrough moment with more women competing in traditionally male-dominated skills.

Insta Links:

1. Skill-Development

Agriculture

15. DI-AMMONIUM PHOSPHATE

Context:

A shortage of di-ammonium phosphate (DAP), a key fertiliser required at the time of sowing, is undermining crop production prospects for the current rabi season.

Key Data Points on DAP (Di-Ammonium Phosphate):

- **Sales decline:** DAP sales in India during April-September 2024 dropped to **45.72 lakh tonnes**, a **27.2%** decline from **62.83 lakh tonnes** in 2023, signalling reduced availability for farmers ahead of sowing seasons.
- **Imports and production:** Imports fell to **19.67 lakh tonnes** from **34.53 lakh tonnes** in 2023, and domestic produc-

tion also decreased slightly to **21.53 lakh tonnes** in 2024 from **23.29 lakh tonnes** in 2023, creating a supply crunch.

- **Price increase:** Farmers are paying **₹1,600-1,650** per bag of DAP, well above the government-fixed MRP of **₹1,350**, driven by international costs and shortages.
- **Fertilizer sales trends:** While DAP sales fell, **urea** and other complex fertilizers saw increases. Urea sales rose to **189.11 lakh tonnes** from **183.95 lakh tonnes** in the same period.
- **Subsidy and costs:** With a government subsidy of **₹21,911** per tonne, but actual costs reaching **₹65,000** per tonne, the import of DAP remains unviable for private players, worsening the shortage.

About Di-Ammonium Phosphate (DAP):

- **Key fertilizer for Indian agriculture:** DAP is the second most used fertilizer in India after urea. It is highly preferred for its balanced content of Nitrogen (18%) and Phosphorus (46%), which are essential macronutrients for plant growth.
- **Nutrient benefits:** DAP provides both nitrogen and phosphorus, which are vital for early root development and overall plant health, making it critical at the sowing stage.
- **Manufacturing process:** DAP is produced by reacting ammonia with phosphoric acid under controlled conditions. It is widely manufactured in fertilizer plants across India.

Insta links:

1. First-urea-and-now-dap

16. 21ST LIVESTOCK CENSUS OPERATION

Context:

The 21st Livestock Census Operation, a landmark initiative led by the Ministry of Fisheries, Animal Husbandry, and Dairying, is set to be launched by Union Minister today.

About 21st Livestock Census:

- **Launch date:** October 25, 2024.

- **Ministry involved:** Ministry of Fisheries, Animal Husbandry, and Dairying.
- **Frequency:** Conducted every five years since 1919; the last census was in 2019.
- **Census period:** Scheduled from October 2024 to February 2025.
- **Scope:**
 - Covers 15 livestock species, including cattle, buffalo, yak, sheep, goats, and more.
 - Includes poultry species like fowl, ducks, turkeys, quail, and others.
 - Data on 219 indigenous breeds of 16 species.
- **New features:**
 - First census to capture independent data on livestock holdings by pastoralists.
 - Will provide information on the gender of individuals primarily involved in livestock rearing.
- **Technology:** Utilizes mobile technology for accurate and efficient data collection and transmission.
- **Field officials:** Around 1 lakh veterinarians and para-veterinarians will conduct the door-to-door survey.
- **Importance:** Provides critical data for policy-making and supports the livestock sector's growth and development.

Insta Links:

1. Animal-husbandry-in-India
2. Livestock in India

Infrastructure

17. ADVANCE BOOKING SYSTEM

Context:

The Indian Railways has decided to shorten the Advance Reservation Period (ARP) for booking train tickets from 120 days to 60 days.

About Advance Booking System:

- **New ARP rule:** From November 1, 2024, passengers can book railway tickets 60 days in advance, down from the previous 120-day window.
- **Historical changes:** The ARP has been adjusted several times:
 - Between 1981-1985, the ARP was 90 days.
 - Between 1988-1993, it was reduced to 45 days.
 - Since 1995, the ARP was 60 days before being extended to 120 days in 2008.
- **Reasons for shortening ARP:**
 - High cancellation rates (21%) and seat

wastage.

- Fraudulent practices like impersonation and touts exploiting longer booking windows.
- 88-90% of reservations occur within 60 days, making the longer ARP redundant.
- **Fraud prevention:** A shorter booking window limits the ability of touts to block large numbers of tickets and reduces opportunities for impersonation and illegal seat allotment.
- **Special exemptions:**
 - **Foreign tourists:** They can still book tickets up to 365 days in advance as part of a dedicated quota for planning long journeys.
 - **Certain trains like the Taj Express:** These are exempt from ARP rules since tickets are typically booked just days in advance.
 - **General class tickets:** Not affected by ARP since they are bought just before travel.

Insta links:

1. Indian-railways-stress-factors
2. Growth-in-Indian-railways

Health

18. E. COLI

Context:

Recently, an E. coli outbreak in the U.S. has caused the death of one individual and led to the hospitalization of 10 others after consuming McDonald's burgers. The incident has sparked concerns over food safety and the spread of such infections.

About E. coli:

- **Definition:** E. coli is a type of bacteria that normally resides in the intestines of humans and animals. While most strains are harmless, some can cause serious illness.
- **Toxin Production:** The dangerous strains produce Shiga toxins, damaging the lining of the small intestine and causing diarrhea.
- **Common Symptoms:** Infections can result in diarrhea (often bloody), stomach cramps, fever, and nausea.
- **Transmission:** Spread through contaminated food, water, and contact with fecal matter from infected humans or animals.
- **Most Known Strain:** E. coli O157 is the most commonly known strain linked to severe infections.
- **Severe Complications:** In rare cases, it can lead to hemolytic uremic syndrome (HUS), which can

cause kidney failure, particularly in children and the elderly.

- **Treatment:** Most infections resolve on their own, but hydration is key. In severe cases, medical intervention may be needed.

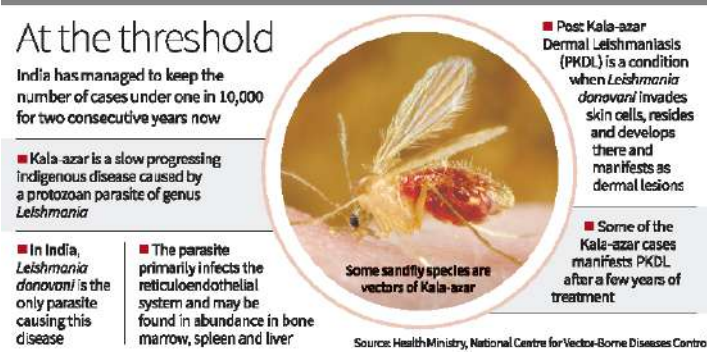
Insta links:

1. Antibiotic-resistant-bacteria
2. Abaucin

19. KALA-AZAR

Context:

India is on the brink of eliminating Kala-azar (visceral leishmaniasis) as a public health problem, having maintained fewer than one case per 10,000 people for two consecutive years, a requirement for World Health Organization (WHO) certification.



