



INSIGHTSIAS

SIMPLIFYING IAS EXAM PREPARATION



Venus Orbiter Mission

INDIA'S MAIDEN MISSION TO VENUS, WHICH IS SCHEDULED FOR LAUNCH IN MARCH 2028, WILL EMBARK ON A 112-DAY JOURNEY TO REACH THE PLANET.

CURRENT AFFAIRS 30

OCT 2024

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INSIDE

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 6

Topics: Population and associated issues, poverty and developmental issues.

2. Vanishing Demographics: The Decline of South India's Population 7

Topics: Women and women related issues.

3. "The Gender Gap: A UN Wake-Up Call!" 8

GENERAL STUDIES – 2

Topics: Indian Constitution- historical underpinnings, evolution, features, amendments, significant provisions and basic structure; Comparison of the Indian constitutional scheme with that of other countries.

4. Ladak and Sixth Schedule 9
5. Election Expenditure India vs USA 10
6. USA Elections 11

Topics: Structure, organization and functioning of the Executive and the Judiciary; Ministries and Departments of the Government; pressure groups and formal/informal associations and their role in the Polity.

7. Casteism in Prison 13
8. "Marital Rape: Justice Denied or Recognized?" 14
9. Supreme Court's Assam verdict 15

Topics: Salient features of the Representation of People's Act.

10. "The Exit Poll Trap: Misleading or Meaningful?" 16

Topics: Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

11. 10 Years of SBM 17

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

12. National Health Account Estimates 18
13. "Orphan Drugs: A Lifeline for Rare Disease Patients" 19
14. Learning Gaps: India's Literacy & Numeracy Struggle

Topics: Issues relating to poverty and hunger.

15. "India's Struggle: 2024 GHI Shows Decline in Hunger Status" 21

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.

16. Pandemic Preparedness and Emergency Response Framework 22
17. Global Digital Compact 23
18. Final Choice: Advocating for a Dignified Death 24
19. Census Exercise 25

Topics: India and its neighbourhood- relations.

20. Border Balancing Act: India-China Patrolling Dynamics 27

Topics: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

21. "Dimming Diplomacy: India-Canada Relations Strained" 28

Topics: Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

22. Middle East Tension 29
23. "Korean Peninsula: A Powder Keg of Tension" 30

GENERAL STUDIES – 3

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

1. SEBI rules to curb F&O 31
2. India's Employment Growth 32
3. MF Lite framework 33
4. India Textile Sector 34
5. India Ascendant: Dawn of a New Economic Era 35
6. Unpaid Labor 36

Topics: Inclusive growth and issues arising from it.

7. All India Rural Financial Inclusion Survey (2021-22) 37

Topics: Major crops cropping patterns in various parts of the country, different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers.

8. Non - Basmati Rice 38

9. Framework for the Future: The National Agriculture Code	40	<u>Topics: Linkages between development and spread of extremism.</u>	
10. Second All India Rural Financial Inclusion Survey	41	26. Naxalism	59
<u>Topics: Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System- objectives, functioning, limitations, revamping; issues of buffer stocks and food security; Technology missions; economics of animal-rearing.</u>		27. Budget Woes Cloud COP-29 Climate Summit	60
11. Rice fortification	42	<u>Topics: Security challenges and their management in border areas; linkages of organized crime with terrorism.</u>	
12. India and Fertilizer Imports	43	28. Strengthening Borders: Security Dynamics in Ladakh	61
<u>Topics: Effects of liberalization on the economy, changes in industrial policy and their effects on industrial growth.</u>		<u>Topics: Challenges to internal security through communication networks, role of media and social networking sites in internal security challenges, basics of cyber security; money-laundering and its prevention.</u>	
13. Diamond Industry	44	29. "Digital Arrest: Unmasking the Dark World of Cyber-crime"	62
<u>Topics: Infrastructure: Energy, Ports, Roads, Airports, Railways etc.</u>		<u>Topics: Various Security forces and agencies and their mandate.</u>	
14. "Green Powerhouse: India's Leap in Renewable Energy"	45	30. India's Defence Revolution	63
15. "Tracks of Trouble: Indian Railways' Enduring Challenges"	47	GENERAL STUDIES – 4	
16. Fuelling the Future: India's Ethanol Blending Drive	48	1. Case of Atul	65
17. Securing the Skies: From Airport to Aircraft	49	CONTENT FOR MAINS ENRICHMENT	
<u>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.</u>		1. Ministry of Textile programs	66
18. Revolutionary Ultrasound Method Enhances Early Cancer Detection	50	2. Annual Survey of Industries	66
19. "Precision Medicine: Personalizing Healthcare for the Future"	51	3. Gender Performativity	66
20. Small Modular Reactors & Tech Firms	53	4. State Chapter of the Women Entrepreneurship Platform	67
21. Solar Radiation Management	54	5. Judge's Asset Disclosure	67
<u>Topics: Awareness in space.</u>		6. Railway accident data (2019-2024)	67
22. Beyond Earth: India's Vision for Space Exploration	55	7. Case of South Korea Deepfake	68
<u>Topics: Awareness in the fields of IT, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.</u>		8. e-ABkari portal	68
23. Fluorescent Nanodiamonds	56	9. Farm to Fork: Share of Pie	68
<u>Topics: Conservation related issues, environmental pollution and degradation, environmental impact assessment.</u>		10. Case of Kritarth	69
24. Eco-Sensitive Areas	57	11. A tribe out of time	69
<u>Topics: Disaster and management.</u>		12. Weed and Agriculture	70
25. Bihar Flood	58	13. Rule to Roll shift	71
		14. Bride Bazaar	71
		15. India contributes to WHO	72
		16. Vidyan Mahadan	72
		17. Living Planet Report 2024	73
		18. UMANG - Digi Locker	73
		19. Out-of-pocket medical expenses	74
		20. Kidney Transplant Racket	74
		21. Internet Vigilantism	75

22. iFOREST Study	75	14. Slag and Sedimentary Rock Formation	92
23. Shetkari Samruddhi Special Train	76	15. Aurora Borealis	92
24. “Energizing Tomorrow: 2024 World Energy Outlook Sparks Hope!”	76	16. Cyclone Dana	92
25. India’s Direct Tax Collections	77	17. DANA	93
26. Click-to-Cancel Rule	78		
27. Compassion case	78		
28. Mining Dust for Carbon Capture	79		
29. Google’s Violation of Antitrust Laws	79		
30. Joint survey by Safdarjung Hospital and AIIMS	80		
31. Amazon Future Engineer Program	80		
32. I4C Study	81		
33. Localized Weather Forecasting	81		
34. “Breaking Chains: Pakistan’s Women’s Struggle”	81		
35. AI-powered chatbot on CPGRAMS	82		
36. A Silent Crisis	82		
37. Lib Tech study on MNREGA	83		
38. Eco-Crafts from Water Hyacinth	83		
39. Federalism	84		
40. Hula Parties – Man Animal Conflict	84		
41. Aandhi Village – Green Technology	85		
42. Swachh Diwali Shubh Diwali Campaign	85		
43. Aarambh 6.0 Initiative	85		
44. “Mummy-Papa, Vote Do” campaign	86		

FACTS FOR PRELIMS; GS-1

Art & Culture

1. New Inclusion to Classical Language Status	86
2. 2024 Nobel Prize in Literature	87
3. Yuva Sangam	87
4. 2024 Nobel Peace Prize	87
5. National Mission for Manuscripts	88
6. Dinosaur Fossil Park and Museum	88
7. Konark Wheels	88

History

8. Doddalathur Megalithic Site	89
9. National Maritime Heritage Complex	89
10. Battle of Walong	90

Society

11. Korowai Tribe	90
12. Doli Deaths	90

Geography

13. Isostatic Rebound	91
-----------------------	----

GS-2	
<u>Salient Features on Indian Constitution</u>	
1. “Free to Think 2024” report	93
2. Chief Justice of India Appointment	94
<u>Comparison of Constitutions</u>	
3. Swing States	94
<u>Functioning of Parliament and State Legislatures</u>	
4. Section 6A of the Citizenship Act, 1955	94
<u>Centre – State Relations</u>	
5. Industrial Alcohol	95
<u>Constitutional and non-constitutional bodies</u>	
6. National Pharmaceutical Pricing Authority	96
<u>Judiciary</u>	
7. Statue of Lady Justice	96
<u>Governance</u>	
8. RajyaMata-Gomata	97
9. Dharti Aaba Janjatiya Gram Utkarsh Abhiyan	97
10. Prime Minister’s Internship Scheme	97
11. Co-District	98
12. Tele-MANAS	98
13. e-Migrate Portal v2.0	99
14. Drugs Technical Advisory Board	99
15. “Scam se Bacho” Campaign	100
16. National Green Hydrogen Mission	100
17. ‘Karmayogi Saptah’	100
18. ‘E-Cube Hindi Language Lab’	101
19. eShram-One Stop Solution	101
20. Bima Sugam	102
21. Pandemic Fund	102
22. Ayushman Bharat Pradhan Mantri Jan Arogya Yojana	102
23. Tarun Plus	103
24. Ayushman Vaya Vandana Card	103
<u>International Relations</u>	
25. Operation Northern Arrows	104
26. United States Commission on International Religious Freedom	104
27. India-USA MoU	104

28. UNIFIL (United Nations Interim Force in Lebanon)	105	20. Marburg Virus Disease	118
29. Inter-Parliamentary Union	105	21. Trachoma Elimination	119
30. World Telecommunication Standardization Assembly	106	22. Medicinal Foods and Benefits	119
31. Five Eye Alliance	106	23. Global TB Report 2023	119
32. Musaned Platform	107		
33. Indian Development and Economic Assistance Scheme	107		
34. Haemodialysis (HD) Machines	107		
35. International Container Transshipment Port	107		
36. Kartarpur Corridor	108		
37. Kazan Declaration	108		
38. Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO)	109		
39. BRICS and Venezuela	109		

GS-3

Indian Economy

1. Eight - Core Sector	110
2. Cruise Bharat Mission	110
3. Insolvency and Bankruptcy Board of India	111
4. World Green Economy Forum, 2024	112
5. UPI123 and UPI Lite	112
6. "Nobel Prize Honors Study on Institutions as Pillars of Success"	112
7. World Economic Outlook	113
8. WorldSkills 2024	113
9. Gold Reserves	114

Agriculture

10. National Mission on Edible Oils - Oilseeds	114
11. Di-Ammonium Phosphate	115
12. 21st Livestock Census Operation	115
13. Paddy Variety PR-126	116
14. Mission for Integrated Development of Horticulture (MIDH)	116
15. Kanda Express	117

Infrastructure

16. BEML	117
17. Advance Booking System	117

Health

18. E. coli	118
19. Kala-azar	118

Science & Technology

24. Venus Orbiter Mission	120
25. Bharat-Gen	120
26. Polymer nanocomposite	121
27. ISRO third launch pad	121
28. Nobel Prize for Medicine, 2024	122
29. 2024 Nobel Prize in Chemistry	122
30. Charon moon	123
31. Nobel Prize for Physics, 2024	123
32. MACE Project	123
33. TDP1	124
34. X-band Radar	124
35. Mechazilla	124
36. India Mobile Congress	125
37. Ossification Test	125
38. Haber-Bosch Process	125
39. Copper Zinc Tin Sulfide Nanoparticles	126
40. Jiangmen Underground Neutrino Observatory	126
41. IndiaAI Mission	127
42. Artificial Stone	127
43. Non-Kinetic Warfare	128
44. Moonlight Lunar Communications and Navigation Services	128
45. Green Hydrogen Fuel Cell Bus	129
46. Cloud Chamber	129
47. Srijan - Center for Generative AI	130
48. ISRO-DBT Agreement	130
49. Transponder Technology	131
50. Electric Propulsion Satellite	131

Environment & Ecology

51. Swallowtail butterflies	132
52. Elephant Census Method	132
53. Modified Eco-mark Scheme	133
54. Halari donkeys	133
55. Indian Wild Ass	133
56. Antarctic warming	134
57. PMECRG & MAHA-EV Mission	134
58. Kaziranga National Park	135

59. Azores Archipelago	135	6. My Quynh Safari Park	151
60. Tenkana	136	7. Sudan Civil War	152
61. Great Indian Bustard	136	8. Chaukhamba III Peak	153
62. Indian Flapshell Turtles	137	9. Nile River Basin Cooperative Framework Agreement	154
63. Emissions Gap Report, 2024	137	10. Mount Adams	155
64. Coking Coal	137	11. Italy-Albania Migration Pact	156
65. Tardigrades	138	12. Coogee Beach	157
66. Surge in Global Greenhouse Gas	138	13. Hwange National Park	158
67. Bandhavgarh Tiger Reserve	139	14. Refugee camps in the Gaza Strip	159
68. Durgesh Aranya Zoological Park	139	15. NEOM project	160
		16. Iranian Military Bases	161

Defence

69. Thermobaric weapons	140
70. PM E-DRIVE	140
71. Odisha Leopard Population	140
72. Very Short-Range Air Defence System	141
73. Small Modular Reactors	141
74. LSAM 12 (Missile Cum Ammunition Barge)	142
75. T-90 Bhisma Tank	142
76. THAAD missile system	143
77. Samarthak Vessel	143
78. Maritime Exercises	143
79. Shadow Fleet	143
80. S4* SSBN	144
81. Fast Patrol Vessels	144
82. Military Exercises	145

INSIGHT SHORTS

1. iDEX (ADITI 2.0) challenge	146
2. DISC 12 challenge	146
3. Indian Institute of Foreign Trade	146
4. Nepal and India	146
5. France and India	146
6. Lord's Resistance Army	146
7. Great Indian Bustard	146
8. Joya-La Barreta park	146

MAPPING

INTERNATIONAL

1. Canary Island	147
2. Mount Erebus	148
3. Vuhledar	149
4. Little Prespa Lake	149
5. Chagos Archipelago	150

INDIAN

1. Bagmati River	162
2. Eturnagaram Wildlife Sanctuary	163
3. Gangaramchak and Gangaramchak-Bhadulia coal mine	164
4. Padmaja Naidu Himalayan Zoological Park	165
5. Karanpura Coalfield	166
6. Roopkund Lake	167
7. Sri Singeeswarar Temple	168
8. Z-Morh tunnel	169
9. Bioluminescent Waves	170
10. Nandankanan Zoological Park	171
11. Rat Tail Falls	172
12. Arugam Bay	173
13. Periyar Tiger Reserve	174
14. Dholavira	175
15. Petrapole Land Port (Maitri Dwar)	176
16. Sambhar Lake	177

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 health-care 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)

Topics: Women and women related issues.

3. "THE GENDER GAP: A UN WAKE-UP CALL!"

Context:

A new report from United Nations Women has unveiled a significant gender gap in social protection worldwide, leaving billions of women and girls vulnerable to poverty.

Data points and status:

- **2 billion women and girls** worldwide lack access to social protection (e.g., cash benefits, healthcare, pensions).
- **18%** of nearly 1,000 social protection measures introduced by governments across 171 countries focus on **women's economic security**.
- **63% of women** globally give birth without maternity benefits, with the figure rising to **94% in sub-Saharan Africa**.
- **25% more likely:** Women aged 25-34 are more likely to live in extreme poverty compared to men of the same age.
- **7.7 times more likely:** Women in fragile settings

face a much higher likelihood of extreme poverty due to factors like conflict and climate change.

Examples from the Report:

- **Mongolia:** Extended maternity leave to informal workers like herders and self-employed individuals; also introduced paternity leave to promote caregiving gender equality.
- **Mexico and Tunisia:** Included domestic workers in social security systems, ensuring better protection.
- **Senegal:** Expanded the National Health Insurance scheme to meet rural women's needs, with support from UN Women.

Challenges:

- **Gender-specific vulnerabilities:** Women face compounded risks due to conflict, economic shocks, and climate change, which are not adequately addressed in existing social protection schemes.
- **Inflation:** Rising food and energy costs since 2022 have disproportionately impacted women, worsening their financial situation.
- **Gaps in maternity benefits:** Lack of maternity leave and financial support leaves women vulnerable during childbearing years, contributing to gender inequality in economic stability.
- **Extreme poverty:** Women, especially in fragile settings, are far more likely to experience poverty, making gender-responsive policies essential.
- **Funding gap:** Low-income countries need \$77.9 billion (or 15.9% of GDP) to implement basic social protection systems, but lack the fiscal capacity to do so.

Way ahead:

- **Gender-responsive social protection:** Governments must design systems addressing the unique challenges faced by women and girls to ensure inclusivity.
- **International support:** Financial aid from global bodies may be needed to help low-income countries close funding gaps for comprehensive social protection.
- **Innovative policies:** Targeted policies in countries like Mongolia, Mexico, and Senegal show the effectiveness of extending benefits to informal workers.
- **Prioritizing economic security:** Governments should focus more on measures that improve women's access to resources and benefits, enhancing their economic security.

Conclusion:

The UN Women report highlights the urgent need for **gender-responsive social protection policies to bridge the gap** in economic security for women and girls globally. Countries should prioritize inclusive social protection measures and collaborate internationally to ensure sustainable development that addresses gender inequality.

Insta Links:

1. [UN- Women](#)

PYQ:

1. Which of the following gives 'Global Gender Gap Index' ranking to the countries of the world? (UPSC-2017)
 - a) World Economic Forum
 - b) UN Human Rights Council
 - c) UN Women
 - d) World Health Organization

Answer: a)

2. "Empowering women is the key to control population growth". Discuss. (UPSC-2019)

GENERAL STUDIES – 2

Topics: Indian Constitution- historical underpinnings, evolution, features, amendments, significant provisions and basic structure; Comparison of the Indian constitutional scheme with that of other countries.

4. LADAKH AND SIXTH SCHEDULE

Context:

Climate activist Sonam Wangchuk was detained on the Delhi border on Monday night as he led a group of protesters to petition the Central government for the inclusion of Ladakh in the Sixth Schedule of the Constitution among other demands for autonomy to the region.

Asymmetrical Federalism

- **Definition:** Asymmetrical federalism refers to a system where different states or regions within a federation have varying degrees of autonomy and powers.
- **India's case:** In India, certain states and areas enjoy more autonomy under constitutional provisions, particularly through the Fifth and Sixth Schedules. This differs from symmetrical federations like the U.S., where all states enjoy equal powers.

Fifth and Sixth Schedule Origin & Current Application:

- **Historical background:** The Fifth and Sixth Schedules derive from the provisions of the Government of India Act, 1935, which classified areas into 'excluded' and 'partially excluded' regions. These were meant to protect tribal populations from external interventions.
- **Fifth Schedule (Article 244):** It applies to 'Scheduled Areas' declared by the President,

focusing on tribal welfare, land rights, and advisory councils. States covered include Andhra Pradesh, Odisha, Gujarat, Maharashtra, Rajasthan, Himachal Pradesh, and others.

- **Sixth Schedule (Article 244A):** It covers 'Tribal Areas' in Assam, Meghalaya, Mizoram, and Tripura. Autonomous District Councils (ADCs) manage legislative and administrative tasks in these regions, providing more autonomy than the Fifth Schedule.

Why Ladakh Needs the Sixth Schedule?

- **Cultural and ethnic protection:** Ladakh's indigenous population, including the Buddhist and Shia Muslim communities, seeks cultural preservation and governance autonomy.
- **Demands for autonomy:** Activists, including Sonam Wangchuk, argue that inclusion under the Sixth Schedule will provide constitutional safeguards, ensuring economic and social development while protecting their cultural heritage.
- **Tribal representation:** Ladakh has a significant tribal population, and the Sixth Schedule would empower Autonomous District Councils to govern with greater local autonomy, much like northeastern tribal areas.

Positives of being under the Sixth Schedule:

1. **Increased autonomy:** States and regions under the Sixth Schedule enjoy legislative, executive, and judicial autonomy, helping preserve tribal culture. **E.g.** The Autonomous District Councils in Meghalaya regulate land and forests, ensuring local control over resources.
2. **Self-governance:** Tribal communities can manage their affairs, including laws on land inheritance, social customs, and marriage. **E.g.** Mizoram's ADCs regulate shifting cultivation, a traditional tribal practice.
3. **Development & representation:** The Sixth Schedule provides for tailored developmental programs, creating more opportunities for regional growth. **E.g.** Meghalaya's ADCs have autonomy over primary education and local roads.
4. **Economic upliftment:** The Sixth Schedule areas benefit from government schemes that focus on education, infrastructure, and healthcare, improving the overall socio-economic status.

Limitations of the Sixth Schedule:

1. **Limited fiscal powers:** ADCs often lack sufficient financial autonomy, relying heavily on state and central funding. **E.g.** Some ADCs struggle to collect taxes and generate their own revenue.
2. **Political interference:** Although ADCs have autonomy, the laws they create must receive the Governor's approval, reducing actual independence. **E.g.** ADC decisions in Assam sometimes face delays

due to state interventions.

3. **Bureaucratic delays:** Approval from central or state authorities can delay the implementation of laws or policies. E.g. Central regulations can overshadow local rules in Tripura’s tribal areas.
4. **Exclusion of non-tribal population:** The Sixth Schedule’s protections can sometimes lead to conflicts between tribal and non-tribal communities over resource allocation.

Conclusion & Way Forward

To safeguard Ladakh’s unique culture and foster balanced development, inclusion under the Sixth Schedule could be a strategic step. By enhancing local governance and integrating tribal interests, Ladakh can better manage its social, cultural, and economic needs.

Insta Links:

1. [Sixth schedule](#)

PYQ:

1. Why are the tribals in India referred to as ‘the Scheduled Tribes? Indicate the major provisions enshrined in the Constitution of India for their upliftment. (UPSC - 2016)

5. ELECTION EXPENDITURE INDIA VS USA

Context:

Election spending in India often surpasses the limits set by the [Election Commission of India \(ECI\)](#), pointing to challenges like influence-peddling and inequitable representation. Comparatively, countries such as the U.S. and U.K. emphasize transparency and donor influence limitations to regulate election financing.

Present laws governing election expenditure in India:

- **Rule 90 of the Conduct of Election Rules, 1961:** Sets expenditure limits for candidates based on election type and state size.
- **Section 77 of the Representation of the People Act, 1951:** Mandates that every candidate must maintain a separate account of all expenses incurred from nomination to result declaration.
- **Expenditure Statement Submission:** Candidates must submit a complete expenditure report to the Election Commission of India (ECI) within 30 days after election completion.
- **Disqualification for Non-Compliance:** Under Section 10A of the Representation of the People Act, 1951, failure to accurately report or exceeding expenditure limits may lead to a three-year disqualification by the ECI.
- **Political Party Expenditure:** While there is no cap on a party’s total spending, all registered parties are required to file their election expenditure reports to the ECI within 90 days post-election, addressing concerns around party expenditure exploitation.

Current limit:

Election Type	Larger States Expenditure Limit	Smaller States /UT Expenditure Limit	Party Spending Limit
Lok Sabha Elections	₹95 lakh	₹75 lakh	No limit
Legislative Assembly	₹40 lakh	₹28 lakh	No limit

Comparison of election expenditure in India vs. the U.S:

Aspect	India	United States
Expenditure Limits	Limit for candidates, no limit for political parties	Limits on contributions to candidates, no limit for Super political action committees (PACs’) independent spending
Funding Sources	Primarily self-funding and donations	Individual and PAC contributions, with Super PACs accepting unlimited funds
Spending Transparency	Limited transparency, with self-reported spending	High transparency due to campaign finance disclosures by the Federal Election Commission (FEC)

Regulatory Body	Election Commission of India	Federal Election Commission (FEC) and regulations around PACs and Super PACs
Penalties for Violations	Disqualification for up to three years	Hefty fines and disqualification, but Super PACs face fewer restrictions on independent spending
Total Expenditure	₹1,00,000 crore estimated for Lok Sabha 2024	U.S. \$16 billion (₹1,36,000 crore) estimated for the 2024 U.S. presidential and Congressional elections

Way forward:

- **State funding of elections:** As per the Indrajit Gupta Committee (1998) and Law Commission (1999), consider partial state funding to reduce financial dependency on private donations.
- **Simultaneous elections:** Conducting elections simultaneously could help streamline expenditures, although constitutional challenges exist.
- **Cap on party expenditure:** Establish a ceiling on total party spending, calculated as candidate limits multiplied by the number of candidates.
- **Amend financial assistance laws:** Amend laws to count any financial assistance provided by political parties to candidates within the spending limit.
- **Enhanced judicial oversight:** Increase judicial capacity to handle election disputes swiftly, disincentivizing breaches of expenditure limits.

Conclusion

India’s election financing model has controls, yet lacks spending caps for parties, favoring wealthier candidates and creating imbalance. Implementing transparency and stricter caps, as recommended, could curb undue influence, improve fairness, and strengthen public trust in the electoral process.

Insta Links:

1. [De-recognition-or-de-registration-of-political-parties](#)

PYQ:

1. Simultaneous election to the Lok Sabha and the State Assemblies will limit the amount of time and money spent in electioneering but it will reduce the government’s accountability to the people”. Discuss. (UPSC-2017)

6. USA ELECTIONS

Context:

In the United States, the President is elected not directly by popular vote but through a unique system known as the electoral college. This indirect voting system mandates that each state appoints electors who then cast their votes to determine the President.

U.S. Presidential Election Process:

- **Governing articles:** The U.S. Constitution, particularly Article 2 and the 12th Amendment, govern the election process for the President and Vice-President.
- **Electoral college:**
 - **Structure:** The electoral college is composed of 538 electors, a figure derived from the total members of Congress (435 Representatives, 100 Senators) plus three electors for the District of Columbia.
 - **State representation:** Each state’s number of electors equals its representation in Congress. **For example,** California has the most with 54, while smaller states like Delaware have the minimum of three.
 - **Voting procedure:** On election day, citizens vote for their preferred candidate. The party that wins the popular vote in each state appoints its slate of electors.
 - These electors meet in December to cast their votes based on their state’s popular vote, with

“winner-takes-all” rules applying in most states except Maine and Nebraska.

- **Faithless electors:** Electors who defy the popular vote in their state are known as faithless electors. Some states impose penalties for this, though their impact on election outcomes has been negligible.
- **If a Tie Occurs:**
 - **Historical Precedent:** A tie has happened twice (1800 and 1824), resolved by the House of Representatives.
 - **House vote:** In the case of a tie, each state delegation in the House gets one vote to select the President. A candidate must secure 26 state votes to win.
 - If no decision is reached by the inauguration date, the Vice-President, chosen by the Senate, temporarily assumes the role until a President is elected.
- **Comparison of U.S. and Indian election systems:**

<u>Aspect</u>	<u>U.S. Presidential Election</u>	<u>Indian Presidential Election</u>
Electoral Body	Electoral College with 538 electors	Electoral College of MPs and MLAs
Constitutional Basis	Article 2 and the 12th Amendment	Articles 52 to 71
Method of Elector Selection	Electors are chosen by popular vote in each state	MPs and MLAs act as electors, no public voting
Voting System	Indirect, state-by-state “winner-takes-all” for most states	Single transferable vote with proportional representation
Role of Faithless Electors	Permitted in some states, with limited impact	Not applicable
Handling of Ties	House of Representatives chooses the President	Re-election by Electoral College if no candidate secures majority
Election Frequency	Every 4 years	Every 5 years
Inauguration Date	January 20 following the election year	Within a few days after the election results

Conclusion:

The U.S. and India’s Electoral Colleges reflect distinct democratic contexts: the U.S. system balances state representation but may diverge from the popular vote, while India’s system ensures proportional representation through Parliament and state assemblies. Both illustrate diverse democratic approaches to uphold federalism and constitutional integrity.

Insta Links:

1. [Election-expenditure-India-vs-USA](#)

PYQ:

1. ‘Simultaneous election to the Lok Sabha and the State Assemblies will limit the amount of time and money spent in electioneering but it will reduce the government’s accountability to the people’ Discuss. (UPSC-2017)

Topics: [Structure, organization and functioning of the Executive and the Judiciary](#); [Ministries and Departments of the Government](#); [pressure groups and formal/informal associations and their role in the Polity](#).

7. CASTEISM IN PRISON

Context:

The **Supreme Court** on October 3 declared caste-based labour assignments in prisons as “**unconstitutional**”, striking down provisions in State prison manuals across more than 10 states, including **Uttar Pradesh, Tamil Nadu, and Kerala**.

- The court highlighted that assigning menial jobs like cleaning to marginalized castes while reserving cooking for higher castes violates **Articles 14 (Right to Equality), 15 (Prohibition of discrimination), 17 (Abolition of untouchability), and 23 (Prohibition of forced labour)** of the Constitution.

Key issues identified in prison manuals:

- Caste-based discrimination:** Manuals still include discriminatory rules that segregate prisoners based on caste, assigning specific duties based on social hierarchies.
E.g. The separation of **Thevars, Nadars, and Pallars** in Tamil Nadu prisons.
- Colonial legacy:** Prison rules continue to categorize members of **denotified tribes** as “habitual offenders” or “born criminals,” perpetuating colonial-era stereotypes.
- Labor segregation:** Specific tasks are assigned based on caste, such as Brahmins being given cooking duties while marginalized castes are assigned cleaning and manual labor roles.

Current status of Indian prisons:

- Overcrowding:** Indian prisons operate at **117% capacity**, with a significant proportion of inmates being under-trial prisoners.
- Poor conditions:** Lack of hygiene, inadequate medical facilities, especially for women, and reports of **custodial torture** persist.
- Judicial delays:** Prolonged trials and a lack of access to legal aid hinder timely justice for inmates.

Legal framework governing prisons:

- Articles 14, 15, 17, and 23:** These constitutional provisions prohibit discrimination, untouchability, and forced labor, ensuring equality and dignity for all.
- Model Prison Manual (2016) and Model Prisons and Correctional Services Act (2023):** Criticized for retaining vague definitions of “habitual offenders” and failing to fully eliminate caste-based discrimination.
- Prisons Act, 1894:** The primary legislation governing prison administration in India.

Consequences of caste-based discrimination in prisons:

- Violation of fundamental rights:** Caste-based labor assignments undermine inmates’ dignity, equality, and human rights.
- Perpetuation of social inequality:** Reinforces social hierarchies, stigmatizing marginalized communities even within prison walls.
- Obstruction to reformation:** Caste-based assignments restrict personal growth and rehabilitation opportunities for marginalized inmates.

Way ahead for prison reforms:

- Amend prison manuals:** Ensure that all states and Union Territories update prison rules to eliminate discriminatory practices within the next three months.
- Legal framework enhancement:** Incorporate provisions from the **Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013** into the prison manual.
- Regular inspections:** District legal services authorities and boards of visitors should conduct periodic inspections to identify and rectify any biases.
- Awareness and sensitization:** Train prison staff on the principles of equality and non-discrimination to promote inclusive prison practices.
- Judicial oversight:** Encourage adherence to guidelines laid out in landmark judgments like **Arnesh Kumar Vs. State of Bihar (2014)** for the protection of prisoners’ rights.

Conclusion

The SC’s judgment marks a significant step toward reforming India’s prison system by rooting out caste-based discrimination. Moving forward, strict adherence to constitutional principles and reforms in prison administration will be essential to safeguard the dignity and rights of all inmates.

Insta Links:

- [Model-prisons-act-2023](#)
- [Prison-Reforms-in-India](#)

PYQ:

- “Caste system is assuming new identities and associational forms. Hence caste system cannot be eradicated in India.” Comment. (UPSC-2018)
- What are the two major legal initiatives by the State since Independence addressing discrimination against Scheduled Tribes (STs)? (UPSC-2017)

8. “MARITAL RAPE: JUSTICE DENIED OR RECOGNIZED?”

Context:

A three-judge Bench headed by Chief Justice of India (CJI) D.Y. Chandrachud has begun hearing a batch of petitions challenging the constitutional validity of Exception 2 to Section 375 of the Indian Penal Code, 1860 (IPC).

About Section 375 of the Indian Penal Code (IPC):

- **Definition of rape:** Section 375 of the IPC defines acts constituting rape committed by a man against a woman.
- **Exceptions:**
- **It provides two exceptions:**
 - **Marital rape decriminalization:** A man is not considered guilty of rape if he has sexual intercourse with his wife, provided she is not under 18 years of age.
 - **Medical procedures:** Medical procedures or interventions are excluded from the definition of rape.
- **Historical context:** Originally enacted during British colonial rule in 1860, the age of marital consent was raised from 10 to 15 years in 1940, and later to 18 years through a 2017 Supreme Court ruling.

Laws governing marital rape:

1. **Section 375 of IPC:** Defines rape but includes Exception 2, which decriminalizes marital rape for wives over 18, granting immunity to husbands for non-consensual sex within marriage.
2. **Independent Thought v. Union of India (2017):** The Supreme Court raised the age of consent in marriage from 15 to 18 but did not criminalize marital rape.
3. **Section 85 of Bharatiya Nyaya Sanhita (BNS), 2023:** Addresses cruelty towards women but doesn't explicitly recognize marital rape as a criminal offense.
4. **Protection of Women from Domestic Violence Act, 2005:** Provides civil remedies like protection orders and monetary compensation for victims of marital abuse but lacks provisions for criminal prosecution of marital rape.

Judicial cases and verdicts:

1. **Joseph Shine v. Union of India (2018):**
 - The Supreme Court dismantled parts of the doctrine of coverture, asserting that marriage shouldn't limit a woman's autonomy.
2. **Hrishikesh Sahoo v. State of Karnataka (2022):**
 - The Karnataka High Court allowed prosecuting a husband for marital rape, citing the 2013 Justice J.S. Verma Committee Report. The ruling was stayed by the Supreme Court.

3. Delhi High Court Split Verdict (2022):

- Justice Rajiv Shakdher ruled that the marital rape exception violates Article 21 and bodily autonomy.
- Justice C. Hari Shankar upheld the exception, citing that sexual relations are a legitimate marital expectation.

Government's arguments against criminalizing marital rape:

- **Impact on marriage:** The government argued that making marital sexual acts punishable as “rape” could severely impact conjugal relationships and the institution of marriage.
- **Parliamentary decision:** Parliament retained Exception 2 to Section 375 during the 2013 amendments, which exempted marital rape from being criminalized.
- **Separate provisions for consent within marriage:** The government acknowledged violations of consent but argued that the consequences should differ for marital relationships compared to non-marital relationships.
- **Judicial interference:** The government urged the Supreme Court to respect Parliament's decision and not interfere in socio-legal matters concerning marriage.
- **Disproportionate punishment:** Criminalizing marital rape could lead to disproportionate punishment, as it may not consider the nuances of the marital context.

Arguments in favour of criminalizing marital rape:

- **Violation of consent:** Consent remains central to the definition of rape, and marriage should not negate the autonomy of a woman over her body.
- **Arbitrary legal exception:** The marital rape exception is arbitrary, as it discriminates against married women, depriving them of legal protections available to unmarried women.
- **International norms:** Around 77 countries, including Australia, Canada, and the USA, have criminalized marital rape, aligning with international human rights standards.
- **Equal protection under law:** The law should provide equal protection to all women, irrespective of their marital status.
- **Supreme court's recognition:** The Supreme Court has already recognized marital rape under the Medical Termination of Pregnancy (MTP) Act, showing the need for broader criminal recognition.

Way ahead:

- **Legislative review:** Parliament should reconsider the current exception, focusing on gender justice and equal protection of women's rights.
- **Public dialogue:** A broader socio-legal dialogue is essential to align marital rape laws with evolving social norms and international standards.

- **Safeguards:** Implement safeguards to prevent misuse, addressing concerns of false accusations while ensuring justice for victims of marital rape.

Conclusion:

Criminalizing marital rape is a necessary step to protect the dignity and rights of women. While respecting the institution of marriage, it is crucial to ensure consent and equality in marital relationships, moving toward a more just legal framework for all.

Insta Links:

1. [Criminalizing-marital-rape-in-India](#)
2. [The-issue-of-marital-rape](#)

PYQ:

1. We are witnessing increasing instances of sexual violence against women in the country. Despite existing legal provisions against it, the number of such incidences is on the rise. Suggest some innovative measures to tackle this menace. (UPSC-2014)

2. **Cultural Erosion:** Threatens the cultural identity of indigenous Assamese under Article 29.
3. **External Aggression:** Cites illegal immigration as “external aggression,” threatening Assam’s security.
4. **Accord Betrayal:** Seen as undermining the original spirit of the Assam Accord.
5. **Implementation Issues:** Misuse and bureaucratic delays create unrest in Assam.

Arguments in Favor of Section 6A

1. **Parliamentary Competence:** Parliament has the authority to regulate citizenship under Article 11.
2. **Unique Situation:** Assam’s demographic challenge justifies a special framework.
3. **Controlled Process:** Section 6A provides a regulated, time-bound process for citizenship.
4. **Alignment with Constitution:** Articles 6 and 7 align with Section 6A.
5. **National Unity:** The ruling upholds fraternity and national cohesion.

Supreme Court Verdict

1. **Affirmation of Legislative Power:** Reaffirms Parliament’s right to legislate on citizenship.
2. **Balance of Concerns:** The ruling balances Assam’s demographic concerns with national unity.
3. **Judicial Precedent:** Differentiates Section 6A from earlier cases on illegal immigration.
4. **Dissenting Opinion:** Justice Pardiwala called for its prospective invalidation due to outdated relevance.

Way Forward

1. Strengthen border controls to prevent further illegal immigration.
2. Periodic review of Section 6A for effective implementation.
3. Safeguard Assam’s linguistic and cultural identity.
4. Broaden national discussions on citizenship policies, including the Citizenship Amendment Act (CAA).
5. Increase public awareness to promote understanding and reduce tensions.

Conclusion

The Supreme Court’s verdict on Section 6A acknowledges Assam’s unique demographic challenges while affirming Parliament’s legislative authority. It balances regional concerns with national unity and may influence future discussions on citizenship laws in India.

Insta Links:

1. [Citizenship-amendment-act-rules-notified](#)
2. [Section-6a-of-the-citizenship-act-1955](#)

PYQ:

1. With reference to India, consider the following statements: (2021)
1. There is only one citizenship and one

9. SUPREME COURT’S ASSAM VERDICT

Context:

The Supreme Court has upheld **Section 6A of the Citizenship Act, 1955**, which grants citizenship to migrants who entered Assam between January 1, 1966, and March 24, 1971, under the Assam Accord. This decision addresses Assam’s unique demographic and migration history, balancing regional concerns with national unity.

Background

1. **Assam Accord (1985):** Set March 24, 1971, as the cut-off date for citizenship, aiming to resolve tensions between indigenous Assamese people and migrants.
2. **Section 6A:** Added to the Citizenship Act to implement the Assam Accord, establishing special criteria for Assam, different from India’s post-Partition cut-off.
3. **NRC (2019):** Updated to identify legitimate citizens in Assam, excluding 1.9 million people, raising questions about human rights and citizenship.
4. **Legal Challenges:** Petitioners argued Section 6A violates Articles 14 (equality) and 29 (cultural rights) of the Constitution, singling out Assam and threatening its indigenous identity.

Arguments Against Section 6A

1. **Violation of Article 14:** Creates an unequal framework by applying different rules for Assam.

domicile.

2. A citizen by birth only can become the Head of State.
3. A foreigner once granted citizenship cannot be deprived of it under any circumstances.

Which of the statements given above is/are correct?

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

Answer: a)

Topics: Salient features of the Representation of People’s Act.

10. “THE EXIT POLL TRAP: MISLEADING OR MEANINGFUL?”

Context:

Chief Election Commissioner Rajiv Kumar stated that exit polls were causing distractions and asked media houses to self-introspect before publishing the verdict.

What is an Exit Poll?

- Exit Polls are surveys conducted immediately after voters exit polling stations. These polls aim to predict the election outcome based on voters’ preferences as they leave after voting.
- **Legal backing:** In India, exit polls are regulated under the Representation of the People Act, 1951. Section 126A of the Act prohibits the publication of exit poll results from the beginning of voting until the conclusion of polling across all phases.

Methodology used for exit polls:

1. **Sample size:** A significant, representative sample of voters is selected. Larger samples aren’t necessarily more accurate; it’s about a stratified and random selection.
2. **Stratified sampling:** Ensures representation of various demographics, such as gender, caste, religion, rural/urban voters, etc.
3. **Data collection:** Face-to-face interviews with voters as they leave polling stations, sometimes anonymized for honest responses.
4. **Weighting:** Data is weighted to match demographic profiles of the population, ensuring fair representation.
5. **Analysis:** Pollsters convert vote share estimates to seat projections using swing analysis and historical voting data.