At the threshold
India has managed to keep the number of cases under one in 10,000 for two consecutive years now

- Kala-azar is a slow progressing indigenous disease caused by a protozoan parasite of genus *Leishmania*
- In India, *Leishmania donovani* is the only parasite causing this disease
- The parasite primarily infects the reticuloendothelial system and may be found in abundance in bone marrow, spleen and liver
- Post Kala-azar Dermal Leishmaniasis (PKDL) is a condition when *Leishmania donovani* invades skin cells, resides there and develops there and manifests as dermal lesions
- Some of the Kala-azar cases manifests PKDL after a few years of treatment

Some sandfly species are vectors of Kala-azar

Source: Health Ministry, National Centre for Vector-Borne Diseases Control

Current status in India:

- **Cases and deaths:** India registered 595 cases and four deaths in 2023. In 2024, the number of cases decreased to 339, with one recorded death so far.
- **Eligibility for WHO certification:** India could soon become eligible for the elimination certificate if the trend of keeping cases below one per 10,000 people continues for another year.
- **Vulnerable regions:** Bihar accounts for over 70% of the total cases, along with Jharkhand, West Bengal, and parts of Uttar Pradesh.

About Kala-azar:

- **Origin:** Kala-azar, or visceral leishmaniasis, is caused by the protozoan parasite *Leishmania donovani*.
- **Transmission:** The disease is transmitted by the bite of an infected **female sandfly** (*Phlebotomus argentipes* in India).
- **Vector:** The sandfly, breeding in humid conditions and poor sanitation, plays a major role in the spread of the disease.
- **Symptoms:** It is characterized by fever, significant weight loss, enlargement of the spleen and liver, and severe anemia. If left untreated, Kala-azar has a fatality rate of over 95%.
- **Diagnosis:** Diagnosis relies on clinical symptoms

and parasitological or serological tests, such as the rK39 diagnostic kit.

- **Treatment:** Various anti-parasitic treatments are available, such as amphotericin B, miltefosine, and sodium stibogluconate.

Insta links:

1. Kala-azar
2. India-has-eliminated-kala-azar

Science & Technology

20. MOONLIGHT LUNAR COMMUNICATIONS AND NAVIGATION SERVICES

Context:

The European Space Agency (ESA) launched its Moonlight Lunar Communications and Navigation Services (LCNS) programme at the International Astronautical Congress.

About Moonlight Programme:

- **Purpose:** The Moonlight programme aims to create a constellation of lunar satellites to support accurate autonomous landings, high-speed communication, and mobility on the lunar surface.
- **Satellite Constellation:** Around five lunar satellites will enable long-distance data transfer between Earth and the Moon, covering a distance of about 400,000 km (250,000 miles).
- **Timeline:**
 - The programme begins with the launch of **Lunar Pathfinder**, a communications relay satellite built by Surrey Satellite Technology LTD, planned for 2026.
 - Initial services are expected to begin by the **end of 2028**, with full operational capabilities by 2030.
- **Target Areas:** The **Moon's South Pole** will be a primary focus due to its unique lighting conditions and the potential presence of water ice in permanently shadowed craters.
- **Collaboration:** ESA will work alongside global space agencies, including NASA's Artemis programme, and the Artemis Gateway project, to foster cooperation and build shared lunar infrastructure.
- **Future Impact:** Moonlight's communications infrastructure is expected to reduce the need for standalone communication systems, allowing mission teams to concentrate more on mission operations such as astronaut safety and robotics.

Insta Links:

1. Apophis-asteroid

21. GREEN HYDROGEN FUEL CELL BUS

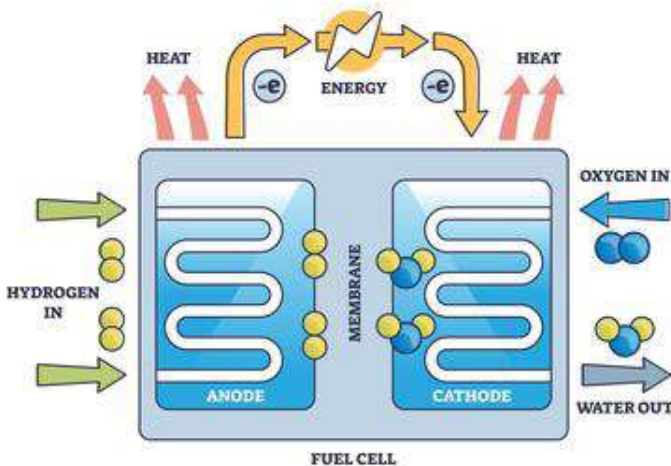
Context:

Union Minister along with Bhutan Prime Minister Tshering Tobgay took a ride on a green hydrogen-run bus here in the national capital, in a message to sustainable mobility and a green future.

About Green Hydrogen Fuel Cell:

- Green Hydrogen Fuel Cells are a highly efficient and environmentally friendly way to generate electricity.
- They harness the energy stored in green hydrogen, which is hydrogen produced using renewable energy sources like wind, solar, or hydropower, ensuring zero greenhouse gas emissions during production.

HYDROGEN FUEL CELLS



Key components:

- **Green hydrogen:**
 - Green hydrogen is generated through electrolysis, a process where water is split into hydrogen (H₂) and oxygen (O₂) using renewable energy.
- **Fuel cell:**
 - A fuel cell is an electrochemical device that converts the chemical energy in hydrogen directly into electrical energy.
 - It consists of two main parts: the anode (positive side) and the cathode (negative side), with an electrolyte facilitating the movement of ions between the electrodes.

How the fuel cell works:

- **Hydrogen supply:**
 - Green hydrogen is supplied to the anode side of the fuel cell, where hydrogen molecules are split into protons (positively charged hydrogen ions) and electrons.
- **Electric current generation:**
 - The electrons flow through an external circuit from the anode to the cathode, creating an electric current that can be used to power

various applications, from vehicles to stationary power plants.

- **Water as a byproduct:**

- At the cathode, oxygen from the air reacts with the protons and electrons to form water vapor (H₂O), the only byproduct of the reaction, along with heat.

Insta links:

1. Biohydrogen-and-Indias-green-hydrogen-pathway
2. World-Hydrogen-2024-summit

22. CLOUD CHAMBER

Context:

India recently launched Mission Mausam, a weather modification initiative to improve forecasting and manage events like rainfall and fog. Alongside, the Indian Institute of Tropical Meteorology (IITM) in Pune is developing a convective cloud chamber for advanced cloud physics research, enhancing understanding of Indian monsoon clouds.

About Cloud Chamber:

- **Definition:** A cloud chamber is a closed drum-like structure where water vapor, aerosols, and other particles are injected to study cloud formation under controlled humidity and temperature.
- **Purpose:** India's cloud chamber, unlike basic ones in other countries, will include convection properties to simulate monsoon clouds and other weather phenomena relevant to India.
- **Function:** It will allow the study of cloud behavior, rain formation, intra-particle interactions, and cloud-seeding techniques under Indian weather conditions.

About Mission Mausam:

- **Weather modification:** The mission aims to manage weather events such as rainfall, hail, fog, and potentially even lightning strikes.
- **Focus on cloud physics:** Strengthening cloud physics research to understand cloud formation and behavior under Indian weather systems.
- **Convective cloud chamber:** Developing a first-of-its-kind chamber to simulate Indian monsoon clouds, improving weather forecasting and strategic planning.
- **Cloud seeding:** Building on past experiments like CAIPEEX, which showed promising results in rainfall enhancement, but with recognition that cloud seeding alone cannot solve rainfall deficits.

Insta Links:

1. Mission-mausam

23. SRIJAN - CENTER FOR GENERATIVE AI

Context:

IndiaAI and Meta have launched a Center for Generative AI, called **Srijan**, at IIT Jodhpur, with the goal of driving open-source AI innovations in India.

- This initiative, supported by a **partnership with the All India Council for Technical Education (AICTE)**, aims to encourage young developers to leverage open-source AI models to solve real-world challenges.

About the Center for Generative AI, Srijan:

- **Objective:** Srijan seeks to empower young AI talent by providing resources to work with Large Language Models (LLMs) and focus on essential areas like healthcare, mobility, and education.
- **Funding:** Meta has committed INR 750 Lakhs over three years, supporting training, research, and workshops.
- **Initiatives:** The center will host Hackathons, Master Training workshops, and a GenAI Resource Hub to foster collaboration and skill development.
- **Partnerships:** IIT Jodhpur collaborates with national and international stakeholders, including Meta, MeitY, AICTE, and academic institutions, to expand Generative AI research and innovation.

About YuvaAI (Youth for Unnati and Vikas with AI) initiative:

- **Goal:** Part of India's YuvaAI program, it aims to skill **1 lakh young developers** (ages 18-30) in generative AI to tackle real-world challenges.
- **Collaboration:** A joint effort by **Meta, MeitY and AICTE** to enhance AI talent through open-source Large Language Models (LLMs) training.
- **Core activities:** Offers skilling programs, LLM workshops, and hackathons. Outstanding projects receive mentoring, seed funding, and support.
- **Focus areas:** Targets sectors like healthcare, education, agriculture, and smart cities, aligning with national goals for sustainable development.

About AICTE (All India Council for Technical Education):

- **Establishment:** Formed in November 1945, AICTE became a statutory body in 1987 under the AICTE Act.
- **Purpose:** AICTE supports coordinated development and improvement in technical education across India.
- **Ministry:** Under the Ministry of Human Resource Development
- **Functions:** AICTE accredits graduate and postgraduate programs, ensures quality standards in technical education, and offers strategic guidance.

- **Headquarters:** Located in New Delhi.

Insta links:

1. Bharat-Gen

24. ISRO-DBT AGREEMENT

Context:

The Indian Space Research Organisation (ISRO) and the Department of Biotechnology (DBT) have joined forces to develop bio-experiments for the Bharatiya Antariksh Station (BAS), India's planned indigenous space station.

ISRO-DBT agreement highlights:

- **Purpose:** To design biological experiments for BAS and the Gaganyaan mission.
- **Areas of Research:**
 - Impact of weightlessness on muscle health.
 - Algae studies for nutrient-rich, long-lasting food sources and biofuel production.
 - Effects of space radiation on astronaut health.
- **BioE3 (Biotechnology for Economy, Environment and Employment) initiative:** Aligns with DBT's policy to promote bio-manufacturing in India, focusing on health, biopharma, regenerative medicine, and biotechnology for waste management.

About BioE3 (Biotechnology for Economy, Environment, and Employment) Policy:

- **Objective:** Led by the Department of Biotechnology, the BioE3 policy promotes high-performance biomanufacturing in India to support advancements in biotechnology across various sectors.
- **Focus areas:**
 - **High-value bio-based products:** Encourages the production of bio-based chemicals, biopolymers, enzymes, and smart proteins.
 - **Climate-resilient agriculture & carbon capture:** Aims to strengthen agricultural practices that can withstand climate change impacts and utilize carbon capture for sustainable growth.
 - **Healthcare and nutrition:** Focuses on precision biotherapeutics, functional foods, and regenerative medicine to improve healthcare outcomes.
 - **Marine and space biotechnology:** Encourages innovations in marine and space research to broaden biotechnology applications.

- **Innovation and entrepreneurship:** Supports R&D-driven entrepreneurship through the establishment of bio-manufacturing hubs, bio-AI centers, and biofoundries.
- **Employment growth:** By expanding bio-economy sectors, the policy aims to create a skilled workforce, generating new jobs and promoting green growth.

About Bharatiya Antariksh Station (BAS):

- **Orbit:** Planned at 400 km above Earth.
- **Timeline:** Initial module launches by 2028; complete expansion by 2035.
- **Capacity:** Designed for 15–20-day missions in orbit.
- **Structure:** Comprises a command module, habitat module, propulsion systems, and docking ports.

Insta links:

1. Bharatiya-antariksh-station
2. BioE3 Policy

Environment & Ecology

25. AZORES ARCHIPELAGO

Context:

Recently, the regional assembly of the Azores approved the creation of the largest marine protected area in the North Atlantic, significantly contributing to global conservation goals.



About Azores Archipelago:

- **Location:** The Azores is a group of nine volcanic islands located in the North Atlantic Ocean, around 1,500 km west of mainland Portugal.
- **Origin:** The islands were formed through volcanic activity, and the archipelago sits above the Azores Triple Junction, where the Eurasian, North American, and African tectonic plates meet.

- **Geography:** Divided into three groups — northwest, central, and eastern — the islands run in a northwest-southeast direction.
- **Key Features:**
 - **Mount Pico** on Pico Island is the highest point in the Azores.
 - **Climate:** The islands have an oceanic subtropical climate, characterized by mild temperatures year-round.
 - **Fauna:** The Azores are home to unique biodiversity, including the endemic Azores bullfinch and Monteiro’s storm petrel, as well as rich laurel forests.
 - **Marine conservation:** The Azores government recently established a 300,000 square km protected marine area, aiming to preserve underwater mountain ranges and deep-sea ecosystems.
 - **Conservation leadership:** The region is leading marine protection efforts, aligning with the UN’s 2030 goals to protect 30% of land and sea.
 - **Marine biodiversity:** The islands are known for their diverse marine life, including deep-sea corals and hydrothermal vents.