Difference between Exit poll and Opinion poll:

Criteria	Exit Poll	Opinion Poll
Timing	Conducted after voters cast their votes	Conducted before the election
Purpose	Predicts the outcome of an election based on actual voting behavior	Gauges voter intentions before polling
Respondents	Voters who have already cast their vote	General electorate, some of whom may not vote
Accuracy	Generally, more accurate due to real-time data	More speculative as opinions may change
Legal Regulation	Heavily regulated; results published post-election	Less regulated but influenced by media ethics

Challenges in Exit polls:

1. **Sampling bias:** Incorrect sampling or under-representation of marginalized groups may skew results.
Example: Axis MyIndia overrepresented male respondents in their 2024 survey.
2. **Non-disclosure by voters:** Some voters, especially from marginalized groups, may not disclose their true voting preferences, leading to inaccurate predictions.
3. **Swing calculation errors:** Converting vote share to seat share involves complex calculations based on regional swings, which can be misleading.
Example: Today’s Chanakya overestimated NDA’s seat tally in the 2024 election.
4. **Social desirability bias:** Voters may give socially acceptable answers rather than their true choices, distorting the poll results.

Way ahead:

1. **Improved sampling techniques:** Ensure more robust sampling, including better representation of rural, marginalized, and minority voters.
2. **Transparency:** Pollsters should disclose their sampling methods, error margins, and assumptions, enhancing trust in results.
3. **Mixed-method approach:** Combine face-to-face interviews with anonymized responses for greater honesty from voters.
4. **Technology integration:** Use of AI and data analytics to process large datasets and identify patterns more accurately.

Conclusion:

Exit polls play a critical role in gauging public sentiment, but their accuracy depends on methodology,

representation, and proper weighting of data. Enhancing transparency and refining sampling methods can ensure more reliable predictions and a better understanding of voter behavior in future elections.

Insta Links:

1. [Sansad-TV-perspective-exit-polls](#)

PYQ:

1. In the light of recent controversy regarding the use of Electronic Voting Machines (EVM), what are the challenges before the Election Commission of India to ensure the trustworthiness of elections in India? (UPSC-2018)
2. To enhance the quality of democracy in India the Election Commission of India has proposed electoral reforms in 2016. What are the suggested reforms and how far are they significant to make democracy successful? (UPSC-2017)

Topics: Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

11. 10 YEARS OF SBM

Context:

The Swachh Bharat Mission was launched with great fanfare exactly a decade ago. A little earlier, on August 15, 2014, the Prime Minister had lent his voice to this neglected cause from the ramparts of the Red Fort.

Swachh Bharat Mission (SBM)

The Swachh Bharat Mission (SBM) was launched on **October 2, 2014** by Prime Minister Narendra Modi, aiming to eliminate open defecation and improve overall sanitation.

The campaign is handled by two ministries:

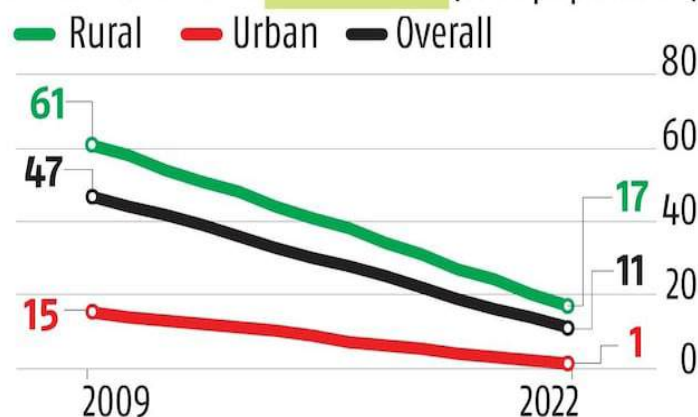
1. **Ministry of Drinking Water and Sanitation:** Responsible for **SBM-Gramin** (rural areas).
2. **Ministry of Housing and Urban Affairs:** Handles **SBM-Urban** (urban areas).

Components of SBM:

1. **Open defecation free (ODF) India:** Focus on eliminating open defecation.
2. **Toilet construction:** Building household, community, and public toilets.
3. **Solid and liquid waste management:** Managing both organic/inorganic waste and wastewater.
4. **Behavioral change campaigns:** Educating citizens on the importance of cleanliness and sanitation.
5. **ODF+ and ODF++:** Focus on sustaining ODF status

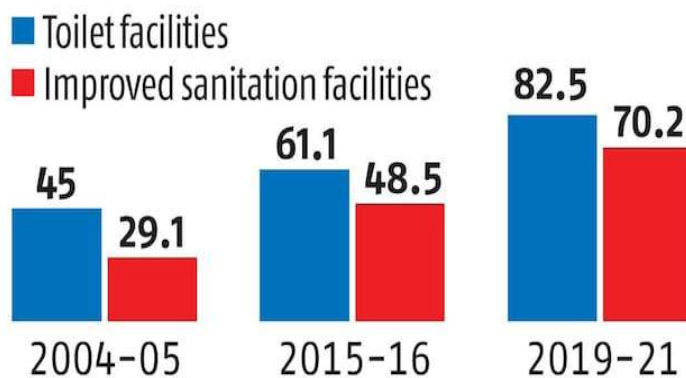
with proper liquid waste management (ODF+) and sludge management (ODF++).

PEOPLE PRACTISING OPEN DEFECAATION (% of population)



Source: World Bank

IMPROVEMENT IN FACILITIES Percentage of households having...



Note: Improved sanitation facility refers to access to toilets that is not shared with other households

Source: NFHS reports

10-Year Analysis:

Positive outcomes:

1. **Open defecation decline:** As of 2019, India was declared ODF with over **10 crore toilets** built. [Source: WHO, 2019 Report]
2. **Improvement in health:** The **World Health Organization (WHO)** estimated that **3 lakh deaths** due to diarrheal diseases were prevented from 2014-19 due to improved sanitation. [Source: WHO Report]
3. **Infant mortality impact:** A **Nature** study found **60,000 to 70,000** fewer infant deaths annually from 2015-2020 due to SBM's impact. [Source: Nature, 2023 Study]
4. **Waste management:** About **78%** of solid waste is now processed, with **97%** of urban municipal wards having door-to-door waste collection. [Source: SBM-U Dashboard]

5. **Toilet access:** The percentage of households with access to toilets rose from **45% in 2004 to 82.5% in 2019-21**. [Source: NFHS 5]

Challenges:

1. **Persistent open defecation:** Despite being declared ODF, **11%** of the population still practices open defecation, mostly in rural areas. [Source: World Bank, 2022 Data]
2. **Rural-urban disparity:** Urban areas have **95.6%** toilet access, while rural regions lag at **76%**. [Source: NFHS-5]
3. **Landfill clearance issues:** Only **30%** of the target to clear legacy landfills has been achieved, with **41%** of the waste remediation completed. [Source: SBM-U Dashboard]
4. **Behavioral challenges:** Deep-rooted behavioral changes are still a challenge, as **toilet usage** in certain rural areas remains inconsistent.
5. **Waste processing targets:** The goal for processing all waste by 2025-2026 has yet to be fully met, with only partial progress.

Way ahead:

1. **Strengthen behavior change:** Intensive campaigns to sustain toilet usage, particularly in rural areas, are essential.
2. **Complete waste processing:** Fast-track efforts to clear legacy landfills and improve waste processing systems.
3. **Focus on rural areas:** Further investment in rural sanitation infrastructure and behavior change interventions is critical.
4. **Sustained health impact:** Continue to link sanitation improvements to health outcomes like reduced infant mortality and general disease reduction.
5. **Community engagement:** Encouraging community involvement for better maintenance and sustainability of sanitation initiatives.

Conclusion:

The Swachh Bharat Mission has significantly improved sanitation across India, reducing open defecation and improving health outcomes. A continued focus on **behavior change, infrastructure improvements, and health linkages** will be key to achieving a cleaner and healthier India.

Insta Links:

1. [SBM](#)

PYQ:

1. As per the Solid Waste Management Rules, 2016 in India, which one of the following statements is correct? (UPSC - 2019)

- a) Waste generator has to segregate waste into five categories.
- b) The Rules are applicable to notified urban local bodies, notified towns and all industrial townships only
- c) The Rules provide for exact and elaborate criteria for the identification of sites for landfills and waste processing facilities.
- d) It is mandatory on the part of the waste generator that the waste generated in one district cannot be moved to another district.

Answer: c)

2. "To ensure effective implementation of policies addressing the water, sanitation and hygiene needs the identification of the beneficiary segments is to be synchronized with anticipated outcomes." Examine the statement in the context of the WASH scheme. (UPSC - 2017)
3. How could social influence and persuasion contribute to the success of Swachh Bharat Abhiyan? (UPSC - 2016)

[Topics: Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources.](#)

12. NATIONAL HEALTH ACCOUNT ESTIMATES

Context:

The Union Ministry of Health and Family Welfare recently released the National Health Account (NHA) estimates for the fiscal years 2020-21 and 2021-22. These reports are the eighth and ninth editions of the NHA series, which provides a comprehensive view of the country's healthcare expenditure.

Summary of Key Findings of National Health Account (NHA) Estimates for 2020-21 and 2021-22:

1. **Rising government health expenditure (GHE):**
 - GHE as a percentage of GDP increased from **1.13% (2014-15)** to **1.84% (2021-22)**.
 - GHE as a share of General Government Expenditure (GGE) rose from **3.94% (2014-15)** to **6.12% (2021-22)**.
 - Per capita GHE increased from **₹1,108** to **₹3,169** during the same period.
2. **Decline in out-of-pocket expenditure (OOPE):**
 - OOPE reduced from **62.6% (2014-15)** to **39.4% (2021-22)** of Total Health Expenditure (THE).

3. **Government's share in total health expenditure:**
 - o GHE increased from **29% (2014-15)** to **48% (2021-22)** of THE.
4. **Social security expenditure (SSE) growth:**
 - o SSE on health increased from **5.7% (2014-15)** to **8.7% (2021-22)** of THE, aiding in reducing OOPE.
5. **Total health expenditure (THE):**
 - o In **2020-21**, THE was **₹7,39,327 crores (3.73% of GDP)**; by **2021-22**, it rose to **₹9,04,461 crores (3.83% of GDP)**.
 - o Per capita health expenditure rose from **₹5,436 (2020-21)** to **₹6,602 (2021-22)**.
6. **Implications of increased government spending:**
 - o **Reduction in financial hardships** due to lower OOPE.
 - o Strengthened **public healthcare services** and progress toward **Universal Health Coverage (UHC)**.
7. **COVID-19 Response:**
 - o Significant increases in health expenditure reflect government efforts to tackle the COVID-19 pandemic through expanded healthcare infrastructure and vaccination programs.
8. **NHA Framework:**
 - o The NHA framework aligns with **System of Health Accounts (SHA) 2011**, facilitating international comparisons and improving healthcare financial transparency.

This rise in health expenditure, improved public health access, and reduction in OOPE reflect India's proactive approach toward achieving **UHC** and ensuring **financial protection** for its citizens.

Note: You don't need to remember all the data but try to remember certain specific data which can be used as value addition in exam.

Insta Links:

1. [Public health challenges](#)
2. [Health infrastructure](#)

PYQ:

1. "Besides being a moral imperative of a Welfare State, primary health structure is a necessary precondition for sustainable development." Analyse. (2021)

Government Health Expenditure (GHE) as % of GDP



Government Health Expenditure (GHE) and Out-Of-Pocket Expenditure (OOPE) as % of Total Health Expenditure (THE)



13. "ORPHAN DRUGS: A LIFELINE FOR RARE DISEASE PATIENTS"

Context: The Delhi High Court last week issued directions aimed at improving the availability of so-called "orphan drugs", which are medications used to treat "rare diseases" — defined by the World Health Organization (WHO) as a debilitating, lifelong condition that affects 1 or fewer people in 1,000.

THE SCENARIO IN INDIA

FROM OVER 7,000 IDENTIFIED RARE DISEASES, 95% DO NOT HAVE ANY FDA APPROVED ORPHAN DRUGS

80% of the diseases occur at birth and are genetic in nature

50% babies born with rare diseases die within a year of birth

ESTIMATES	SOME RARE DISEASES
<p>9-10 crore No. of people in India who suffer from rare diseases, which is 25% of global patients</p> <p>5.4 to 6.5 lakh No. of people in Hyderabad, of a population of 90 lakh, who suffer from rare diseases</p> <p>40% Chances of error in diagnosis during a patient's first visit</p> <p>4.8 years Average time taken for diagnosis</p> <p>20 years Maximum time taken to detect</p>	<ul style="list-style-type: none"> ➤ Thalassaemia ➤ Sickle cell anaemia ➤ Ataxia ➤ Lysosomal storage disorder ➤ Congenital insensitivity to pain (rarest of rare) ➤ Acquired aplastic anaemia ➤ Muscular dystrophy ➤ Multiple sclerosis ➤ Sweet syndrome ➤ Paediatric cardiomyopathy

Definition of rare disease:

- India does not have a standard definition for rare diseases.
- Globally, a rare disease is defined as one affecting fewer than 1 in 2,000 individuals.
- In India, there are over 450 identified rare diseases, including Spinal Muscular Atrophy (SMA) and Gaucher’s disease.

Indian status:

- Around 50-100 million Indians suffer from rare diseases, with over 75% of the cases being children.
- High morbidity and mortality rates are observed, as most patients do not survive into adulthood due to lack of treatment.
- 80% of patients do not receive necessary treatment.

Categorization of rare diseases:

1. **Group 1:** Diseases that can be treated with a one-time curative procedure.
2. **Group 2:** Diseases requiring lifelong treatment with lower costs.
3. **Group 3:** Diseases with available treatments but at extremely high and lifelong costs.

Challenges:

1. **Unavailability of treatment:** Less than 50% of rare diseases have treatments.
2. **Unaffordable treatment costs:** Drugs for rare diseases (orphan drugs) are highly expensive.
3. **Low focus on R&D:** Pharmaceutical companies view rare diseases as unprofitable, limiting drug development.
4. **Late diagnosis:** Diagnosis takes an average of seven years, leading to delayed or incorrect treatments.
5. **Lack of trained healthcare professionals:** Healthcare professionals are often untrained to diagnose or treat rare diseases.

Government initiatives:

1. **National Policy for Rare Diseases 2021:** Provides financial assistance and sets up 12 Centres of Excellence (CoEs) for treatment.
2. **PLI scheme for rare drugs:** Provides financial incentives for manufacturing orphan drugs.
3. **Customs duty waiver:** Waivers on imported rare disease drugs for personal use.
4. **Digital portal for crowdfunding:** Allows the public to donate funds for patients’ treatments.

Way ahead:

- **Increase treatment access:** Expand the range of treatable rare diseases and increase the number of CoEs.
- **Financial assistance:** Enhance financial aid, especially for long-term treatments, and reduce the burden on patients.
- **R&D investments:** Encourage research and

development of affordable drugs for rare diseases.

- **Healthcare professional training:** Improve medical education and training for better diagnosis and treatment of rare diseases.
- **Public awareness:** Raise awareness about rare diseases to foster timely diagnosis and better understanding.

Conclusion:

India’s rare disease burden demands **urgent attention, with reforms in healthcare infrastructure, treatment access, and research** development. Strengthening policies, enhancing financial support, and improving medical knowledge are essential steps in providing equitable healthcare to millions of affected individuals.

Insta Links:

1. [Rare-disease](#)
2. [Policy-on-rare-diseases](#)

PYQ:

1. Appropriate local community-level healthcare intervention is a prerequisite to achieve ‘Health for All’ in India. Explain. (UPSC-2018)

14. 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: Issues relating to poverty and hunger.

15. "INDIA'S STRUGGLE: 2024 GHI SHOWS DECLINE IN HUNGER STATUS"

Context:

The Global Hunger Index (GHI) 2024 reports that India continues to face a **serious level of hunger, ranking 105th out of 127 countries** with a score of **27.3**.

India's Status in GHI 2024 (Crisp Points):

- **Rank:** India ranks 105th out of 127 countries with a score of 27.3.
- **Child wasting:** India has the highest global rate of child wasting at 18.7%.
- **Stunting:** 35.5% of children under five are stunted.
- **Undernourishment:** 13.7% of India's population is undernourished.
- **Child mortality:** 2.9% of children die before their fifth birthday.
- **Comparison:** India lags behind South Asian neighbors like Bangladesh, Nepal, and Sri Lanka, which fall into the moderate hunger category.

Methodology used:

- **Indicators:** GHI uses four indicators – undernourishment, child stunting, child wasting, and child mortality.

- **Data sources:** Data is sourced from UNICEF, WHO, World Bank, and FAO, ensuring comparability across countries.
- **Child wasting:** The GHI uses survey estimates vetted for inclusion in the Joint Malnutrition Estimates and WHO Global Database.

Limitations of the report:

- **Data discrepancies:** The Ministry of Women and Child Development raised concerns about GHI not using data from the Poshan Tracker, which shows lower child wasting rates (7.2% vs. GHI's 18.7%).
- **Survey-based estimates:** Reliance on survey data might not fully reflect real-time data from government tracking systems.
- **National representation:** The GHI's methodology may not capture regional variations and improvements in India's nutrition programs.

Way Ahead:

- **Improved data collection:** India should integrate real-time data from systems like Poshan Tracker to improve hunger and nutrition estimates.
- **Focus on maternal health:** Address the intergenerational transfer of undernutrition by improving maternal health and nutrition.
- **Agricultural investments:** Increase focus on sustainable agriculture and nutritious crop production like millets to improve dietary diversity.
- **Social safety nets:** Strengthen access to Public Distribution Systems (PDS) and Integrated Child Development Services (ICDS) for better coverage of vulnerable populations.

Conclusion:

India's performance in the Global Hunger Index highlights serious challenges, especially in child malnutrition. By improving data transparency, maternal health, and investing in sustainable food systems, India can enhance its hunger and nutrition outcomes, aligning better with global targets like **Zero Hunger by 2030**.

Insta Links:

1. [Global-report-on-food-crises-2023](#)
2. [Food-security-in-India](#)

PYQ:

1. Which of the following is/are the indicator/ indicators used by IFPRI to compute the Global Hunger Index Report? (2016)
 1. Undernourishment
 2. Child stunting
 3. Child mortality

Select the correct answer using the code given below:

- a) 1 only

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

Answer: c)

2. Can the vicious cycle of gender inequality, poverty and malnutrition be broken through microfinancing of women SHGs? Explain with examples. (UPSC-2021)

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.

16. PANDEMIC PREPAREDNESS AND EMERGENCY RESPONSE FRAMEWORK

Context:

Four years after the outbreak of Covid, an expert group constituted by NITI Aayog has recommended setting up a comprehensive framework to effectively manage future public health emergencies or pandemics.

Summary of report:

Challenges and Learnings from COVID-19 Pandemic:

1. **Governance:** Lack of clear risk communication systems and rapid response SOPs for delegation of power.
2. **Legislation:** NDMA and EDA were insufficient for modern pandemic management; need for a specific Public Health Act.
3. **Surveillance and data management:** Challenges in data integration, forecasting, and early warning systems; lacked comprehensive pandemic surveillance integration.
4. **Research and development:** Public-private collaborations were effective, but structured mechanisms linking research institutions with industries are required.
5. **Regulatory reforms:** Delays in emergency authorization due to unclear and unharmonized global regulatory norms.

Future Pandemic Threats and Preparedness:

1. **Global preparedness:** Align country preparedness with global core capacities to prevent cross-border spread.
2. **Cross-sectoral collaboration:** Enhance coordination between public health authorities and disaster management agencies for effective pandemic management.

3. **Risk assessment and community engagement:** Focus on accurate information dissemination and proactive engagement with communities to counter misinformation.
4. **Resource availability:** Ensure availability of necessary funds and resources to support pandemic response efforts.
5. **One Health Approach:** Develop coordinated surveillance and response systems for zoonotic and emerging infectious diseases.

NITI Aayog’s Pandemic Preparedness and Emergency Response Framework:

1. **PHEMA (Public Health Emergency Management Act):**
 - Recommended to replace the outdated Epidemic Diseases Act (1897) and National Disaster Management Act (2005) for better management of health emergencies.
 - The new law would empower governments to respond to pandemics, non-communicable diseases, disasters, and bioterrorism.
 - Establishes public health cadres for national and state levels.
2. **Empowered group of secretaries (EGoS):**
 - Proposed panel headed by the Cabinet Secretary for pandemic preparation and response.
 - **EGoS** will develop SOPs for pandemics and guide governance, finance, R&D, and surveillance during health crises.
3. **Strengthening surveillance:**
 - Focus on monitoring human-bat interfaces, considering viruses linked to bats (e.g., Covid-19).
 - Creation of a national biosecurity and biosafety network for disease surveillance.
 - Establishment of an emergency vaccine bank for rapid response.
4. **Early warning and forecasting:**
 - Build an epidemiology forecasting network for predicting transmission and monitoring countermeasures.
 - Establish Centres of Excellence (CoE) to develop diagnostics, vaccines, and therapeutics for priority pathogens as identified by WHO.

Insta Links:

1. [Pandemic treaty](#)
2. [Disease X](#)

PYQ:

1. What are the research and developmental achievements in applied biotechnology? How will these achievements help to uplift the poorer sections of society? (UPSC -2021)

17. GLOBAL DIGITAL COMPACT

Context:

The Global Digital Compact (GDC), adopted during the UN’s ‘Summit of the Future,’ focuses on harnessing digital technologies for the common good while promoting sustainable development and responsible data governance.

- It aims to address challenges like the **digital divide, data privacy, and ethical AI use.**

Key points on Global Digital Compact (GDC):

- **Nature:** The GDC is a non-binding diplomatic instrument aiming to guide governments, institutions, and stakeholders in digital technology use and governance. Over time, its guidelines could evolve into soft laws.
- **Core objectives:** Promotes global cooperation in technology governance based on international laws, the Universal Declaration of Human Rights, and the UN 2030 Agenda, emphasizing inclusive participation, sustainability, and responsible data governance.
- **Digital public goods:** Advocates for the development of digital public infrastructure, including open-source software, data, and AI models, to bridge the digital divide and support sustainable development goals (SDGs).
- **Panels established:** Two panels have been set up: an Independent International Scientific Panel on AI and a Global Dialogue on AI Governance, aimed at guiding responsible AI use and innovation.
- **Challenges and criticisms:**
 1. **Public-private partnerships:** The openness of such partnerships may be limited by confidentiality and intellectual property concerns.
 2. **Self-regulation:** Relies on tech companies to self-regulate, which has been ineffective in curbing misuse of digital platforms.
 3. **Data governance:** Emphasizes interoperable data systems but lacks robust personal data protection measures.
 4. **Monopoly risks:** Calls for greater corporate involvement in data governance without sufficient countermeasures against monopolistic control.
- **Alignment with SDGs:** Links digital technology advancements with SDGs, highlighting their potential role in achieving these goals, though recognizing the challenges posed by the rapidly evolving AI landscape.

Aspect	Significance
Openness in Partnerships	Promotes collaboration between public and private sectors to develop digital public goods.

Self-regulation	Encourages ethical technology use and accountability among digital technology firms.
Data Governance	Aims to create interoperable data systems for innovation and economic growth.
Monopolistic Control	Focuses on equitable access to data and technologies for sustainable development.
Implementation	Serves as a foundation for future international laws and regulations in digital technology governance.

UN's role: Positions the UN as a central figure in digital governance, advocating for "data flow with trust," although some nations resist this concept due to digital sovereignty concerns.

- **Global cooperation needed:** Emphasizes the necessity for multilateral and regional negotiations in addition to the GDC to address varied jurisdictional and local needs effectively.

Insta Links:

1. [Artificial-intelligence-and-its-significance](#)
2. [Digital-public-goods](#)

PYQ:

1. With the present state of development, Artificial Intelligence can effectively do which of the following? (UPSC - 2020)
 1. Bring down electricity consumption in industrial units
 2. Create meaningful short stories and songs
 3. Disease diagnosis
 4. Text-to-Speech Conversion
 5. Wireless transmission of electrical energy

Select the correct answer using the code given below:

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

Answer: b)

18. 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.

IN THE SUPREME COURT

2011: *Aruna Shanbaug v. Union of India* recognised that life-sustaining treatment could legally be withheld/ withdrawn even from persons without decision-making capacity.

2018: *Common Cause v. Union of India* recognised the right to die with dignity as a fundamental right under Article 21 of the Constitution

of India, and legalised the use of advance medical directives or 'living wills'.

2023: *Common Cause v. Union of India* simplified the process for making living wills and withholding/ withdrawing life-sustaining treatment by removing bureaucratic hurdles.



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

Answer: c)

19. CENSUS EXERCISE

Context:

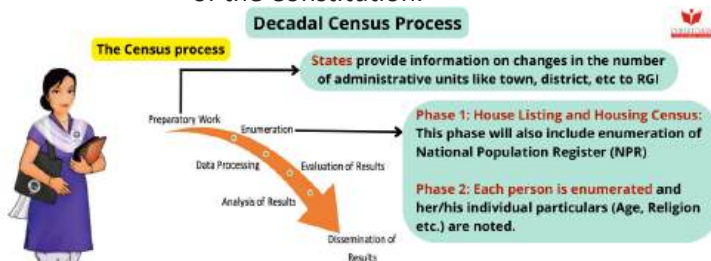
The Indian government has announced plans to initiate the delayed Census exercise next year, expected to conclude by 2026. This Census will impact two major processes: **delimitation** of constituencies and the **reservation for women** in legislative bodies.

About Census in India:

- **Frequency:** Conducted every 10 years, India's Census provides essential population data.
- **Historical background:**
 - The first Indian city census was conducted in **1830** by Henry Walter in Dacca.
 - The first non-synchronous, nationwide census took place in **1872** under Lord Mayo.
 - The **first synchronous census** occurred in **1881**, led by Census Commissioner W.C. Plowden, establishing the decennial cycle.
- **Global comparison:** Many countries, such as the United States and the United Kingdom, also conduct a census every 10 years, while some, like Canada and Japan, conduct it every five years.
- **Responsible authority:** **The Office of the Registrar**

General and Census Commissioner under the **Ministry of Home Affairs** manages India's Census.

- **Legal framework:**
 - The Census is governed by the **Census Act of 1948**, introduced by Sardar Vallabhbhai Patel.
 - It is a **Union subject** under **Article 246** and is listed as item **69** in the **Seventh Schedule** of the Constitution.



What is RGI?
Registrar General and Census Commissioner of India, **founded in 1961**, comes under the **Ministry of Home Affairs**, for arranging, conducting and analysing the results of the demographic surveys of India including Census of India and **Linguistic Survey of India**.
As per the RGI, total number of districts in India has gone up from **640 (2011) to 736 (2021)**

CENSUS	Vs	NPR
Census Act, 1948	Legal Origin	Citizenship Rules, 2003
Assesment, Policy and Planning	Purpose	Creating NRIC
Literacy, Migration, Employment, Income	Information	Birth details of parents and documents
Anonymous and Confidential	Data Privacy	Not Confidential
No punishment for non-disclosure	Punishment	Punishment for non-disclosure

What is NPR?
NPR is a register of all usual residents of the country regardless of whether they are citizens/non-citizens of India.
It was 1st compiled in 2010 under the provision of **Citizenship Act 1995 and Rules, 2003**.

About Delimitation exercise:

- **Definition:** Delimitation is the process of redrawing the boundaries of electoral constituencies to reflect population changes. A Delimitation Commission oversees this exercise.
- **Historical Context:** India has conducted the Census seven times since independence, yet only four delimitations (1952, 1953, 1973, and 2002) have occurred.
- **Last Delimitation:** The previous delimitation in 2002 only adjusted boundaries without changing the number of seats, which has remained based on the 1971 Census for Lok Sabha and the 2001 Census for state Assemblies.
- **Expected Changes:** Based on the estimated population of 1.5 billion in 2026, significant seat adjustments may occur to represent population growth accurately.

Constitutional changes:

- **Article 82:** Requires re-adjustment of seats in the House of the People (Lok Sabha) and legislative Assemblies after each Census.
- **42nd and 84th amendments:** Amendments in 1976 and 2001 froze delimitation until the first Census after 2026.
- **2026 census dependency:** The first Census post-2026 will serve as a reference for re-adjustment

under Article 82, potentially requiring further amendments for early implementation.

- **Key articles affected:** Articles 82, 81 (Lok Sabha composition), 170 (state Assemblies), and 55 (President's election) must be adjusted to align with any changes to seat allocations.

Political challenges:

- **Constitutional mandate:** The 128th Constitutional Amendment mandates 33% women's reservation in Lok Sabha and state Assemblies.
- **Contingent on delimitation:** The reservation will be implemented only after delimitation based on the first Census conducted post-2026.
- **Impact on male representation:** Women's reservation in the current 545-member Lok Sabha would reserve 182 seats for women, impacting the availability of seats for male representatives.
- **Seat redistribution:** Delimitation can help reallocate seats without reducing current representation, helping to facilitate the women's quota.

Way forward:

- **Constitutional amendments:** Update Articles 82, 81, 170, and 55 to align with current population data for balanced representation.
- **Balanced delimitation approach:** Establish fair delimitation criteria beyond population, incorporating regional growth considerations.
- **Women's reservation implementation:** Initiate steps to ensure smooth seat reallocation to accommodate 33% reservation.
- **Strengthen regional consensus:** Work towards a balanced approach to address the North-South divide in population growth.
- **Enhanced stakeholder engagement:** Build support from key political stakeholders for smoother legislative amendments and policy adoption.

Conclusion:

The upcoming Census, delimitation, and women's reservation adjustments are pivotal for aligning India's legislative representation with its demographic reality. These changes demand legal amendments, regional consensus, and a commitment to equitable representation, ensuring legislative reforms reflect India's evolving socio-political landscape.

Insta Links:

1. [No-population-census-in-the-dark-without-vital-data](#)

PYQ:

1. Consider the following statements:
 1. Between Census 1951 and Census 2001, the density of the population of India has

increased more than three times.

- Between Census 1951 and Census 2001, the annual growth rate (exponential) of the population of India has doubled.

Which of the statements given above is/are correct? (UPSC-2009)

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

Answer: d)



Topics: [India and its neighbourhood- relations.](#)

20. 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.



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)

Topics: Bilateral, regional and global groupings and agreements involving India and/or affecting India’s interests.

21. “DIMMING DIPLOMACY: INDIA-CANADA RELATIONS STRAINED”

Context:

Relations between India and Canada are at a nadir, amidst the row regarding India’s alleged involvement in the murder of Khalistani separatist Hardeep Singh Nijjar.

Background of Bilateral Relations:

- **Diplomatic Relations:** Established in 1947, upgraded to a strategic partnership in 2015.
- **Trade:** India was Canada’s 10th largest trading partner in 2022-23, with bilateral trade worth US\$ 8.15 billion. CEPA/EPTA trade negotiations are on hold.
- **Nuclear cooperation:** Began in 1956, paused after India’s 1974 nuclear test, resumed in 2010.
- **Diaspora:** 1.6 million Indian diaspora members in Canada, with 22 Indian-origin MPs in its House of Commons.

Current issues:

- **Khalistani extremism:** Canada’s perceived support for Khalistani groups has strained ties.
- **Nijjar killing:** Relations worsened after the June 2023 killing of Nijjar. PM Trudeau accused Indian agents, which India denied.
- **Diplomatic expulsions:** Both countries expelled diplomats, further escalating tensions.

Diplomatic Principles:

- Diplomatic Immunity:**
 - Defined under the **Vienna Convention** on Diplomatic Relations (1961), ensuring diplomats are not subjected to local jurisdiction.
- Termination of Relations:**
 - **The Vienna Convention** also outlines procedures for ending diplomatic relations and withdrawing diplomats.

Western double standards: India pointed out the hypocrisy of **Western democracies**, including Canada, when security concerns outweigh their commitment to freedoms.



Impacts:

- **Diplomatic fallout:** Reduced diplomatic engagement, withdrawal of senior diplomats.
- **Economic impact:** Paused trade talks could hurt bilateral trade and market access.
- **Diaspora concerns:** Rising tensions may affect Indian diaspora in Canada specially students abroad.
 - Canada hosts **1.6 million Indian-origin people**, making up over **3%** of its population.
 - Indian students make up **40%** of all international students in Canada, contributing significantly to remittances.
- **Strategic cooperation:** Strain on cooperation in nuclear energy, education, and technology.

Way ahead:

- **Diplomatic engagement:** Both nations must initiate high-level dialogue to ease tensions.
- **Security concerns:** Canada should address anti-India elements, while India should cooperate transparently.
- **Focus on trade:** Resume trade talks to rebuild economic ties.
- **People-to-People ties:** Strengthen diaspora ties and encourage cultural exchanges.

Conclusion:

The diplomatic row between India and Canada

poses a significant challenge to bilateral relations, yet both countries stand to benefit from restoring trust and cooperation. By addressing core issues related to extremism and diplomacy, they can work towards stabilizing ties for mutual benefit.

Insta Links:

1. [India - Canada](#)
2. [India-Canada-Relationship](#)

PYQ:

1. Indian diaspora has scaled new heights in the West. Describe its economic and political benefits for India. (UPSC-2023)
2. Indian diaspora has a decisive role to play in the politics and economy of America and European Countries". Comment with examples (UPSC-2020)

Topics: Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

22. MIDDLE EAST TENSION

Context:

Recent tensions in the Middle East have heightened concerns for global stability, with Iran and Israel on the verge of a major conflict. This ongoing strife threatens to expand regionally, with potential repercussions on India's strategic interests, including energy security and regional partnerships.

Rising Tensions in the Middle East:

- In 2024, **Iran and Israel** have exchanged missile attacks, reminiscent of previous confrontations.
- This escalation poses the risk of **regional instability**, affecting not only the two countries but also surrounding nations like Lebanon, Syria, and Iraq.
- For Israel, maintaining control over Iran's influence through **Hezbollah and other proxy groups remains crucial**. For Iran, retaliation is part of its broader geopolitical ambitions in the region.

Importance of the Middle East for India:

1. **Energy Security:** India sources 80% of its crude oil from the region. Any disruption due to conflict could lead to price hikes and jeopardize India's energy supplies.
2. **Diaspora Concerns:** Over 9 million Indians live and work in the Middle East, contributing significantly to remittances. Their safety is crucial.
3. **Strategic Investments:** Projects like the India-

Middle East-Europe Economic Corridor (IMEEC) and Chabahar port underline India's economic and strategic interests in the region.

4. **Terrorism:** Collaborative efforts between India and Middle Eastern nations in counter-terrorism and intelligence sharing are essential for regional stability.



Other stakeholders in the region:

1. **Qatar:** A key mediator, engaged with both Iran and Israel, with influence due to hosting Hamas leaders.
2. **Saudi Arabia & UAE:** Keen to advance peace and stability, driven by long-term economic visions. They seek to de-escalate tensions.
3. **Turkey:** A mediator in back-channel diplomacy, maintaining communication with both sides while positioning itself as a regional power.
4. **United States:** The U.S. maintains its role as Israel's key ally but faces challenges in preventing escalation.

Challenges:

1. **Energy supply disruptions:** Any conflict could destabilize the global oil market, affecting India's economy.
2. **Regional volatility:** The spread of conflict could draw in other actors like Hezbollah, Syria, or Iraq.
3. **Balancing diplomatic relations:** India must manage its ties with both Israel and Iran, avoiding entanglement in regional politics.
4. **Impact on investments:** Initiatives like the IMEEC may face setbacks if regional instability grows.

Way ahead for India:

1. **Diplomatic engagement:** India should continue using its established relations to advocate for peace, leveraging its ties with both Israel and Iran.
2. **Strengthening energy ties:** Diversifying energy sources to mitigate risks in times of conflict is essential.
3. **Diaspora safety:** India should prioritize evacuation plans and safety measures for its citizens in the region.

4. **Maintaining balance:** India’s non-alignment policy should be maintained to ensure it can mediate where necessary without alienating key stakeholders.

Insta Links:

1. [Israel Iran conflict](#)

PYQ:

1. Mediterranean Sea is a border of which of the following countries? (UPSC - 2017)
 1. Jordan
 2. Iraq
 3. Lebanon
 4. Syria

Select the correct answer using the code given below:

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

Answer: c)

2. “India’s relations with Israel have, of late, acquired a depth and diversity, which cannot be rolled back.” Discuss. (UPSC - 2018)

History:

1. **Japanese occupation:** Korea was under Japanese control from 1910 to 1945.
2. **Post-WWII division:** After Japan’s defeat, Korea was split along the **38th parallel**. The **USSR** controlled the North, and the **USA** controlled the South.
3. **Korean war:** In **1950**, North Korea, backed by the USSR, invaded South Korea. The war ended with an **armistice in 1953**, creating the **Demilitarized Zone (DMZ)** but no formal peace treaty was signed.
4. **Nuclear development:** North Korea has pursued nuclear weapons, leading to international sanctions.

Present status:

- **Military build-up:** North Korea has ramped up its nuclear program, conducting multiple missile tests, and fortifying its borders.
- **Diplomatic stalemate:** Despite previous peace talks, North Korea declared South Korea as its “primary foe” in 2024, ending hopes for reunification.
- **Nuclear tests:** North Korea has withdrawn from the **Non-Proliferation Treaty (NPT)** and has tested nuclear weapons multiple times.

International Implications

- **Global conflicts:** Rising tensions in the Korean Peninsula coincide with other global conflicts, such as Russia-Ukraine and Israel-Palestine.
- **Major power involvement:** Key stakeholders in the Korean Peninsula, including the U.S., China, and Russia, are involved in a broader strategic competition.
- **Conflict possibilities:** While a major conflict may be avoided due to alliances and nuclear deterrence, incidents or skirmishes are possible.
- **Complex alliances:** North Korea’s ties with China and Russia and South Korea’s alignment with the U.S. add complexity to ongoing global conflicts.

India’s stand:

- **Neutral position:** India opposes North Korean nuclear tests but has maintained a neutral stance on sanctions.
- **Diplomatic relations:** India maintains diplomatic ties with both Koreas. It played a significant role in the **1953 ceasefire** and helped negotiate peace.
- **Strategic partnerships:** India has a **special strategic partnership** with South Korea, playing a role in South Korea’s **Southern Policy** and India’s **Act East Policy**. India also has diplomatic relations with North Korea.

Way ahead:

- **Diplomatic engagement:** Resume dialogue to reduce military tensions and avoid further escalation.
- **International cooperation:** Leverage diplomatic ties with major players like China, Russia, and the US to mediate peace.
- **Denuclearization talks:** Revive international talks on North Korea’s denuclearization.

23. “KOREAN PENINSULA: A POWDER KEG OF TENSION”

Context:

Simmering tensions between North and South Korea, are now seemingly boiling over. The North Korea has adopted a renewed aggressive stance in the face of tensions with its neighbour, South Korea.



Conclusion:

North and South Korea remain in a delicate and volatile situation, with military tensions rising. A sustained diplomatic effort is crucial for reducing hostility and avoiding a potential conflict, while India can play a supportive role in maintaining regional stability.

NOTE: No need to memorise everything in topic but make sure you know context so that GS1 world history and prelim's theme will be covered in this.

Insta Links:

1. [India-Korea-defence-cooperation](#)
2. [Both Koreas-violated-armistice-agreement](#)

GENERAL STUDIES – 3

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

1. SEBI RULES TO CURB F&O

Context:

The Securities and Exchange Board of India (SEBI) recently introduced significant reforms in the equity index derivatives (futures and options, F&O) framework to curb speculative trading, protect retail investors, and improve market stability.

Recent SEBI Reforms and Their Implications:

1. Recalibration of Contract Size for Index Derivatives:

- **Reform:** The minimum contract size for index derivatives has been increased to ₹15 lakh (from the earlier ₹5-10 lakh), effective November 20, 2024.
- **Implication:** This raises the entry barrier, ensuring that participants have sufficient risk tolerance, reducing speculative trading by small retail investors.
- **Impact:** It will discourage small traders from taking excessive risks, encouraging more responsible trading.

2. Upfront Collection of Options Premium:

- **Reform:** From February 1, 2025, trading members must collect the options premium upfront from buyers.
- **Implication:** It reduces the misuse of leverage in options trading, enforcing financial discipline and reducing the risk of

defaults.

- **Impact:** This measure protects investors from over-leveraged positions, preventing potential market volatility.

3. Rationalization of Weekly Expiring Derivatives Products:

- **Reform:** Only one benchmark index per exchange will offer weekly expiring derivatives, starting November 20, 2024.
- **Implication:** Limits frequent speculative trades that create short-term volatility, especially on expiry days.
- **Impact:** Reduces speculative pressure, promoting market stability.

4. Intra-Day Monitoring of Position Limits:

- **Reform:** From April 1, 2025, SEBI will monitor position limits intra-day, not just end-of-day.
- **Implication:** Prevents excessive speculative positions from being built up during the day.
- **Impact:** Real-time compliance ensures smoother and more stable market functioning.

5. Removal of 'Calendar Spread' Treatment on Expiry Day:

- **Reform:** Effective February 1, 2025, calendar spread benefits will not be available on the day of contract expiry.
- **Implication:** Forces traders to execute rollovers earlier, reducing speculation on the day of expiry.
- **Impact:** Eases volatility and stabilizes derivative prices during expiration.

6. Increase in 'Tail Risk' Coverage on Expiry Day:

- **Reform:** An additional 'Extreme Loss Margin' of 2% will be levied on short options contracts on expiry day.
- **Implication:** Provides greater protection against extreme market movements.
- **Impact:** Reduces the risk of significant losses due to rare market events, improving market resilience.

• **How these reforms impact India:**

- **Curbing speculation:** Larger contract sizes and upfront premium collection reduce excessive speculation, particularly by small traders.
- **Market stability:** Limiting speculative positions and lowering intra-day volatility enhances market stability, attracting long-term investors.
- **Protecting retail investors:** The reforms safeguard retail investors from significant losses due to aggressive short-term trading.
- **Promoting capital growth:** A focus on disciplined investment strategies supports capital formation and sustainable economic growth.

Insta Links:

1. [SEBI](#)

PYQ:

1. Which of the following is issued by registered foreign portfolio investors to overseas investors who want to be part of the Indian stock market without registering themselves directly? (2019)
 - (a) Certificate of Deposit
 - (b) Commercial Paper
 - (c) Promissory Note
 - (d) Participatory Note

Answer: d)

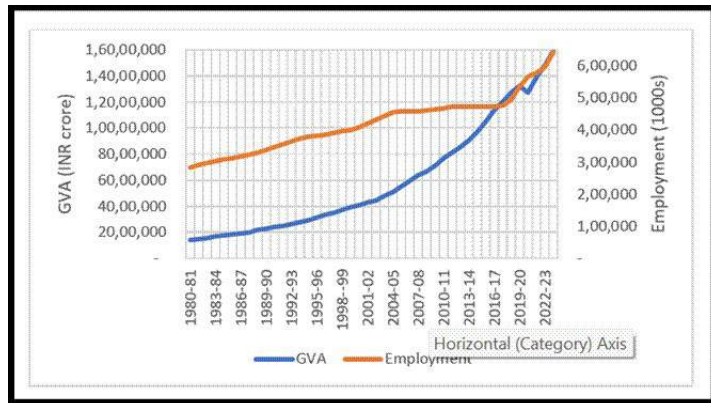
2. INDIA'S EMPLOYMENT GROWTH

Context:

India has witnessed significant employment growth over the years. With the employment increased by nearly 36%, adding around 17 million jobs during 2016-17 and 2022-23, India's economic trajectory demonstrates sustained job creation across key sectors.

Summary of India's Employment Growth (2016-2023):

- **Employment growth:** India's employment grew by 36%, adding 17 million jobs between 2016-17 and 2022-23. This challenges the concept of "jobless growth" and shows a positive correlation between GDP growth and job creation.
- **Worker population ratio (WPR):** WPR increased by 9 percentage points, reflecting a 26% rise in employment from 2017 to 2023, based on PLFS data.
- **Consumption-driven growth:** India's growth is driven by domestic consumption, which suggests that more people are securing employment and boosting economic demand.
- **Employment elasticity:** Between 2017-23, a 1% GDP increase led to a 1.11% rise in employment, indicating strong job creation relative to economic growth.
- **Sectoral job creation:** The services sector showed high labor intensity with a labor-capital ratio of 1.17, highlighting robust job generation in the services industry.



Sector-Specific Insights:

- **Improved labor market:** Unemployment fell to 3.2% in 2022-23, showing significant labor market improvement.
- **Sectoral shift:** While agriculture still employs 45% of the workforce, there's a growing shift toward manufacturing and services.
- **Youth employment:** Youth unemployment (ages 15-29) declined from 17.8% in 2017-18 to 10% in 2022-23.
- **Female participation:** Female labor participation has steadily increased due to policy support.
- **Wage growth:** Rural wages grew at 6.9% CAGR (FY15-FY22), while urban wages grew at 6.1%, reflecting higher labor demand.

WPR	Rural			Urban			Rural + Urban		
	Male	Female	Person	Male	Female	Person	Male	Female	Person
2023-24	56.3	34.8	45.6	56.4	20.7	38.9	56.4	30.7	43.7
2022-23	54	30	42.3	55.6	18.7	37.7	54.4	27	41.1
2021-22	54.7	26.6	40.8	55	17.3	36.6	54.8	24	39.6
2020-21	54.9	27.1	41.3	54.9	17	36.3	54.9	24.2	39.8
2019-20	53.8	24	39.2	54.1	16.8	35.9	53.9	21.8	38.2
2018-19	52.1	19	35.8	52.7	14.5	34.1	52.3	17.6	35.3
2017-18	51.7	17.5	35	53	14.2	33.9	52.1	16.5	34.7

Economic Growth

- Real GDP grew by 8.2% in FY23-24, while the manufacturing sector grew 9.9% after a previous decline of -2.2% in FY22-23.

Conclusion

India's job market has strengthened, supported by economic growth, government policies, and skilling initiatives. Further investments in education and healthcare will sustain this positive trend.

Note: You don't need to remember all the data but try to remember certain specific data which can be used as value addition in exam.

Insta Links:

1. [ILO India-employment-report-2024](#)
2. [Unemployment](#)

PYQ:

1. Disguised unemployment generally means (UPSC - 2013)
 - a) large number of people remain unemployed
 - b) alternative employment is not available
 - c) marginal productivity of labour is zero
 - d) productivity of workers is low

Answer: c)

2. Most of the unemployment in India is structural in nature. Examine the methodology adopted to compute unemployment in the country and suggest improvements. (UPSC - 2023)

3. MF LITE FRAMEWORK

Context:

The Securities and Exchange Board of India (SEBI) introduced the Mutual Funds Lite (MF Lite) framework on September 30 to promote passively managed mutual fund schemes.

- This initiative aims to attract new players to the mutual fund industry, offer diversified and less risky investment opportunities for retail investors, and enhance market liquidity.

Features of MF Lite framework:

1. **Relaxed regulations:** Lower eligibility criteria for sponsors, including requirements related to net worth, track record, and profitability, to ease entry for new AMCs.
2. **Minimum net worth:** Mandates a minimum net worth of ₹35 crore for AMCs operating passive funds, ensuring adequate liquidity.
3. **Simplified governance:** Reduced oversight role for trustees in passive funds, with a focus on preventing conflicts of interest and market misconduct.
4. **Board-level operations:** Daily operational control shifted to the AMC's board to maintain transparency in fees, expenses, and tracking errors.

Need for a separate framework

1. **Lower risk profile:** Passive funds mimic index performance, making the stringent requirements of active funds unnecessary.
2. **Predictable strategy:** Tracking established indices means minimal discretion in asset allocation, lowering the need for tight regulations.
3. **Regulatory simplification:** Current regulations focus on active funds; a separate framework tailors to the

unique nature of passive funds.

4. **Enhanced market participation:** Encourages new and smaller players to enter the mutual fund ecosystem, increasing diversity and competition.

Impact of the MF Lite framework:

1. **New market entrants:** Lower financial barriers and governance changes are expected to attract more AMCs, increasing competition.
2. **Increased liquidity:** More players in the market will improve overall liquidity, enhancing market stability.
3. **Cost-efficient options:** Investors benefit from cost-effective passive funds, focusing on minimizing expenses and maximizing returns.
4. **Operational efficiency:** Shifting oversight to the AMC's board streamlines processes and boosts transparency.

Risks associated with MF Lite framework

1. **Tracking error:** Deviation from the benchmark can lead to lower-than-expected returns, impacting investor profits.
2. **Expense management:** Even with a low TER, unmanaged costs can reduce the returns of passive funds.
3. **Market volatility:** Passive funds mirror market movements, making them vulnerable to downturns without active intervention.
4. **Limited flexibility:** Lack of active management limits response to market shifts, potentially affecting performance during market instability.

Conclusion:

The MF Lite framework represents a significant step towards creating a robust, inclusive, and diversified mutual fund ecosystem in India. Adopting global best practices, focusing on investor education, and using technology for transparency will ensure sustainable growth and responsible investment opportunities in the passive mutual fund space.

Insta Links:

1. [SEBI](#)
2. [SEBI-rules-to-curb-F&O](#)

PYQ:

1. Which of the following is issued by registered foreign portfolio investors to overseas investors who want to be part of the Indian stock market without registering themselves directly? (UPSC-2019)
 - (a) Certificate of Deposit
 - (b) Commercial Paper
 - (c) Promissory Note
 - (d) Participatory Note

Answer: d)

4. INDIA TEXTILE SECTOR

Context:

The Indian textile industry, which was estimated at \$153 billion in 2021, has recently faced challenges, impacting its growth and export potential. Although aiming for a \$350 billion target by 2030, the industry has experienced a slump due to various economic and geopolitical factors.

Current status of the textile sector:

1. **Market size:** The Indian textile and apparel industry was valued at \$153 billion in 2021, with \$110 billion coming from the domestic market.
2. **Global position:** India is the third-largest textile exporter in the world, holding a 5.4% share of the global market.
3. **Employment:** The sector employs about 105 million people directly and indirectly, making it one of the largest employment generators in the country.
4. **Economic contribution:** The textile industry contributes around 2.3% to India's GDP and accounts for 10.6% of the total manufacturing Gross Value Added (GVA) as of FY23.
5. **Production clusters:** Major textile hubs like Tamil Nadu, Gujarat, and Maharashtra are crucial for spinning and garment manufacturing, with Tiruppur being a key knitwear production center.
6. **Recent performance:** FY22 saw growth with exports reaching \$43.4 billion; however, there has been a notable decline in both domestic demand and exports in FY23 and FY24.

Reasons behind the slump in the textile sector:

1. **Global economic slowdown:** Geopolitical issues and reduced demand from international markets have severely impacted India's textile exports.
2. **High raw material costs:** Increased prices of cotton and Man Made Fibres (MMF) have led to higher production costs, making Indian products less competitive.
3. **Import duties:** The 10% import duty on cotton has made domestic cotton more expensive than global prices, further hampering the industry's competitiveness.
4. **Supply chain disruptions:** Quality control orders on MMF and supply chain bottlenecks have affected raw material availability and price stability.

Other challenges in the textile sector

1. **E-commerce and retail shift:** Direct retailing through e-commerce has disrupted traditional business systems, impacting small-scale manufacturers.
2. **Changing consumer preferences:** Increased demand for comfort wear and sustainable fashion has led to a decline in demand for conventional textile products.

3. **Sustainability and ESG compliance:** Foreign brands are increasingly adopting ESG (Environmental, Social, and Governance) sustainability, pressuring Indian manufacturers to meet strict compliance standards.
4. **Labour costs:** Rising labour costs in the textile sector are affecting overall production expenses, prompting the need for technological interventions to enhance productivity.

Government schemes in the textile sector:

1. **Amended Technology Upgradation Fund Scheme (ATUFS):**
 - Supports technology upgradation in textiles with financial incentives.
 - Aims to improve production capabilities and boost employment.
2. **Scheme for Integrated Textile Parks (SITP):**
 - Provides world-class infrastructure for textile units in clusters.
 - Enhances competitiveness and efficiency of the textile industry.
3. **SAMARTH Scheme (Scheme for Capacity Building in Textiles Sector):**
 - Focuses on skill development, targeting 10 lakh people in textile-related jobs.
 - Aims to bridge the skill gap in the organized and traditional sectors.
4. **Power-Tex India:**
 - Aims to strengthen the power loom sector through technology upgrades.
 - Provides subsidies for modernization and market expansion.
5. **Silk Samagra Scheme:**
 - Integrated program to promote silk production and quality improvement.
 - Supports R&D, seed production, and market promotion in the silk industry.
6. **PM-MITRA (Mega Integrated Textile Region and Apparel Parks):**
 - Aims to create world-class industrial infrastructure for the textile industry.
 - Establishes integrated textile parks to attract investments and boost exports.

Way ahead for the textile sector

1. **Policy interventions:** Remove or reduce the import duty on cotton during off-season months to stabilize raw material prices.
2. **Investment in technology:** Invest in modern technologies and innovations to improve production efficiency and reduce wastages.
3. **Skilling and workforce development:** Upskill the workforce to align with the changing demands of the global market.
4. **Sustainability initiatives:** Promote the adoption of sustainable practices in manufacturing and supply

chains to meet international standards.

- Market diversification:** Explore new markets and diversify exports to reduce dependency on traditional markets.

Insta Links:

- [Production-linked-incentive](#)
- [PM Mitra scheme](#)

PYQ:

- Consider the following statements: (UPSC - 2020)
 - The value of Indo-Sri Lanka trade has consistently increased in the last decade.
 - “Textile and textile articles” constitute an important item of trade between India and Bangladesh.
 - In the last five years, Nepal has been the largest trading partner of India in South Asia.

Which of the statements given above is/are correct?

- 1 and 2 only
- 2 only
- 3 only
- 1, 2 and 3

Answer: b)

- Analyse the factors for highly decentralized cotton textile industry in India. (UPSC - 2013)

- 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).

5. 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).

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 crackdowns
Demographics	Younger population with favorable dependency ratio (UN, 2024)	Aging 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)

6. UNPAID LABOR

Context:

The paper "Valuation of Unpaid Household Activities in India" by Sahoo, Sarkar, and Kumar sheds light on the economic significance of unpaid household work, particularly the disproportionate burden borne by women.

Unpaid work and India's status:

- **High burden on women:** Indian women spend an average of 36 hours per week on unpaid domestic work, compared to 16 hours for men.
- **Major contributor to economy:** Unpaid work in India contributes approximately ₹22.7 lakh crore, around 7.5% of GDP.
- **Labor force gap:** Women outside the labor force spend over seven hours daily on unpaid work, limiting their ability to participate in paid employment.

Comparison with global trends:

- **Global perspective:** Unpaid work accounts for between 10% to 60% of GDP worldwide, varying significantly across countries.
- **Examples:** APEC member economies estimate unpaid work at 9% of GDP; in Australia, it represents up to 41.3%, while it is only 5.5% in Thailand.
- **SDG integration:** Recognizing unpaid labor aligns with UN SDG 5, which promotes gender equality and values unpaid care and domestic work.

Economic value of unpaid work in India:

- **Monetary valuation:** Estimated at ₹49.5 lakh crore (24.6% of GDP) using the Gross Opportunity Cost method and ₹65.1 lakh crore (32.4% of GDP) using the Replacement Cost method for 2019–20.
- **Pandemic impact:** During COVID-19, the value rose to 27.2% (GOC) and 42.3% (RCM) of GDP, reflecting increased household contributions.

Consequences of unpaid work:

- **Gender inequality:** Disproportionate unpaid work for women perpetuates gender disparity, restricting women's financial independence and professional growth.
- **Economic underutilization:** Excluding unpaid work from GDP undervalues substantial economic contributions, leading to an incomplete view of national productivity.
- **Reduced workforce participation:** High unpaid workload limits women's entry into the formal labor market, affecting overall labor force productivity and economic growth.
- **Mental and physical health impact:** The burden of unpaid work can lead to stress, burnout, and negative health outcomes for those disproportionately responsible for it.

- **Policy blind spot:** Without quantification, unpaid work remains unaddressed in policy-making, leaving a significant economic and social issue unresolved.

New Zealand’s Wellbeing Budget Case Study: New Zealand’s 2019 Wellbeing Budget emphasizes citizen well-being alongside economic growth, targeting mental health, child welfare, and gender equity. By accounting for unpaid and domestic labor in policy, it promotes a holistic approach to development, balancing economic and social welfare.

Way ahead:

- **Policy recognition and inclusion:** Develop frameworks to recognize and account for unpaid work in national economic indicators, acknowledging its economic value.
- **Redistribution of domestic labor:** Encourage shared domestic responsibilities to address gender disparities, supported by public awareness and educational initiatives.
- **Enhanced data collection:** Conduct frequent and comprehensive Time Use Surveys to obtain accurate data on unpaid labor and support evidence-based policymaking.
- **Supportive services:** Introduce affordable childcare, eldercare, and family support services to ease the unpaid workload on primary caregivers, mostly women.
- **Financial support mechanisms:** Consider direct or indirect support, such as tax credits or social security benefits for primary caregivers, to offset unpaid work contributions.

Conclusion:

Integrating unpaid labor into economic assessments would not only highlight the economic value of women’s contributions but also foster more equitable policies, supporting India’s growth and aligning with global goals for sustainable development.

Insta Links:

1. [Issues-related-to-women’s-unpaid-work](#)

PYQ:

1. Distinguish between ‘care economy’ and ‘monetized economy’. How can care economy be brought into a monetized economy through women empowerment? (UPSC-2023)

Topics: Inclusive growth and issues arising from it.

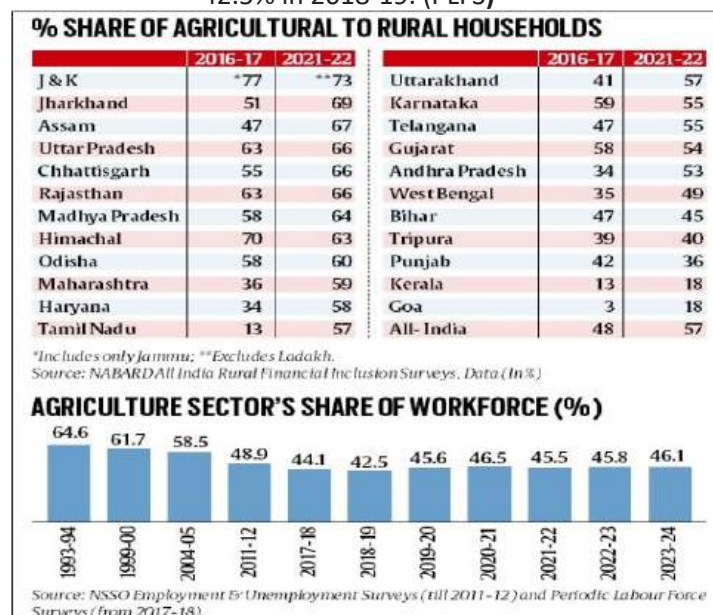
7. ALL INDIA RURAL FINANCIAL INCLUSION SURVEY (2021-22)

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)



Positives:

1. **Increased agricultural participation:** More rural households are relying on agriculture for income, potentially revitalizing the sector.
 - **Example:** 57% rural households involved in agriculture (NABARD).
2. **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).
3. **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).
4. **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:

1. **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).
2. **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.
3. **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).
4. **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:

1. **Diversify rural employment:** Promote rural industries and service-sector jobs to reduce over-reliance on agriculture.
2. **Boost agricultural productivity:** Invest in modern technologies and practices to enhance farm productivity and increase income.
3. **Strengthen rural infrastructure:** Improve transportation, irrigation, and storage facilities to support the agricultural sector and rural industries.

4. **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:

1. [NABARD Report](#)
2. [Second-all-India-rural-financial-inclusion-survey](#)

PYQ:

3. "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: Major crops cropping patterns in various parts of the country, different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers.

8. NON - BASMATI RICE

Context:

The Government of India lifted the export ban on Non-Basmati White Rice on September 28, 2024.

Recent decision points:

1. **Minimum export price (MEP):** A minimum export price (MEP) of \$490 per tonne has been imposed on Non-Basmati White Rice.
2. **Reduction in export duty:** The government also removed the 20% export duty on Non-Basmati White Rice and reduced export duty from 20% to 10% on husked rice, parboiled rice, and paddy.

India's status in global rice exports:

1. **Global leader:** India is the second-largest producer and the biggest exporter of rice globally, accounting for 33% of the world's total rice exports in 2023 (17 million tonnes).

- Competitors:** India's major competitors in the rice export market are Thailand and Vietnam, which together export almost as much rice as India. Other competitors include Pakistan, Cambodia, and the United States.
- Export breakup:** India's rice exports are divided into Basmati and Non-Basmati categories. In 2023-24, Basmati rice accounted for one-third of total rice exports (52.42 lakh tonnes), while Non-Basmati rice saw major exports of varieties like parboiled rice and Non-Basmati White Rice.

- **Temperature:** 22-32°C (high humidity)
- **Rainfall:** Around 150-300 cm.
- **Soil Type:** Deep clayey and loamy soil.
- **Top Rice Producing States:** West Bengal > Punjab > Uttar Pradesh > Andhra Pradesh > Bihar.
- **Aus, Aman and Boro:** In states like Assam, West Bengal and Odisha, three crops of paddy are grown in a year.
- **India is the leading exporter of Basmati Rice to the global market and accounts for 2/3rd of supply.**
- **Major Export Destinations for Basmati Rice (2021-22):** Iran, Saudi Arab, Iraq, United Arab Emirates, U S A and Yemen Republic.



TOP 10 RICE PRODUCING COUNTRIES IN THE WORLD



Impacts of lifting the ban:

- **Domestic level:**
 - Increase in retail prices:** The lifting of the ban could lead to further price hikes in domestic retail prices, which have already been elevated due to inflationary trends.
 - Benefit to farmers:** Farmers who grow premium Non-Basmati rice varieties, like Sona Masoori, are likely to benefit from improved export opportunities.
 - Support for state welfare schemes:** State governments have been allowed to purchase rice for welfare schemes, providing a safety net for lower-income communities.
- **International level:**
 - Boost to exporters:** The lifting of the ban will revive sentiment among traders, particularly in countries like Kenya, Vietnam, and Malaysia, which are major importers of India's Non-Basmati White Rice.
 - Global market stabilization:** India's re-entry into the global rice market will help stabilize prices internationally, especially after the earlier ban disrupted global supplies.
 - Strengthening international relations:** India's rice exports play a role in food security for

many countries, especially in regions like Southeast Asia and Africa. The lifting of the ban could reinforce trade ties with these countries.

Way ahead:

- Balanced export-import policies:** The government should monitor both domestic supply and global demand to ensure a balance that prevents further domestic inflation while maintaining export growth.
- Focus on production:** Increasing investment in rice farming infrastructure, including irrigation and yield-improving technologies, will be critical in ensuring sustained high production levels.
- Promote diversification:** Encouraging diversification of rice varieties and exports can ensure stable income for farmers while promoting India's competitiveness in the global market.

Conclusion:

The decision to lift the ban on Non-Basmati White Rice exports and impose a minimum export price is aimed at balancing domestic availability with global demand. This may benefit both farmers and exporters, while also addressing India's global role as a key rice supplier.

Insta Links:

- [Rice export ban](#)
- [Economics of curbs on Rice](#)

PYQ:

- Among the following, which one is the largest exporter of rice in the world in the last five years? (2019)
 - China
 - India
 - Myanmar
 - Vietnam

Answer: b)
- According to India's National Policy on Biofuels, which of the following can be used as raw materials for the production of biofuels? (2020)
 - Cassava
 - Damaged wheat grains
 - Groundnut seeds
 - Horse gram
 - Rotten potatoes
 - Sugar beet

Select the correct answer using the code given below:

- 1, 2, 5 and 6 only
- 1, 3, 4 and 6 only
- 2, 3, 4 and 5 only
- 1, 2, 3, 4, 5 and 6

Answer: a)

9. FRAMEWORK FOR THE FUTURE: THE NATIONAL AGRICULTURE CODE

Context:

The Bureau of Indian Standards (BIS) has begun the process of formulating a National Agriculture Code (NAC), on the lines of the existing National Building Code and National Electrical Code.

About National Agriculture Code (NAC):

- **Purpose:** Aims to standardize agricultural practices and provide guidelines for future standardization in India.
- **Structure:**
 1. **General principles: Applicable to all crops.**
 2. **Crop-specific standards:** Focuses on crops like paddy, wheat, oilseeds, and pulses.

Coverage:

- **Agricultural cycle:** Encompasses entire agricultural processes from crop selection to post-harvest operations.
- **Post-harvest operations:** Includes standards for storage, processing, irrigation, soil and plant health management, and traceability.
- **Emerging areas:** Incorporates standards for natural farming, organic farming, and the use of Internet-of-Things (IoT) in agriculture.
- **Input management:** Provides guidelines for the use of chemical fertilizers, pesticides, and weedicides.

Objectives:

- **Standardization:** To create a national code considering agro-climatic zones, crop types, and socio-economic diversity.
- **Quality culture:** Acts as a reference for policymakers and agriculture departments to incorporate NAC into their schemes.
- **Guidance for farmers:** Serves as a comprehensive guide to aid decision-making in agricultural practices.
- **SMART farming and sustainability:** Focuses on modern farming techniques, sustainability, traceability, and documentation.
- **Capacity building:** Supports training initiatives by agriculture extension services and civil society organizations.

Implementation plan:

- **Timeline:** NAC drafting expected to be completed by October 2025.
- **Standardized Agriculture Demonstration Farms (SADF):** Experimental farms to test and implement standardized agricultural practices.
- **Training programs:** BIS plans to collaborate with universities and agricultural institutes to train farmers on NAC standards.

Significance of the National Agriculture Code (NAC):

1. **Standardization of practices:** Promotes uniform agricultural standards, enhancing productivity and ensuring best practices across diverse agro-climatic zones.
2. **Guidance for stakeholders:** Provides a comprehensive framework for farmers, policymakers, and agricultural institutions to make informed decisions in agricultural practices.
3. **Support for modern farming:** Encourages the adoption of SMART farming, sustainability, and the use of emerging technologies like IoT, improving efficiency.
4. **Capacity building:** Aids in the training of farmers and agricultural workers, empowering them with knowledge and skills to improve productivity and sustainability.

Limitations of the National Agriculture Code (NAC):

1. **Implementation challenges:** Standardizing agricultural practices across diverse regions with varying climates and soil conditions may be difficult.
2. **Adoption issues:** Farmers, especially smallholders, may face resistance or difficulty in adopting new practices due to lack of resources or awareness.
3. **Dynamic agricultural needs:** Rapidly changing agricultural trends and the emergence of new technologies might require frequent updates to the code.
4. **Infrastructure limitations:** Lack of adequate infrastructure and resources in rural areas could hinder the effective rollout and training on NAC guidelines.

Conclusion

The National Agriculture Code (NAC) represents a significant step toward modernizing and standardizing agricultural practices in India, aiming to boost productivity, sustainability, and efficiency. However, its success will depend on effective implementation, farmer adoption, and continuous updates to address evolving agricultural needs.

Insta Links:

1. [Digital-agriculture-mission](#)

PYQ:

1. In India, which of the following can be considered as public investment in agriculture? (2020)
 - 1) Fixing Minimum Support Price for agricultural produce of all crops
 - 2) Computerization of Primary Agricultural Credit Societies
 - 3) Social Capital development
 - 4) Free electricity supply to farmers
 - 5) Waiver of agricultural loans by the banking system

6) Setting up of cold storage facilities by the governments

Select the correct answer using the code given below:

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

Answer: c)

2. Given the vulnerability of Indian agriculture to vagaries of nature, discuss the need for crop insurance and bring out the salient features of the Pradhan Mantri Fasal Bima Yojana (PMFBY). (UPSC-2016)

10. SECOND ALL INDIA RURAL FINANCIAL INCLUSION SURVEY

Context:

The National Bank for Agriculture and Rural Development (NABARD) released its second All India Rural Financial Inclusion Survey (NAFIS) for 2021-22, covering one lakh rural households across India. The survey provides insights into economic and financial indicators, assessing the impact of government policies on rural development post-COVID.

Data points:

Data Category	2016-17	2021-22	Key Observations
Income Growth	Rs. 8,059 per month	Rs. 12,698 per month	57.6% increase in average monthly income. Agricultural households earn slightly more.
Expenditure Increase	Rs. 6,646 per month	Rs. 11,262 per month	Significant rise in monthly expenditure, higher for agricultural households.
Financial Savings	50.6% of households saved	66% of households saved	Higher savings rate, with agricultural households showing more savings.
Kisan Credit Card (KCC)	Not specified	44% of agricultural households	Greater uptake among households with larger landholdings.
Insurance Coverage	25.5% with insurance	80.3% with insurance	Marked increase in households with at least one insured member.
Pension Coverage	18.9% receiving pension	23.5% receiving pension	Slight improvement in households with at least one member receiving pension.
Financial Literacy	33.9% demonstrated good literacy	51.3% demonstrated good literacy	Significant rise in financial literacy and sound financial behavior.

Significance:

- **Economic growth:** Improved income and expenditure levels indicate better economic conditions for rural households, contributing to poverty reduction.
- **Enhanced financial security:** Increased savings, insurance, and pension coverage suggest improved financial resilience and security among rural populations.
- **Inclusive growth:** The rise in financial literacy and KCC adoption reflects greater access to financial services, empowering rural communities.
- **Policy impact:** Government initiatives like MGNREGS, PMAY-G, and DAY NRLM have played a vital role in boosting rural financial inclusion and socio-economic development.

Limitations:

- **Income disparities:** Despite the rise in average income, there remain significant disparities between agricultural and non-agricultural households.
- **Uneven financial access:** States like Goa, Kerala, and Gujarat show lower savings rates, indicating uneven access to financial services.
- **Insurance gaps:** Life and health insurance penetration remains limited compared to vehicle insurance, highlighting areas for improvement.
- **Pension shortfalls:** Despite improvements, a significant portion of elderly rural populations still lacks pension coverage.

Conclusion:

The NAFIS 2021-22 survey highlights substantial progress in **rural financial inclusion, with improved income, savings, and financial literacy**. Continued government support and investment are crucial to sustain this momentum and ensure a prosperous future for India's rural population.

Insta Links:

1. [NABARD](#)
2. [NAFIS](#)

PYQ:

1. "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: Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System-objectives, functioning, limitations, revamping; issues of buffer stocks and food security; Technology missions; economics of animal-rearing.

11. RICE FORTIFICATION

Context:

The Union Cabinet has extended the universal supply of fortified rice in all central government schemes providing free food grain under the National Food Security Act, 2021, in its present form, until December 2028.

What is rice fortification, and why is it needed?

- **Definition:** Rice fortification involves adding essential micronutrients to rice to improve its nutritional quality, providing public health benefits with minimal risk to health.
- **Need:** India has high levels of malnutrition, with widespread anaemia affecting children, women, and men. Malnutrition results in stunted growth and low productivity, which fortification can help address.
- **Health benefits:** Fortified rice supplements diets with vital nutrients like iron, folic acid, and vitamin B12, addressing the widespread nutritional gaps in the population.
- **Staple diet:** Since rice is a staple food consumed by nearly two-thirds of India's population, fortifying it can significantly impact public health.

Process of rice fortification

- **Technologies used:** Methods like coating, dusting, and extrusion are used to add micronutrients to rice, with extrusion being the most suitable for India.
- **Extrusion process:** Dry rice flour is mixed with micronutrient premix and water, then passed through an extruder machine to produce fortified rice kernels (FRKs).
- **Blending:** These kernels are blended with regular rice at a ratio of 10 g FRK to 1 kg of regular rice.
- **Shelf life:** Fortified rice kernels have a shelf life of at least 12 months, ensuring long-term storage and distribution without losing nutritional value.

FSSAI norms and nutrients involved:

- **Iron:** Each kilogram of fortified rice contains 28 mg-42.5 mg of iron to combat iron-deficiency anaemia.
- **Folic acid:** Contains 75-125 micrograms of folic acid, essential for preventing birth defects and boosting immunity.
- **Vitamin B-12:** Includes 0.75-1.25 micrograms of vitamin B-12 to improve energy levels and prevent nerve damage.
- **Additional nutrients:** Fortified rice may also include zinc, vitamin A, B1, B2, B3, and B6 to enhance overall health.

Initiatives so far:

- **Phase 1 (2022):** Fortified rice was initially distributed through Integrated Child Development Services and PM POSHAN schemes.
- **Phase 2 (2023):** Extended to the Public Distribution System (PDS) in 112 Aspirational Districts and 291 high stunting burden districts.
- **Phase 3 (2024):** Universal coverage achieved, with fortified rice distributed in all districts under various government schemes.
- **Production capacity:** India has 925 fortified rice manufacturers with a capacity to produce 111 LMT of fortified rice annually.

Limitations:

- **Cost:** The annual cost of rice fortification is around Rs 2,700 crore, which may strain budget allocations.
- **Quality control:** Inconsistent quality of fortified rice due to the varying standards of rice mills and manufacturers.
- **Awareness:** Lack of awareness among the population about the benefits of fortified rice reduces its acceptance.
- **Distribution challenges:** Ensuring uniform distribution of fortified rice to remote and underprivileged areas remains a logistical challenge.

Way ahead:

- **Increase awareness:** Educate the public about the health benefits of fortified rice to improve its acceptance and demand.
- **Enhance quality standards:** Establish stringent quality control measures to ensure consistent nutrient levels in fortified rice.
- **Expand infrastructure:** Strengthen infrastructure at rice mills to improve blending and distribution capabilities.
- **Monitoring and evaluation:** Implement robust monitoring systems to assess the impact of rice fortification on public health regularly.

Insta Links:

1. [Fortified-rice](#)
2. [Fortified-rice-kernels](#)

PYQ:

1. Genetically modified “golden rice” has been engineered to meet human nutritional requirements. Which one of the following statements best qualifies golden rice? (UPSC- 2010)
 - a) The grains have been fortified with genes to provide three times higher grain yield per acre than other high yielding varieties.
 - b) Its grains contain pro-vitamin A which upon ingestion is converted to vitamin A in the human body.
 - c) Its modified -genes cause the synthesis of all the nine essential amino acids.
 - d) Its modified genes cause the fortification of its grains with vitamin D.

Answer: b)

12. INDIA AND FERTILIZER IMPORTS

Context:

With conflicts in **Ukraine and Gaza escalating**, global concerns about the stability of fertilizer supplies have intensified. India, highly dependent on imports for various fertilizers, is now considering strategies to enhance domestic production and reduce its reliance on foreign sources.

India’s fertilizer imports:

- **Current dependence:** India relies on imports for about 20% of its urea, 50-60% of diammonium phosphate (DAP), and 100% of muriate of potash (MOP).
 - **Primary import sources:** Major import partners include China, Russia, Saudi Arabia, UAE, Oman, Iran, and Egypt.
- Source:** Standing Committee on Chemicals and Fertilizers Report, August 2023.

India’s fertilizer production:

Category	Details
Total Production (2021-22)	435.95 Lakh Metric Tonnes (LMT) against total demand of 579.67 LMT
Production by Type	<ul style="list-style-type: none"> • Urea: 250.72 LMT; • Di-Ammonium Phosphate (DAP): 89.67 LMT; • Single superphosphate: 10.00 LMT; • Muriate of Potassium: 95.18 LMT imported
Subsidy Allocation (2023-24)	₹1.79 lakh crore, including incentives for urea, as well as Phosphorus & Potassium

Source: Department of Fertilizers, Government of India

Challenges:

- **High import dependency:** Given India’s reliance on imports, disruptions in global supply chains due to geopolitical conflicts directly impact availability and prices.
- **Limited production growth:** While production has increased marginally from 385.39 LMT in 2014-15 to 435.95 LMT in 2021-22, it remains insufficient to meet domestic demand fully.
- **Fluctuating global prices:** As oil prices rise due to regional conflicts, the cost of petroleum-based fertilizers will likely surge, raising India’s fertilizer import costs.
- **Environmental concerns:** The overuse of chemical fertilizers raises concerns about soil health and long-term sustainability.

Recommendations and way forward:

- **Expand domestic production:** Continue setting up new urea plants, similar to the six new plants established since the 2012 investment policy. Boosting domestic capacity could mitigate dependency on imports.
- **Promote alternative solutions:** Adopt nano-urea, encourage natural farming methods, and expand bio-fertilizer use to reduce chemical fertilizer dependency.
- **Invest in R&D:** Encourage research and innovation

in alternative fertilizers and efficient farming practices.

- **Policy reforms:** Create an environment that encourages private and cooperative sector investment in fertilizer production.
- **Long-term sustainability initiatives:** Implement soil health management programs and train farmers in efficient fertilizer use.

Conclusion:

Addressing India’s fertilizer challenges requires a mix of increased domestic production, innovative practices, and strategic policy support. The government’s steps toward self-sufficiency, alongside sustainable practices, will be crucial to stabilizing the agricultural sector in the face of global uncertainties.

Insta Links:

3. [Fertilizer-support](#)

PYQ:

1. How do subsidies affect the cropping pattern, crop diversity and the economy of farmers? What is the significance of crop insurance, minimum support price and food processing for small and marginal farmers? (UPSC-2017)
2. In what way could replacement of price subsidy with direct benefit Transfer (DBT) change the scenario of subsidies in India? Discuss. (UPSC-2015)

Topics: Effects of liberalization on the economy, changes in industrial policy and their effects on industrial growth.

13. DIAMOND INDUSTRY

Context:

The Indian diamond industry, particularly in Surat, is facing a significant downturn due to global geopolitical tensions, especially the Russia-Ukraine war and the Gaza conflict. This has severely affected raw diamond supply and global demand, leading to widespread job losses and economic challenges in India’s diamond sector.

About Indian diamond industry:

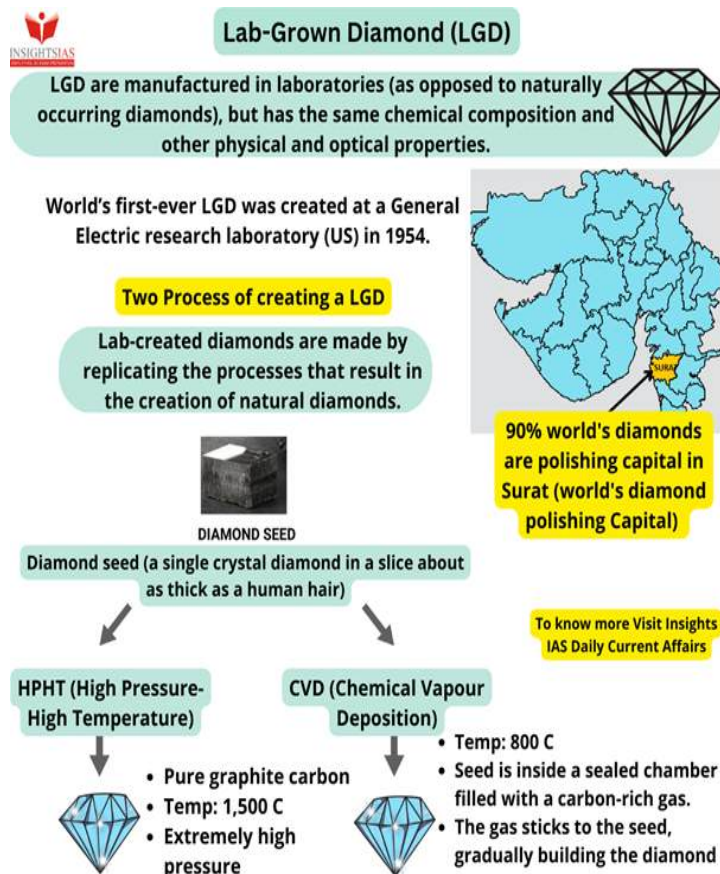
- **Global leader:** India processes over 90% of the world’s diamonds.
- **Employment:** Provides jobs to around 5 million people.
- **Exports:** In 2022, diamond exports were valued at \$23 billion, dropping to \$16 billion in 2023, with further decline expected.
- **Global share:** India contributes 19% of total global diamond exports.

Issues faced by the diamond industry:

1. **Supply chain disruptions:** Sanctions on Russia, a major diamond supplier, have limited raw material availability.
2. **Global demand slump:** Key markets like the U.S., Europe, and China have reduced demand.
3. **Suicides and job losses:** Over 50,000 job losses in Surat, with more than 70 suicides in a year due to economic hardship.
4. **Oversupply and price drop:** Despite limited demand, production continued, causing a 5-27% decline in polished diamond prices.
5. **Rise of lab-grown diamonds:** Cheaper alternatives are gaining market share, impacting the natural diamond industry.