Insta links:

1. Measures-for-the-protection-of-marine-species
2. State-of-the-ocean-report-2024

26. TENKANA

Context:

A team of scientists from India and Canada has identified a new genus of jumping spiders, *Tenkana*, in South India.

About Tenkana:

- **New Genus:** The genus *Tenkana* was discovered in southern India, named after the Kannada word for “south.”
- **Species Relocation:** Two previously known species, *Tenkana manu* (South India and Sri Lanka) and *Tenkana arkavathi* (Karnataka), have been moved from the *Colopsus* genus to *Tenkana*.
- **New Species:** A new species, *Tenkana jayamangali*, was discovered and named after the Jayamangali river in Karnataka.
- **Habitat:** Unlike related spiders that inhabit forests, *Tenkana* species are found in drier, ground habitats across Tamil Nadu, Karnataka, Andhra Pradesh, Telangana, and Puducherry.

Insta links:

1. Helopeltis-theivora/spider

27. GREAT INDIAN BUSTARD

Context:

The birth of a Great Indian Bustard (GIB) chick through artificial insemination at the **Sudasari Breeding Centre in Rajasthan's** Jaisalmer marks a significant step in the conservation of this critically endangered species.

Artificial Insemination of GIB:

- The chick was hatched on October 16, marking the **first birth of a Great Indian Bustard** through artificial insemination.
- A team from the **Wildlife Institute of India (WII)** learned the technique from a similar project in Abu Dhabi, where artificial insemination is used to breed the **houbara bustard**.
- This initiative is part of the ongoing **captive breeding program started in 2019**, with the aim of eventually releasing bred GIBs into the wild.

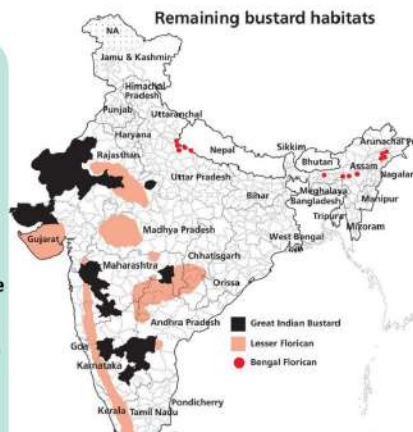


Great Indian Bustard



About Great Indian Bustard

- It is **India's most critically endangered bird**
- It is considered the **flagship grassland species** and is a symbol of the health of the grassland ecology.
- **Threats:** Power transmission lines, hunting, habitat loss due to agricultural expansion, and other factors.
- **Legal protection:** Schedule-I of the Wild Life (Protection) Act, 1972, (legal protection from hunting)
- **IUCN:** Critically Endangered



The population is mostly confined to Rajasthan and Gujarat (with a small population in Maharashtra, Karnataka, and Andhra Pradesh)

To know more Visit Insights IAS Daily Current Affairs

About Great Indian Bustard:

- **Scientific Name:** *Ardeotis nigriceps*
- **Distribution:** Found mainly in the Thar Desert of Rajasthan, with a viable population of around 100-150 individuals.
- **Habitat:** Prefers dry grasslands and scrublands.
- **Features:**
 - Among the heaviest flying birds, with males weighing up to 15 kg.
 - Distinctive black crown, pale neck, and brownish body with marked wings.
- **Diet:** Opportunistic eaters, consuming grass seeds, insects, small rodents, and reptiles.
- **Breeding:** Lays a single egg during the monsoon season on open ground.
- **Conservation Status:**
 - **IUCN Red List:** Critically Endangered

- **Wildlife Protection Act, 1972:** Schedule I
- **CITES:** Appendix I
- **Threats:** Habitat destruction, power line collisions, and human interference.

Insta links:

1. GIB
2. Supreme-court-eases-ban-on-power-lines-in-great-indian-bustard-habitat

28. INDIAN FLAPSELL TURTLES

Context:

Recently, two individuals were arrested in Noida for smuggling live Indian flapshell turtles. These turtles, protected under India's Wildlife Protection Act, 1972, are considered government property, making their trade illegal.

About Indian flapshell turtle (*Lissemys punctata*):

- **Habitat:** Freshwater species found in rivers, ponds, lakes, and canals, preferring areas with muddy or sandy bottoms.
- **Distinguishing feature:** Named "flapshell" due to the flaps of skin on their plastron that cover their limbs when retracted.
- **Distribution:** Found across South Asia, including India, Pakistan, Sri Lanka, Nepal, Bangladesh, and Myanmar.
- **Lifestyle:** Omnivorous and typically solitary, they are well adapted to drought conditions.
- **Conservation status:**
 - **IUCN Red List:** Vulnerable.
 - **CITES:** Appendix I.
 - **Indian Wildlife Protection Act, 1972:** Schedule I, making their trade, hunting, and transportation illegal.

Insta Links:

1. Operation-kachchhap

29. EMISSIONS GAP REPORT, 2024

Context:

The Emissions Gap Report, an annual publication of the UN Environment Programme, warned that the Paris Agreement objective of keeping global rise in temperatures to within 1.5 degree Celsius would be "gone within a few years".

Key Findings of Emissions Gap Report 2024:

- **GHG emissions growth:** Global GHG emissions increased by 1.3% in 2023, with China and

India seeing notable rises of 5.2% and 6.1%, respectively.

- **Paris agreement targets in jeopardy:** The report emphasizes that without rapid reductions, the goal of limiting warming to 1.5°C will likely become unachievable within a few years, with the world on track for a 2.6-3.1°C rise by the century's end.
- **Ambitious emissions reductions required:** To stay on the 1.5°C path, a reduction of 42% in global GHG emissions is required by 2030 and 57% by 2035, with current plans achieving only about a 10% cut by 2030.
- **Financial commitment for emissions reductions:** Achieving the necessary reductions by 2030 would require investment at \$200 per ton of CO₂, which could bridge the emissions gap by 31 billion tonnes.

About Emission Gap Report:

- **Publisher:** United Nations Environment Programme (UNEP).
- **Title:** "Emissions Gap Report 2024: No More Hot Air...Please!"
- **Purpose:** Annual analysis to assess the gap between current and required emissions levels to meet Paris Agreement goals.
- **Focus of the 2024 report:**
 - Review of upcoming Nationally Determined Contributions (NDCs) due by 2025.
 - Call for a 7.5% annual reduction in emissions through 2035 to meet targets.
 - Emphasis on enhanced financial, policy, and technological commitments.

Insta links:

1. Emission-gap-report
2. Production-gap-report, 2023

30. COKING COAL

Context:

India's coking coal imports surged to a six-year peak in the first half of the current fiscal (April-September 2023), driven by increased imports from Russia amidst rising domestic steel production.