Way ahead

1. **Diversify export markets:** Focus on emerging markets to reduce dependency on traditional buyers.
2. **Support for workers:** Implement government relief measures for displaced workers, including financial aid and retraining programs.
3. **Boost lab-grown diamond industry:** Leverage India’s expertise in diamond cutting to expand in the growing lab-grown sector.
4. **Global cooperation:** Collaborate with international players to find alternate sources of rough diamonds.
5. **Technological upgradation:** Invest in innovation and technology to improve productivity and maintain global competitiveness.



More about Lab grown diamond:

- **Chemical properties:** Lab-grown diamonds have the same chemical, physical, and optical properties as natural diamonds.
- **Origin:** Created using technology that replicates natural geological processes.
- **Production methods:**
 - **HPHT method:** Mimics natural diamond formation using extreme pressure and temperatures.
 - **CVD method:** Uses carbon gas to form diamonds under controlled temperature and pressure.
- **Applications:** Widely used in industries for cutting tools, electronics, and lasers due to their hardness and thermal conductivity.

Conclusion:

The diamond industry’s recovery will hinge on proactive government intervention and the sector’s ability to adapt to changing global dynamics. While challenges remain, a collaborative approach involving workers, policymakers, and industry leaders can ensure resilience and sustained growth.

Insta Links:

1. [Surat Diamond Bourse](#)
2. [Rough Diamond](#)

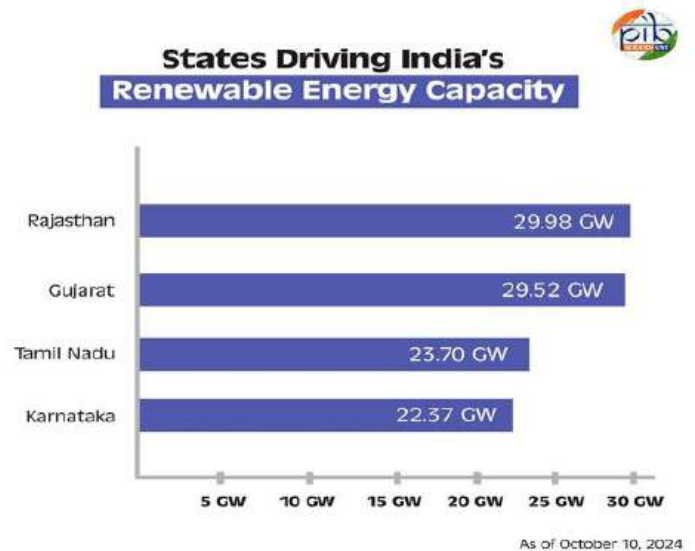
PYQ:

1. Which one of the following foreign travellers elaborately discussed about diamonds and diamond mines of India? (UPSC-2018)
 - a) Francois Bernier
 - b) Jean-Baptiste Tavernier
 - c) Jean de Thevenot
 - d) Abbe Barthelemy Carre

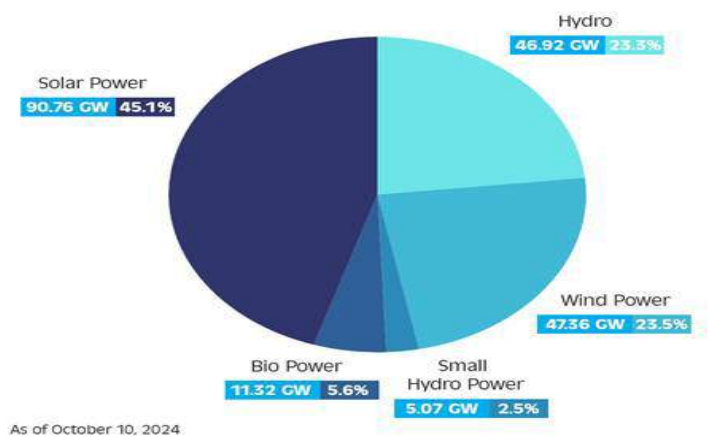
Answer: b)

Topics: Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

14. “GREEN POWERHOUSE: INDIA’S LEAP IN RENEWABLE ENERGY”



Renewable Energy Capacity in India



Context:

India has reached a significant milestone in its renewable energy journey, with the country’s total renewable energy capacity crossing the 200 GW (gigawatt) mark as of October 10, 2024.

India’s renewable energy targets:

- **By 2030:** Achieve 500 GW of installed electricity capacity from non-fossil fuel sources.
- **Net-Zero by 2070:** As per India’s commitments at COP26.

Present status of renewable energy in India (as of October 2024):

Category	Installed Capacity (GW)	Contribution (%)
Solar Power	90.76 GW	20.05%
Wind Power	47.36 GW	10.46%
Large Hydro	46.92 GW	10.36%
Small Hydro	5.07 GW	1.12%
Bio Power	11.32 GW	2.50%
Total Renewable	201.45 GW	46.30%
Total Installed Capacity	452.69 GW	

Source: Central Electricity Authority, Government of India.

Government steps:

- National Green Hydrogen Mission:** Focuses on developing green hydrogen to reduce carbon emissions and enhance energy security.
- PM-KUSUM:** Provides solar irrigation pumps to farmers, promoting solar energy use in agriculture.
- PLI Schemes:** Encourages domestic manufacturing of solar PV modules by offering production-linked incentives.
- 100% FDI:** Allows full foreign direct investment in renewable energy through the automatic route to attract capital.
- Waiver of ISTS Charges:** Exempts renewable projects from inter-state transmission system charges until June 2025 to promote clean energy growth.
- Renewable Purchase Obligation:** Mandates power utilities to purchase a set percentage of their energy from renewable sources until 2029-30.
- Viability Gap Funding:** Provides financial assistance for offshore wind energy projects to make them commercially viable.
- Green Energy Open Access Rules 2022:** Facilitates easier access to renewable energy for businesses, promoting greater usage.

Challenges of renewable energy:

- High upfront costs:** Significant initial investments are required for solar and wind energy infrastructure, which can be prohibitive.
- Intermittency & variability:** Renewable energy sources like solar and wind are dependent on weather and time, making them less predictable.
- Infrastructure needs:** Renewable energy projects require large areas of land and skilled technicians for installation and maintenance.
- Policy & Regulatory hurdles:** Inconsistent policies and bureaucratic delays create uncertainty and slow project implementation.
- Raw material access:** The renewable sector

faces shortages of rare earth materials critical for manufacturing technologies.

- Geographical disparities:** Renewable resources like wind and solar are unevenly distributed across regions, limiting adoption in certain areas.

Way ahead:

- Technological advancements:** Invest in energy storage solutions and smart grids to manage renewable energy variability.
- Policy consistency:** Develop stable, long-term policies to create a favorable investment environment in the renewable sector.
- Capacity building:** Enhance training programs for skilled technicians to ensure smooth deployment and maintenance of renewable energy systems.
- International collaboration:** Foster partnerships with global entities to access technology and raw materials, boosting the renewable energy sector.

Conclusion:

India’s renewable energy journey has reached a significant milestone, marked by the impressive achievement of over 200 GW of installed capacity. This accomplishment is a testament to the nation’s commitment to a sustainable energy future, driven by a diverse array of renewable sources, including solar, wind, hydro, and bioenergy.

Insta Links:

- [Challenges-posed-by-renewable-energy-projects-in-India](#)
- [Perspective-Indias-green-energy-transition](#)

PYQ:

- With reference to solar power production in India, consider the following statements: (UPSC-2018)
 - India is the third largest in the world in the manufacture of silicon wafers used in photovoltaic units.
 - The solar power tariffs are determined by the Solar Energy Corporation of India.
 Which of the statements given above is/are correct?
 - 1 only
 - 2 only**
 - Both 1 and 2
 - Neither 1 nor 2

Answer: d)

- “Access to affordable, reliable, sustainable and modern energy is the sine qua non to achieve Sustainable Development Goals (SDGs)”. Comment on the progress made in India in this regard. (UPSC-2018)

15. “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)

16. 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- Sugar, Corn, Starch, 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- Rice Husk, Wood Chips 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., Algae
	<p>4th Generation Biofuel</p> <ul style="list-style-type: none"> • Made from 'Genetically Engineered Crops'. • 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)

17. SECURING THE SKIES: FROM AIRPORT TO AIRCRAFT

Context:

In recent weeks, Indian airlines like Air India, Vistara, IndiGo, and others have encountered numerous bomb threats, leading to emergency responses, rerouting, and even fighter jet interception.

Rise in threats:

- Threats to flights have surged, mostly originating from social media platforms.
- Intelligence agencies are tracking these threats and IP addresses, with one detention made so far.
- The Union Civil Aviation Minister highlighted that around 275 threats were issued for about 48,000 flights, prompting discussions on updating aviation laws for stricter punishments.

About aviation security architecture:

- **International guidelines:** The International Civil Aviation Organization (ICAO) sets standards through its Annex 17—Aviation Security (under the Chicago Convention) to counteract threats.
- **ICAO resources:** The Aviation Security Manual (Doc 8973) aids ICAO member states with implementing safety measures against unlawful interference.
- **National oversight:** In India, the Bureau of Civil Aviation Security oversees security protocols, with the Directorate General of Civil Aviation focusing on safety. Other agencies like the CISF, NSG, and Intelligence Bureau assist in threat management.

Chicago Convention Overview:

- **Purpose:** Established foundational principles for international civil aviation, creating the ICAO to oversee and harmonize global aviation standards.
- **Main provisions:** Regulates aspects like air-space, aircraft registration, aviation safety, security, and environmental sustainability, along with detailing signatory rights in air travel.
- **Establishment:** Signed on December 7, 1944, in Chicago by 52 nations and went into effect on April 4, 1947, when ICAO formally began operations.
- **Global participation:** As of March 2019, the Convention includes 193 countries, comprising nearly all UN member states, except Liechtenstein, although it is extended there through Switzerland's ratification.
- **Non-UN member:** The Cook Islands participates in the Convention despite not being a UN member.

Protocol for handling bomb threats in aviation:

1. **Pre-departure threats:**

- Aircraft is moved to a secured bay for thorough checks.
- Passengers and baggage undergo additional screening.

2. In-flight threats:

- The **Bomb Threat Assessment Committee (BTAC)** at both the departure and destination airports assesses the threat.
- If the threat **is deemed “specific”** and the aircraft is in domestic airspace, the plane is diverted to the nearest airport. Security staff inspect the aircraft after evacuation of crew and passengers.
- If the aircraft has exited Indian airspace, Air Traffic Control contacts foreign authorities to coordinate the response.

NOTE: The Chicago convention and protocol are also important for your preliminary exam. Kindly make note of it as well.

Government actions to counteract bomb threats:

- **Social media accountability:**
 - Platforms like X (formerly Twitter), Meta, and Google are required to promptly share user details of accounts posting threats.
 - Platforms may lose immunity under the IT Act if they fail to remove false alerts and could face action under the Bharatiya Nyaya Sanhita 2023.
- **Enhanced protocols:**
 - Directors of CISF and BCAS briefed the Union Home Secretary on strengthening ground operations.
 - The BTAC protocol has been updated to incorporate “red flag” assessments for improved threat classification.

Challenges:

- **Technological limitations:** Current systems lack advanced capabilities for tracking and analyzing threat calls, impacting quick response.
- **Regulatory and policy gaps:** Existing laws need updates to address threats comprehensively, including stricter penalties for ground-based incidents.
- **Communication gaps:** Coordination among agencies involved in aviation security is inconsistent, leading to delayed or fragmented responses.
- **Absence of a threat database:** Lack of a centralized, global hoax call database limits information-sharing and tracking of recurrent threats.
- **Resource demands:** Security improvements require significant investment in technology, skilled manpower, and infrastructure.

Way forward:

- **Invest in advanced technology:** Incorporate AI-driven threat analysis, quantum computing,

and enhanced tracking for real-time threat management.

- **Update aviation laws:** Revise regulations, such as the Aircraft Act of 1934, to allow prompt action against security threats, even for grounded flights.
- **Strengthen communication channels:** Streamline cross-agency communication protocols to ensure rapid, unified responses during security threats.
- **Establish a global hoax database:** Create a collaborative platform for sharing hoax-related data globally, integrating AI for initial assessments.
- **Enhance funding for security measures:** Allocate more resources to develop cybersecurity frameworks and conduct predictive profiling for potential threats.

Conclusion:

The rise in hoax threats poses systemic challenges in India’s aviation security. Tackling these requires updated legislation, better technological investment, and coordination among agencies under international guidelines.

Insta Links:

1. [Delhi declaration-on-civil-aviation](#)
2. [Civil-aviation-in-India](#)

PYQ:

1. Examine the development of Airports in India through joint ventures under Public–Private Partnership (PPP) model. What are the challenges faced by the authorities in this regard? (UPSC-2017)

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.

18. REVOLUTIONARY ULTRASOUND METHOD ENHANCES EARLY CANCER DETECTION

Context:

Scientists have developed a new technique to detect cancers. The method uses ultrasound to turn a small part of our body’s tissue into droplets that are released into the blood. These bubbles contain molecules like RNA, DNA, and proteins that allow the scientists to identify particular types of cancer.

Technology used and methods:

1. **High-energy ultrasound:** Employs higher-frequency sound waves than traditional ultrasound, capable of interacting more intensely with tissues.

2. **Droplet formation:** The ultrasound waves cause tiny pieces of cancerous tissue to break off, turning them into droplets that release molecular contents into the bloodstream.
3. **Biomarker analysis:** The droplets contain biomarkers like RNA, DNA, and proteins, which are then extracted from the blood and analyzed to identify specific cancer types.
4. **Single cell detection capability:** The method is sensitive enough to detect a single cancer cell in blood samples, providing insights into cancer progression and metastasis.

Significance

1. **Non-invasive technique:** Reduces the need for painful and invasive procedures like biopsies, making cancer detection easier for patients.
2. **Cost-effective solution:** Expected to lower the cost of cancer detection significantly, offering a more affordable alternative to current expensive tests.
3. **High sensitivity:** Increases the concentration of detectable biomarkers by over 100 times, improving early cancer detection accuracy.
4. **Versatility:** Has the potential to detect multiple cancer types, such as prostate, breast, and melanoma, using a single diagnostic approach.

Limitations:

1. **Clinical validation required:** Needs extensive clinical trials on diverse populations to ensure its effectiveness and accuracy before widespread use.
2. **Technical standardization:** Challenges in standardizing the technique for different cancer types and ensuring consistent results across various settings.
3. **Biomarker variability:** The sensitivity of detection may vary with different cancers due to variations in biomarker thresholds, potentially affecting accuracy.
4. **Early development stage:** Still in the experimental phase, with a timeline of at least five years before potential commercial availability, depending on trial outcomes.

Early Cancer Detection:

- **Definition:** Early cancer detection involves identifying cancer at its initial stages, significantly improving treatment outcomes.
- **Two components:**
 - **Screening:** Testing asymptomatic individuals to detect cancer before symptoms appear (e.g., mammography for breast cancer).
 - **Early diagnosis:** Focuses on symptomatic patients, aiming for prompt detection, diagnosis, and treatment.
- **Difference:** Screening targets asymptomatic people and specific cancers (e.g., breast, cervical), while early diagnosis focuses on all cancers in

symptomatic patients.

- **Challenges:**
 - Risk of false-positive and false-negative results.
 - Overdiagnosis leading to unnecessary treatments.
 - Limited recommendations for certain cancers due to risk-benefit concerns.

About Cancer

- **Definition:** Cancer is a disease characterized by uncontrolled cell growth that spreads to other parts of the body.
- **Global impact:** The second leading cause of death worldwide, responsible for 1 in 6 deaths in 2018.
- **Importance of early detection:** Early detection increases the likelihood of successful treatment and can significantly reduce mortality rates.

Insta Links:

1. [Cancer-in-India-a-status-report](#)
2. [Cancer-moonshot-initiative](#)

PYQ:

1. What are the research and developmental achievements in applied biotechnology? How will these achievements help to uplift the poorer sections of the society? (UPSC-2021)
2. What do you understand by nanotechnology and how is it helping in health sector? (UPSC-2020)
3. Why is there so much activity in the field of biotechnology in our country? How has this activity benefitted the field of biopharma? (UPSC-2018)

19. “PRECISION MEDICINE: PERSONALIZING HEALTHCARE FOR THE FUTURE”

Context:

Precision medicine is a rapidly evolving approach to healthcare that tailors treatment based on individual genetic, environmental, and lifestyle factors. In India, despite strides in this field, the lack of robust biobank regulations is a major hurdle in advancing precision medicine.

What is Precision Medicine and Biobanks?

- **Precision medicine:** An approach to medical care that customizes treatment based on the genetic

makeup, lifestyle, and environmental factors of an individual, rather than adopting a generalized treatment for all.

- **Biobanks:** These are repositories that store biological samples such as blood, tissues, DNA, etc., alongside their genetic data, collected from consenting individuals for research purposes.

Importance of Biobanks in precision medicine:

- **Data repository:** Biobanks provide genetic data essential for identifying disease patterns and developing targeted therapies.
- **Research backbone:** They enable research into genetic disorders, chronic diseases, and personalized treatments.
- **Diversity in research:** Large and diverse biobanks ensure precision medicine benefits more people across varying ethnicities and demographics.

Present status in India:

- **Growth of precision medicine:** The Indian precision medicine market is growing rapidly, expected to be worth over \$5 billion by 2030.
- **Biobanks:** There are 19 registered biobanks in India. Major initiatives like the Genome India Project and Phenome India have begun collecting large-scale genetic data.
- **Policy gaps:** India lacks comprehensive biobank regulations, which hampers growth in precision medicine.

Best Practices from foreign nations:

- **Comprehensive laws:** Countries like the U.S., U.K., Japan, and China have specific laws regulating biobanks, covering aspects like informed consent, privacy, and data security.
- **Oversight:** These nations have centralized authorities overseeing biobank operations, ensuring ethical standards and data protection.

Significance of Biobank regulations:

- **Ensuring ethical standards:** Clear regulations will protect individual rights, ensuring informed consent and preventing misuse of genetic data.
- **Boosting research:** Regulating biobanks can enhance trust, encouraging more public participation in precision medicine research.
- **Global collaboration:** Aligning Indian laws with global standards will facilitate international collaborations in drug development and clinical research.

Challenges:

1. **Lack of comprehensive regulation:** No central authority governs biobank operations, leading to ethical concerns and potential misuse of data.
2. **Informed consent issues:** Participants are often unaware of how their samples will be used, creating risks for privacy violations.

3. **Limited public trust:** Without strong privacy protections, public participation in biobank-related research remains low.
4. **Access by foreign entities:** Inadequate regulations allow foreign companies to access Indian genetic data without ensuring local benefits.

Way ahead:

1. **Formulate comprehensive biobank laws:** Implement stringent biobank regulations that ensure privacy, consent, and ethical handling of samples.
2. **Establish central authority:** Create a national body to regulate and oversee biobank operations, ensuring compliance and consistency.
3. **Encourage public participation:** Through awareness campaigns and data protection assurances, encourage more individuals to contribute to biobanks.
4. **Promote research and collaboration:** Facilitate collaboration between Indian and international research organizations while ensuring equitable access to research outcomes.
5. **Incentivize domestic drug development:** Support the development of locally manufactured drugs based on biobank data to lower costs.

Conclusion:

Biobanks are pivotal in driving precision medicine forward. However, for India to become a global leader in this field, it must establish strong legal frameworks ensuring ethical practices, data security, and equitable benefits from research. These steps will build trust and ensure the advancement of personalized healthcare for all.

Insta Links:

1. [TDP1](#)
2. [Phenome-India](#)

PYQ:

2. The term 'ACE2' is talked about in the context of (UPSC- 2021)
 - a) Genes introduced in the genetically modified plants
 - b) Development of India's own satellite navigation system
 - c) Radio collars for wildlife tracking
 - d) Spread of viral diseases

Answer: d)

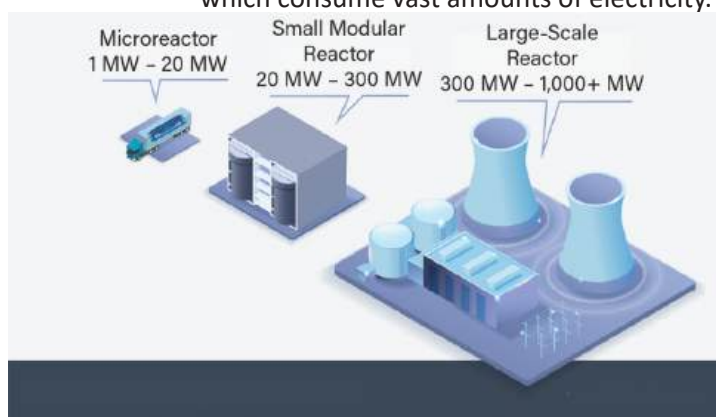
20. SMALL MODULAR REACTORS & TECH FIRMS

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)

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.

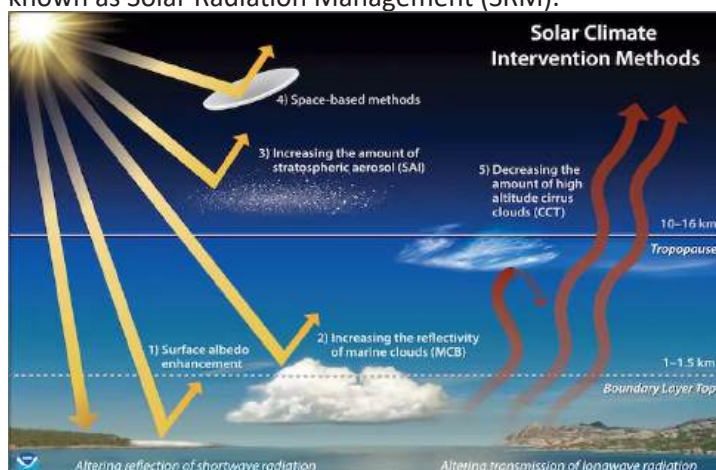
Limitations of spraying diamond dust:

- **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

21. 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).



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:

3. [Climate-change-and-associated-issues](#)
4. [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: Awareness in space.

22. BEYOND EARTH: INDIA'S VISION FOR SPACE EXPLORATION

Context:

India's space program, led by the Indian Space Research Organisation (ISRO), is expanding its horizons with a series of ambitious missions, new technologies, and partnerships, signaling a new phase in space exploration.

India's Space Planning highlights:

- **Gaganyaan Missions:** Four human spaceflight missions and one uncrewed flight.
- **Bharatiya Antariksh Station:** Four test missions planned for India's first space station launch by 2028.
- **Next Generation Launch Vehicle (NGLV):** Approved for ₹8,240 crore, developed in partnership with the private sector.
- **Venus Orbiter Mission:** Scheduled for 2028 to study Venus's atmospheric and surface conditions.
- **Chandrayaan-4 (2027):** Moon sample-return mission to collect lunar soil for Earth analysis.
- **LUPEX with Japan:** Collaborative Lunar Polar Exploration Mission.
- **Space-Based Surveillance (SBS-3):** Comprehensive satellite network for advanced surveillance capabilities.
- **NISAR & Proba-3 Satellites:** Focus on Earth observation and Sun's corona study.
- **Private Sector Involvement:** Green propulsion systems by Manastu Space, low-orbit satellites by Bellatrix Aerospace, and satellite assembly by Ananth Technologies.

Challenges in India's Space Planning:

- **Limited commercial market access:** India's 2.6% share in the global space economy limits commercial space ventures.
- **Technological dependency:** Despite ranking 7th globally, India still relies on imports for advanced launch vehicle components.
- **Policy and legal gaps:** Lack of comprehensive space policy delays regulatory developments.
- **Budget constraints:** India's modest budget of 0.05% of GDP limits its scope for high-cost missions.
- **Geopolitical considerations:** Collaborations like the Artemis Accords require diplomatic balancing amid geopolitical tensions.

Way forward:

- **Boost private sector engagement:** Aligns with global trends and enhances commercial capabilities.
- **Strengthen human spaceflight program:** Invests in astronaut training and infrastructure for crewed missions.
- **Increase budget allocation:** Supports ambitious space goals and complex missions.
- **Develop clear, forward-looking policies:** Ensures safe, sustainable space expansion.
- **Expand international partnerships:** Promotes peaceful, inclusive space exploration.

Insta Links:

1. [ISRO-DBT agreement](#)
2. [ISRO-third-launch-pad](#)

PYQ:

1. What is India’s plan to have its own space station and how will it benefit our space programme? (UPSC-2019)
2. What is the main task of India’s third moon mission which could not be achieved in its earlier mission? List the countries that have achieved this task. Introduce the subsystems in the spacecraft launched and explain the role of the ‘Virtual Launch Control Centre’ at the Vikram Sarabhai Space Centre which contributed to the successful launch from Sriharikota. (UPSC- 2023)

[Topics: Awareness in the fields of IT, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.](#)

23. FLUORESCENT NANODIAMONDS

Context:

Fluorescent Nanodiamonds (FNDs) are becoming increasingly important across various industries due to their unique chemical and physical properties. A recent study demonstrated **spinning FNDs at ultra-high speeds to test their limits in physics**, highlighting potential applications in both theoretical and practical fields.

About FNDs (Chemical and Physical properties):

- **Composition:** FNDs are nanometre-sized diamonds composed of carbon nanoparticles.
- **Stability:** They are stable under light, non-toxic, and capable of maintaining fluorescence for long periods.
- **Fluorescence:** FNDs emit light of a lower frequency when irradiated with higher-frequency light. Unlike other fluorescent materials, FNDs have a longer fluorescence lifespan, making them superior for certain applications.
- **Non-blinking:** FNDs do not exhibit the blinking effect, unlike many other nanoscale fluorescent materials.

Technology process in formation:

- **Production:** FNDs are created under high-temperature and high-pressure conditions.
- **Doping:** They can be doped with nitrogen atoms

to form nitrogen vacancy (NV) centres, which host electron spin qubits.

- **Vacuum levitation:** In a recent experiment, researchers levitated FNDs in a high vacuum and spun them at ultra-high speeds (up to 20 million times per second), marking an advancement in understanding their quantum properties.

Limitations:

- **Technical challenges:** In earlier experiments, researchers faced difficulty preventing the loss of nanodiamonds in a vacuum and controlling the spin qubits effectively.
- **Complexity:** The technology to manipulate spin qubits inside levitated FNDs requires intricate setups, including the use of electric and magnetic fields.

Applications:

- **High-resolution imaging:** FNDs are used in biological imaging to track cells over time due to their stability.
- **Temperature sensing:** They are employed in microscale temperature sensing due to their sensitivity.
- **Sensors:** Their ability to detect acceleration and electric fields makes them valuable in strategic industries.
- **Quantum physics:** FNDs doped with NV– centres can aid in exploring quantum superposition and other quantum mechanical properties.
- **Gyroscopes:** The Berry phase generated by rotating FNDs could lead to their use in rotation-sensing gyroscopes.

Conclusion:

FNDs, with their stable fluorescence, quantum properties, and potential industrial applications, offer promising avenues in both theoretical research and applied fields like imaging, sensing, and quantum computing. Their recent advancements in vacuum levitation showcase their growing relevance in cutting-edge technology.

Insta Links:

2. [Nano Technology](#)

PYQ:

1. Consider the following statements: (UPSC - 2022)
 1. Other than those made by humans, nanoparticles do not exist in nature.
 2. Nanoparticles of some metallic oxides are used in the manufacture of some cosmetics.
 3. Nanoparticles of some commercial products which enter the environment are unsafe for humans.

Which of the statements given above is/are correct?

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

Answer: d)

1. What do you understand by nanotechnology and how is it helping in the health sector? (UPSC - 2020)

Topics: Conservation related issues, environmental pollution and degradation, environmental impact assessment.

24. ECO-SENSITIVE AREAS

Context:

The Karnataka government has asked the Union Ministry of Environment, Forest and Climate Change (MoEF&CC) to withdraw the sixth draft notification issued by it for the declaration of Eco-Sensitive Areas (ESAs) of the Western Ghats.

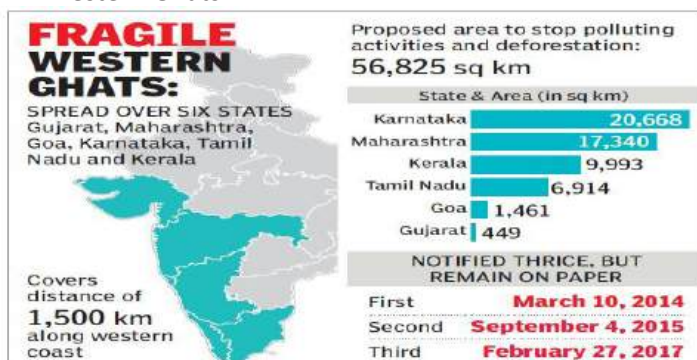
About Eco-Sensitive Area:

Eco-Sensitive Areas (ESAs) are regions surrounding protected areas like national parks and wildlife sanctuaries, designated to act as buffer zones to reduce the impact of human activities on biodiversity.

- Governed under the **Environmental (Protection) Act, 1986**, and outlined in the **National Wildlife Action Plan (2002-2016)** by the **Ministry of Environment, Forest and Climate Change (MoEFCC)**.

Origin:

- ESAs were introduced to provide buffer zones for protected areas.
- The **Western Ghats Ecology Expert Panel** (Gadgil Committee) and **Kasturirangan Committee** recommended their designation for biodiversity conservation, especially in fragile ecosystems like the Western Ghats.



Activities in ESAs:

- **Prohibited:** Commercial mining, industries causing pollution, large hydroelectric projects, sawmills, and use of wood for commercial purposes.
- **Regulated:** Felling trees, constructing hotels/resorts, commercial use of water, electrical cables, changing agricultural systems.
- **Permitted:** Organic farming, rainwater harvesting, use of renewable energy, ongoing agricultural practices.

Comparison between Madhav Gadgil's report and Kasturirangan's report:

Aspect	Madhav Gadgil Report	Kasturirangan Report
Approach	Emphasized a more inclusive, bottom-up approach involving local communities in conservation.	More top-down with emphasis on balance between development and conservation.
ESA Coverage	Proposed 100% of the Western Ghats as ESA.	Proposed only 37% of the Western Ghats as ESA.
Local Involvement	Recommended strong participation from local communities and Gram Sabhas.	Involved minimal local participation, focusing on bureaucracy.
Development	Highly restrictive on developmental activities, especially in high-priority areas (ESZ-1).	Allowed controlled developmental activities in less sensitive areas.
Mining and Quarrying	Recommended a complete ban on mining in ESA areas.	Phasing out mining over time, depending on existing leases.
Power Projects	Opposed large hydropower projects in sensitive zones.	Allowed hydropower projects with extensive studies.

Significance of ESAs

- **Biodiversity conservation:** Regulates human activities and prevents environmental degradation.
- **In-situ conservation:** Helps conserve endangered species in their natural habitat.
- **Man-animal conflict reduction:** Maintains forest corridors.
- **Buffer zones:** Balances development and conservation in ecologically fragile areas.
- **Climate resilience:** Preserves natural landscapes for ecosystem adaptation.

Challenges

- Balancing Economic Growth and Environmental

Protection

- Challenges include balancing economic growth with environmental protection.
- Restrictions can negatively impact communities dependent on natural resources.
- Inconsistent policies across states cause confusion and enforcement issues.
- Encroachment threats include illegal mining, deforestation, and human encroachments.
- Insufficient local participation weakens compliance.

Way ahead

- Community Involvement in ESA Management
- Strengthen local participation through Gram Sabhas and bodies.
- Promote sustainable development through eco-friendly alternatives.
- Standardize ESA policies to prevent loopholes.
- Conduct thorough environmental impact assessments before projects.
- Provide financial support and training for sustainable income sources.

Conclusion:

ESAs play a vital role in balancing conservation with sustainable development. Going forward, a balanced, inclusive, and sustainable approach is essential to preserve these fragile ecosystems while ensuring that development benefits local communities.

Insta Links:

1. [Eco-Sensitive Area](#)
2. [Kasturirangan Committee](#)

PYQ:

1. In which one among the following categories of protected areas in India are local people not allowed to collect and use biomass? (UPSC - 2012)
 - a) Biosphere Reserves
 - b) National Parks
 - c) Wetlands declared under the Ramsar Convention
 - d) Wildlife Sanctuaries

Answer: b)

2. "Policy contradictions among various competing sectors and stakeholders have resulted in inadequate 'protection and prevention of degradation' to the environment." Comment with relevant illustrations. (UPSC - 2018)

Topics: [Disaster and management.](#)

25. BIHAR FLOOD

Context:

Bihar, India, is severely affected by annual floods, with millions displaced and livelihoods disrupted. The region's geographic vulnerability, coupled with ineffective flood control measures, continues to exacerbate the problem.



Geographic Conditions Contributing to Flooding in Bihar:

1. **Proximity to the Himalayas:** North Bihar is located downstream from Nepal, with rivers originating from the Himalayas flowing into Bihar.
 - These rivers, including **Kosi, Gandak, and Bagmati**, carry large amounts of sediment, making the state flood-prone.
2. **River sedimentation:** The young Himalayan rivers are sediment-heavy due to loose soil, causing them to overflow when rainwater increases the volume.
3. **Flat terrain:** Bihar's flat plains make it difficult for floodwaters to drain quickly, leading to prolonged waterlogging, especially during the monsoon.
4. **Permanent waterlogged areas:** Low-lying areas, known as Chaus, further complicate drainage, causing long-term waterlogging in certain regions.
5. **Impact of embankments:** Embankments built along rivers like the Kosi have narrowed their channels, leading to sediment buildup and shallower riverbeds, increasing the risk of overflow.

Causes of Flooding in Bihar:

1. **Heavy rainfall in Nepal:** Flash floods are often triggered by heavy rainfall in the Himalayan regions of Nepal, which drains into Bihar's rivers.
2. **Overflowing rivers:** During monsoons, snow-fed and rain-fed rivers breach their banks, flooding large areas.
3. **Embankment failures:** Structural issues with embankments have led to breaches, worsening flood damage.
4. **Waterlogging from small rivers:** Encroachment on drainage channels and silted rivers cause further water stagnation.
5. **Release of water from barrages:** The release of

water from Nepal’s barrages, such as the Kosi barrage, contributes to increased water levels.

Way ahead to handle floods:

- 1. Integrated Flood Management:** Building additional barrages, dams, and improving embankments must be accompanied by policies for early warnings and quick responses.
- 2. Collaboration with Nepal:** The long-pending proposal to build a dam on the Kosi requires diplomatic collaboration with Nepal to address upstream water management.
- 3. Strengthening embankments:** Regular maintenance and modernization of embankments, along with widening river channels to manage sediment, can mitigate flood impacts.
- 4. Non-structural solutions:** Improved flood forecasting, risk reduction policies, disaster management training, and community awareness programs are essential for flood preparedness.
- 5. Rehabilitation of affected populations:** Providing sustainable resettlement options for communities trapped within flood-prone embankments can prevent annual displacement.

Best Practice:

- **Chennai: Stormwater Drainage System**
- Chennai has enhanced its stormwater drainage system post-2015 floods by redesigning and expanding it. The city increased the number of stormwater drains and connected them to natural water bodies for efficient water flow and drainage during heavy rainfall.
- **Surat: Flood Early Warning System (FEWS)**
- Surat, a flood-prone city, uses a Flood Early Warning System (FEWS) to predict and monitor floods, especially in the Tapi River basin. This system allows for timely evacuations and preparation, minimizing flood damage.

Insta Links:

1. [Flood-Management-in-India](#)
2. [Climate change and Flood](#)

PYQ:

1. The interlinking of rivers can provide viable solutions to the multi-dimensional inter-related problems of droughts, floods, and interrupted navigation. Critically examine. (UPSC - 2020)
2. Account for the huge flooding of million cities in India including the smart ones like Hyderabad and Pune. Suggest lasting remedial measures. (UPSC - 2020)

Topics: Linkages between development and spread of extremism.

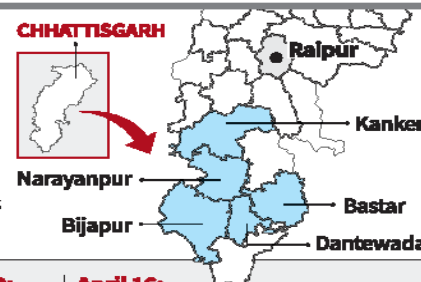
26. NAXALISM

Context:

Recently security forces in Chhattisgarh’s Bastar region engaged in a significant gunfight with Naxalites, resulting in the death of 28 insurgents. This marks one of the highest casualty tolls in recent anti-Naxal operations.

Red alert

Encounters between security forces and Maoists have become frequent this year. A look at the encounters since April this year



Oct. 4, 2024: 28 Maoists killed in Bastar area, the second highest in terms of casualties	Sept. 3: Nine Maoists killed in Dantewada	April 16: 29 Maoists killed at Kanker-Narayanpur border, recording the biggest ever toll	April 10: 12 Maoists gunned down
			April 2, 2024: 13 Maoists killed in Bijapur

About Naxalism:

- **Origins in Naxalbari:** The Naxalite movement began in 1967 in Naxalbari village, West Bengal, when peasants led an uprising against local landlords over land disputes.
- **Maoist Ideology:** The movement was inspired by Maoist political ideology, advocating armed rebellion to overthrow the state and redistribute land and resources to oppressed communities.
- **Spread to Tribal Regions:** Naxalism gradually spread to underdeveloped and tribal areas, particularly in states like Chhattisgarh, Odisha, Jharkhand, and parts of Andhra Pradesh.
- **Objective:** The Naxalites aimed to challenge the Indian state through armed insurgency, focusing on the redistribution of land, wealth, and resources to marginalized and tribal communities.
- **Red Corridor Zones**
 - The Red Corridor refers to areas significantly affected by Naxalite-Maoist insurgency. It includes regions in Chhattisgarh, Odisha, Andhra Pradesh, Maharashtra, West Bengal, Jharkhand, Bihar, and Telangana.

Reasons for Naxalism’s growth:

- **Tribal displacement:** Massive displacement due to development projects and mining activities has fueled discontent among tribal populations, making them vulnerable to Maoist influence.
- **Socio-economic gaps:** Poverty, lack of education, and absence of government welfare programs in tribal and rural areas have deepened grievances.

- **State negligence:** Lack of infrastructural development, poor connectivity, and weak governance in the Red Corridor have created vacuums that Maoists exploit.
- **Forest rights:** The **Forest (Conservation) Act, 1980** restricts access to forest produce, further alienating forest-dependent communities.
- **Government focus on security:** The government's emphasis on security measures rather than addressing underlying socio-economic issues has left many grievances unresolved.

Steps taken by the government:

Legal measures:

1. **Unlawful Activities (Prevention) Act (UAPA):** Declares Naxalite groups as terrorist organizations and enables swift action against them.
2. **Relief and Rehabilitation Policy:** Encourages Naxalites to surrender and join the mainstream by offering rehabilitation packages.
3. **Forest Rights Act, 2006:** Aims to restore land rights to tribal communities, addressing one of the root causes of insurgency.

Military measures:

1. **Operation Green Hunt:** Launched in 2010, this large-scale counter-insurgency operation has significantly reduced Naxal activities.
2. **Greyhounds force:** Special forces unit in Andhra Pradesh trained for guerrilla warfare against Naxalites.
3. **Coordination with state forces:** Increased cooperation between central paramilitary forces and state police, improving intelligence and response.

Developmental measures:

1. **Aspirational Districts Programme:** Targets underdeveloped regions, including those affected by Naxalism, to enhance healthcare, education, and infrastructure.
2. **Skill development programs:** Initiatives to train the tribal youth in vocational skills and reduce their dependency on Naxalite ideologies.
3. **Infrastructure development:** Road and telecom connectivity projects have been launched in remote areas, enhancing access to basic services and governance.

Way ahead

1. **Addressing socio-economic grievances:** Focus on addressing root causes such as land disputes, tribal rights, and poverty through inclusive policies.
2. **Enhanced intelligence:** Improve real-time intelligence gathering and collaboration between state and central forces.
3. **Sustained development:** Ensure the long-term implementation of development schemes and socio-economic programs.

Conclusion:

To comprehensively address Naxalism, India must balance military actions with efforts to improve tribal livelihoods and ensure access to “**Jal, Jangal, Zameen**”, the fundamental demands of tribal populations.

Insta Links:

1. [Urban Naxalism](#)

PYQ:

1. The persisting drives of the government for development of large industries in backward areas have resulted in isolating the tribal population and the farmers who face multiple displacements. With Malkangiri and Naxalbari foci, discuss the corrective strategies needed to win the Left-Wing Extremism (LWE) doctrine that affected citizens back into the mainstream of social and economic growth. (UPSC - 2015)
2. What are the determinants of left-wing extremism in the Eastern part of India? What strategy should the Government of India, civil administration and security forces adopt to counter the threat in the affected areas? (UPSC - 2020)

27. 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)

Topics: Security challenges and their management in border areas; linkages of organized crime with terrorism.

28. STRENGTHENING BORDERS: SECURITY DYNAMICS IN LADAKH

Context:

The Ukraine war highlights the renewed importance of battle tanks alongside long-range firepower. Since the May 2020 stand-off in Eastern Ladakh, India and China have deployed tanks at altitudes of 13,000-15,000 feet, sometimes with barrels just 100 meters apart.



Tanks armouring Ladakh sector:

- **Revival of tanks in modern warfare:**
 1. **Global relevance:** Tanks have regained importance in modern conflicts, proving

essential alongside long-range firepower, as seen in the Ukraine war.

2. **Ladakh deployment:** India and China have stationed tanks at altitudes of 13,000-15,000 feet on the Line of Actual Control (LAC).
 3. **Close proximity:** Tanks from both nations were positioned as close as 100 meters apart during peak tensions on the Pangong Tso in 2020.
 4. **Enhanced capabilities:** Armoured units now feature advanced equipment, making them adaptable to evolving battlefield dynamics.
- **Current situation in Ladakh:**
 1. **T-90 Bhisma tanks:** India has deployed T-90 tanks and BMP-2 carriers to demonstrate capabilities like deep-fording and maneuverability at high altitudes.
 2. **Operational challenges:** Tanks require frequent engine revving in cold conditions to maintain functionality due to low oxygen levels.
 3. **Infrastructure upgrades:** Maintenance facilities and winterisation kits have been set up at Nyoma and other strategic locations.
 4. **Increased presence:** Tank regiments, including T-72s and artillery units, have been steadily added to fortify the region since the 2020 stand-off.
 - **Challenges of high-altitude operations:**
 1. **Extreme weather:** Harsh conditions with temperatures dropping to -40°C impact the performance and durability of tanks.
 2. **Oxygen levels:** Low oxygen at high altitudes affects both the crew and the engine's efficiency, necessitating special adaptations.
 3. **Wear and tear:** Rapid degradation and high wear and tear of equipment require faster turnaround of spares and technical support.
 4. **Logistics:** Transporting and maintaining heavy armoured units in such terrain is a logistical challenge, demanding specialized facilities.
 - **Threats from China:**
 1. **PLA modernization:** China has deployed advanced ZTQ 15 light tanks and Type 96A tanks along the LAC, enhancing its military presence.
 2. **Mechanized units:** Chinese mechanized brigades have inducted new wheeled APCs and CSK assault vehicles for rapid mobility.
 3. **Strategic positioning:** China has improved its infrastructure and troop strength along the LAC, posing a persistent threat to Indian positions.
 - 4. **Comparative advantage:** Chinese light tanks are more agile and maneuverable in high-altitude conditions compared to traditional heavy tanks.
- **Indian Army's future plans:**
 1. **Tank upgrades:** Plans to upgrade T-72 tanks and BMP-2 carriers with advanced engines and new-generation Anti-Tank Guided Missiles (ATGMs).
 2. **Light tank development:** Indigenous light tank 'Zorawar' is in development with expected trials by August 2025 for deployment in Ladakh.
 3. **Modern combat vehicles:** Focus on acquiring Future Ready Combat Vehicles (FRCV) and Future Infantry Combat Vehicles (FICV) for advanced warfare.
 4. **Countermeasures:** Implementing technology to counter drones and loitering munitions, including air burst ammunition to protect armoured units.

Insta Links:

1. [Ladak-and-sixth-schedule](#)
2. [High-powered-committee-for-Ladakh](#)

PYQ:

1. Why are the tribals in India referred to as 'the Scheduled Tribes'? Indicate the major provisions enshrined in the Constitution of India for their upliftment. (UPSC-2016)
2. 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)

Topics: Challenges to internal security through communication networks, role of media and social networking sites in internal security challenges, basics of cyber security; money-laundering and its prevention.

29. "DIGITAL ARREST: UNMASKING THE DARK WORLD OF CYBERCRIME"

Context:

The rise of cybercrimes has given birth to new scams, such as "digital arrest," where cybercriminals impersonate government officials to extort money. These scams have impacted many well-educated and affluent individuals, prompting the Ministry of Home Affairs (MHA) to issue warnings and take preventive actions.

What is Digital Arrest?

- **Definition:** Digital arrest is a form of cybercrime where scammers impersonate officials from law enforcement agencies (CBI, ED, police, etc.) and claim the victim is involved in serious crimes like money laundering or narcotics trafficking. They create a fear psychosis and “arrest” the victim digitally by forcing them to stay on video calls while extorting money under the pretense of avoiding physical arrest.

Status in India:

- **Examples:**
 - **Businessman S.P. Oswal:** Duped of Rs 7 crore after being misled into believing he was involved in a money laundering case.
 - **Scientist in Indore:** Lost Rs 71 lakh after he and his wife were placed under digital arrest for six days.
 - **Bengaluru lawyer:** Extorted Rs 14 lakh and subjected to a fake narcotics test during a digital arrest.

According to Indian Cyber Crime Coordination Centre (I4C) data, multiple such scams have been reported in various states, with significant financial losses.

Consequences of digital arrest:

1. **Financial losses:** Victims lose substantial sums, sometimes their entire savings, to these scams.
2. **Mental trauma:** Victims face immense psychological stress, often leading to depression and suicidal tendencies.
3. **Trust erosion:** The prevalence of these scams erodes public trust in online platforms and even government systems.

Government initiatives:

- **I4C:** The MHA-established Indian Cyber Crime Coordination Centre has been blocking fraudulent accounts, including over 1,000 Skype accounts linked to digital arrest scams.
- **Cyber awareness campaigns:** I4C’s “Cyberdost” platform is issuing alerts and spreading awareness about such scams.
- **National cyber-crime reporting portal:** Victims are encouraged to report incidents at the portal or call the helpline (1930).

Challenges:

1. **Lack of awareness:** Many victims are unaware of the existence of digital arrest scams and easily fall prey to them.
2. **Cross-border operations:** These scams often have international elements, making it difficult for law enforcement to track and prosecute the criminals.
3. **Use of deepfake technology:** Scammers use sophisticated technology to impersonate officials, making it harder for victims to detect fraud.
4. **Inadequate cybercrime laws:** India’s cyber laws

are still evolving, and enforcement is not always efficient in addressing new forms of cybercrime.

Way ahead:

1. **Strengthen cybercrime laws:** Amendments to cyber laws are necessary to keep pace with rapidly evolving technologies.
2. **Public awareness campaigns:** The government must intensify awareness campaigns to educate people about digital arrest scams.
3. **Enhance technology and law enforcement:** Invest in anti-deepfake technology and increase cooperation with international bodies to combat cross-border cybercrimes.
4. **Collaboration with financial institutions:** Work with banks to monitor suspicious transactions linked to these scams.

Conclusion:

Digital arrest scams pose a significant threat to individuals’ financial and mental well-being in India. While government initiatives like I4C and public awareness campaigns are steps in the right direction, a multi-pronged approach involving stronger laws, better technology, and public education is essential to curb this menace.

Insta Links:

1. [Cybercrimes-from-southeast-asia](#)

PYQ:

1. In India, it is legally mandatory for which of the following to report on cyber security incidents? (UPSC-2017)
 1. Service providers
 2. Data centres
 3. Body corporate

Select the correct answer using the code given below:

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

Answer: d)

Topics: Various Security forces and agencies and their mandate.

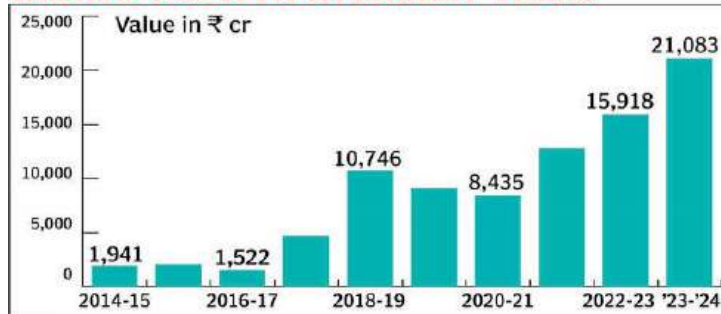
30. INDIA’S DEFENCE REVOLUTION

Context:

The recent inauguration of the Tata Aircraft Complex at Tata Advanced Systems Limited (TASL) in Vadodara, Gujarat, marks a significant achievement for India’s [“Atmanirbhar](#)

[Bharat” mission](#), further advancing the nation’s self-reliance in defense manufacturing.

INDIA'S GROWTH IN RECENT YEARS



Rise in Defense Production: (Source: PIB Report)

- **Record production:** India’s defense production achieved a record high in FY 2023-24, reaching ₹1.27 lakh crore.
 - This marks an approximate 174% growth from ₹46,429 crore in 2014-15.
- **Key Driver:** The rise is attributed to initiatives like the Make in India campaign, focused on bolstering indigenous manufacturing.
- **Increased domestic manufacturing:** Over 65% of India’s defense needs are now met domestically, reducing import dependency significantly.
- **Diverse industry base:** The defense sector includes 16 Defense Public Sector Undertakings (DPSUs), over 430 licensed private companies, and approximately 16,000 MSMEs.
- **Private sector contribution:** Currently, 21% of defense production comes from private industry participants, contributing to India’s self-reliance in defense.

India’s Defense Exports Surge:

- **Historic growth in exports:** Defense exports increased from ₹686 crore in FY 2013-14 to ₹21,083 crore in FY 2023-24, representing a 30-fold rise.
- **Global reach:** India exports defense equipment to over 100 countries, with the U.S., France, and Armenia being top destinations.
- **Export target:** The government has set a target to increase defense exports further, **aiming for ₹50,000 crore by 2029**, solidifying India’s role as a reliable defense partner on the global stage.

Key Government Initiatives:

- **Liberalized FDI:** Increased to 74% via the Automatic Route and up to 100% through the Government Route.
- **Budget Allocation:** ₹6,21,940.85 crore allocated to defense for FY 2024-25.
- **Domestic Procurement Priority:** Emphasis on local sourcing under the [Defense Acquisition Procedure \(DAP\)-2020](#).
- **Positive Indigenization Lists:** Import embargo on 509 defense items and 5,012 DPSU items.
- **Simplified Licensing:** Streamlined process with longer validity.
- **iDEX Scheme:** Engages MSMEs and startups for defense innovation.
- **Defence Industrial Corridors:** In Uttar Pradesh and Tamil Nadu to bolster defense manufacturing.
- **Domestic R&D:** Opened to industry and startups to promote collaboration.
- **Domestic Procurement Allocation:** 75% of Capital Acquisition funds earmarked for local procurement in FY 2024-25.

Key data points on Indian defence sector:

Aspect	Details
Top Export Markets	Armenia, the U.S., and France are leading importers. Armenia buys major systems (e.g., Akash, Pinaka); U.S. imports components.
Export Record	Defence exports reached ₹21,083 crore (\$2.6 billion) in 2023-24; goal is ₹50,000 crore by 2028-29.
Strategic Collaborations	Partnerships include BrahMos missiles for the Philippines; Brazil seeks co-production for advanced Akash missiles.
Indigenous Production	Achieved ₹1.2 lakh crore in 2023-24; target of ₹3 lakh crore by 2028-29 under “Aatmanirbhar Bharat” initiative.
Industrial Base Expansion	Includes 16 PSUs, 430 licensed companies, and 16,000 MSMEs; threefold growth since 2014-15; private sector at 21%.
Global Standing	Despite growth, India remains the largest arms importer (9.8% of global imports, 2019-2023).

NOTE: From prelims perspective try to memorise the targets, trends and major buyer of Indian weapons (Armenia). From mains perspective remember the Indian performance and few data to fetch more marks.

Challenges:

- **Technological gaps:** Despite progress, India relies on foreign suppliers for critical technologies in areas such as aerospace and advanced electronics.
- **Quality standards:** Private sector players face challenges meeting high standards, especially in high-tech segments like avionics and missile technology.
- **Funding constraints:** Despite budget increases, additional resources are needed for R&D and infrastructure to keep pace with growing demands.
- **Bureaucratic hurdles:** Procedural delays can hinder quick adoption and implementation of projects.
- **Limited skilled workforce:** Developing and retaining a skilled workforce in specialized areas remains challenging.

Way ahead:

- **Enhanced private sector role:** Encouraging private sector participation, particularly in research-intensive domains.
- **Increased budget for R&D:** To maintain momentum and foster innovation in high-tech defense segments.
- **International collaborations:** Leverage strategic partnerships for technology transfer and joint ventures in defense.
- **Skill development:** Initiatives to build and retain talent in aerospace, electronics, and other defense-oriented skills.
- **Streamlined processes:** Further simplify procurement and licensing procedures to foster a conducive environment for innovation.

Conclusion:

India's drive for defense self-reliance reflects a strong commitment to reducing imports, bolstering national security, and emerging as a global arms industry player. Ambitious 2029 targets aim to make India a defense manufacturing hub, supported by progressive policies and a growing domestic industry.

Insta Links:

1. [Defence-diplomacy](#)
2. [Indias-defence-exports](#)

PYQ:

1. Analyze the multidimensional challenges posed by external state and non-state actors, to the internal security of India. Also discuss measures required to be taken to combat these threats. (UPSC - 2021)
2. Analyze internal security threats and transborder crimes along Myanmar, Bangladesh and Pakistan borders including Line of Control (LoC). Also discuss the role played by various security forces in this regard. (UPSC - 2020)

GENERAL STUDIES – 4

1. CASE OF ATUL

Context:

The case of a young Dalit student, Atul, who missed paying his admission fee by mere minutes due to a technical glitch, reflects the deep social and systemic challenges faced by marginalized communities in India. Despite having the talent to crack JEE Advanced, one of the toughest exams, Atul's opportunity seemed lost until the Supreme Court, under Chief Justice DY Chandrachud, intervened. The Court recognized that talent should not be hindered by minor procedural lapses, especially when it comes from marginalized sections. The judiciary's empathetic and just response underscores the ethical responsibility of institutions to ensure fairness and equal opportunities for all.

Note: You can use this as an anecdote in the essay as well.

Usage in UPSC Syllabus:

This case serves as a powerful example of the balance between rules and equity and can be used in an essay or ethics paper to discuss **social justice, inclusivity, and compassionate governance**. It also highlights **the role of the judiciary** in safeguarding the rights of underprivileged individuals against systemic barriers, a principle central to good governance and ethical public administration.

CONTENT FOR MAINS ENRICHMENT

Topic in News	Usage in Answers
<p>1. MINISTRY OF TEXTILE PROGRAMS</p>	<p>Ministry of Textiles Organizations’ Activities:</p> <ul style="list-style-type: none"> • ‘Cleaning of Office Premises’: Maintains hygiene and organization in workplaces. • ‘Cyber Hygiene Activities’: Promotes digital security and safe online practices. • ‘Safai Mitra Suraksha Shivirs’: Camps for sanitation workers’ safety and welfare, involving health check-ups and safety gear distribution. <p style="text-align: center;"><u>Usage in UPSC Syllabus:</u></p> <ul style="list-style-type: none"> • Use in UPSC GS2: Connected to Social Justice, especially in safeguarding the rights and dignity of sanitation workers and labor welfare • Use in UPSC GS2: Linked to e-Governance and Digital Governance, emphasizing the role of digital literacy and safety measures in effective administration.
<p>2. ANNUAL SURVEY OF INDUSTRIES</p>	<p>India’s Industrial Sector Growth Overview:</p> <ul style="list-style-type: none"> • Significant growth in India’s industrial sector during 2022-23, as per the Annual Survey of Industries by the Ministry of Statistics and Programme Implementation. • The sector added 22 lakh jobs, surpassing pre-pandemic levels. • Gross Value Added (GVA) grew by 7.3% in 2022-23 compared to the previous year. • Key growth drivers include basic metal, coke, refined petroleum products, food products, chemicals, and motor vehicles. • Top states in terms of GVA are Maharashtra, Gujarat, Tamil Nadu, Karnataka, and Uttar Pradesh. • Average wages in the sector increased by 6.3% in 2022-23.
<p>3. GENDER PERFORMATIVITY</p>	<p>Gender Performativity Concept and Gender Essentialism</p> <ul style="list-style-type: none"> • Introduced by Judith Butler in 1990, it challenges traditional gender understanding. • Gender is socially constructed through repeated actions and behaviors. <p>Essentialism vs. Social Constructivism</p> <ul style="list-style-type: none"> • Gender Essentialism: Gender is biologically determined. • Social Constructivism: Gender is created through societal norms and discourse. <p>Butler’s View on Sex and Gender</p> <ul style="list-style-type: none"> • Critiques the distinction between biological sex and socially constructed gender. • Performativity: Unconscious repetition of gender norms, illusion of naturalness. <p>Critiques and Impact on Feminism and Queer Theory</p> <ul style="list-style-type: none"> • Influenced third-wave feminism and queer theory. • Proposes gender is a continuous performance shaped by societal expectations.

<p>4. STATE CHAPTER OF THE WOMEN ENTREPRENEURSHIP PLATFORM</p>	<p>Context: NITI Aayog has launched its first State Chapter of the Women Entrepreneurship Platform (WEP) in Telangana, in collaboration with WE Hub and the state government.</p> <p>Key Points:</p> <ul style="list-style-type: none"> • Launch of Telangana chapter: The maiden chapter of WEP aims to promote women entrepreneurs by addressing challenges like lack of access to financing and mentorship. • Focus areas: The platform will offer digital skills, financial services, and market linkages. It has over 30,000 women entrepreneurs registered and 400 mentors across various sectors. • Role of WE hub: WE Hub will act as the nodal agency for all WEP-related activities in the state. <p>Usage in UPSC exams:</p> <ul style="list-style-type: none"> • GS Paper 2 (Governance): Role of NITI Aayog and state collaboration for inclusive development, government initiatives for women empowerment. • GS Paper 3 (Economy): Encouraging entrepreneurship, challenges faced by women entrepreneurs, promoting MSMEs. • Essay and Ethics Papers: Topics on gender equality, the role of women in economic growth, and empowerment initiatives.
<p>5. JUDGE'S ASSET DISCLOSURE</p>	<p>Kerala High Court's Asset Disclosure</p> <ul style="list-style-type: none"> • Kerala High Court has the most asset declarations of 37 out of 39 judges. • Only 13% of High Court judges' assets are publicly available. • Kerala, Punjab, Haryana, and Delhi High Courts contribute over 80% of total asset declarations. • Bombay, Gujarat, and Telangana have not disclosed asset declarations due to personal privacy and confidentiality concerns. • Parliament's Committee on Personnel, Public Grievances, and Law and Justice recommended mandatory asset disclosure in August 2023. • Supreme Court adopted a resolution for voluntary asset disclosure in 1997, followed by several High Courts in 2009. <p>Relevance in UPSC GS2:</p> <ul style="list-style-type: none"> • This can be used in the Judicial Accountability section of GS2, highlighting issues of transparency and accountability in the Indian judiciary. • It serves as an example when discussing RTI Act limitations, and the balance between personal privacy and public interest.
<p>6. RAILWAY ACCIDENT DATA (2019-2024)</p>	<p>Context: Over the past five years, 351 persons were killed and 970 injured in 200 consequential railway accidents, data shared by the Indian Railways from 17 railway zones reveal.</p> <p>Key data points: [Source: Indian Railways]</p> <ol style="list-style-type: none"> 1. 351 persons killed and 970 injured in 200 consequential railway accidents. 2. Compensation of ₹32 crore distributed (₹26.83 crore to next of kin and ₹7 crore to injured). 3. Accidents reduced from 171 per year (10 years ago) to 40 per year now. 4. Worst affected zones: South Eastern Railway (297 deaths, 637 injuries) and East Coast Railway (20 deaths, 79 injuries). 5. Safest zones (no casualties): North Eastern Railway, Konkan Railway, South Western Railway, Southern Railway. <p>Relevance to UPSC Syllabus:</p> <ul style="list-style-type: none"> • General Studies Paper 3: Relevant to Infrastructure and Disaster Management sections, examining railway safety can help with case studies on transportation systems and emergency response protocols.

<p>7. CASE OF SOUTH KOREA DEEPFAKE</p>	<p>Context: South Korea is facing a surge in non-consensual deepfake pornography, particularly targeting women, with teenage boys as the primary perpetrators. The issue reflects broader societal problems including misogyny and weak digital regulations.</p> <ul style="list-style-type: none"> • Legal response: <ul style="list-style-type: none"> ○ Recent laws now criminalize viewing or possessing explicit deepfake content, but enforcement challenges persist. • Cultural drivers: <ul style="list-style-type: none"> ○ Misogynistic attitudes, a lack of education on digital ethics, and insufficient regulation of minors on social media are key contributing factors. • Psychological impact: <ul style="list-style-type: none"> ○ Victims experience severe trauma, and trust between genders, especially in schools, has eroded. <p>Use in UPSC:</p> <ul style="list-style-type: none"> • Ethics (GS-IV): As an example of technology misuse, privacy violations, and the ethical responsibilities of governments in protecting citizens. • Cybersecurity (GS-III): In discussions on the regulation of digital platforms and protection from cybercrimes. • Gender Studies (GS-I): Illustrates the intersection of technology, gender-based violence, and the need for social reform. • Essay Writing: Can be cited in essays addressing the challenges of digital age privacy and ethical governance.
<p>8. E-ABKARI PORTAL</p>	<p>Context: The Delhi Excise Department has introduced the e-ABkari portal to digitize and regulate the alcohol business in Delhi after the scrapping of the previous liquor policy. Developed by NIC, the portal aims to streamline the entire alcohol trade process.</p> <p>Use in UPSC Syllabus:</p> <ul style="list-style-type: none"> • E-Governance (GS II): Example of digital governance enhancing transparency and efficiency. • Public Administration (GS II): Case study for reforms in sectoral regulation through technology. • Economy (GS III): Link to excise policies and their impact on state revenue. • Ethics (GS IV): Technology-driven solutions to promote transparency and accountability in public administration.
<p>9. FARM TO FORK: SHARE OF PIE</p>	<p>Context: A series of working papers from the Reserve Bank of India (RBI) reveals that farmers receive a significantly lower share of the consumer rupee in the fruits and vegetables market, with middlemen and retailers profiting substantially.</p> <p>Source: RBI Working Papers on Fruits, Vegetables, Livestock, Poultry, and Pulses.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Note: You don't need to remember all the data but try to remember certain specific data which can be used as value addition in exam.</p> </div> <p>Relevance to UPSC GS3 Syllabus:</p> <ul style="list-style-type: none"> • Agricultural pricing & marketing: Highlights inefficiencies in the value chain and role of middlemen in lowering farmers' earnings. • Food inflation: Case studies for understanding food price dynamics. • Agricultural reforms: Discusses reforms to enhance farmers' income and reduce dependency on middlemen.

<p>10. CASE OF KRITARTH</p>	<p>A 10-year-old boy, Kritarth, was killed in a sacrificial ritual at a school in Uttar Pradesh. Police are investigating occult practices, but Kritarth’s father remains skeptical. The story highlights ethical dilemmas, moral failures of institutions, and the influence of superstition on extreme actions, emphasizing the need for strong moral accountability.</p> <p>Use in UPSC ethics syllabus:</p> <ul style="list-style-type: none"> ○ Ethical dilemmas in institutions: Highlights moral failures in education settings, emphasizing the need for ethical leadership. ○ Probity in governance: Demonstrates the collapse of trust in positions of responsibility, showing the importance of institutional accountability. ○ Superstition and rationality: Shows the harmful impact of superstitions when used as a justification for unethical actions. <p>Use in UPSC essay:</p> <ul style="list-style-type: none"> ○ Moral failures in society: Provides an example of societal ethical breakdown when superstition and financial distress intersect. ○ Institutional trust and accountability: Demonstrates how the lack of accountability in institutions leads to disastrous consequences.
<p>11. A TRIBE OUT OF TIME</p>	<p>Context: The Chenchu tribe of Panukumadugu, nestled deep within Andhra Pradesh’s Nallamala forest, faces a difficult challenge in balancing their traditional lifestyle with the pressures of a rapidly modernizing world. As one of the Particularly Vulnerable Tribal Groups (PVTGs), they have historically relied on subsistence farming and gathering, but with declining access to modern tools like bank accounts and mobile phones, they are increasingly marginalized. The transition to Aadhaar-linked payments for welfare schemes like MGNREGA has left many Chenchus out of vital employment opportunities, further deepening their poverty. Despite government efforts, such as the MGNREGS Chenchu Special Project, the community is struggling to adapt to a system that seems increasingly distant from their traditional way of life. The Chenchus’ story is one of a community caught between the past and the future, grappling with issues of identity, survival, and access to development in an evolving world.</p> <p>Usage in UPSC:</p> <ol style="list-style-type: none"> 1. GS2 (Governance, Social Justice): <ul style="list-style-type: none"> ○ Can be used to highlight challenges in tribal welfare, the limitations of Aadhaar-linked welfare schemes, and the need for tailored governance approaches for vulnerable groups. 2. GS4 (Ethics and Integrity): <ul style="list-style-type: none"> ○ The Chenchus’ struggle illustrates ethical governance challenges, particularly in ensuring equitable access and addressing marginalization in a diverse society. 3. Essay: <ul style="list-style-type: none"> ○ Provides an example for topics on inclusive growth, social justice, and tribal welfare, showing how modernization can create unintended disparities if not managed inclusively.

12. WEED AND AGRICULTURE

Context: A recent study commissioned by the Federation of Seed Industry of India (FSII) revealed significant crop productivity losses caused by weeds, amounting to ₹92,000 crore (\$11 billion) annually. The study focused on understanding weed-related crop damage and recommending strategies for better weed management.

Key findings:

1. **Impact on crop yield:** Weeds are responsible for 25-26% yield losses in *kharif* crops and 18-25% in *rabi* crops across India.
2. **Affected crops:** The study covered seven major crops, including rice, wheat, maize, cotton, sugarcane, soybean, and mustard, from 30 districts in 11 States.
3. **Farmer and dealer input:** Over 3,200 farmers and 300 dealers were consulted, along with experts from Krishi Vigyan Kendras and the Agriculture department.
4. **Economic Costs:** Farmers spend ₹3,700 to ₹7,900 per acre on weed control, with weeds being a leading factor in crop losses among biotic stresses.
5. **Weed management recommendations:**
 - **Herbicides** and mechanization.
 - **Crop rotation** and **cover cropping**.
 - **Biological control** measures.
6. **Cost reduction:** Implementing these strategies could reduce costs by 40-60% compared to traditional methods.

Source: Indian Council of Agricultural Research (ICAR) & FSII, “Weed Management — Emerging Challenges & Management Strategies” report.

UPSC GS3 syllabus:

1. **Agriculture:**
 - Impact of weeds on crop productivity (₹92,000 crore loss annually) directly ties to challenges in Indian agriculture.
 - Weed control methods (herbicides, mechanization, crop rotation) connect with agricultural practices and inputs.
2. **Science and technology in agriculture:** Adoption of technology-driven weed management can be linked to technology indigenization and advancements in agriculture.
3. **Economic development:** Financial losses due to weeds impacting farmers’ incomes can be tied to inclusive growth and farmer welfare issues.

<p>13. RULE TO ROLL SHIFT</p>	<p>Context: Minister Dr Jitendra Singh highlighted a significant transformation in India’s governance approach, moving from a traditional rule-based system to a dynamic, role-based framework.</p> <ul style="list-style-type: none"> • Shifts from rule-based to role-based system for civil servants. • Abolition of interviews for Group B and C positions and faster recruitment timelines. • Emphasizes performance-driven focus for tangible results and global aspirations. • Mission Karmayogi Prarambh focuses on preparing new recruits with necessary tools and training. • Introduction of iGOT-Karmayogi platform with four new features and 20 domain-specific courses. • Initiatives like “Know Your Ministry” and new learning modules for skill strengthening. <p>Relevance to UPSC Syllabus</p> <ul style="list-style-type: none"> • General Studies Paper II (Polity and Governance): <ul style="list-style-type: none"> ○ Government policies and interventions ○ Governance and accountability • General Studies Paper IV: <ul style="list-style-type: none"> ○ Public/Civil service values and Ethics in public administration ○ Case Studies on government efforts • Essay writing: <ul style="list-style-type: none"> ○ Can be used in essays on topics like “Reforms in Civil Services,” “Role of Technology in Governance,” or “Modernizing Indian Administration.”
<p>14. BRIDE BAZAAR</p>	<p>Context: The “bride bazaar” in Hyderabad’s Old City has resurfaced online, facilitating marriages between young girls and wealthy Arab men, often much older than the brides. These marriages, brokered by agents, now occur via WhatsApp video calls instead of physical meetings. Despite earlier crackdowns, at least 20-30 such marriages happen monthly, with girls sent to their “husbands” on tourist visas, often facing exploitation. The process is hard to trace due to its online nature, requiring stricter monitoring of brokers and visa agents.</p> <p>Usage in UPSC Syllabus:</p> <ul style="list-style-type: none"> • GS4 (Ethics, Integrity, and Aptitude) • Essay paper: The topic can be used to discuss themes like human rights, social justice, gender equality, and moral responsibilities in society. <p>Ethical issues involved:</p> <ol style="list-style-type: none"> 1. Exploitation: Young girls are exploited financially due to their poverty. 2. Human trafficking: Marriages are used to traffic women for potential abuse abroad. 3. Violation of consent: These marriages undermine the girls’ autonomy and true consent. 4. Corruption: Agents and some authorities prioritize profit over ethical responsibilities.

15. INDIA CONTRIBUTES TO WHO

Context: India has pledged over \$300 million to the WHO’s core programme for 2025-2028, making it the largest contributor in Southeast Asia.

- **Allocation breakdown:**
 - \$250 million for the Centre of Excellence for Traditional Medicine.
 - \$38 million for a new premises for WHO’s regional office.
 - \$10 million for digital health initiatives.
 - \$4.6 million for thematic funding.
- **WHO funding gap:** WHO seeks to fill a \$7.1 billion funding gap and has received pledges totaling over \$2.2 billion.
- **WHO’s 2025-2028 Mandate:**
 - The funds will be used to:
 - Save at least 40 million lives.
 - Deliver vaccines to priority countries.
 - Support 55 countries in training and employing 3.2 million health workers.
 - Prequalify 400 health products per year.
- **Regional contributions:** Countries in WHO’s South-East Asia Region have pledged over \$345 million in funding for WHO’s core programme.
- **Upcoming events:** A pledging ceremony will take place in November at the G-20 summit in Brazil.

Relevance to UPSC Syllabus

- **GS II (Governance):** India’s role in international organizations like WHO.
- **GS II (International Relations):** Bilateral and regional contributions to global health initiatives.
- **GS II (Health):** Public health funding and India’s commitment to global health.
- **GS IV (Ethics in International Relations):** Ethical responsibilities of countries in supporting global health and “Health for all” initiatives.

16. VIDYAN MAHADAN

Context: Ajay Grewal, a Head Constable with the **Delhi Police**, has been running a free coaching center called **Vidyan Mahadan** on the terrace of his house in **Bahadurgarh, Haryana** since 2016. He teaches **general knowledge, reasoning, mathematics, English, and Hindi** to over **10,000 students** from economically weaker backgrounds, both in person and online, to help them prepare for government job exams.

Relevance to UPSC Ethics Syllabus and Essay Paper

5. Ethics (GS4):

- **Altruism and Public Service**
- **Empathy and Compassion**
- **Role of Civil Servants**

6. Essay Paper:

- **Education and Social Mobility**
- **Leadership and Motivation**
- **Ethical Leadership**

<p>17. LIVING PLANET REPORT 2024</p>	<p>Context: The World-Wide Fund for Nature’s (WWF) Living Planet Report 2024 reveals a 73% decline in monitored wildlife populations from 1970 to 2020. This report highlights the significant impact of habitat loss, climate change, and over-exploitation on global biodiversity.</p> <p>Key data points</p> <ul style="list-style-type: none"> • Wildlife population decline: 73% decline in the average size of monitored wildlife populations from 1970-2020, up from 69% reported in 2022. • Ecosystem-specific declines: <ul style="list-style-type: none"> ○ Freshwater ecosystems: 85% decline ○ Terrestrial ecosystems: 69% decline ○ Marine ecosystems: 56% decline • Main threats to wildlife: Habitat loss, degradation, over-exploitation, invasive species, and diseases. • Data source: Living Planet Index (LPI) provided by the Zoological Society of London, covering trends from 5,495 species and nearly 35,000 population records. <p>UPSC syllabus relevance</p> <ul style="list-style-type: none"> • GS Paper III: Environment and Ecology – Conservation, Environmental Pollution and Degradation, Environmental Impact Assessment. • Essay paper: Topics related to climate change, biodiversity, and sustainable development. • Current affairs: Issues concerning wildlife conservation, climate change policies, and environmental protection strategies.
<p>18. UMANG - DIGI LOCKER</p>	<p>Context: The National e-Governance Division has announced the integration of the UMANG app with DigiLocker, allowing citizens to access a wide range of government services through a single platform.</p> <ul style="list-style-type: none"> • This collaboration aims to simplify user experience by bringing together multiple services under one digital interface. <p>Significance:</p> <ul style="list-style-type: none"> • Enhanced accessibility: Integration enables citizens to access government services easily and securely using both UMANG and DigiLocker. • Streamlined services: Facilitates a unified platform for managing multiple government services, reducing the need for multiple apps. • Promotes Digital India: Supports the government’s goal of digitizing public services and promoting secure cloud-based storage solutions. <p>About UMANG App:</p> <ul style="list-style-type: none"> • Full Form: Unified Mobile Application for New-age Governance. • Purpose: Provides a single platform for Indian citizens to access e-Gov services ranging from Central to Local Government bodies. • Availability: Accessible to all Android users, offering various government services in one place. <p>About DigiLocker:</p> <ul style="list-style-type: none"> • Flagship initiative: Part of the Digital India program by the Ministry of Electronics and IT. • Purpose: Provides secure cloud-based storage for essential documents and digital certificates. • Integration: Allows users to access UMANG services through the DigiLocker app, enhancing convenience and efficiency.

19. OUT-OF-POCKET MEDICAL EXPENSES

Context: A government survey reported that the average out-of-pocket medical expenses for hospitalization over the past year were Rs 4,129 in rural areas and Rs 5,290 in urban areas.

Key Data Points from the Govt Survey (July 2022-June 2023)

1. **Out-of-Pocket medical expenditure:**
 - **Hospitalisation:** Rural households spent an average of ₹4,129 per year; urban households spent ₹5,290.
 - **Non-hospitalisation treatments:** Rural households spent ₹539 per month; urban households spent ₹606.
2. **Literacy and numeracy:**
 - 96.9% of individuals aged 15-24 can read, write, and perform simple arithmetic.
 - Literacy rates: 97.8% for males and 95.9% for females in the 15-24 age group.
3. **Education, Employment, and Training:**
 - 23.3% of the 15-24 age group were not in education, employment, or training (NEET).
 - The NEET figure rises to 25.6% for those aged 15-29.
4. **Digital access:**
 - 95.1% of households have a telephone or mobile connection.
 - Only 9.9% of households have access to computers.
 - 95.7% of individuals aged 15-24 in rural areas and 97% in urban areas can use mobile phones.

Relevance to UPSC syllabus:

- **Social issues and development:** Highlights gaps in healthcare access and costs in rural and urban areas.
- **Governance and policy-making:** Useful in evaluating policies related to health and education.
- **Economic development:** Data on out-of-pocket expenses aids in understanding financial burden on households.
- **Education and skill development:** Provides insights into literacy and skill training needs for youth.

20. KIDNEY TRANSPLANT RACKET

Context: A kidney transplant racket, spanning from Dhaka to Delhi, exploited fake family trees, forged documents, and a fake lab to facilitate illegal transplants for Bangladeshi patients in two Noida hospitals. The racket, allegedly involving a prominent surgeon, middlemen, and forged diplomatic approvals, conducted numerous illegal transplants over the years before being busted by Delhi Police.

Relevance to UPSC GS2:

- **Health governance**
- **Diplomatic channels**

Relevance to UPSC GS4:

- **Medical ethics violation:** Demonstrates ethical breaches by healthcare professionals, eroding trust in medical practices.
- **Lack of accountability**

<p>21. INTERNET VIGILANTISM</p>	<p>Context: In Pakistan, internet vigilantism has surged, with groups and individuals tracking online content to accuse people of blasphemy, a crime punishable by death. These vigilantes, led mostly by private organizations like the Legal Commission on Blasphemy Pakistan (LCBP), search for online offenders, often entrapping unsuspecting individuals into sharing or engaging with blasphemous content. The cases are largely driven by financial, ideological, or personal motivations.</p> <p>Relevance to UPSC exam:</p> <ol style="list-style-type: none"> Governance & Ethics (GS-4): misuse of power, human rights violations, and abuse of blasphemy laws. Internal Security (GS-3): Demonstrates how misuse of digital platforms can escalate social and legal conflicts, relevant to discussions on cybersecurity, law enforcement, and human rights.
<p>22. IFOREST STUDY</p>	<p>Context: A report by environmental think-tank iForest highlights the multifaceted costs involved in this energy transition, focusing not only on replacing coal with green energy but also addressing non-energy costs such as worker support and land rehabilitation.</p> <p>Key points from the study:</p> <ol style="list-style-type: none"> Total cost estimate: <ul style="list-style-type: none"> India will require more than ₹84 lakh crore (\$1 trillion) to phase out coal mining and thermal power plants. Coal dependency: <ul style="list-style-type: none"> Currently, coal accounts for about 55% of India's commercial energy needs. Coal-based thermal power plants produce over 70% of India's electricity. Coal mining and Thermal power plants: <ul style="list-style-type: none"> India will need to close coal mines producing 1,315 million tonnes per annum and phase out thermal power plants with a capacity of 237.2 gigawatts. Green energy costs: <ul style="list-style-type: none"> Account for 52% of the transition costs, which include building green energy plants and upgrading the electricity grid. Non-energy costs: <ul style="list-style-type: none"> Comprise 48% of total costs, including "just transition costs" to support the livelihoods of around 60 lakh workers dependent on the coal economy, land rehabilitation, and repurposing. Land rehabilitation: <ul style="list-style-type: none"> The study mentions the rehabilitation of 343,504 hectares of coal mining land and 124,789 hectares of land at thermal power plant sites for green repowering. <p>Relevance in the UPSC Exam:</p> <ul style="list-style-type: none"> Environment and Ecology (GS Paper III): Economics (GS Paper III): Highlights financial challenges in moving from fossil fuels to clean energy Governance and Social Justice (GS Paper II): Social impacts like worker rehabilitation and community support are central for inclusive growth and social justice. Essay and Ethics (GS Paper IV)

23. SHETKARI SAMRUDDHI SPECIAL TRAIN

Context: Union Railways Minister, Ashwini Vaishnaw, flagged off the **Shetkari Samruddhi Special Train** via video conferencing, connecting Maharashtra’s Devlali and Bihar’s Danapur.

Key information:

- **Purpose:** Facilitate the transport of perishable goods and produce from farmers to new markets at minimal cost.
- **Features:** The train is equipped with small parcel vans for easy and safe transport of perishable goods.

Relevance in UPSC exam:

- **Economics (GS Paper III):** Highlights agricultural logistics and infrastructure improvement, crucial for market access and rural development.
- **Governance and Development (GS Paper II)**

24. “ENERGIZING TOMORROW: 2024 WORLD ENERGY OUTLOOK SPARKS HOPE!”

Context: The International Energy Agency (IEA) in its World Energy Outlook 2024 highlights the rapid transition toward clean energy, projecting that more than half of the world’s electricity will come from low-emission sources by 2030.