Recent status of Coking Coal imports:

- **Import volume:** 29.6 million tonnes (mt) of coking coal imported in H1 FY24, a six-year high.
- **Russian imports:** Shipments from Russia rose significantly, with a 200% increase, reaching 4 MT in H1 FY24.
- **Alternative sourcing:** India's mills capitalized on Russia's discounted coking coal, while imports from traditional sources like Australia saw a

decline.

NOTE: No need to remember all these data for prelims but you can use them in your mains answers which can fetch additional marks.

About Coking Coal:

- **Content and formation:**
 - **Composition:** Bituminous coal with high carbon content, low sulphur, phosphorus, and alkalis, making it suitable for steelmaking.
 - **Formation:** Formed from the carbonization of coal at high temperatures to produce metallurgical coke.
- **Chemical and physical indicators:**
 - **High carbon Content:** Essential for the strength and efficiency of coke in blast furnaces.
 - **Low impurities:** Lower sulphur and phosphorus content than steam coal to minimize contamination in steel production.
- **Importance:**
 - **Steel production:** Critical for producing pig iron in blast furnaces, where it acts as a reducing agent and supports the furnace charge.
 - **Industrial by-products:** Produces by-products like tar, benzole, ammonia sulphate, and coke oven gas, which support chemical manufacturing and power generation.
- **India's resources and dependency:** Despite being a major steel producer, India is a net importer of coking coal due to limited domestic reserves.

Insta Links:

1. Coal
2. Indias-coal-and-lignite-production

Defence

31. MARITIME EXERCISES

Context:

India conducted two significant maritime exercises in October 2024 to enhance security and cooperation in the Indian Ocean region.

About NASEEM AL BAHR Exercise:

- **Nations involved:** India and Oman.
- **Location:** Off the coast of Goa, India.

About Sagar Kavach Exercise:

- **Forces involved:**
 - Indian Coast Guard, Indian Navy, Marine Police, State Police, Border Security Force (BSF), National Security Guard (NSG), and port authorities.
 - Aerial surveillance support provided by Coast Guard aircraft and drones.
- **Location:** Gujarat and Union Territory of Daman & Diu.
- **Key activities:**
 - Coastal security drills and simulated scenarios to test coordination and SOPs among various forces.
 - The exercise aimed to sharpen coastal defense mechanisms and enhance preparedness for maritime threats.

Insta links:

1. Sagar-kavach
2. Military-exercises-in-news

32. SHADOW FLEET

Context:

The term “shadow fleet” has gained attention in the global maritime industry, particularly in the context of sanctions imposed on Russia due to its ongoing conflict with Ukraine.

About Shadow Fleet:

- **Meaning:** A fleet of tanker ships that obscure the ownership and origin of cargo, often to bypass international sanctions.
- **Operations:** These ships operate by frequently changing flags, names, and ownership to mask their activities and avoid sanctions or regulatory oversight.
- **Issue:** The use of complex ownership structures, shell companies, and registration under Flags of Convenience (FoC) makes enforcement of sanctions difficult, allowing sanctioned countries, like Russia, to export goods.
- **Impact on India:** India has been implicated in hosting shadow fleets, particularly in relation to Russian oil shipments, with some Indian firms reportedly linked to such fleets operating from Dubai.

About Flag of Convenience (FoC):

- A Flag of Convenience (FoC) vessel flies the flag of a country different from the country where the ship’s owner is based. This is often done to save costs and avoid stringent regulations on crew welfare and ship maintenance.
- **Purpose:** Allows shipowners to benefit from lower taxes, fewer regulations, and easier registration processes in countries with less

stringent maritime laws.

- **Common FoCs:** Countries like Panama, Liberia, and the Marshall Islands are known for offering FoCs, making them attractive for owners looking to minimize operational costs and oversight.
- **Issues:** It allows owners to obscure the true origin and ownership of vessels, making it harder to enforce international laws and labor protections.

About Indian Register of Shipping (IRS):

- Established in **1975** under the Indian Companies Act, based on the recommendation of the Mudaliar Committee.
- **Mission:** To ensure accurate classification and safety records of mercantile shipping and other maritime-related constructions.
- **Key Functions:**
 - Sets standards for the construction, maintenance, and operation of ships.
 - Conducts surveys and provides technical certifications for maritime equipment and industrial installations.
 - Assists in the development of India’s merchant marine industry and evaluates quality management systems.
- **Global Recognition:** IRS has grown to become an internationally recognized classification society and became Chair of the International Association of Classification Societies (IACS) in 2019.
- **Commitment:** IRS promotes safety, environmental protection, and maritime risk management, aiming to be a trusted partner in maritime operations worldwide.

Insta links:

1. Vadhavan-port-Indias-first-mega-port
2. LSAM-12-missile-cum-ammunition-barge

33. S4* SSBN

Context:

India’s fourth nuclear-powered ballistic missile submarine (SSBN), referred to as S4*, was launched into water at the Ship Building Centre in Visakhapatnam.

About Nuclear-Powered Ballistic Missile Submarine (SSBN):

1. Features:

- **Nuclear propulsion:** SSBNs are powered by nuclear reactors, enabling them to stay submerged for long durations without surfacing, limited only by food supplies and maintenance.
- **Ballistic missile capability:** They are equipped with submarine-launched ballistic missiles (SLBMs), allowing them to serve as a platform for nuclear deterrence with a second-strike capability.

- **Stealth:** The submarines are designed for stealth, reducing their detection by enemy forces, making them a key asset for strategic deterrence.

2. Indian SSBN Programme:

- **Operational SSBNs:** India currently operates two SSBNs, INS Arihant (commissioned in 2016) and INS Arighaat (commissioned in 2024).
- **Upcoming SSBNs:** The S4 submarine, Aridhman, is undergoing sea trials, and the newly launched S4* is more advanced in terms of size and missile range capabilities.

3. Features of Indian SSBNs:

- **Missile range:** INS Arihant is equipped with K-15 SLBMs with a 750 km range. The S4* will carry the advanced K-4 missile, capable of striking targets up to 3,500 km away.
- **Nuclear deterrence:** These submarines provide India with a second-strike capability, a critical element of its nuclear deterrence strategy, ensuring survivability in case of a first-strike attack.
- **Strategic importance:** SSBNs allow India to maintain credible deterrence by remaining hidden in the vastness of the oceans, ensuring the capability to respond to any nuclear attack.