Key Findings	Data/Insights
Clean Energy Growth	More than 50% of global electricity to be generated by low-emission sources before 2030.
Renewable Energy Addition	560 GW of renewables capacity added in 2023.
Investment in Clean Energy	Nearly \$2 trillion annually on clean energy projects, double the investment in fossil fuels.
Nuclear Power’s Role	Renewed interest in nuclear power to support clean energy transition.
Electricity Demand Drivers	Growth driven by industry, electric vehicles (EVs), air conditioning, and AI-linked data centers.
Renewable Power Capacity Projection	Expected to rise from 4,250 GW to nearly 10,000 GW by 2030.
China’s Role in Renewables	60% of global new renewable capacity in 2023 added by China.
Solar Power in China	By 2030, China’s solar power generation will exceed the total electricity demand of the U.S. today.
Carbon Emissions	Global CO2 emissions set to peak “imminently”; energy-related CO2 emissions hit a record high last year.
Global Temperature Rise	Current policies put the world on track for a 2.4°C rise by 2100, exceeding the Paris Agreement goal.
Challenges in Developing Countries	Policy uncertainty and high capital costs are hindering clean energy adoption in developing nations.
COP28 Renewable Energy Target	World pledged to triple renewable energy capacity by 2030, but current progress falls short.
CO2 Emissions and Energy Demand	Two-thirds of increased energy demand in 2023 was met by fossil fuels , slowing the decline of coal usage.

25. INDIA'S DIRECT TAX COLLECTIONS

Context: In FY2023-24, India's direct tax collections reached a significant milestone, constituting 56.72% of total tax revenue, the highest in 14 years.

Key data released by the Central Board of Direct Taxes (CBDT) report:

Parameter	FY2023-24	Comparison/Trend
Direct Tax to Total Tax Revenue	56.72%	Highest since FY2010 (60.78%)
Indirect Tax to Total Tax Revenue	43.28%	Decreased from FY2022-23
Direct Tax to GDP Ratio	6.64%	Highest in over 20 years
Personal Income Tax Collection	₹10.45 lakh crore	Higher than corporate tax collection
Corporate Tax Collection	₹9.11 lakh crore	Lower due to 2019 corporate tax rate cuts
Tax Buoyancy	2.12	Improved from 1.18 in FY2022-23
Income Tax Filers	8.09 crore	Up from 7.4 crore in FY2022-23
Total Taxpayers	10.41 crore	Up from 9.37 crore in FY2022-23
Cost of Tax Collection	0.44%	Lowest since 2000-01
Assessment Year	2023-24	Increased number of taxpayers

Usage in UPSC syllabus:

- **Economy (Growth and Development):** The data reflects tax buoyancy and its relation to economic growth, relevant for topics like **Taxation Policies**, **Fiscal Responsibility**, and **Public Finance**.
- **Public Administration and Governance:** Insights into **tax reforms**, the impact of the **corporate tax cut**, and the changing dynamics of **direct vs indirect taxation** are crucial for understanding **fiscal governance** and **public sector efficiency**.
- **Social Issues and Policy:** Understanding how **direct taxation** (linked to income) affects wealth redistribution and impacts various socioeconomic groups aligns with **equity and justice** in economic policies.

<p>26. CLICK-TO-CANCEL RULE</p>	<p>Context: The United States’ Federal Trade Commission (FTC) will soon implement a “click-to-cancel” rule, which will make it significantly easier for consumers to cancel their subscriptions and memberships.</p> <p>About Click-to-Cancel rule:</p> <ul style="list-style-type: none"> • Ease of cancellation: Companies must allow consumers to cancel subscriptions as easily as they signed up, using the same medium (e.g., online, phone). • Prohibited barriers: Businesses cannot force customers to talk to representatives or add charges for phone cancellations if those were not required for signing up. • Coverage: Applies to “negative option programs” like automatic renewals, where failure to cancel leads to continued billing. <p>Relevance for UPSC syllabus</p> <ul style="list-style-type: none"> • Governance and transparency: This rule demonstrates regulatory frameworks ensuring consumer rights and transparency, a key topic in governance and ethical policy. • Economic reforms: Reflects consumer protection in the digital economy, tying into broader discussions of economic regulation and technological governance.
<p>27. COMPASSION CASE</p>	<p>Context: R Prakash, a police head constable in Tiruppur city, was on patrol under the Dedicated Beat System when he encountered a disabled woman named G Amutha, living under a Neem tree with only an umbrella for shelter. Moved by her plight, Prakash took it upon himself to build her a small shelter using his own funds. Amutha, despite her physical challenges, earns a meager income by turning knitwear waste into yarn. Prakash’s actions not only exemplify compassion but also the dedication of public servants who go beyond their duty to improve the lives of the needy.</p> <p>Usage in UPSC essay exam:</p> <ol style="list-style-type: none"> 1. Empathy and Public Service: This anecdote can be used to highlight how compassion and empathy are key traits in effective public service. 2. Social Responsibility: Can be linked to essays on social justice and responsibility of public officials in uplifting marginalized individuals. 3. Example of Citizen-Police Relations: Demonstrates the role of police in society as not only protectors but also enablers of welfare. <p>Usage in Ethics Case Study:</p> <ol style="list-style-type: none"> 1. Demonstrating Ethical Leadership: The anecdote can be used to show how individuals in positions of responsibility can take initiative to act beyond their defined roles for the public good. 2. Compassionate Public Service: This example can be cited to emphasize the importance of empathy, integrity, and duty towards vulnerable sections.

28. MINING DUST FOR CARBON CAPTURE

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.

Process:

- 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.

Location:

- 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.

Environmental Benefit:

- Apart from capturing carbon, basalt also acts as a soil enhancer, improving fertility and benefiting agricultural productivity.

Scale:

- For every 3-4 tonnes of basalt dust, 1 tonne of CO₂ can be sequestered over a few years.

Usage in Carbon Credits:

- Companies can purchase carbon credits generated from this process to offset their emissions voluntarily.

Usage in UPSC Syllabus:

1. **GS Paper 3 – Environment and Ecology:**

- **Climate change mitigation**
- **Sustainable development**
- **Carbon credit markets**

2. **GS Paper 2 – Governance: Environmental policies**

29. GOOGLE'S VIOLATION OF AN-TITRUST LAWS

Context: In 2020, *Epic Games* made a bold move that challenged the status quo of the app economy by introducing a direct payment option within its popular game, *Fortnite*. 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 *Fortnite* 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.

• **GS Paper 3 - Economic Development.**

- **Regulation and Anti-Trust Laws**
- **Innovation and Growth**
- **Entrepreneurship:** The case exemplifies how unchecked corporate dominance hampers small businesses, linking to *Inclusive Growth* and *Market Dynamics*.

• **GS Paper 4 - Ethics, Integrity, and Aptitude.**

- **Business Ethics**
- **Fairness and Accountability**
- **Moral Leadership:** The role of leadership in ensuring ethical business conduct can be tied to *Leadership*, emphasizing *Empathy* and *Accountability* in governance.

30. 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.

31. 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**

<p>32. I4C STUDY</p>	<p>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.</p> <p>Key Findings from the I4C Study:</p> <ul style="list-style-type: none"> • 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. <p>Relevance to the UPSC Syllabus:</p> <ul style="list-style-type: none"> • 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.
<p>33. LOCALIZED WEATHER FORECASTING</p>	<p>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.</p> <p>Key points on collaboration:</p> <ul style="list-style-type: none"> • 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. <p>Relevance to UPSC Syllabus:</p> <ul style="list-style-type: none"> • Governance: This initiative can be linked to e-governance efforts in rural development • Agriculture and Climate • Science and Technology.
<p>34. “BREAKING CHAINS: PAKISTAN’S WOMEN’S STRUGGLE”</p>	<p>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.</p> <p>Relevance in UPSC syllabus:</p> <ul style="list-style-type: none"> • 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.

35. AI-POWERED CHATBOT ON CP-GRAMS

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

36. 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.

37. LIB TECH STUDY ON MNREGA

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.

38. ECO-CRAFTS FROM WATER HYACINTH

The Krishna district administration, in partnership with Lepakshi Handicrafts and Andhra Pradesh Handicrafts Development Organisation, is transforming water hyacinth plant into eco-friendly handicrafts, empowering rural women, addressing environmental concerns, and boosting local craftsmanship.

Relevance in UPSC Syllabus:

- **GS Paper II - Governance and Social Justice**
 - **Women Empowerment**
 - **Government Schemes and Initiatives**
- **GS Paper III - Environment and Ecology**
 - **Invasive Species Management**
 - **Sustainable Development**
- **GS Paper IV - Ethics in Public Administration**
 - **Innovative Governance Solutions**
 - **Community-Centric Policies**
- **Optional Papers (Sociology, Public Administration)**
 - **Role of Community and Gender in Economic Development:** Illustrative example for rural upliftment and gender equality.

<p>39. FEDERALISM</p>	<p>Context: Chief Justice of India recently highlighted the evolving role of federalism in promoting democracy and upholding constitutional ideals. At the Loksatta Annual Lecture, he stressed that modern challenges like climate change, AI, and cybercrime require Union and state collaboration, emphasizing the need for greater synergy.</p> <p>These lines from his speech capture CJI Chandrachud’s vision of a dynamic and cooperative federalism:</p> <ul style="list-style-type: none"> • “Federalism should foster democracy, equality, liberty, dignity, and fraternity.” • “Modern challenges like climate change and cybercrime go beyond traditional federal boundaries.” • “The Constitution was intended to be transformative, not static.” • “Indian federalism is unique; it values equality and liberty, not as a mask but as a core principle.” • “Constructive dialogue between the Union and States is vital for federalism to thrive.” • “Courts play a key role in shaping and safeguarding federal principles.” <div style="border: 1px solid black; padding: 5px;"> <p>NOTE: Using these statements by CJI in your answer, especially the introduction and conclusion, will help in fetching additional marks in the exam.</p> </div> <p>Relevance in UPSC syllabus:</p> <ul style="list-style-type: none"> • GS Paper II - Indian Constitution and Governance <ul style="list-style-type: none"> ○ Federalism in India ○ Cooperative and Competitive Federalism ○ Judiciary and Federalism • Essay Paper <ul style="list-style-type: none"> ○ Federalism as a Dynamic Principle • Optional Papers - Political Science and Public Administration <ul style="list-style-type: none"> ○ Indian Political System
<p>40. HULA PARTIES – MAN ANIMAL CONFLICT</p>	<p>Context: The human-elephant conflict in India has significantly impacted both communities and wildlife, particularly in the Jhargram district of West Bengal, where close interactions between populated areas and forest patches often lead to confrontations. One notable approach for managing such conflicts is the use of Hula Parties by the forest department, a practice that has drawn criticism for its ethical and environmental implications.</p> <p>About Hula Party:</p> <ul style="list-style-type: none"> • Definition: Hula Parties are groups, typically made up of 15-30 locals, hired informally by the forest department to prevent elephants from entering populated areas. • Tools and method: They use torches (hulas), consisting of iron rods with live fire, sticks, and noise to ward off elephants. In emergencies, torches are used to create barriers to reduce human-elephant interaction. • Legal and ethical issues: Using fire against protected species like elephants, categorized under Schedule I of the Wildlife Protection Act, is illegal. There are also safety concerns and ethical considerations regarding potential harm to elephants. • Recent controversy: Following the tragic death of a pregnant elephant, the use of torches by hula parties has come under scrutiny, with calls for better-trained personnel and non-violent conflict resolution. <p>Relevance in UPSC Syllabus:</p> <ul style="list-style-type: none"> • Ethics in Administration • Environment and Ecology • Science and Technology • Governance and Policy

<p>41. AANDHI VILLAGE – GREEN TECHNOLOGY</p>	<p>Context: In Aandhi village, located just 43 kilometers from Jaipur, Rajasthan, a transformation toward a zero-waste model is underway through the integration of advanced green technologies. Food waste, agro waste, wastewater, and other sources from across the village are being converted into resources. Using an array of sustainable technologies like an Organic Waste Bio-Methanation Plant, Vermifiltration, and Constructed Wetlands, the village has started generating clean energy, treating wastewater, and recycling waste materials. This project, led by the Climate, Energy, and Sustainable Technology (CEST) Division, stands as a replicable model for rural India, setting a powerful example of resource recovery and environmental conservation through innovative interventions.</p> <p>Relevance in UPSC Syllabus:</p> <ul style="list-style-type: none"> • Sustainable Development and Waste Management • Case Study for Rural Development • Innovation and Climate Resilience • Governance and Community Engagement
<p>42. SWACHH DIWALI SHUBH DIWALI CAMPAIGN</p>	<p>Context: The “Swachh Diwali Shubh Diwali” campaign, launched by the Ministry of Housing and Urban Affairs (MoHUA) from October 28 to November 3, 2024, aims to integrate the festival of Diwali with the Swachh Bharat Mission’s goals of cleanliness and sustainability.</p> <p>About the “Swachh Diwali Shubh Diwali” Campaign:</p> <ul style="list-style-type: none"> • Objective: Promote cleanliness beyond homes to public spaces and neighborhoods, reinforcing the values of the Swachh Bharat Mission. • Eco-friendly focus: Emphasizes plastic-free celebrations and “Vocal for Local” to minimize environmental impact. • Gandhian values: Aligns with principles of public service and sanitation, encouraging Diwali celebrations that support marginalized communities. • Community involvement: Engages citizens to create a cleaner, more inclusive Diwali celebration in line with collective well-being and sustainability. <p>Relevance in UPSC Syllabus:</p> <ul style="list-style-type: none"> • Ethics in Public Administration: Social responsibility, ethical duty, and Gandhian values. • Social Issues: Urban sanitation, public health, and social welfare, • Environment and Ecology • Essay: Community service, inclusivity, and social harmony
<p>43. AARAMBH 6.0 INITIATIVE</p>	<p>Context: Prime Minister engaged with young civil servants during Aarambh 6.0, focusing on enhancing governance through public participation (Jan Bhagidari) and improving feedback and grievance redressal systems.</p> <p>About Aarambh 6.0 initiative:</p> <ul style="list-style-type: none"> • Objective: Aarambh is an orientation program for young civil servants, designed to equip them with governance skills and foster innovative thinking. • Focus Areas: This edition emphasized “Jan Bhagidari” (public participation), the importance of robust feedback mechanisms, and streamlined grievance redressal. <p>Relevance in UPSC syllabus:</p> <ul style="list-style-type: none"> • Governance: Citizen-centric governance • Polity and Public Administration • Ethics and Integrity

44. "MUMMY-PAPA, VOTE DO" CAMPAIGN

Context: Ahead of the upcoming assembly elections in Jharkhand, the Election Commission launched an innovative voter awareness campaign, "Mummy-Papa, Vote Do," engaging schoolchildren to encourage their parents to vote.

About "Mummy-Papa, Vote Do" Campaign:

- **Objective:** Aimed at increasing voter turnout by involving children in urging their parents to vote.
- **Method:** Over 1.7 million students from 18,570 schools wrote letters to their parents, encouraging them to fulfill their civic responsibility.
- **Significance:** Boosts democratic participation, especially in rural areas, and emphasizes the importance of voting as a civic duty.

Relevance for UPSC

- **Electoral awareness:**
- **Civic engagement**
- **Innovative governance**

FACTS FOR PRELIMS

GS-1

Art & Culture

1. NEW INCLUSION TO CLASSICAL LANGUAGE STATUS

Context:

Prime Minister Narendra Modi praised the Union Cabinet's decision to grant Classical Language status to **Marathi, Pali, Prakrit, Assamese, and Bengali**, highlighting their rich literary and cultural heritage.

About Classical Language Status Criteria:

The government's criteria for declaring a language as classical include the following:

1. **Historical antiquity:** The language should have a documented history of at least 1,500-2,000 years.
2. **Cultural heritage:** It should have a body of ancient literature that is regarded as a cultural heritage.
3. **Literary tradition:** The language should have an original literary tradition, not borrowed from another community.
4. **Distinctness:** There should be a clear distinction between the classical language and its later forms, indicating a discontinuity.

Presently recognised language under Classical language:

Language	Year of Recognition
Tamil	2004

Sanskrit	2005
Telugu	2008
Kannada	2008
Malayalam	2013
Odia	2014

Benefits of Classical Language Status:

1. **International awards:** Two major international awards are conferred annually for scholars of eminence in the classical language.
2. **Center of excellence:** The government establishes a dedicated Centre of Excellence for studies related to the classical language.
3. **Promotion and research:** Grants and funding are provided to promote the study, research, and dissemination of the classical language and its literature.
4. **Educational support:** Programs are established in universities and institutes to support academic activities around classical languages.

Insta links:

1. [Centres-demand-autonomy-for-classical-language-promotion](#)

2. 2024 NOBEL PRIZE IN LITERATURE

Context:

The 2024 Nobel Prize in Literature was awarded to South Korean author Han Kang for her “**intense poetic prose**” that explores historical traumas and human fragility. This marks a shift from recent Europe-centric winners, with the Swedish Academy recognizing her innovation in contemporary prose.

About Han Kang and her works:

- **Early career:** Han Kang started her literary journey with poetry, but her breakthrough came with her novel, **The Vegetarian (2007)**, which won the Man Booker International Prize in 2016.
- **Key themes:** Her writing often addresses themes like patriarchy, violence, grief, and historical injustices, blending a radical and poetic imagination with intense narratives.
- **Notable works:**
 - **The vegetarian:** Explores a woman’s decision to stop eating meat and her family’s violent reactions.
 - **Human acts (2016):** Focuses on the 1980 Gwangju Uprising in South Korea, highlighting the voices of historical victims.
 - **The white book (2017):** A meditative exploration of grief and memory, constructed around the symbolism of the color white.
 - **Greek lessons (2023):** A story of love and loss between a woman who has lost her speech and a teacher losing his sight.
 - **We do not part:** Set against the backdrop of a hidden massacre in Korean history, it delves into collective trauma and memory.
- **Impact:** Her works have expanded Korean literature’s reach globally, highlighting its power to address universal human experiences with empathy and depth.

Insta links:

1. [2023-Nobel-prize-for-literature-jon-olav-fosse](#)

3. YUVA SANGAM

Context:

The Ministry of Education today launched the registration portal for the fifth phase of Yuva Sangam under Ek Bharat Shreshtha Bharat.

About Yuva Sangam:

- **Scheme part of:** Yuva Sangam is an initiative under the Ek Bharat Shreshtha Bharat (EBSB) program launched by the Government of India.
- **Aim:** Its primary goal is to foster cultural exchange and strengthen people-to-people connections

among youth from different states and union territories of India.

- **Criteria:** Youth aged 18-30, including students, National Service Scheme (NSS) and Nehru Yuva Kendra Sangathan (NYKS) volunteers, and employed/self-employed individuals, are eligible to participate by registering on the Yuva Sangam portal.
- **Origin:** The initiative draws inspiration from the National Education Policy (NEP) 2020, focusing on experiential learning and promoting India’s rich cultural diversity.
- **Significance:**
 - Provides multi-dimensional exposure to participants in areas like Tourism (Paryatan), Traditions (Parampara), Development (Pragati), People-to-people connect (Paraspar Sampark), and Technology (Prodyogiki).
 - Encourages youth to experience India’s diverse heritage, development landmarks, and traditions first-hand.

Insta Links:

1. [PM YUVA SCHEME](#)
2. [Ek Bharat Shreshtha Bharat](#)

4. 2024 NOBEL PEACE PRIZE

Context:

The 2024 Nobel Peace Prize was awarded to **Nihon Hidankyo**, a Japanese organization representing the survivors of the Hiroshima and Nagasaki atomic bombings, known as “Hibakusha.” The award recognized their tireless efforts to promote nuclear disarmament and highlight the catastrophic effects of nuclear weapons.

About Nihon Hidankyo:

1. **Origin:**
 - Founded on **August 10, 1956**, as a national organization for Hiroshima and Nagasaki atomic bomb survivors.
 - Created to **unify Hibakusha voices, promote their welfare**, and advocate against nuclear weapons.
2. **Leadership:**
 - Led by Hibakusha themselves, sharing firsthand experiences to influence global policy and promote peace.
3. **Role and contributions:**
 - **Advocacy:** Pushing for nuclear disarmament through global platforms like the United Nations.
 - **Awareness:** Educating on the human and environmental impacts of nuclear warfare.
 - **Collaboration:** Working with groups like ICAN to support a treaty-based prohibition

of nuclear weapons.

- **Nuclear Taboo:** Contributed to the global norm against the use of nuclear weapons since 1945.

4. Significance:

- Raised global awareness about nuclear dangers.
- Supported international disarmament efforts despite challenges from countries expanding nuclear capabilities.

Insta links:

1. [2023-Nobel-prize-for-peace](#)

5. 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](#)

6. DINOSAUR FOSSIL PARK AND MUSEUM

Context:

Gujarat’s Dinosaur Fossil Park and Museum in Balasinor, an iconic site is currently under **consideration for a UNESCO geo-heritage tag**. The park faces neglect in maintenance and management, impacting both visitor experience and the conservation of fossils.

About Dinosaur Fossil Park and Museum, Balasinor:

- **Location:** Located in Raiyoli, Balasinor, Gujarat,

known for Late Cretaceous fossils of dinosaurs like **Rajasaurus narmadensis**.

- **Discovery:** Uncovered in the 1980s by GSI geologists, it ranks as one of the world’s largest dinosaur egg hatcheries.
- **Current issues:** Faces neglect with overgrown vegetation, broken displays, and frequent power outages.
- **Nearby threats:** A nearby irrigation project poses risks to the fossil-rich area.
- **Museum facilities:** Features like 3D mapping and VR tours but is affected by structural issues and funding delays.
- **Local conservation:** The Fossil Park Society coordinates upkeep efforts, and **Nawabzadi Aaliya Sultana Babi, known as the “Dinosaur Princess,”** advocates for its preservation.

In News: Hong Kong has discovered dinosaur fossils for the first time on **Port Island** in its UNESCO Global Geopark. Initial analysis suggests they belong to a large dinosaur from the Cretaceous period (145-66 million years ago), likely preserved by sediment and later exposed by flooding.

Insta Links:

1. [National-fossil-park-in-Ghugwa-Madhya-Pradesh](#)

7. KONARK WHEELS

Context:

Four replicas of the Konark wheels, made of sandstone, have been installed at Rashtrapati Bhavan Cultural Centre and Amrit Udyan.

- This initiative aims to highlight India’s cultural heritage, presenting visitors with a glimpse of traditional and historical artistry associated with the 13th-century Konark Sun Temple in Odisha.

About Konark Sun Temple:

- **Historical background:** Built in the 13th century under **King Narasimhadeva I** of the Eastern Ganga Dynasty, the temple is located in Konark, Odisha.
- **Architectural design:** The temple represents a colossal stone chariot with twelve pairs of intricately carved wheels, symbolizing the Sun God’s chariot.
- **Materials used:** Constructed using **Khondalite stones**, the temple features detailed carvings illustrating mythology and cultural life.
- **Astronomical significance:** The temple’s design is oriented to capture the first light of the sun, symbolizing ancient Indian astronomical knowledge.
- **UNESCO recognition:** In 1984, the Konark Temple was declared a UNESCO World Heritage Site, acknowledging its historical and architectural importance.

About Konark Wheel:

- **Symbolism:** The Konark wheel, built in the 13th century, represents time (Kalachakra), progression, and democracy.
- **Design features:** With 24 spokes, it embodies ancient wisdom and architectural mastery, symbolized in the national flag.
- **Purpose:** The wheel served as a sundial in the temple, symbolizing the passage of time and India’s commitment to progress and resilience.

Insta links:

1. [Konark-sun-temple](#)

History

8. DODDALATHUR MEGALITHIC SITE

Context:

A team of history and archaeology scholars and students from the University of Mysore have embarked on an excavation of megalithic burial sites in Chamarajanagar district (Karnataka).

About Doddalathur megalithic site:

- **Location:** Doddalathur village, Hanur taluk, Chamarajanagar district, Karnataka. Situated in a small valley formed by the Male Mahadeshwara Hill ranges.
- **Discovery:** Identified by C. Krishnamurti of the Archaeological Survey of India (ASI) in 1961.
- **Period:** The site corresponds to the Iron Age, broadly placed between 1200 BC and 300 CE in South India.
- **Significance:** Contains hundreds of megalithic burials characterized by circles made of large boulders. Many burials remain intact despite agricultural expansion and land development.
- **Current excavation:** Led by a team from the University of Mysore and the Mythic Society, Bengaluru, with a focus on understanding megalithic-iron age culture and providing field training to archaeology students.

About Megalithic sites:

- **Definition:** Megaliths are large stones used in prehistoric monuments or burial structures.
- **Purpose:** Constructed as burial sites or commemorative memorials (non-sepulchral).
 - **Burial types:** Include dolmenoid cists, cairn circles, capstones, and urns or sarcophagi made of terracotta.
 - **Memorial types:** Include non-sepulchral sites such as menhirs.
- **Types of Megalithic structures:**
 - **Stone circles (Cromlechs):** Circular arrangements of stones, sometimes used as

- **burial markers,**
- **Dolmen:** A chamber formed by placing a large capstone on support stones, often used as tombs.
- **Cist:** A small stone-built coffin-like box used to hold bodies, often placed underground.
- **Monolith:** Single standing stones, sometimes used as markers or commemorative symbols.
- **Capstone style:** Single horizontal stones placed over burial chambers without support stones.

- **Timeline:** Most megaliths in India date to the Iron Age (1500 BC to 500 BC), with some predating this period up to 2000 BC.
- **Geographic spread:** Found throughout Peninsular India, especially in Maharashtra, Karnataka, Tamil Nadu, Kerala, Andhra Pradesh, and Telangana.

Insta links:

1. [Menhir-and-megalithic-burial-sites](#)

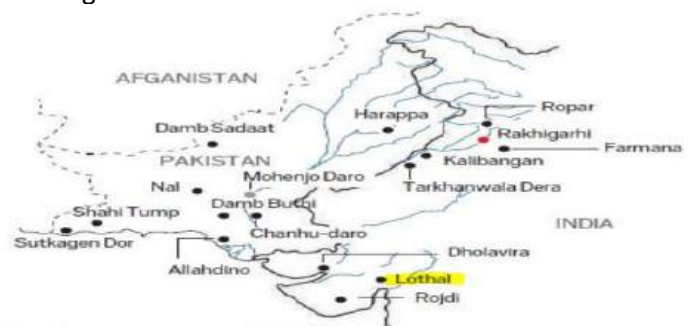
9. NATIONAL MARITIME HERITAGE COMPLEX

Context:

In a significant decision, the Union Cabinet, has approved the development of the National Maritime Heritage Complex (NMHC) at Lothal, Gujarat.

More about National Maritime Heritage Complex (NMHC):

- **Location:** Being built in Lothal, Gujarat, under the Ministry of Ports, Shipping, and Waterways.
- **Objective:** Showcases India’s maritime heritage from ancient to modern times through an educational and engaging experience.
- **Significance:** Set to be the world’s largest maritime museum complex; aims to boost tourism, create jobs, and enhance India’s global maritime image.
- **Key features:** Includes Lothal recreation, four theme parks, coastal state pavilions, eco-resorts, a maritime research institute, and advanced museum facilities.
- **Development:** Managed by Tata Projects Ltd and designed by Architect Hafeez Contractor, creating around 22,000 jobs, promoting regional economic growth.



About Lothal:

- **Historical importance:** A significant Indus Valley Civilization site dating back to 2,200 BC; known for its role as a major trading hub.
- **Key discoveries:** World’s oldest artificial dock, bead factories, warehouses, drainage systems, and evidence of maritime trade with West Asia and Africa.
- **Location:** Situated in Gujarat’s Bhal region; well-connected by road and rail, making it accessible for visitors.
- **UNESCO status:** Nominated for the UNESCO World Heritage list, highlighting its historical significance in ancient maritime trade and culture.

Insta links:

1. [National-maritime-heritage-complex](#)

10. BATTLE OF WALONG

Context:

To mark the 62nd anniversary of the iconic Battle of Walong during the 1962 war with China, the Army is planning a month-long series of commemorative events.



About Battle of Walong:

- **Location:** Walong, Arunachal Pradesh, near the **McMahon Line**, was a key battleground in the 1962 Sino-Indian War.
- **Indian Forces:** The 11th Infantry Brigade, comprising the **4th Sikh, 6th Kumaon, and 3rd Battalion of 3 Gorkha Rifles**, defended Walong with about 800 men.
- **Chinese Offensive:** On October 21, 1962, over 4,000 Chinese troops attacked. Despite limited resources, Indian forces resisted for **27 days**.
- **Tactics:** Indian troops used the terrain to set up ambushes and defensive positions, slowing the Chinese advance.
- **Outcome:** Indian forces withdrew on November 16, 1962, after inflicting heavy casualties and delaying the Chinese significantly.
- **Significance:** The Indian defense forced China to divert additional troops from Tawang, demonstrating India’s bravery and resilience in its

only counterattack of the war.

Insta links:

1. [Battle of Walong](#)
2. [1962-India-China-war](#)

Society

11. 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](#)

12. 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

13. ISOSTATIC REBOUND

Context:

A recent study suggests that Mount Everest has grown 15-50 meters taller than expected over 89,000 years due to the erosion caused by the Arun River, which helps push the peak upwards by up to 2mm annually.

More about study:

- **Isostatic Rebound:** The reduction of landmass in the Arun River basin leads to isostatic rebound, where the Earth's crust rises due to diminished surface weight, akin to a floating object adjusting when weight is removed.

- **Impact on Neighboring Peaks:** The isostatic rebound affects other Himalayan peaks like Lhotse and Makalu, contributing to their elevation increase.
- **Himalayan Uplift:** Everest has been rising due to the collision of the Indian and Eurasian plates for 50 million years. The Arun River's erosion adds an extra boost to this process.

About Isostatic rebound:

Isostatic Rebound:

Isostatic rebound, also called post-glacial rebound or glacial isostasy, is the gradual rise of Earth's crust after the removal of heavy weight, such as ice sheets or eroded landmasses.

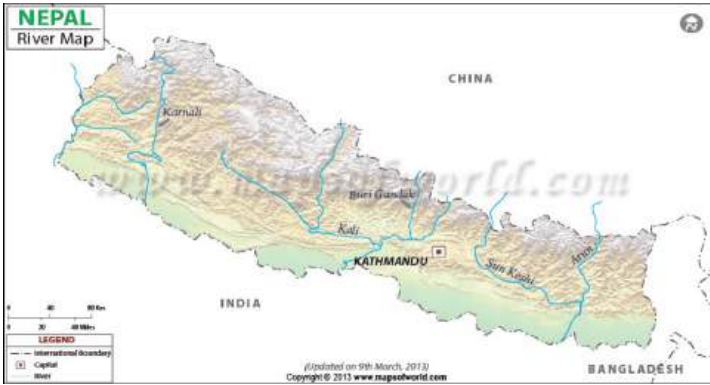
- This phenomenon occurs due to the **Earth's lithosphere** (crust and upper mantle) behaving elastically over time.
- When heavy loads, like glaciers, depress the Earth's surface, their melting or erosion leads to the land rebounding or rising as the weight is removed.
- This process takes thousands of years and continues even after the glaciers have disappeared.

Process and Importance:

1. **Force:** The Earth's crust behaves much like a floating object in a fluid. When a heavy load like an ice sheet or eroded rock is removed, the crust "rebounds" upward in response to the decrease in pressure.
2. **Geography:** Isostatic rebound is particularly significant in areas once covered by massive ice sheets, like Scandinavia and Canada. The process can also occur due to erosion in mountainous regions, as in the case of Mount Everest.
3. **Importance:** It helps maintain the height of mountains and other elevated landforms, compensating for erosion by lifting the land. It also influences sea levels and can impact tectonic activity in certain regions.

Arun River:

1. **Origin:** The Arun River originates from the Tibet Autonomous Region of China.
2. **Flow:** It flows through Tibet and Nepal before joining the Saptakoshi River in Nepal, which later merges with the Ganges in India.
3. **Tributaries:** The Barun River and the Sankhuwa River in Nepal.
4. **India:** Although the Arun River does not directly flow through India, it indirectly influences the flow of rivers that contribute to the Ganges Basin in northern India.



Insta Links:

1. [Isostacy](#)

14. SLAG AND SEDIMENTARY ROCK FORMATION

Context:

Human activity has drastically transformed the Earth’s landscape, leading to the creation of new geological formations, such as sedimentary rocks formed from slag, a by-product of the steelmaking industry.

Key Points on Slag and Sedimentary rock formation:

1. **Slag’s role in artificial ground:**
 - o Slag is a composite material from steel production, containing metal oxides and silicon dioxide.
 - o It becomes a significant component of artificial ground, contributing to sedimentary material in the environment.
2. **Formation of sedimentary rock from slag:**
 - o Slag undergoes lithification, turning into sedimentary rock through natural weathering.
 - o This process can sequester greenhouse gases like carbon dioxide through mineral carbonation, mimicking natural processes.
3. **Carbon capture potential:**
 - o The lithification of slag through calcite cement precipitation traps atmospheric carbon dioxide in the form of calcite.
 - o This process can potentially reduce the carbon footprint of the steel industry by reusing slag deposits.
4. **Environmental and industrial implications:**
 - o Calcite formation on the slag surface aids in carbon capture and prevents coastal erosion.
 - o Calcium-silicate-hydrate (CSH) minerals formed in the intertidal zone limit the release of toxic metals from slag.
5. **Slag’s future potential:**
 - o Repurposing slag deposits for carbon capture could eliminate the need for additional processing facilities.
 - o Hardened slag can also be used in coastal

defense strategies to prevent erosion, combining waste management with environmental protection.

Insta links:

1. [Different-types-of-rocks](#)

15. AURORA BOREALIS

Context:

On October 10, 2024, Leh, Ladakh experienced a rare display of aurora borealis, or northern lights, due to a severe geomagnetic storm triggered by a coronal mass ejection (CME) from the Sun.

About auroras:

Auroras are natural light displays that appear as bright, swirling curtains in the night sky, with colors ranging from **green, red, and blue to yellow and purple**. These lights primarily occur near the poles, known as the **aurora borealis in the northern hemisphere** and **aurora australis in the southern hemisphere**, but can sometimes extend to lower latitudes.

Why auroras occur:

- **Caused by solar activity:** Auroras occur due to the interaction of charged particles from the Sun, known as the solar wind, with Earth’s magnetic field.
- **Solar wind and earth’s magnetic field:** As the solar wind reaches Earth, most particles are deflected by the planet’s magnetic field. However, some particles get trapped and travel toward the poles.
- **Interaction with atmospheric gases:** These charged particles collide with gases like oxygen and nitrogen in the upper atmosphere, producing light. Oxygen emits green hues, while nitrogen produces blue and purple tones.
- **Influence of solar flares and CMEs:** During strong solar activity, like solar flares or coronal mass ejections (CMEs), the solar wind intensifies, leading to geomagnetic storms. These storms can cause auroras to expand to mid-latitudes, making them visible in regions farther from the poles.

Insta links:

1. [Northern-lights-in-India](#)

16. 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](#)

17. DANA

Context:

The weather pattern known as **DANA, or “gota fría” (cold drop)**, recently triggered devastating **flash floods** across

southern and eastern Spain, causing widespread damage and fatalities.

- This atmospheric phenomenon, which has become increasingly intense and widespread, is linked to climate changes affecting rainfall patterns in the [Mediterranean region](#).

About DANA (Cold Drop):

- **Definition:** DANA stands for **“depresión aislada en niveles altos”** (isolated depression at high altitudes) and is also called “gota fría” or cold drop in Spain.
- **Formation:** Occurs when a pocket of cold air descends over the warm Mediterranean Sea, causing rapid atmospheric instability.
- **Mechanism:** The cold air mixes with warm, moist air, causing the latter to rise quickly and form cumulonimbus clouds that lead to intense rainfall.
- **Polar jet stream influence:** Involves the polar jet stream, which separates polar and tropical air; sometimes, a cold air pocket detaches and moves over the Mediterranean, sparking DANA.
- **Seasonal occurrence:** Commonly occurs in autumn and spring in the western Mediterranean.
- **Intensity:** Increasingly severe and geographically spread due to rising sea temperatures, with warmer air retaining more moisture, leading to heavier rainfall.

NOTE: Don’t confuse this with [Cyclone DANA](#) (was a tropical cyclone which affected the states of West Bengal and Odisha in India.)

Insta Links:

1. [Flash-Floods](#)

GS-2

[Salient Features on Indian Constitution](#)

1. “FREE TO THINK 2024” REPORT

Context:

India’s academic freedom has significantly declined over the past decade, with growing concerns over political influence and restrictions on student protests at universities. This trend has been highlighted in the “Free to Think 2024” report, which examines global academic freedom.

More about the report:

- **Published by:** Scholars at Risk (SAR) Academic Freedom Monitoring Project, a network of 665 universities worldwide.
- **India’s Rank:** Slipped from 0.6 points to 0.2 points on the Academic Freedom Index from 2013 to 2023, now classified as **“completely restricted,”** its lowest level since the mid-1940s.

Key Findings:

- The report covers **391 attacks on higher education** in 51 countries between July 2023 and June 2024.
- Highlights political control and a **Hindu nationalist agenda** influencing India’s universities.
- Restrictions on student protests noted in institutions like **Jawaharlal Nehru University (JNU) and South Asian University (SAU)**.

The report indicates growing tensions between the Indian central and state governments over higher education control, affecting institutions in states like Kerala, Tamil Nadu, West Bengal, and Punjab.

Insta links:

1. [India-rankings-2024](#)

2. CHIEF JUSTICE OF INDIA APPOINTMENT

Context:

Chief Justice of India (CJI) D.Y. Chandrachud is set to retire on **November 10, 2024**, and has recommended **Justice Sanjiv Khanna** as his successor to become the **51st Chief Justice of India**.

Process of Chief Justice of India appointment (CJI):

- **Seniority Principle:** The appointment of the CJI is typically based on the senior-most judge of the Supreme Court.
- **Memorandum of Procedure (MoP):** The **Law Ministry** requests a recommendation from the outgoing CJI regarding their successor.
- **Presidential Appointment:** After receiving the recommendation, the **President of India** appoints the next CJI.
- **Tenure and Retirement:** The CJI serves until reaching the age of **65**, and the process repeats upon each CJI’s retirement.
- **Merit and Integrity Consideration:** In addition to seniority, **merit and integrity** are important factors in the recommendation, as seen in previous appointments like **Justice Khanna’s** own elevation to the Supreme Court.

Insta Links:

1. [Appointment-of-Judges](#)

[Comparison of Constitutions](#)

3. SWING STATES

Context:

The 2024 U.S. presidential election, set for November 5, places a critical emphasis on a handful of states known as

“swing states” or “battleground states.”

About Swing States:

- **Definition:** Swing states are those where neither Democratic nor Republican candidates have a consistent dominance, leading them to “swing” between parties in different elections.
- **Examples in 2024:** The primary swing states this election include **Pennsylvania, Michigan, Wisconsin, Georgia, Nevada, Arizona, and North Carolina**.



● **Significance:**

- **Electoral college impact:** Swing states are crucial as they can allocate their entire electoral votes to the winner within that state, regardless of the margin. This can be decisive in a closely contested election.
- **Close poll margins:** In the 2024 race, polls in these states show tight competition, with leads often within a 3.4% margin, the typical polling error.
- **Demographic influence:** Each swing state has unique demographic groups—like Latinos in Arizona and Black voters in Georgia—that candidates aim to influence through tailored campaigns.

Insta links:

1. [US-sees-india-swing-state-can-help-tilt-global-strategic-balance](#)
2. [How-is-the-American-president-elected](#)

[Functioning of Parliament and State Legislatures](#)

4. SECTION 6A OF THE CITIZENSHIP ACT, 1955

Context:

India’s Supreme Court upheld Section 6A of the Citizenship Act, granting citizenship to Bangladeshi migrants who entered India before March 25, 1971.

Background:

- **Enacted in 1985** as part of the Citizenship

(Amendment) Act, following the **Assam Accord**.

- The **Assam Accord** aimed to resolve issues related to the influx of illegal migrants from **Bangladesh** into Assam after the **Bangladesh Liberation War (1971)**.
- Section 6A was inserted specifically to address the **unique historical and demographic challenges** faced by Assam due to large-scale migration.

Provisions:

- **Citizenship for Migrants Pre-1966:**
- **Persons of Indian origin** who entered Assam from Bangladesh before **January 1, 1966**, were granted **Indian citizenship** retroactively.
- **Migrants Between 1966-1971:**
- **Migrants who arrived between January 1, 1966, and March 25, 1971** were to register and were granted citizenship after **10 years of residence**, provided they fulfilled certain conditions.
- **Post-1971 Migrants:**
- Persons who entered Assam after **March 25, 1971**, were to be **detected and deported** as per the law.

About Citizenship Act, 1955:

- **Governing Indian Citizenship:** The **Citizenship Act, 1955** regulates who can obtain **Indian citizenship** based on birth, descent, registration, or naturalization.
- **Illegal Immigrants:** The Act bars illegal immigrants from obtaining citizenship. An illegal immigrant is someone who:
 - Enters India without valid documents (e.g., passport, visa), or
 - Enters with valid documents but **overstays** beyond the permitted period.
- **Single Citizenship:** India follows a policy of **single citizenship**, and the Act does not allow **dual citizenship**.
- **Constitutional Framework:** Citizenship matters fall under the **Union List** and are dealt with in **Part II of the Indian Constitution (Articles 5-11)**. The term **“citizen”** is not defined in the Constitution, leaving it to statutory laws like the Citizenship Act.

Insta links:

1. [Citizenship-amendment-act-rules](#)
2. [CAA, 2019](#)
3. [Clause-6-of-the-assam-accord](#)

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 odour, slightly sweet taste	Foul odour, 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. RAJYAMATA-GOMATA

Context:

The Maharashtra government has designated the State’s indigenous cow breeds as ‘RajyaMata-Gomata’ due to concerns over declining numbers.

- Designates indigenous cow breeds as ‘RajyaMata-Gomata’ due to declining numbers.
- Introduces ₹50 subsidy per cow per day to support goshalas.
- Indigenous cows hold cultural, scientific, and economic significance.
- Scheme implemented online, monitored by district verification committees.
- Opposition criticizes decision as politically motivated for upcoming Assembly elections.
- **The primary breeds found in the Maharashtra include:**

- **Deoni** - Primarily found in the Marathwada region.
- **Lal Kandhari** - Also native to the Marathwada area.
- **Khillar** - Predominantly raised in Western Maharashtra.
- **Dangi** - A breed from the northern part of Maharashtra.
- **Gaolao** - Commonly found in the Vidarbha region.

These breeds are known for their adaptability to local climates and are valued for their contributions to organic farming, milk production, and Ayurvedic practices

Insta links:

1. [Gir cow breed](#)
2. [Rastriya Gokul Mission](#)

9. DHARTI AABA JANJATIYA GRAM UTKARSH ABHIYAN

Context:

Prime Minister Shri Narendra Modi launched the Dharti Aaba Janjatiya Gram Utkarsh Abhiyan (DAJGUA) on Mahatma Gandhi’s birth anniversary, from Hazaribagh, Jharkhand.

Dharti Aaba Janjatiya Gram Utkarsh Abhiyan (DAJGUA):

1. **Ministry:** The Ministry of Tribal Affairs.
2. **Funds allocated:** The total outlay for the scheme is Rs. 79,156 crores, with Rs. 56,333 crores as the Central share and Rs. 22,823 crores as the State share.
3. **Aim:** The Abhiyan aims to cover 63,843 villages in tribal areas, focusing on saturating gaps in social infrastructure, health, education, and livelihood through 25 interventions.

Features of the scheme:

1. **Comprehensive coverage:** Encompasses 549 districts and 2,911 blocks across 30 States/UTs, targeting tribal-majority villages.
2. **Multi-ministerial convergence:** 17-line ministries will collaborate to implement 25 interventions.
3. **Holistic approach:** The scheme builds upon the success of PM-JANMAN and focuses on critical gaps in tribal development.
4. **Saturation of services:** Ensures saturation of education, healthcare, and livelihood services in tribal communities.
5. **Infrastructure development:** Inauguration of 40 Eklavya schools and laying of foundations for 25 more, with a target to make 728 schools functional by March 2026, serving 3.5 lakh tribal students.

Insta links:

1. [Pradhan Mantri Janjatiya Unnat Gram Abhiyan](#)

10. PRIME MINISTER’S INTERNSHIP SCHEME

Context:

The government launched the pilot phase of the ambitious Prime Minister’s Internship Scheme, which aims to provide 1.25 lakh internship opportunities during the fiscal year 2024-25.

About PM Internship Scheme:

- **Origin:**
 - Announced in **Budget 2024-25** as part of the Prime Minister’s Package for Employment and Skilling.
- **Aim:**
 - To provide **1 crore youth** with hands-on

work experience in top 500 companies over five years, enhancing employability and skill development.

- **Budget:**
 - ₹2 lakh crore overall, with **₹2,000 crore allocated** for the fiscal year 2024-25.
- **Criteria:**
 - Youth aged **21-24** who are not in full-time employment or education.
 - Must hold qualifications like high school diplomas, ITI certificates, or graduate degrees (e.g., B.A., B.Sc., B.Com).
 - Excludes candidates from IITs, IIMs, and those holding advanced degrees (e.g., MBA, CA).
- **Features:**
 - 12-month internships with a **stipend of ₹5,000** (₹4,500 from the government, ₹500 from companies).
 - Interns are insured under government schemes like PM Jeevan Jyoti Bima Yojana.
 - A **one-time ₹6,000 grant** for incidentals.
 - Multilingual helpline and grievance redressal system.
- **Significance:**
 - Enhances practical experience for youth, improving employability.
 - Focuses on skill development in real-world job environments across sectors like pharma, auto, and agriculture.
 - Supports the government’s vision of self-reliance (Atmanirbhar Bharat) by developing skilled manpower.

Insta links:

1. [PMRPY](#)

11. CO-DISTRICT

Context:

Assam has become the first state in India to implement a new administrative structure known as Co-Districts, aimed at improving governance and accessibility of public services. The inaugural phase will take place on October 4 and 5, 2024, when 39 Co-Districts will be officially launched.

About Co-Districts:

- **What It Is:** Co-districts are smaller administrative units under Assam’s district administration, established to decentralize governance.
- **Objective:** Aimed at making administrative services more accessible to citizens by bringing governance closer to their homes.
- **Functions:** Co-districts handle administrative tasks such as issuing ration cards, caste certificates, managing land revenue matters, excise, development, welfare work, and disaster

management. They also have magisterial powers.

- **Difference from Districts:**
 - **Leadership:** Co-districts are led by an Assistant District Commissioner, while districts are led by a Deputy Commissioner.
 - **Size:** Co-districts cover smaller geographical areas compared to districts.
 - **Autonomy:** While districts have full administrative control over various departments, co-districts serve as a localized extension, reducing the administrative burden on district-level offices.
- **Launch:** The first phase started in 2024 with the creation of 21 co-districts, and 18 more are expected to follow, with the goal of covering all 126 assembly constituencies.

Insta links:

1. [District administration](#)

12. TELE-MANAS

Context:

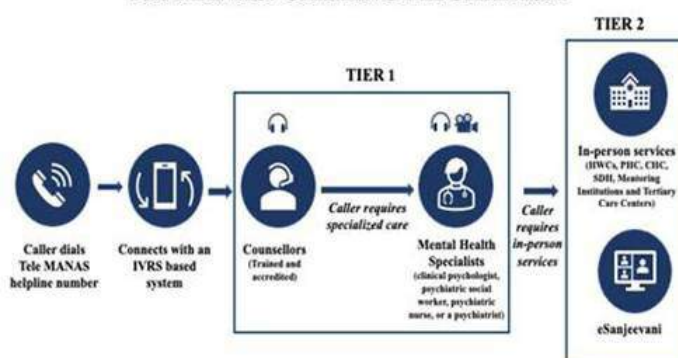
Tele MANAS (Tele Mental Health Assistance and Networking Across States) is a tele-mental health initiative launched by the Government of India under the National Tele Mental Health Programme (NTMHP) on October 10, 2022.

About Tele MANAS:

Need for Tele MANAS:

- **Mental health crisis:** 15% of India’s adult population requires mental health intervention, with a 70-92% treatment gap.
- **High suicide rates:** Over 1 lakh people die by suicide annually in India.
- **Mental disorders:** Mental disorders are the second leading cause of years lived with disability (YLDs).
- **Untapped healthcare access:** More than 80% of people with mental health issues in India do not seek help, despite mental healthcare being a statutory right under the Mental Healthcare Act, 2017.

Tele MANAS: CALLING MECHANISM



Key features of Tele MANAS:

- **24/7 toll-free helpline:** Provides phone-based counselling, psychotherapy, psychiatric consultations, and referral services.
- **Accessibility:** Designed to make mental health support easily available to individuals across remote and urban areas.
- **Two-tier system:** Tier 1 offers initial counselling and referral services, while Tier 2 provides specialist consultations and follow-up care, including e-prescriptions.
- **Integrated care:** Seamless connections to in-person services and other mental health interventions.
- **WHO praised model:** Recognized by the WHO as an effective, innovative model for large-scale mental health care delivery.

Insta Links:

1. [Tele MANAS](#)
2. [Chatbot-for-people-in-mental-distress](#)

13. E-MIGRATE PORTAL V2.0

Context:

External Affairs Minister Dr. S Jaishankar launched the revamped eMigrate v2.0 web portal and mobile app, aimed at promoting safe and legal migration for Indian workers.

- This initiative is part of the government's commitment to **protecting the rights and welfare of Indian migrant workers**, aligning with global migration goals under the 2030 Agenda for Sustainable Development.

e-Migrate Portal v2.0:

- **Launch date:** October 2024.
- **Objective:** Promote safe, transparent, and inclusive migration for Indian workers abroad.
- **Ministry:** Ministry of External Affairs
- **Key features:**
 - Provides a platform for safe and legal migration channels.
 - **24x7 Multilingual helpline:** Offers support for migrant workers in multiple languages, with real-time solutions for urgent issues.
 - **Integration with Digilocker:** Enables paperless submission of documents like passports and employment contracts.
 - **Social Security Net:** Expands social security for migrants through insurance policies and partnerships with the State Bank of India for zero-fee digital payment services.
 - **Mobile app:** Developed for the first time, offering easy access to services, including a job search marketplace for overseas employment.
- **Global need:** The platform aligns with India's global negotiations on migration and the growing demand

for domain-specific knowledge in the international workforce.

Insta Links:

1. [India-launches-e-migrate-v2-0-web-portal](#)

14. DRUGS TECHNICAL ADVISORY BOARD

Context:

The Drugs Technical Advisory Board (DTAB) has recommended bringing all antibiotics under the definition of "new drug" in the New Drugs and Clinical Trial (NDCT) Rules, 2019 to combat antimicrobial resistance (AMR).

Recent Recommendations by DTAB:

- **Inclusion of antibiotics as "New Drugs":**
- All antibiotics would fall under the category of "new drugs," requiring manufacturing, marketing, and sale to be more strictly documented and regulated.
- **Union government control:**
- Manufacturing and marketing approvals for antibiotics would need clearance from the Union government, rather than state authorities.
- **Prescription mandatory:**
- Antibiotics would only be available with a valid prescription, curbing over-the-counter purchases and indiscriminate use.
- **Labeling changes:**
- A blue strip or box would be added to antibiotic packaging to distinguish antimicrobial products, improving public awareness.
- **Focus on AMR:**
- This move is part of efforts to address rising antimicrobial resistance in India, where common infections like UTIs, pneumonia, and typhoid are becoming resistant to standard treatments.

Significance:

- **Curbing Antimicrobial Resistance:** Reducing misuse of antibiotics will help slow the rise of drug-resistant infections.
- **Centralized Regulation:** Bringing antibiotics under central control ensures uniform regulation across the country.
- **Public Health Protection:** Mandatory prescriptions and labeling aim to safeguard public health by preventing self-medication and misuse.

About [Drugs Technical Advisory Board \(DTAB\):](#)

- **Role:** It is the highest statutory body for advising on technical drug-related matters in India.
- **Established under:** The Drugs and Cosmetics Act, 1940.
- **Part of:** Central Drugs Standard Control Organization (CDSCO).
- **Nodal ministry:** Ministry of Health and Family

Welfare.

- **Functions:** Advises the central and state governments on technical matters related to the administration of the Drugs and Cosmetics Act and performs other assigned functions under the Act.

Insta Links:

[DTAB](#)

15. “SCAM SE BACHO” CAMPAIGN

Context:

Government and Meta join forces for “Scam se Bacho” Campaign to tackle rising online scams.

About “Scam se Bacho” campaign:

- **Aim:** To combat rising online scams and cyber fraud by fostering digital safety and vigilance across India.
- **Partnership:** Collaboration between **Meta** (formerly Facebook) and key government ministries, including:
 - Ministry of Electronics and Information Technology (MeitY)
 - Ministry of Home Affairs (MHA)
 - Ministry of Information and Broadcasting (MIB)
 - Indian Cyber Crime Coordination Centre (I4C)
- **Ministry:** Led by the Ministry of Information and Broadcasting (MIB).
- **Coverage:** National initiative, aimed at India’s over 900 million internet users.
- **Features:**
 - A whole-of-government approach to raising **awareness on cyber safety**.
 - Focus on **educating citizens** to prevent cyber threats and scams.
 - Leverages Meta’s global expertise in online safety to empower Indian users.
 - Support from the highest levels of government to align with **Digital India’s** cybersecurity goals.

Insta Links:

1. [Cyber-security](#)
2. [Steps-taken-by-the-government-to-spread-awareness](#)

16. NATIONAL GREEN HYDROGEN MISSION

Context:

As part of the National Green Hydrogen Mission, the Union Government has sanctioned three pilot projects aimed at using hydrogen in steel production.

About National Green Hydrogen Mission:

- **Budget:** Outlay of ₹19,744 crore up to FY 2029-30 for green hydrogen initiatives.
- **Objectives:**
 - Establish India as a global hub for green hydrogen production, utilization, and export.
 - Foster decarbonization across industries, especially steel, mobility, and energy sectors.
- **Pilot Projects:**
 - Focus on demonstrating green hydrogen use in sectors like steel, mobility, and shipping.
 - Three sanctioned steel sector projects with financial support of ₹347 crore.
- **SIGHT (Strategic Interventions for Green Hydrogen Transition):**
 - Incentivizes the domestic manufacturing of electrolyzers.
 - Promotes the production and usage of green hydrogen.
- **Expected Outcomes by 2030:**
 - **Green Hydrogen Production:** At least 5 MMT per year.
 - **Renewable Energy:** Addition of around 125 GW of capacity.
 - **Investment:** Over ₹8 lakh crore in green hydrogen.
 - **Employment:** Creation of 6 lakh jobs.
 - **Reduction in fossil fuel imports:** Exceeding ₹1 lakh crore.
 - **GHG Emissions:** Averting nearly 50 MMT of annual greenhouse gas emissions.
- **Phase-wise Implementation:**
 - Phase I (2022-26): Focuses on demand creation and deployment in existing hydrogen-using sectors.
 - Phase II (2026-30): Expands to new sectors with commercialization of green hydrogen

Insta links:

2. [National-hydrogen-mission Opportunities-and-challenges-of-green-hydrogen-in-India](#)

17. ‘KARMAYOGI SAPTAH’

Context:

Prime Minister inaugurated the ‘Karmayogi Saptah’ - National Learning Week on 19th October 2024 at Dr. Ambedkar International Centre, New Delhi.

About Karmayogi Saptah:

- **Launch Date:** 19th October 2024 by Prime Minister Modi.
- **Objective:** Promote individual and organizational capacity-building for civil servants through competency-linked learning.

- **National Learning Week (NLW):**
 - Largest learning event for civil servants.
 - Aims to create a “One Government” message, aligning civil servants with national goals.
 - Focuses on lifelong learning and continuous development.
- **Learning Targets:**
 - Each Karmayogi is expected to achieve at least 4 hours of competency-linked learning during the week.
 - Learning methods include role-based modules on iGOT, webinars, public lectures, and policy masterclasses by eminent speakers.
- **Workshops & Seminars:**
 - Ministries and departments will organize seminars and workshops to enhance domain-specific competencies.
 - Emphasis on improving citizen-centric service delivery through knowledge sharing and skill development.

Insta links:

1. [Mission-Karmayogi](#)

18. ‘E-CUBE HINDI LANGUAGE LAB’

Context:

To facilitate easy learning of Hindi for school students, Kerala’s general education department has launched the ‘E-Cube Hindi Language Lab’ for students of classes 5 to 7.

E-Cube English Language Lab: Key Points

- **Objective:** Provides an interactive language learning environment for English, now extended to Hindi.
- **Developer:** Created by KITE (Kerala Infrastructure and Technology for Education).
- **Audience:** Targets students in schools, primarily using school laptops.
- **Interactive Features:**
 - Includes game-based activities for practicing listening, speaking, reading, writing, and discourse creation.
 - Students can record their voices and save activities in audio/video formats.
 - Supports animated conversations to help students speak confidently in real-life situations.
- **Monitoring:**
 - Teachers and head teachers have separate logins to track student progress.
 - Provides feedback mechanisms for teachers to review and guide students.
- **FOSS-based:** Entirely developed using Free and Open-Source Software.

Insta links:

1. [Keralam](#)
2. [Kerala Landslide](#)

19. 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](#)

20. 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](#)

21. PANDEMIC FUND

Context:

The Union Government of India has **launched a \$25 million project** to boost animal health security in partnership with the Asian Development Bank (ADB), World Bank, and Food and Agriculture Organization (FAO).

About Pandemic Fund:

- **Fund size and origin:** A \$25 million initiative established under the G20 Pandemic Fund during Indonesia's G20 presidency in **2022**.
- **Objective:** Enhance pandemic preparedness in low- and middle-income countries by improving response capacity to animal health risks.
- **Implementing partners:** Asian Development Bank (ADB), World Bank, and Food and Agriculture Organization (FAO).

Purpose and rationale:

- **Preventing zoonotic outbreaks:** Address the animal origin of zoonotic diseases, with 5 of 6 WHO-declared public health emergencies having animal origins.
- **Reducing economic impact:** Mitigate socio-economic damage caused by zoonotic outbreaks, like SARS and avian flu, which caused global losses of \$50 billion and \$30 billion, respectively.

Key Interventions:

- **Laboratory upgrades:** Expand and improve animal health labs and vaccine production facilities.
- **Enhanced surveillance:** Strengthen early warning systems for better outbreak detection and timely intervention.
- **Data system upgrades:** Improve data management and analysis for better risk assessment and decision-making.
- **Institutional capacity building:** Establish a disaster management framework tailored for the livestock sector, addressing capacity needs at national and regional levels.

Zoonotic diseases:

- **Definition:** Diseases that can be transmitted from animals (domesticated or wildlife) to humans, often facilitated by close animal-human interactions.
- **Risk statistics:** Over 60% of pathogens affecting humans originate from animals, with 75% of emerging human diseases linked to animal sources.
- **Examples and impact:** Mosquito-borne diseases (e.g., dengue from *Aedes aegypti*), avian influenza, and rabies are zoonotic diseases. Climate change increases the frequency and range of these diseases.

Insta links:

1. [Global-struggle-for-a-pandemic-treaty](#)

22. AYUSHMAN BHARAT PRADHAN MANTRI JAN AROGYA YOJANA

Context:

On Dhanvantari Jayanti, celebrated as the 9th [Ayurveda Day](#), the Prime Minister will launch the expansion of health coverage to **all senior citizens aged 70 years and above** as a major addition to the Ayushman Bharat Pradhan Mantri Jan

Arogya Yojana.

- This will help provide health coverage to **all senior citizens regardless of their income.**



About Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PM-JAY):

- Launch year:** 2018, as a flagship scheme focused on accessible healthcare for India’s vulnerable families.
- Objective:** Provides health insurance coverage of up to ₹5 lakhs per family annually for secondary and tertiary hospital care.
- Coverage:** Currently covers 55 crore individuals across 12.34 crore families nationwide.
- Key features:**
 - Universal health access:** Seeks to ensure no citizen, especially the marginalized, is deprived of healthcare.
 - Health and Wellness Centres (HWCS):** Target of 1,50,000 HWCs to offer primary healthcare, emphasizing preventive and curative services.
 - Expanded senior citizen coverage:** Recently expanded to include all senior citizens 70+, offering coverage irrespective of income.
 - Financial protection:** Reduces out-of-pocket healthcare expenses for low-income families by covering a wide array of medical treatments.

Insta Links:

- [Universal-health-coverage](#)
- [PMJAY](#)

23. TARUN PLUS

Context:

In July 2024, the finance minister announced an increase in the loan limit to ₹20 lakh, effective from October 24, 2024, under the **new Tarun Plus category.**



About Pradhan Mantri MUDRA Yojana (PMMY):

- Origin:** Launched on April 8, 2015.
- Ministry:** The Ministry of Finance.
- Objective:** Designed to promote financial inclusion and self-employment opportunities by extending credit to small-scale enterprises in manufacturing, trading, and services, including allied agricultural activities.
- Loan categories:**
 - Shishu:** Loans up to ₹50,000 for nascent businesses.
 - Kishore:** Loans between ₹50,000 and ₹5 lakh for slightly developed businesses.
 - Tarun:** Loans above ₹5 lakh up to ₹10 lakh for mature businesses.
 - Tarun Plus:** New category with loans from ₹10 lakh to ₹20 lakh for successful Tarun borrowers.
- Member Lending Institutions (MLIs):** Scheduled Commercial Banks, Regional Rural Banks (RRBs), Small Finance Banks (SFBs), Non-Banking Financial Companies (NBFCs), Micro Finance Institutions (MFIs) etc.
- Key features:**
 - Collateral-free loans:** Offered through banks, NBFCs, RRBs, and MFIs without collateral, ensuring easier access.
 - MUDRA card:** A RuPay debit card offering flexible working capital, functioning as an overdraft facility for credit access and payment convenience.
 - MUDRA MITRA app:** A mobile app providing loan-related information, guidance, and resources for aspiring entrepreneurs.

Insta links:

- [PM-Mudra-Yojana-completes-8-years](#)

24. AYUSHMAN VAYA VANDANA CARD

Context:

Prime Minister recently launched the **Ayushman Vaya Vandana Card** as an extension of the **Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PM-JAY).**

- This card aims to ensure free healthcare for every citizen aged 70 years and above, providing an annual coverage of up to ₹5 lakh.

About Ayushman Vaya Vandana Card:

- **Origin:** Announced during the Union Budget 2024-25.
- **Ministry:** Operates under the Ministry of Health and Family Welfare.
- **Aim:** To provide free, universal healthcare access to seniors above 70 years, ensuring they can avail of necessary treatments without financial burdens.
- **Eligibility:** All Indian citizens aged 70 years or older are eligible, regardless of income or economic status.
- **Features:**
 - **Coverage:** Provides an annual health cover of ₹5 lakh per family for healthcare needs, shared if multiple elderly individuals live in one household.
 - **Enrolment process:** Requires registration via the PM-JAY portal or Ayushman app and mandatory eKYC completion, even for those with existing Ayushman cards.
 - **Integrated with other schemes:** Beneficiaries of other government health schemes (e.g., CGHS, ECHS) can either retain existing coverage or opt for the Ayushman Bharat benefits.
 - **Additional support:** Also available for individuals insured under the Employees State Insurance Corporation (ESIC) and those with private health insurance.

Insta links:

[5-years-of-Ayushman-Bharat-PMJAY](#)

International Relations

25. OPERATION NORTHERN ARROWS

Context:

The Israel Defense Forces (IDF) initiated a ground invasion into southern Lebanon, targeting Hezbollah's military infrastructure in villages near the Israel-Lebanon border.

About Operation Northern Arrows:

- **Launch:** The Israel Defense Forces (IDF) initiated Operation Northern Arrows, a ground invasion targeting Hezbollah's military infrastructure in southern Lebanon.
- **Objective:** The operation aims to neutralize Hezbollah targets near the Israel-Lebanon border that pose an immediate threat to northern Israel's communities.
- **Military Strategy:**
 - Limited, localized raids conducted by IDF commandos, supported by air cover and artillery.
 - Targets are based on precise intelligence.
- **Parallel operations:** Operation Northern Arrows

is being conducted simultaneously with Israel's military operations in Gaza and other conflict areas.

Insta Links:

1. [Defense Systems Israel](#)
2. [Israel- Iran conflict](#)

26. UNITED STATES COMMISSION ON INTERNATIONAL RELIGIOUS FREEDOM

Context:

The United States Commission on International Religious Freedom (USCIRF) recently released a report flagging concerns over "**collapsing religious freedom**" conditions in India.

- It particularly highlighted events around India's 2024 national elections, legal changes such as anti-conversion laws, the Citizenship (Amendment) Act (CAA), and the Uniform Civil Code (UCC).
- The report also raised issues around expropriation of places of worship and misuse of anti-cow slaughter laws.

About USCIRF:

- **Established:** Under the **1998 International Religious Freedom Act (IRFA)**.
- **Type:** Independent, bipartisan U.S. federal government commission.
- **Functions:**
 - Reviews religious freedom violations globally.
 - Provides policy recommendations to the U.S. President, Secretary of State, and Congress.
 - Publishes annual reports with recommendations for U.S. policy on religious freedom.
- **Composition:** Nine commissioners appointed by the U.S. President or Congressional leaders, supported by non-partisan staff.
- **Objective:** To monitor and recommend actions concerning religious freedom violations based on international human rights standards.

Insta links:

1. [USCIRF Annual Report](#)

27. INDIA-USA MOU

Context:

With an eye on reducing dependence on China, India and the US signed a memorandum of understanding (MOU) to expand and diversify the critical minerals supply chain at a bilateral commercial dialogue.

Origin and Nations involved:

- **Countries involved:** India and the United States signed a Memorandum of Understanding (MOU) aimed at expanding and diversifying critical mineral supply chains.
 - This agreement is part of a broader effort to reduce dependence on China for critical minerals, which are essential for modern technology and clean energy transitions.
- **Objective:** The MOU aims to strengthen cooperation in areas like mineral exploration, extraction, processing, recycling, and recovery between India and the US.

Key Features:

- The agreement focuses on improving the **resilience of the critical minerals sector** by identifying equipment, policies, and best practices that both countries can adopt.
- It also **emphasizes joint projects** in third countries and cooperation in newer areas like semiconductors and clean energy.
- Both countries are working to create a sustainable supply chain for critical minerals like **Rare Earth Elements (REEs), lithium**, and others, given China's dominance in the sector.

Initiatives taken by India:

- **Planning Commission (now NITI Aayog):** Highlighted the need for critical minerals for industrial growth, identifying 12 strategic minerals, including lithium, cobalt, and tungsten.
- **Ministry of Mines:** Set up a steering committee to review rare-earth elements and energy-critical elements. Studies on India's mineral reserves were conducted to formulate a strategy.
- **Geological Survey of India (GSI):** Developed plans to enhance rare earth exploration, crucial for securing India's mineral resources.
- **Council on Energy, Environment, and Water (CEEW):** Conducted studies identifying 13 minerals critical for India by 2030, essential for manufacturing and clean energy.

Dr. Veena Kumari Dermal committee:

- **Objective:** To assess the importance and supply risks of critical minerals using a three-stage process: international study, inter-ministerial consultation, and statistical analysis.
- **Outcome:** 30 minerals were identified as critical, based on factors like availability, substitutability, and supply risks, with two minerals categorized as crucial for fertilizers.

Insta links:

1. [Critical-minerals-resilient-supply-chains](#)

28. UNIFIL (UNITED NATIONS INTERIM FORCE IN LEBANON)

Context:

India expressed concern over the worsening security situation in West Asia following the injury of two United Nations peacekeeping personnel by an Israeli tank attack along the Lebanon-Israel border.

About UNIFIL (United Nations Interim Force in Lebanon)

- **Establishment:** Created by the UN Security Council in March 1978 through resolutions 425 and 426 following Israel's invasion of Lebanon.
- **Mandate:**
 - Confirm the withdrawal of Israeli forces from southern Lebanon.
 - Restore international peace and security in the region.
 - Assist the Government of Lebanon in re-establishing its authority in the area.
 - Expanded in 2006 to prevent hostile activities and monitor the ceasefire between Israel and Hezbollah.
- **Personnel:** Comprises over 10,500 peacekeepers from 48 countries, performing approximately 14,500 operations monthly, including joint activities with the Lebanese Armed Forces.
- **Operations:** Primarily observational, with peacekeepers allowed to use force only in self-defense or to protect civilians.
- **Maritime task force:** Includes a five-vessel unit to support coastal security and prevent arms smuggling.
- **Funding:** Financed through a dedicated budget approved annually by the UN General Assembly as part of the UN Peacekeeping force.

Insta links:

[UN-Peacekeeping-Forces](#)

29. INTER-PARLIAMENTARY UNION

Context:

Lok Sabha Speaker Om Birla is leading a parliamentary delegation to the 149th Assembly of the Inter-Parliamentary Union (IPU) in Geneva.

About Inter-Parliamentary Union (IPU)

- **Established:** 1889 in Paris to promote representative democracy and world peace.
- **Mission:** Facilitates parliamentary diplomacy and empowers parliaments to promote peace, democracy, and sustainable development.
- **Slogan:** "For democracy. For everyone."
- **Members:** 179 member parliaments and 13 associate members.
- **Headquarters:** Moved to Geneva in 1921.

- **Funding:** Primarily financed by member contributions from public funds.

Key structures:

1. **IPU assembly:** The main body expressing IPU's views on global issues. It brings together parliamentarians to study international problems and make recommendations.
2. **Governing council:** The plenary policymaking body, comprising three representatives from each member parliament. It establishes the annual programme and budget.
3. **Executive committee:** A 17-member body responsible for overseeing IPU's administration. It advises the Governing Council and is led by the IPU President.
4. **Standing committees:** Three committees assist the Assembly in its work.
5. **Meeting of women parliamentarians:** A separate body that discusses gender-related issues and reports to the Governing Council. It includes both male and female parliamentarians.

Insta links:

1. [IPU](#)

30. WORLD TELECOMMUNICATION STANDARDIZATION ASSEMBLY

Context:

Prime Minister will inaugurate the International Telecommunication Union - World Telecommunication Standardization Assembly (WTSA) 2024 at Bharat Mandapam in New Delhi.

About World Telecommunication Standardization Assembly (WTSA):

- **Frequency:** Held every four years, with the first assembly in 2002.
- **Role:** Governing conference for the ITU Telecommunication Standardization Sector (ITU-T), setting work programs, working methods, and study group structures.
- **Significance:** Sets global telecommunication standards to ensure interoperability and promote innovation.
- **WTSA 2024:** Scheduled from October 14-24, 2024, in New Delhi, marking the first time hosted in the Asia-Pacific region.
- **Focus Areas:** 6G, AI, IoT, big data, cybersecurity, machine-to-machine communications, and quantum technologies.

About International Telecommunication Union (ITU):

- **Establishment:** Founded in 1865 as the International Telegraph Union, became a UN

specialized agency in 1947.

- **Mission:** Coordinates global standardization and development of telecommunication and ICT services.
- **Membership:** Comprises 193 countries and over 1,000 companies, universities, and international organizations.
- **Headquarters:** Located in Geneva, Switzerland.

Insta links:

3. [International-telecommunications-union](#)

31. FIVE EYE ALLIANCE

Context:

U.K. is the latest to declare its confidence in the judicial process by Ottawa, which is investigating the alleged involvement of Indian diplomats in the 2023 killing of a pro-Khalistan preacher.

About Five Eyes Intelligence Alliance:

1. **Members:** The alliance includes five English-speaking countries — Australia, Canada, New Zealand, the United Kingdom, and the United States.
2. **Purpose:** It is a multilateral intelligence-sharing network, primarily focused on surveillance and signals intelligence (SIGINT).
3. **Classified information:** Intelligence shared is marked as 'Secret—AUS/CAN/NZ/UK/US Eyes Only,' giving the alliance its name.
4. **Background:**
 - Evolved during World War II to counter the Soviet threat during the Cold War.
 - The U.S. and U.K. collaborated after breaking German and Japanese codes.
5. **Formation:**
 - In 1946, the BRUSA Agreement (now UKUSA Agreement) formalized the intelligence-sharing partnership between the U.S. and U.K.
 - Initially focused on signals intelligence like radio and satellite communications.
6. **Expansion:**
 - Canada joined in 1948, followed by Australia and New Zealand in 1956, making it a five-nation alliance.
7. **Scope:** The alliance covers six key areas, including traffic analysis, cryptanalysis, decryption, and acquisition of communication-related information.
8. **Significance:** The Five Eyes Alliance is one of the most extensive intelligence-sharing networks in the world, key in modern global surveillance and intelligence operations.

Insta links:

1. [Five-eyes-alliance](#)

32. MUSANED PLATFORM

Context:

Saudi Arabia launches new digital platform to ensure wage protection. It ensures a more secure working condition for foreign workers, including those from India.

About Musaned Platform:

- **Purpose:** Musaned is a digital platform created by Saudi Arabia to ensure wage protection and improve working conditions for foreign domestic workers.
- **Coverage:** It benefits workers from 10 African countries (e.g., Sudan, Ethiopia, Kenya) and 9 Asian countries (e.g., India, Bangladesh, Pakistan).
- **Features:**
 - Enables workers to **check employment contracts**.
 - Tracks **financial transactions** between employers and workers.
 - Can be linked to **contract insurance** and **health benefits**.
- **Objective:** To safeguard workers' rights, minimize **illegal immigration**, and meet **Vision 2030** goals of providing a stable working environment.
- **Human rights:** The platform promotes **human rights** by ensuring employers fulfill their obligations.

Insta links:

1. [India-and-Saudi-Arabia](#)
2. [Indian-migrants-to-gulf-countries](#)

33. INDIAN DEVELOPMENT AND ECONOMIC ASSISTANCE SCHEME

Context:

India has extended a new Line of Credit (LoC) for ₹487.60 crores to Mauritius for financing a water pipeline replacement project. This initiative is part of the Indian Development and Economic Assistance Scheme (IDEAS), which supports developmental projects in partner countries through concessional loans.

About IDEAS scheme:

- **Origin:** Launched in **2003-04** as the “**India Development Initiative**,” later renamed as IDEAS Scheme.
- **Aim:** To promote India's political, economic, and strategic interests by providing developmental assistance to developing countries.
- **Ministry:** The scheme is administered by the **Ministry of External Affairs (MEA)** with support from **Exim Bank**.
- **Features:**
 - Provides Lines of Credit (LoCs) to developing countries for projects in **infrastructure, water,**

education, and other key sectors.

- Projects funded are typically recommended by MEA and are aimed at bolstering socio-economic development in partner countries.
- The financing includes **concessional terms** to reduce the burden on developing nations.
- The scheme **fosters diplomatic goodwill**, strengthening India's ties with countries in the Global South.

Insta links:

1. [India-Maldives-relations](#)
2. [DEA](#)

34. HAEMODIALYSIS (HD) MACHINES

Context:

India is extending humanitarian assistance to two countries by providing **33 tonnes of medical supplies to Lebanon** and **haemodialysis (HD) machines to Papua New Guinea**.

Nations Involved

- **Lebanon:** Recipient of 33 tonnes of Indian medical aid to improve healthcare services.
- **Papua New Guinea:** Recipient of HD machines and portable RO units, fulfilling India's healthcare commitments under the **Forum for India-Pacific Islands Cooperation (FIPIC)**.

About Haemodialysis (HD) Machines:

- **Function:** HD machines filter blood to remove wastes, excess fluids, and toxins for patients with kidney failure.
- **Components:**
 - Uses a **dialyzer**, also known as an artificial kidney.
 - Blood flows through hair-thin hollow fibers inside a **clear plastic cylinder**.
 - **Dialysate fluid** cleans the blood by surrounding the fibers.
 - Wastes diffuse through pores and are flushed away.
- **Outcome:** With each pass through the dialyzer, the blood is gradually cleaned, supporting patients with severe kidney dysfunction.

Insta Links:

1. [Indian-pharma-industry](#)

35. INTERNATIONAL CONTAINER TRANSHIPMENT 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](#)

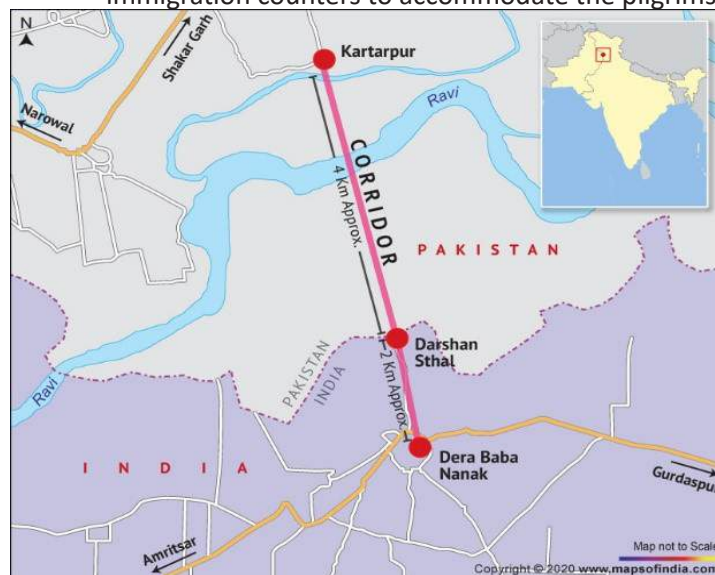
36. KARTARPUR CORRIDOR

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](#)

37. 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.
Pandemic Preparedness & Health	Agreement to explore the establishment of a BRICS Grain Exchange and a BRICS Cross-Border Payment System.
	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](#)

38. COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION (CTBTO)

Context:

Recently, CTBTO's systems clarified a false alarm regarding suspected nuclear activity in Iran, showing the organization's critical role in preventing misinformation related to nuclear tests and promoting global security.

About Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO):

- **Established:** 1996 as the interim Preparatory

Commission for the Comprehensive Nuclear-Test-Ban Treaty.

- **Headquarters:** Vienna, Austria.
- **Mission:** Prepare for the [Comprehensive Nuclear-Test-Ban Treaty](#) (CTBT's) entry into force by building a verification regime and promoting global adoption of the treaty.
- **Structure:**
 - **Preparatory Commission (all Member States),** with Working Groups for administrative, financial, and verification issues.
 - **Provisional Technical Secretariat (PTS),** with divisions for International Monitoring, Data, and On-Site Inspection.
- **Funding:** Member-state contributions.

About CTBTO International Monitoring System (IMS):

- **Network Size:** Comprises 337 monitoring facilities, with over 90% operational.
- **Technologies:**
 - **Seismic:** Detects underground explosions via ground shockwaves.
 - **Hydroacoustic:** Identifies underwater explosions.
 - **Infrasound:** Monitors atmospheric, low-frequency sounds from nuclear tests.
 - **Radionuclide:** Detects radioactive particles from nuclear explosions.

Insta links:

1. [Comprehensive-nuclear-test-ban-treaty-CTBT](#)

39. BRICS AND VENEZUELA

Context:

Tensions are escalating between [Venezuela](#) and Brazil after Venezuela's bid to join BRICS was blocked, reportedly by Brazil.

BRICS and Joining Process:

- **Joining process:** BRICS evaluates candidates based on international influence, regional stability, and potential contributions to the bloc.
 - New members are typically proposed during BRICS summits, and **all current members must agree** for a country to be accepted.
- **Venezuela's bid:** Venezuela aimed to join BRICS in 2024, but [Brazil's](#) concerns over Venezuela's regional standing and internal stability, especially following its disputed presidential election, led to the rejection.



About BRICS:

- **Origin:** Founded in 2009 as a coalition of emerging economies to strengthen economic ties and political influence globally.
- **Headquarters:** BRICS does **not have a permanent headquarters**; activities are coordinated through annual summits hosted by member nations.
- **Current members:** Brazil, Russia, India, China, South Africa, with recent additions of Ethiopia, Iran, Egypt, and the United Arab Emirates (joined in 2024).
- **Key features:**
 - **Economic cooperation:** Fosters trade and investment among members.
 - **Political influence:** Acts as a counterbalance to Western-dominated global institutions.
 - **Multilateral development:** Focuses on sustainable development, infrastructure financing, and currency stability through the New Development Bank.

Insta links:

1. [Kazan-Declaration](#)
2. [Turkeys-bid-to-join-BRICS](#)

GS-3

Indian Economy

1. EIGHT - CORE SECTOR

Context:

Output levels in India’s core sectors slipped to a nine-month low in August, even as year-on-year growth slipped 1.8%, marking the first contraction in three and a half years.

Trends in India’s Core Sector Output (August 2024):

1. **Overall Contraction:** Core sector output declined by **1.8%** in August 2024, compared to the **6.1%** growth recorded in July.
2. **Negative Growth in Key Industries:**
 - **Coal:** Down by **8.1%**, marking the steepest

decline.

- **Electricity:** Decreased by **5%**, the first contraction in 13 months.
- **Cement:** Registered a **3% decline**, its worst performance in nine months.
- **Refinery Products:** Dropped by **1%**, marking the second fall in three months.
- **Natural Gas:** Fell by **3.6%**, its second successive month of contraction.
- **Crude Oil:** Declined by **3.4%**, continuing its third straight month of negative growth.