Insta links:


3. SSBN

INSIGHTS IN-SHORTS

Topic	Why in news?
1. LORD'S RESISTANCE ARMY	A Ugandan court on Friday sentenced a former Lord's Resistance Army (LRA) commander to 40 years in prison after a landmark war crimes trial over his role in the group's two-decade reign of terror.
2. GREAT INDIAN BUSTARD	<ul style="list-style-type: none"> • Suda, a three-year-old male Great Indian Bustard at the Ramdevra breeding centre, was trained to mate with a dummy bird for sperm collection. This enabled the artificial insemination of a female bustard, contributing to the first successful GIB chick born through assisted reproduction. • Tony, a five-year-old female GIB at the Sam breeding centre, was the recipient of Suda's sperm via artificial insemination. Her insemination led to the birth of a chick, marking a significant step in conservation efforts for the endangered GIB. • The Sam breeding centre is one of two main sites dedicated to the Great Indian Bustard conservation project. Alongside the Ramdevra centre, it plays a vital role in the breeding and recovery of the species.
3. JOYA-LA BARRETA PARK	People attend a stargazing and comet-watching gathering at Joya-La Barreta ecological park in Queretaro, Mexico

MAPPING

INTERNATIONAL

Place	Why in News?
<p>1. HWANGE NATIONAL PARK</p>	<p>Context: Hwange National Park, Zimbabwe’s largest wildlife reserve, recently became the center of attention due to the discovery of three poached lions.</p> <p>About Hwange National Park:</p> <ul style="list-style-type: none"> • Location: Situated in northwest Zimbabwe, near the main road between Bulawayo and Victoria Falls. • Size: Covers approximately 14,600 sq. km, making it the largest natural reserve in Zimbabwe. • History: Established in 1928; formerly known as Wankie Game Reserve. • Wildlife: Home to over 100 mammal species and 400 bird species, including 19 large herbivores and eight large carnivores. It houses half of Zimbabwe’s elephant population (around 50,000) and over 500 lions. • Conservation efforts: <ul style="list-style-type: none"> ○ Part of the Kavango-Zambezi Trans frontier Conservation Area (KAZA) involving five Southern African nations. ○ Use of drones and other technologies to combat poaching. • Threats: <ul style="list-style-type: none"> ○ Poaching, though under control, continues to target species like lions, elephants, and rhinos. ○ Trophy hunting contributes to challenge. 

Insta links:
1. [ZiG](#)

INDIAN

Place	Why in News?
<p>2. SRI SINGEESWARAR TEMPLE</p>	<p>Context: A set of copper-plate inscriptions dating back to the 16th Century CE have been discovered at the Sri Singeeswarar temple at Mappedu village in Tiruvallur district recently.</p>  

About Singeeswarar Temple (Mappedu):

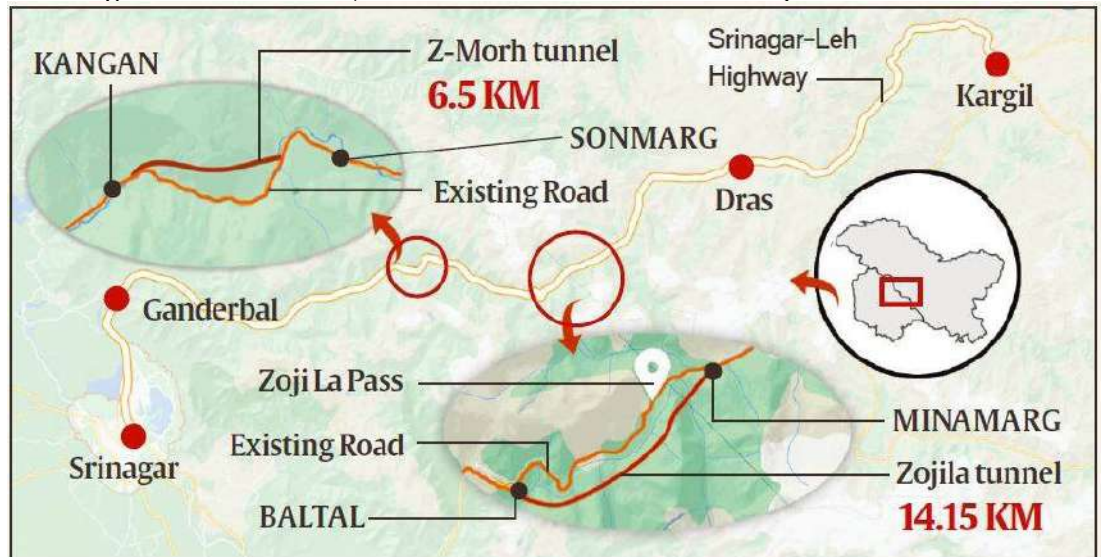
- **Location:** Situated in Mappedu, Tiruvallur district, Tamil Nadu, approximately 20 km from Poonamallee on the Chennai-Poonamallee-Perambakkam highway.
- **Construction:** Built in 976 A.D. by Aditya Karikal Chola II, the elder brother of Rajaraja Chola.
- **Renovation:** In the 16th century, Ariyanatha Mudaliar, an officer under King Tirumala Nayaka, renovated the temple, particularly erecting the main tower (Raja Gopuram).
- **Historical inscriptions:** Copper-plate inscriptions from 1513 CE, written in Sanskrit and Nandinagari script during the reign of Vijayanagara King Krishnadevaraya, were recently discovered at the temple. These inscriptions hold significant historical value.
- **Special features:** The temple is known for its unique depiction of Anjaneya (Hanuman) playing the Veena in a subtle state, making it a special spiritual site.

Insta links:

1. [Temple-architecture](#)

3. Z-MORH TUNNEL

Context: Seven workers of the infrastructure company APCO Infratech, involved in constructing the Z-Morh tunnel, were killed in a militant attack in Jammu and Kashmir.



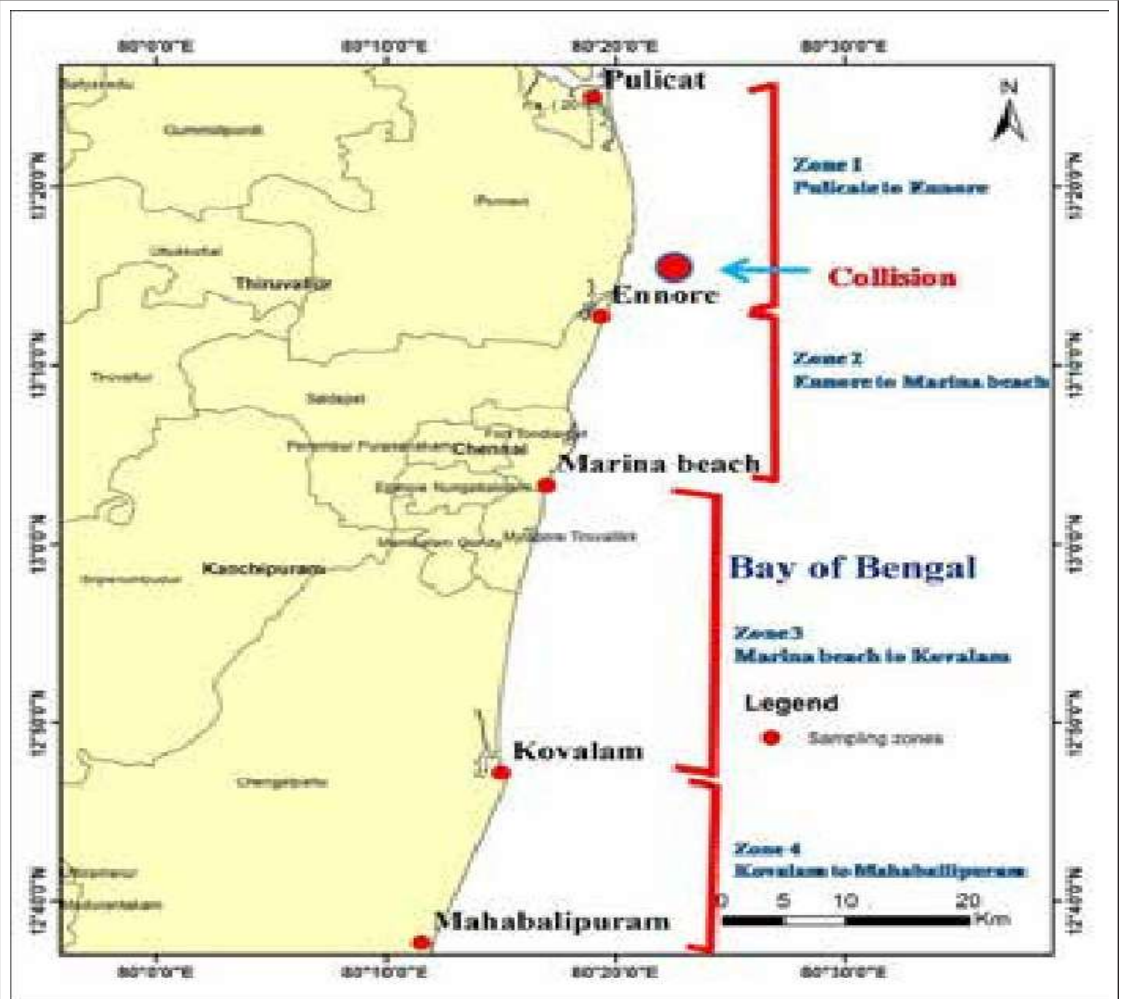
About Z-Morh Tunnel:

- **Location:** 6.4 km tunnel located near Gagangir village in Ganderbal district, connecting **Sonamarg and Kangan** in central Kashmir.
- **Strategic importance:** Part of the larger Zojila tunnel project, providing all-weather connectivity between Srinagar and Ladakh, vital for military access to border areas.
- **Altitude:** Situated at over 8,500 feet, the tunnel bypasses snow-prone regions, ensuring year-round access.
- **Construction:** Initially conceived by the Border Roads Organisation (BRO) in 2012, later transferred to NHIDCL; APCO Infratech is executing the project.
- **Completion:** Soft-opened in February 2024, with full completion delayed due to the Model Code of Conduct (MCC) for J&K elections.
- **Military importance:** Provides crucial connectivity for Indian defence forces to border areas like Siachen Glacier and Eastern Ladakh, especially given ongoing tensions with China and Pakistan.

Insta Links:

1. [Z Morh tunnel](#)
2. [Sela-tunnel-](#)

4. BIOLUMINESCENT WAVES



Context: After Chennai faced heavy rains, a remarkable natural phenomenon took place at the East Coast Road (ECR) beach, as rare bioluminescent waves lit up the night sky, mesmerizing the city’s residents.

Location:

- Chennai East coast road beach.

About Bioluminescence:

- **Definition:** Bioluminescence is the production of light by living organisms, primarily due to chemical reactions within marine life.
- **Organism Responsible:** *Noctiluca scintillans*, also known as “sea sparkle,” is a bioluminescent phytoplankton that creates mesmerizing blue waves when disturbed.
- **Marine species:** Common bioluminescent organisms include certain fish, bacteria, and jellyfish.
- **Purpose:** It is believed that bioluminescence serves multiple functions for marine life, including:
 - **Defense Mechanism:** Used to escape predators.
 - **Communication:** Helps species communicate with each other.
 - **Attraction:** Assists in attracting prey or mates.
- **Location:** Bioluminescence can appear in various marine environments, depending on the type of organism and habitat.

Insta links:

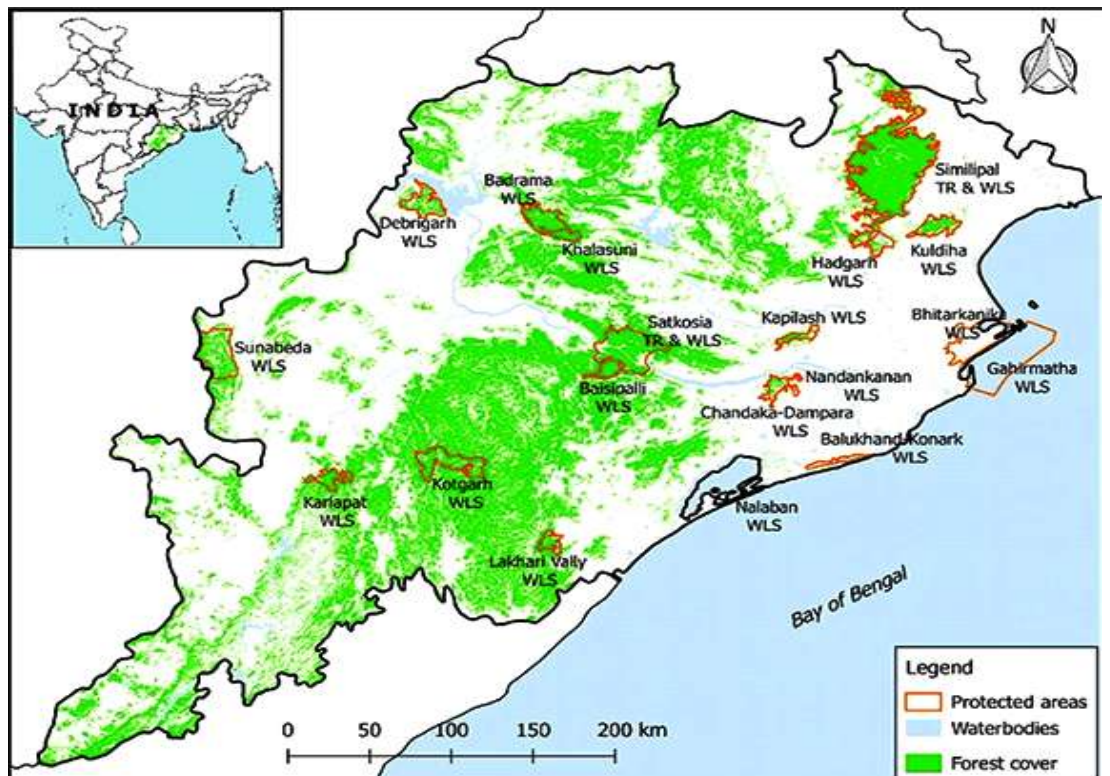
1. [Bioluminescence](#)

5. NANDANKANAN ZOOLOGICAL PARK

Context: With a severe cyclonic storm predicted to hit Bhubaneswar, Odisha, the Nandankanan Zoological Park has initiated extensive preparations to ensure the safety and well-being of the animals.

About Nandankanan Zoological Park:

- **Location:** Situated near Bhubaneswar, Odisha.
- **Inauguration:** Opened in 1960.
- **Global recognition:** First zoo in India to become a member of the World Association of Zoos & Aquariums (WAZA).
- **Breeding centre:** Known for successful breeding of endangered species like the Indian pangolin and white tigers. Leopards, lions, vultures, and the Indian gharial are also bred here.
- **Conservation efforts:** World's first captive crocodile breeding center, achieving the breeding of gharials in 1980.
- **Botanical garden:** The park also hosts the State Botanical Garden, a key center for plant conservation and nature education in Odisha.



Insta links:

1. [Nandankanan-zoological-park](#)

6. RAT TAIL FALLS

Context: The Rat Tail Falls, located in the Dindigul district of Tamil Nadu, stands as the state's tallest waterfall at 947 feet. Recent heavy rainfall has significantly increased its water flow, enhancing its dramatic cascade down the hills.

Lush valley



Full flow: The Rat Tail Falls cascade down the hills in Dindigul district of Tamil Nadu. At 947 feet, this is the highest waterfall in Tamil Nadu. Heavy rain in the area has increased the flow. G. KARTHIKEYAN

About Rat Tail falls (Thalaiyar falls):

- **Location:** Theni District, Tamil Nadu, India.
- **Height:** Stands at 297 meters (974 feet), making it the tallest waterfall in Tamil Nadu, the sixth highest in India, and the 267th highest globally.
- **Water source:** The falls form part of the Manjalar River, a tributary of the Vaigai River.
- **Visibility:** The waterfall can be seen from the Dum Dum Rock viewpoint on the Batalugundu-Kodaikanal Ghat Road, located about 3.6 km away.
- **Scenic view:** It is recognized for its unique appearance as a long, thin strip of water cascading down a black rock cliff, especially noticeable on clear days.

Insta links:

1. [Type of falls](#)
2. [Lonavala waterfalls](#)

7. ARUGAM BAY

Context: Israel has advised its citizens to swiftly leave tourist regions in Sri Lanka, specifically the Arugam Bay area, due to a potential terrorist threat.

About Arugam Bay:

- **Location:** Arugam Bay, also known as “Arugam Kudah,” is located on Sri Lanka’s southeast coast, within the Batticaloa Territory.
- **Historical significance:** It is part of the ancient Mattakallappu Desam, a historic region in Sri Lanka.
- **Tourism:** A popular spot for Israeli tourists, with many businesses catering to Hebrew-speaking visitors, including eateries, spas, and a Chabad house.
- **Name origin:** The Tamil name “Arugam Kudah” translates to “Bay of Cynodon dactylon,” referring to a type of grass commonly found in the area.



Insta links:

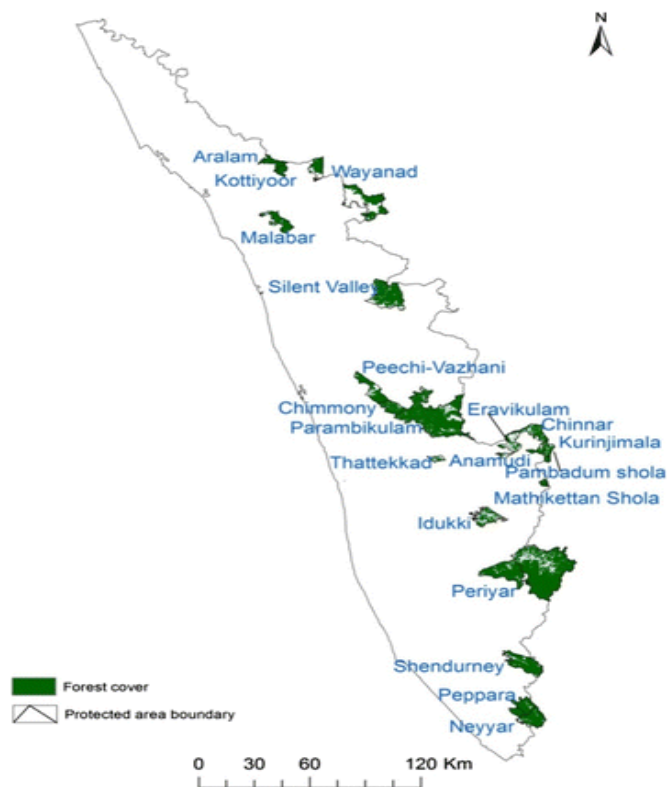
1. [Israel-Palestine-issue](#)
2. [Hambantota-port](#)

8. PERIYAR TIGER RESERVE

Context: The residents of Pampa Valley and Angel Valley in Kerala’s Erumely panchayat are facing challenges due to their proximity to the Periyar Tiger Reserve (PTR) and recent buffer zone demarcations.

Places in News:

- **Pampa Valley & Angel Valley:**
 - Situated **near the Periyar Tiger Reserve**; residents face wildlife threats and legal issues over buffer zone designation.
 - Known for its historical ties to the **“Grow More Food” campaign** of 1947-48, which supported post-war veterans.
- **Mookanpetty Causeway:** A bridge over the Azhutha River serving as a boundary between populated agricultural areas and PTR wilderness, marking a symbolic divide between local communities and protected forest areas.



About Periyar Tiger Reserve (PTR):

- **Location:** Situated in the Idukki and Pathanamthitta districts of Kerala.
- **Formation:** Established as a wildlife sanctuary in 1950 and later declared a Tiger Reserve in 1978. Named after the Periyar River, which originates within the reserve.
- **Drainage:** Major rivers flowing through the reserve are the **Periyar and Mulla- yar**.
- **Unique species:** Hosts medicinal plants like *Syzygium periyarensis*, *Habenaria periyarensis* (an orchid), and *Mucuna pruriense thekkadiensis*.
- **Indigenous communities:** Home to six tribal communities including the Man- nans, Paliyans, Malayarayans, Mala Pandarams, Uralis, and Ulladans, who live within the reserve.

Insta links:

1. [Periyar-tiger-reserve](#)