3. Modest Growth in Fertilizers and Steel:

- **Fertilizers:** Grew by **3.2%**.
- **Steel:** Registered a **4.5%** increase, though this was its slowest growth in 26 months.

Reasons for the decline:

- **Base effect:** August contraction due to 13.4% growth from previous year.
- **Monsoon impact:** Late withdrawal disrupts coal production and electricity generation.
- **Global economic uncertainty:** Impacts demand, especially for energy-intensive industries.
- **Supply chain disruptions:** Logistical bottlenecks and international market fluctuations affect refinery products and crude oil output.
- **Seasonal factors:** Reduced construction activity during monsoon months lowers output in cement and steel sectors.

Background:

1. **Index released by:** The Index of Eight Core Industries (ICI) is released by the Office of the Economic Adviser under the Department for Promotion of Industry and Internal Trade (DPIIT) in the Ministry of Commerce & Industry.
2. **Base year:** The base year for the ICI is 2011-12.
3. **Frequency:** The ICI is published every month.
4. **Significance:** It serves as a critical barometer of India’s industrial performance, covering 40% of the weight in the Index of Industrial Production (IIP).

Insta links:

1. [8 - core sectors](#)

2. CRUISE BHARAT MISSION

Context:

The central government has launched the five-year Cruise Bharat Mission, aiming to boost cruise tourism in India to 1 million passengers and create 400,000 jobs by 2029.

About Cruise Bharat Mission

- **Aim:** The mission aims to boost cruise tourism by doubling cruise passenger traffic by 2029. It also seeks to create an ecosystem that fosters employment, strengthens maritime trade, and

enhances India's standing as a global cruise destination.

- **Target:**
 - Increase cruise passenger traffic to 1 million.
 - Create 400,000 jobs by 2029.
 - Grow river cruise passengers from 0.5 million to 1.5 million.
 - Expand the number of international cruise terminals from 2 to 10 and river cruise terminals from 50 to 100 by Phase-3.
- **Nodal ministry:** Ministry of Ports, Shipping, and Waterways.
- **Features of the Cruise Bharat Mission:**
 - **Phased implementation:**
 - **Phase 1 (2024-2025):** Conduct market studies, form cruise alliances, and modernize cruise terminals.
 - **Phase 2 (2025-2027):** Develop new cruise terminals and activate high-potential locations.
 - **Phase 3 (2027-2029):** Integrate cruise circuits across the Indian Subcontinent.
 - **Sustainable infrastructure development:**
 - Develop terminals, marinas, water aerodromes, and heliports.
 - Emphasize digitalization (e.g., facial recognition) and decarbonization (e.g., shore power).
 - Create a National Cruise Infrastructure Masterplan 2047.
 - **Operational efficiency:**
 - Streamline operations with digital solutions like e-clearance systems and e-visa facilities.
 - **Cruise promotion & circuit integration:**
 - Promote international marketing and investment.
 - Host the "Cruise India Summit" and form alliances with neighboring countries like UAE, Maldives, and Singapore.
 - **Regulatory and financial policies:**
 - Establish fiscal incentives and tailored cruise regulations.
 - Launch a National Cruise Tourism Policy.
 - **Capacity building & employment:**
 - Create a Centre of Excellence for cruise-related research.
 - Develop cruise-specific National Occupational Standards to promote youth employment.

Insta Links:

1. [Maritime India Vision-2030](#)

3. INSOLVENCY AND BANKRUPTCY BOARD OF INDIA

Context:

The Insolvency and Bankruptcy Board of India (IBBI) celebrated its Eighth Annual Day on 1st October, 2024.

About Insolvency and Bankruptcy Board of India (IBBI):

- **Established:** 1st October 2016, under the Insolvency and Bankruptcy Code (IBC), 2016.
- **Aim:** The IBBI is tasked with the efficient implementation of the IBC, focusing on the resolution of insolvency cases for individuals, partnership firms, and corporate entities in a time-bound manner.
- **Functions:**
 1. **Regulation of professionals:** It regulates insolvency professionals, insolvency professional agencies, entities, and information utilities.
 2. **Oversight of processes:** It oversees corporate and individual insolvency resolution, liquidation, and bankruptcy processes under the IBC.
 3. **Eligibility and examination:** IBBI sets the minimum eligibility criteria for insolvency professionals and regulates their qualifying exams.
 4. **Information management:** It collects, maintains, and disseminates information on insolvency and bankruptcy cases.
- **Powers:**
 1. IBBI can enforce rules related to corporate and individual insolvency resolutions, ensuring compliance with time-bound processes.
 2. It can establish regulatory frameworks for insolvency professionals and related entities, setting standards for efficient operations.
- **Composition:**
 1. **Chairperson:** Appointed by the Central Government.
 2. **Government representatives:** Three members from the Ministry of Finance, Ministry of Corporate Affairs, and Ministry of Law (ex-officio).
 3. **RBI Representative:** One member nominated by the Reserve Bank of India (ex-officio).
 4. **Additional members:** Five other members appointed by the Central Government, of which at least three must be full-time members.
- **Tenure:**
 1. Chairperson and non-ex-officio members serve for **five years** or until they reach the age of **65 years**, whichever is earlier, and

are eligible for re-appointment.

Insta links:

1. [IBC Code](#)

4. WORLD GREEN ECONOMY FORUM, 2024

Context:

The **World Green Economy Forum 2024**, held in Dubai, brings together global leaders to address pressing environmental issues under the theme “**Empowering Global Action: Unlocking Opportunities and Advancing Progress**”.

Key Points:

- **Summit held in:** Dubai, UAE, on October 2nd and 3rd, 2024.
- **Theme:** “Empowering Global Action: Unlocking Opportunities and Advancing Progress”
- **Aim:** To promote global cooperation, innovation, and sustainable practices across energy, decarbonization, climate finance, and more. The forum’s goal is to drive positive transformation towards a net-zero future.
- **Features:**
 - Sessions on **decarbonization in heavy industries**, use of AI for sustainability, and the role of youth in climate action.
 - A focus on the future of **Sustainable Aviation Fuel (SAF)**, aiming for 300 million tonnes production by 2050.
 - Emphasis on **public-private partnerships** and philanthropy to drive climate solutions.
 - Panels on renewable energy, power grid challenges, and carbon footprint management.

This forum aligns with global climate goals, such as the **Paris Agreement**, and encourages collaboration between governments, industries, and civil society for sustainable development

Insta links:

1. [Green economy](#)

5. UPI123 AND UPI LITE

Context:

To encourage wider adoption of the Unified Payments Interface (UPI), the RBI on Thursday announced an increase in transaction limits on UPI123 and UPI Lite.

Recent Changes Announced by RBI

1. **UPI Lite wallet limit:** The UPI Lite wallet limit has been increased from ₹2,000 to ₹5,000, and the per-transaction limit has been enhanced from ₹500 to

₹1,000.

2. **UPI123Pay transaction limit:** The per-transaction limit for UPI123Pay has been raised from ₹5,000 to ₹10,000 to support higher-value transactions.
3. **Beneficiary account name look-up:** RBI will introduce a beneficiary account name look-up facility for RTGS and NEFT, similar to UPI and IMPS, enhancing security in payment transactions.

Difference between UPI Lite and UPI 123 are:

Feature	UPI Lite	UPI 123Pay
Target Users	Smartphone users with internet access	Feature phone users without internet access
Transaction Methods	Direct payment using stored funds on the device	IVR, missed call, app-based, and sound-based payments
Transaction Limit	Per-transaction limit increased from ₹500 to ₹1,000	Per-transaction limit raised from ₹5,000 to ₹10,000
Wallet Limit	Increased from ₹2,000 to ₹5,000	No specific wallet limit, uses linked bank accounts
Technology Requirement	Requires internet for initial setup and usage	Works without internet or smartphone, using basic mobile functions
Use Cases	Ideal for small, everyday transactions	Designed for wider digital financial inclusion among feature phone users

Insta links:

1. [New-UPI-features](#)

6. “NOBEL PRIZE HONORS STUDY ON INSTITUTIONS AS PILLARS OF SUCCESS”

Context:

The 2024 Nobel Prize in Economics was awarded to **Daron Acemoglu, Simon Johnson, and James Robinson** for their research on wealth inequality between nations. Their work explores the impact of political and economic systems, particularly those introduced by European colonizers, on long-term prosperity and societal institutions.

About their work:

1. **Study of institutions:** The laureates analyzed how political and economic institutions shape nations’ prosperity and development.
2. **Impact of colonialism:** They examined the systems imposed by European colonizers and their long-

- 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](#)

9. GOLD RESERVES

Context:

India's total gold reserves held by the [Reserve Bank of India \(RBI\)](#) amount to 854.73 metric tonnes, according to the central bank's latest report.

India's Gold Reserve Status:

- **Total Gold Reserves:** 854.73 metric tonnes, with 510.46 metric tonnes held domestically and 324.01 metric tonnes stored at the Bank of England and BIS.
- **Gold's Share in Total Reserves:** Gold now represents 9.32% of forex reserves as of September 2024, an increase from 8.15% in March.
- **Import Cover:** As of June 2024, forex reserves cover 11.2 months of imports, slightly down from March's 11.3 months.
- **World ranking:** (as of September 2024)
 - Top rankers are **United States, Germany and Italy.**
 - The United States has the most gold reserves and has nearly as many reserves as the combined total of the next three countries with the largest gold holdings: Germany, Italy, and France.
 - India holds a significant position in global gold reserves, **ranking 8th in the list** of countries with the most gold reserves.

Rank	Country	Gold Reserves (Tonnes)	Gold Reserves (Millions)	Holdings (%)
1	United States of America	8,133.46	609,527.85	72.41
2	Germany	3,351.53	251,166.13	71.46
3	Italy	2,451.84	183,742.52	68.33
4	France	2,436.97	182,628.35	69.99
5	Russian Federation	2,335.85	175,050.59	29.47
6	China	2,264.32	169,689.52	4.91
7	Japan	845.97	63,397.87	5.15
8	India	840.76	63,007.20	9.57

About Forex Reserves:

- **Definition:** Forex reserves are assets held by RBI in foreign currencies, including foreign currencies, gold, SDR (Special Drawing Rights), and RTP (Reserve Tranche Position) with the IMF.
- **Purpose:** They support the Indian rupee, stabilize the exchange rate, and enable monetary policy adjustments. Reserves also back liabilities and serve as a safety net in times of currency devaluation.
- **Importance:** A strong forex reserve helps India attract foreign trade and investment, enhancing its international reputation and economic resilience.

Insta Links:

2. [RBI-gold-reserves](#)
3. [Indias-forex-reserves-hit-record-high](#)

Agriculture

10. NATIONAL MISSION ON EDIBLE OILS - OILSEEDS

Context:

The Union Cabinet, chaired by the Prime Minister Shri Narendra Modi, has approved the National Mission on Edible Oils – Oilseeds (NMEO-Oilseeds), a landmark initiative aimed at boosting domestic oilseed production and achieving self-reliance in edible oils.

About National Mission on Edible Oils - Oilseeds (NMEO-Oilseeds)

- **Origin:** Announced in 2024 as part of India's broader self-reliance (Atmanirbhar Bharat) agenda.
 - To promote self-reliance, the National Mission on Edible Oils – Oil Palm (NMEO-OP) was launched in 2021 with an outlay of Rs 11,040 crore.
- **Ministry:** Ministry of Agriculture and Farmers' Welfare.
- **Funds:** Total outlay of Rs 10,103 crore (Central Share: Rs 7,150 crore; State Share: Rs 2,953 crore).
- **Aims:**
 - Increase domestic oilseed production from

39 million tonnes (2022-23) to 69.7 million tonnes by 2030-31.

- Reduce dependence on edible oil imports, **targeting 25.45 million tonnes** of domestic production by 2030-31.
- Boost production of **key oilseeds like rapeseed, groundnut, soybean, sunflower, and sesame.**
- Promote cultivation of oilseeds on fallow lands and enhance intercropping practices.
- Utilize modern technologies like **genome editing** to boost seed quality and production.
- **Key features:**
 - Introduction of Aadhaar-authenticated **e-vouchers for EV buyers** to ease the demand incentive process.
 - Allocation of **Rs 500 crore** for promoting e-ambulances.
 - Creation of **65 seed hubs and 50 storage units** to improve seed infrastructure.
 - Formation of over **600 Value Chain Clusters across 347 districts**, covering over 10 lakh hectares annually.
 - Expansion of oilseed cultivation **in rice and potato fallow lands** by 40 lakh hectares.
 - Enhancement of **post-harvest infrastructure** to extract more oil from sources like cottonseed and rice bran.
 - Mission will introduce **SATHI Portal** enabling States to coordinate with stakeholders for timely availability of quality seeds
- **Current status:**
 - India relies on imports for 57% of its edible oil demand.
 - Minimum Support Price (MSP) for oilseeds has been significantly increased to ensure better prices for farmers.
 - The Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (PM-AASHA) supports farmers through price support and deficiency payment schemes.
 - A 20% import duty on edible oils has been imposed to protect domestic producers and promote local cultivation.

Insta links:

1. [Edible oil sector](#)

11. 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 production 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](#)

12. 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](#)

13. PADDY VARIETY PR-126

Context:

The Indian government has initiated a review of the **paddy variety PR-126**, widely cultivated in Punjab, following complaints from local rice millers about a reduction in rice yield, specifically concerning the **Out Turn Ratio (OTR)** from paddy to rice.

About Paddy Variety PR-126:

- **Introduction:** PR-126 was adopted on a large scale in Punjab since 2016.
- **Yield concerns:** Rice millers report a 4-5% reduction in OTR, resulting in less rice yield (around 5 kg per quintal).
- **Intrinsic defects:** Alleged issues include broken grains, potentially due to early harvesting and hybrid varieties sold as PR-126.
- **Growth duration:** A short-duration variety that typically matures in 125 days but can mature in as little as 110 days.
- **Water efficiency:** Requires less water, aligning with sustainable agriculture goals.

About Out Turn Ratio (OTR):

- **Definition:** OTR, or Out Turn Ratio, measures the percentage of rice yield extracted from paddy after

milling.

- **Standard requirement:** The Food Corporation of India (FCI) mandates a standard OTR of 67% per quintal for millers, meaning 67 kg of rice per 100 kg of paddy.
- **Penalties for Shortfall:** If the OTR falls below 67%, millers must compensate the government for the deficit, leading to financial loss.
- **Hybrid impact:** Certain hybrid paddy varieties are reported to yield an OTR as low as 60-62%, increasing costs for millers by approximately ₹300 per quintal due to reduced yield.

Insta links:

2. [Non-basmati-rice](#)

14. MISSION FOR INTEGRATED DEVELOPMENT OF HORTICULTURE (MIDH)

Context:

The Union Government has decided to **expand the Mission for Integrated Development of Horticulture (MIDH)** by incorporating advanced agricultural techniques like **hydroponics, aquaponics, vertical farming, and precision agriculture**.

- This move aims to modernize horticulture practices, increase productivity, and address requests from various states for updated cost norms and guidelines.

About Mission for Integrated Development of Horticulture (MIDH):

- **Origin:** Launched by the Government of India, MIDH is a **Centrally Sponsored Scheme (CSS)** established to promote the horticulture sector.
- **Ministry:** Implemented under the Ministry of Agriculture and Farmers Welfare.
- **Aim:** Focuses on the holistic growth of horticulture through support for production, post-harvest management, and marketing of diverse horticulture crops.
- **Sub-schemes:**
 - National **Horticulture** Mission (NHM)
 - Horticulture Cluster Development Programme (HCDP)
 - Technology Mission for Development in NE States, Sikkim, and J&K
 - National Bamboo Mission
 - Coconut Development Board
 - Mission for Integrated Development of Medicinal Plants (MIDMP)

Additional information:

- **Hydroponics:** A soil-free cultivation method where plants grow in nutrient-rich water solutions, allowing for controlled environment agriculture and higher yields in limited spaces.

- **Aquaponics:** A combination of aquaculture and hydroponics, where fish waste provides nutrients for plants grown in water, and the plants, in turn, purify the water for the fish.
- **Vertical Farming:** An innovative approach to farming in stacked layers, typically indoors, using LED lighting and controlled environments to maximize crop output in urban or limited spaces.
- **Precision Agriculture:** A technology-driven approach to optimize crop yields by using data analysis, GPS, and IoT tools to monitor and manage farming inputs like water, fertilizers, and pesticides with high accuracy.

Insta Links:

1. [Use-of-technology-in-agriculture](#)

- **Ownership:** Initially wholly owned by the Indian government under the Ministry of Defence.
- **Headquarters:** Bangalore, Karnataka, India.
- **Industry:** Manufactures heavy equipment for earthmoving, railways, transport, and mining sectors.
- **Disinvestment:** In 1992, the government divested 25% of its holdings. Further strategic disinvestment (26%) with management control transfer was approved by the Indian government.
- **Significance:** Asia's second-largest manufacturer of earthmoving equipment.

Insta links:

1. [India-Japan-Bullet-Train-Deal](#)

15. KANDA EXPRESS

Context:

The Kanda express train with 840 metric tonnes of onion arrived at Kishanganj Railway Station in **Delhi from Nashik** in Maharashtra to meet the demand of onion in Delhi-NCR.

About Kanda Express:

- **Cargo:** The Kanda Express carries bulk loads of onions to meet regional demands.
- **Recent arrival:** Recently delivered 840 metric tonnes of onions to Delhi's Kishanganj Railway Station from Nashik.
- **Second bulk shipment:** Follows a previous shipment of 1,600 metric tonnes to Delhi-NCR.
- **National impact:** The initiative contributes to onion price stabilization, with similar shipments aiding markets in Northeast India and other major states.
- **Buffer stock utilization:** Part of the government's price stabilization strategy, using its 4.7 lakh tonne buffer of rabi onions to counter price fluctuations.

Insta links:

1. [Parliamentary-committee-for-the-state-of-onion-storage](#)

Infrastructure

16. BEML

Context:

State-owned BEML will manufacture the country's first indigenous high-speed train that can travel at a peak speed of 280 kmph.

About BEML:

- **Incorporation:** Founded on 11 May 1964, with Soviet Union assistance.

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.

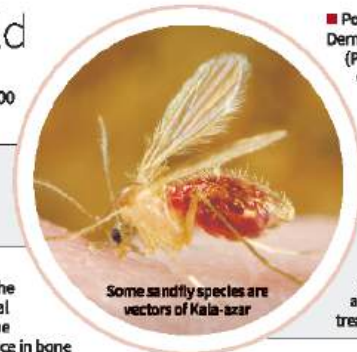
At the threshold

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 infectious disease caused by protozoan parasite of genus *Leishmania*

In India, *Leishmania novani* is the primary parasite using this ease

The parasite primarily infects the reticuloendothelial system and may be found in abundance in bone marrow, spleen and liver



Some sandfly species are vectors of Kala-azar

Post-Kala-azar Dermal Leishmaniasis (PKDL) is a condition when *Leishmania donovani* invades skin cells, resists and develops there and manifests as dermal lesions

Some of the Kala-azar cases manifest as PKDL after a few years of treatment

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

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](#)

20. MARBURG VIRUS DISEASE

Context:

Rwanda says eight people have died so far from the Ebola-like Marburg virus, just days after it declared an outbreak of the deadly hemorrhagic fever that has no authorised vaccine or treatment.

About Marburg Virus Disease (MVD):

- **Origin:** Discovered in 1967 in Marburg, Germany, after lab workers were exposed to infected green monkeys from Uganda.
- **Cause:**
 - Caused by the Marburg virus, a zoonotic RNA virus from the **Filoviridae family**, like Ebola.
 - The natural reservoir is the **African fruit bat (Rousettus aegyptiacus)**.
- **Transmission:**
 - Spread through contact with infected bats or animals, and human-to-human transmission via blood or bodily fluids.
- **Symptoms:**
 - **Early symptoms:** Fever, chills, headache, muscle aches, rash, nausea, and diarrhea.
 - **Severe symptoms:** Liver failure, shock, hemorrhaging, and multi-organ failure.
- **Fatality Rate:**
 - Case fatality rate varies between 24% to 88%, depending on the outbreak.
- **Treatment:**
 - No specific treatment or vaccine. Supportive care includes fluids, oxygen, and blood transfusions to improve survival.

Insta links:

1. [MVD](#)

21. TRACHOMA ELIMINATION

Context:

The World Health Organization (WHO) has declared that India has eliminated Trachoma as a public health problem in 2024, making it the **third country in the WHO South-East Asia Region** to achieve this milestone.

- The achievement aligns with the **WHO's 2021–2030 Neglected Tropical Disease Roadmap**, which targets the elimination of 20 diseases by 2030.

About Trachoma

- **Cause:** Trachoma is caused by the bacterium *Chlamydia trachomatis* and is a leading infectious cause of blindness worldwide.
- **Transmission:** It spreads through direct contact with infected eye or nasal discharges and via flies that come into contact with these secretions.
- **Symptoms:** Starts as conjunctivitis (pink eye), leading to repeated infections that cause the eyelashes to turn inward (trichiasis), scraping the cornea and potentially leading to blindness.
- **Prevention and Treatment:** Early-stage trachoma is treatable with antibiotics like azithromycin. Improving hygiene, sanitation, and access to clean water are key strategies in controlling its spread.

India's Achievement

- **National Effort:** The Union Government declared India free from infectious trachoma based on the National Trachoma Prevalence Surveys conducted from 2014 to 2017, showing an active trachoma prevalence of just 0.7%.
- **Global Recognition:** WHO praised India's success, citing strong government leadership as a key factor.

Other Recognitions at WHO Regional Conference

- **Bhutan** was recognized for cervical cancer elimination targets.
- **Timor-Leste** for eliminating lymphatic filariasis.
- **Maldives and Sri Lanka** for controlling Hepatitis B in children.
- Six countries were acknowledged for reducing under-five mortality and stillbirth rates.

Insta links:

1. [Trachoma](#)

22. MEDICINAL FOODS AND BENEFITS

Context:

In recent decades, researchers have identified new compounds and potential drugs from plants traditionally used in medicine, and today, these plants are being further explored for broader health applications and benefits.

About Medicinal Foods and Benefits:

- **Turmeric:** Known for its anti-inflammatory and antioxidant properties, used traditionally in food and medicine. High doses, however, may pose risks, highlighting the need for dosage regulation.
- **Giloy (Tinospora cordifolia):** Used for immunity boosting, reducing fevers, and other therapeutic benefits; traditionally consumed for its stem's medicinal properties.
- **Ashwagandha (Withania somnifera):** Known to alleviate stress, improve energy levels, and enhance mental focus; it is particularly valued for its root's therapeutic properties in Ayurveda.
- **Bhringaraj (Eclipta prostrata):** Beneficial for hair health, as well as liver and digestive health, and sometimes consumed as a leafy vegetable.
- **Lemon (Citrus limon):** Recognized for vitamin C content and immunity-boosting properties; varies significantly across different varieties and cultivars.

Insta Links:

3. [Traditional-medicine](#)

23. GLOBAL TB REPORT 2023

Context:

The Global TB Report 2023 by the [World Health Organization \(WHO\)](#) reveals that while India has improved

in TB diagnosis and treatment coverage, it still faces significant challenges in achieving its ambitious **2025 TB elimination** target.

- India remains the country with the highest TB burden globally, underscoring the need for enhanced funding and healthcare strategies.

About Global TB Report 2023 and India's status:

- **Global TB cases:** 8.2 million people were newly diagnosed with TB in 2023, making TB the leading infectious killer worldwide, overtaking COVID-19.
- **India's TB burden:** India reported 2.8 million estimated TB cases in 2023, accounting for 26% of global TB cases and 29% of global TB deaths (315,000 deaths).
- **Progress towards targets:** India has reduced TB cases by 18% and deaths by 24% since 2015, short of the 2025 targets of a 50% reduction in cases and a 75% reduction in deaths.
- **Increase in diagnosed cases:** Reported TB cases rose to 2.51 million in 2023, signalling improvement in diagnostic reach, with 85% of diagnosed patients receiving treatment.
- **Multi-Drug-Resistant TB:** India accounts for 27% of global multi-drug-resistant TB cases, highlighting the need for targeted treatment strategies.
- **Funding gap:** India's TB funding dropped from \$432.6 million in 2019 to \$302.8 million in 2023, with domestic funding falling to \$253 million.
- **Catastrophic costs:** For the first time, the report estimates that many households face catastrophic health costs, spending more than 20% of their income on TB-related healthcare.

Read more about [Tuberculosis here](#).

Insta Links:

1. [Analysis-Tuberculosis-elimination-in-India](#)

[Science & Technology](#)

24. VENUS ORBITER MISSION

Context:

India's maiden mission to Venus, which is scheduled for launch in March 2028, will embark on a 112-day journey to reach the planet.

About Venus Orbiter Mission (VOM):

- **Launch year:** Scheduled for March 2028.
- **Aim:** The mission aims to study Venus' atmosphere, surface, and solar interactions. Key objectives include mapping Venus' topography, analyzing atmospheric composition, studying solar X-rays, and examining subsurface characteristics.
- **Sanctioned budget:** ₹1,236-crore

- **Launch vehicle:** Launch Vehicle Mark-3 (LVM-3)
- **Targeted window:** Earth departure date is scheduled on March 29, 2028, and the arrival date on Venus is July 19, 2028
- **Features:**
 - 19 payloads (16 Indian, 2 Indian-international, 1 international).
 - Aerobraking technique to achieve a low-altitude science orbit (200x600 km).
 - Five-year scientific exploration period post-orbit insertion.

Other Missions Related to Venus

- **Past missions:**
 - **Venera Series (1961-1984):** Soviet Union's series of successful Venus missions including flybys, orbiters, landers, and balloons.
 - **Pioneer Venus (1978):** NASA mission studying Venus' atmosphere, cloud structure, and surface using radar.
 - **Magellan (1989):** NASA mission mapping Venus' surface using radar imaging.
 - **Akatsuki (2010):** JAXA mission studying Venus' atmospheric circulation.
- **Future missions:**
 - **VERITAS (2026):** NASA radar mission to map Venus' geology.
 - **DAVINCI (2026):** NASA mission to study Venus' atmosphere.
 - **EnVision (2030s):** ESA radar mission mapping Venus' surface.

Insta links:

3. [Mission to Venus](#)

25. BHARAT-GEN

Context:

India has launched "Bharat-Gen," a generative AI initiative designed to enhance public service delivery, with a strong focus on promoting inclusivity in Indian languages.

Bharat-Gen Overview:

- **Developed by:** Led by IIT Bombay under National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS).
- **Aim:** To create generative AI models supporting India's linguistic diversity and cultural context.
 - This initiative marks the **world's first government-funded** Multimodal Large Language Model project.

Features of Bharat-Gen:

- **Multilingual & Multimodal:** Bharat-Gen models cater to both text and speech, covering a wide range of Indian languages.

- **India-Centric Data:** Uses curated datasets focused on India's linguistic diversity and cultural contexts.
- **Open-Source Platform:** Democratizes AI access, enabling startups, researchers, and innovators to build on foundational AI models.
- **Data-Efficient Learning:** Effective in training AI for languages with limited digital presence, making it suitable for low-resource languages.

Significance:

- **Cultural Preservation:** Ensures representation of India's diverse languages and cultural heritage in AI systems.
- **Digital Sovereignty:** Reduces reliance on foreign technologies by developing indigenous AI solutions.
- **Inclusive Development:** Aims to make AI accessible to all citizens, particularly in underserved regions.
- **Strengthening AI Ecosystem:** Encourages innovation in India's AI research community, fostering global collaborations and boosting AI startups.

Insta links:

1. [Multimodal Artificial Intelligence](#)

26. POLYMER NANOCOMPOSITE

Context:

Researchers from Centre for Nano and Soft matter Sciences (CeNS), Bengaluru have developed a polymer nanocomposite for pressure sensing and energy harvesting applications and used it to invent a prototype of a road safety sensor.

About Polymer Nanocomposite:

- **Chemical and Physical Properties:**
 - The polymer nanocomposite is primarily composed of **vanadium disulfide (VS₂)** nanoparticles integrated into **polyvinylidene difluoride (PVDF)**, a piezoelectric polymer.
 - VS₂ has **high surface charge properties**, which enhance the piezoelectric effect of PVDF.
 - The nanocomposite exhibits high **flexibility, durability, and energy-harvesting capabilities**, which are crucial for pressure sensing applications.
 - It can generate electricity via the **piezoelectric effect**, converting mechanical pressure into electrical energy.
- **Departments Involved:**
 - This project is part of ongoing research by **Centre for Nano and Soft Matter Sciences (CeNS)**, Bengaluru.
 - Funded under the INSPIRE faculty fellowship program by the **Department of Science and Technology (DST)**, India.

Features:

- **Self-powered sensor:** The nanocomposite generates energy through pressure and does not need an external power source.
- **Energy harvesting:** The sensor can store energy produced through the piezoelectric effect, which can be utilized to power electronic devices.
- **Smart application:** It can be used for road safety sensors to alert vehicles approaching dangerous turns or high-risk zones.

Significance:

- The polymer nanocomposite demonstrates potential for **sustainable and flexible energy generation**.
- The application of this technology in **road safety** can significantly reduce accident rates by providing real-time alerts at critical turning points.
- **The use of smart sensors** can pave the way for advanced wearable technology and other self-powered devices, contributing to artificial intelligence and automation sectors.

Insta links:

1. [Polymer nanocomposite - Defence](#)

27. ISRO THIRD LAUNCH PAD

Context:

ISRO is expanding its space capabilities by establishing a **third launch pad** at Sriharikota, aiming to support new technologies like the **New Generation Launch Vehicle (NGLV)**, while enhancing redundancy for critical missions and future space endeavors.

Existing launch pads in India:

1. **First launch pad (FLP):** Designed for PSLV missions; located at Sriharikota, Andhra Pradesh.
2. **Second launch pad (SLP):** Supports GSLV and LVM-3 missions; also situated at Sriharikota, Andhra Pradesh.

Key features of the third launch pad

1. **Redundancy:** Acts as a backup to ensure uninterrupted GSLV launches if issues arise with the second launch pad.
2. **Horizontal integration for NGLV:** Designed for horizontal assembly of the NGLV, focusing on liquid engine boosters, enhancing assembly efficiency.
3. **Increased payload capacity:** Supports NGLV's higher payloads — 20 tonnes to LEO and 9 tonnes to GTO, up from current vehicle capabilities.

Integrated stage testing: Will include stage testing facilities directly at the pad, unlike previous setups at Mahendragiri, streamlining operations.

28. NOBEL PRIZE FOR MEDICINE, 2024

Context:

The Nobel Prize for Medicine in 2024 has been awarded to Victor Ambros and Gary Ruvkun for their groundbreaking work in discovering microRNA and its role in gene regulation.

Nobel Prize in Medicine 2024:

- **Laureates:** Victor Ambros and Gary Ruvkun.
- **Work recognized:** Discovery of microRNA and its role in post-transcriptional gene regulation.
- **Research focus:** They studied the roundworm *C. Elegans* and identified how the lin-4 microRNA regulates the lin-14 gene by inhibiting its protein production.

Significance of their work:

1. **Gene regulation:** Understanding microRNA's role in gene regulation is crucial for biological processes as it helps control protein production in cells.
E.g. Disruption in this regulation can lead to diseases like cancer or diabetes.
2. **Medical implications:** Their work has highlighted the role of microRNA in preventing or contributing to several diseases, including cancer, diabetes, and autoimmune disorders.
E.g. Mutations in microRNA-related genes can cause congenital hearing loss or skeletal disorders.
3. **Therapeutic potential:** MicroRNA-based treatments are being explored for developing targeted therapies for genetic disorders.
E.g. Therapeutic approaches may involve altering microRNA activity to treat specific cancers.
4. **Evolutionary importance:** MicroRNAs have been crucial in genetic evolution for millions of years, influencing how cells and tissues develop in multi-celled organisms.
E.g. Abnormal microRNA activity has been linked to various developmental disorders.

Nobel prize overview:

- **Established:** 1901, based on Alfred Nobel's will to recognize contributions in Physics, Chemistry, Medicine, Literature, and Peace.
- **Award process:** Recipients are chosen by committees based on rigorous assessments of their work's impact on their respective fields.
- **Significance:** It is one of the highest honors in the scientific community, promoting advancements that contribute to humanity's well-being.
- **Selection criteria:** The Nobel Prize recognizes those whose discoveries have had the most significant benefit to humanity, with an emphasis on innovation and progress.

Insta links:

1. [2023 Noble Prize for medicine](#)

29. 2024 NOBEL PRIZE IN CHEMISTRY

Context:

The 2024 Nobel Prize in Chemistry has been awarded to three scientists for their pioneering contributions to **protein design and prediction** using advanced computational techniques.

Nobel Chemistry, 2024 winners:

1. **David Baker:** Recognized for his work in computational protein design.
2. **Demis Hassabis and John Jumper:** Awarded for their development of the AI model AlphaFold 2, which predicts protein structures.

Their Work:

- **David Baker:**
 - Developed methods for designing new proteins using bespoke software, leading to the creation of 'designer' proteins for specific applications.
 - His team's work in computational protein design began in 2003 and has since been refined to construct a wide variety of proteins.
- **Demis Hassabis and John Jumper:**
 - Created AlphaFold 2, an AI model capable of predicting the structures of millions of proteins.
 - AlphaFold 2 marked a breakthrough in 2020 by using AI to accurately predict complex protein structures, significantly surpassing previous manual efforts.

Significance:

1. **Revolutionizes protein research:** Their work enables the creation of custom proteins with specific applications, potentially transforming fields like drug discovery, biotechnology, and materials science.
2. **Accelerates scientific progress:** AlphaFold 2's ability to predict protein structures rapidly has saved years of research, offering insights into biological functions and disease mechanisms.
3. **Wider impact on chemistry:** The award highlights chemistry's interdisciplinary influence, involving AI and computational tools that expand its reach beyond traditional boundaries.
4. **Immediate recognition:** The prize was awarded just four to six years after Hassabis and Jumper's breakthrough, showcasing the rapid impact of their contributions on modern science.

Insta links:

1. [2023-Nobel-prize-in-chemistry-quantum-dots](#)

30. CHARON MOON

Context:

Scientists have recently detected carbon dioxide and hydrogen peroxide on Charon, Pluto's largest moon, using the James Webb Space Telescope (JWST).

About Charon

- **Largest moon of Pluto:** Charon is the largest of Pluto's five moons, roughly half the size of Pluto itself.
- **Discovery:** It was discovered on June 22, 1978, by James W. Christy and Robert S. Harrington at the U.S. Naval Observatory in Flagstaff, Arizona.
- **Size and mass:** Charon is about 1,214 kilometers (754 miles) in diameter, and its mass is more than one-tenth of Pluto's mass.
- **Double dwarf planet system:** Due to its size and mass relative to Pluto, they are often referred to as a double dwarf planet system.
- **Mutual tidal locking:** Charon and Pluto always show the same face to each other, a phenomenon known as mutual tidal locking.
- **Orbital period:** Charon orbits Pluto every 6.4 Earth days at a distance of about 19,640 kilometers (12,200 miles).
- **Surface composition:** Recent findings include carbon dioxide and hydrogen peroxide, in addition to previously known substances like water ice and ammonia-bearing compounds.
- **Kuiper belt object:** Charon is located in the Kuiper Belt and serves as an invaluable target for studying icy bodies beyond Neptune's orbit.

Insta links:

1. [Chronicle India](#)

31. NOBEL PRIZE FOR PHYSICS, 2024

Context:

The 2024 Nobel Prize in Physics has been awarded to **John Hopfield** and **Geoffrey Hinton** for their pioneering work in artificial neural networks (ANNs), crucial to machine learning and AI advancements.

Nobel Physics 2024 Winners

- **John Hopfield** (Princeton University, U.S.)
- **Geoffrey Hinton** (University of Toronto, Canada)

Work of the Laureates:

- **Hopfield Network:** John Hopfield developed a recurrent neural network using **Hebbian learning** principles, applying statistical physics to tasks like pattern recognition.
- **Restricted Boltzmann Machine (RBM):** Geoffrey Hinton advanced deep learning by refining neural

networks to handle complex data, enabling significant AI capabilities.

Significance of their work:

1. **AI foundation:** Their innovations laid the groundwork for machine learning, allowing AI systems to learn and adapt.
2. **Deep learning:** Hinton's developments enabled AI models to perform complex tasks like natural language processing.
3. **AI applications:** Their work powers technologies like chatbots and image recognition.
4. **Integration of physics in AI:** Hopfield's methods improved computational efficiency in handling large datasets.

Insta links:

1. [2023-Nobel-Prize-in-Physics](#)

32. MACE PROJECT

Context:

The Major Atmospheric Cherenkov Experiment (MACE) Observatory was inaugurated at **Hanle, Ladakh**.

- The MACE project is a significant achievement for India in **cosmic-ray research, aiming to advance scientific understanding** and support the socio-economic development of Ladakh.

About the MACE project:

- **Location:** Hanle, Ladakh, at an altitude of ~4,300 m, making it the highest imaging Cherenkov telescope in the world.
- **Development:** Indigenously built by Bhabha Atomic Research Centre (BARC) with support from ECIL and other Indian partners.
- **Objective:** To study high-energy gamma rays and contribute to the understanding of the universe's most energetic phenomena, such as supernovae, black holes, and gamma-ray bursts.
- **Technology:** Uses Cherenkov imaging technology to detect cosmic rays and observe high-energy astrophysical events.
- **Significance:** Enhances India's cosmic-ray research capabilities and strengthens its position in multi-messenger astronomy on a global scale.

Significance of the MACE project

- **Scientific advancement:** Puts India at the forefront of cosmic-ray research, enhancing its ability to study high-energy gamma rays and contribute to global space research.
- **Technological achievement:** Demonstrates India's capability to develop world-class astronomical instruments, promoting self-reliance in advanced technology.
- **Socio-economic impact:** Supports the development of Ladakh by encouraging local talent to pursue

careers in astronomy, astrophysics, and space sciences.

- **Global collaboration:** Aims to foster international partnerships in space research, contributing to the global scientific community's efforts to understand the universe's most energetic events.

Insta links:

1. [Hanle-and-merak-ladakh](#)

33. TDP1

Context:

Recent research by scientists at the Indian Association for the Cultivation of Science (IACS), Kolkata, has identified a new approach for cancer treatment by targeting a DNA repair enzyme called TDP1.

About TDP1:

- **Role:** Tyrosyl-DNA phosphodiesterase 1 (TDP1) is a DNA repair enzyme that plays a crucial role in fixing DNA damage induced by **Topoisomerase 1 (Top1)** inhibitors during cell division.
- **Activation:** TDP1 becomes particularly active during the mitotic phase, helping repair drug-induced DNA damage, allowing cancer cells to survive chemotherapy.
- **Regulation:** The enzyme's activity is regulated by Cyclin-dependent kinase 1 (CDK1), which enhances TDP1's ability to resolve DNA damage through phosphorylation.

Significance:

- **Enhanced cancer therapy:** Using CDK1 inhibitors with Top1 inhibitors disrupts DNA repair and halts the cell cycle, hindering cancer cell survival.
- **Drug resistance target:** TDP1 and CDK1 are new targets for overcoming resistance to current cancer therapies.
- **Precision medicine:** Focuses on personalized treatments by targeting cancer cells dependent on these DNA repair proteins.
- **Therapeutic potential:** Combining CDK1 inhibitors with existing drugs may boost cancer cell elimination, improving treatment success.

Insta links:

1. [TH](#)

34. X-BAND RADAR

Context:

The Union Ministry of Earth Sciences approved the installation of an X-band radar in Wayanad to improve monitoring and prediction of weather conditions, specifically for early warnings related to landslides and floods.

About X-band Radar:

Feature	Details
Purpose	Monitors smaller particles like rain droplets or soil movements.
Frequency Range	8-12 GHz (corresponds to wavelengths of 2-4 cm).
Technology	Uses Doppler radar and Rayleigh scattering to detect object movement.
Resolution	Produces higher resolution images due to shorter wavelength.
Range	Shorter range compared to lower frequency bands, ideal for localized studies.
Application in Wayanad	Will monitor soil movement for landslide warnings and high temporal sampling.
Meteorological Use	Tracks clouds, rain patterns, and storm formation in real time.
Limitations	Shorter range due to higher attenuation of the signal.
Previous Installation in India	First X-band radar installed in New Delhi in 1970.

Insta links:

1. [Risat-2br1](#)

35. MECHAZILLA

Context:

SpaceX has achieved a significant milestone in space exploration by landing its Starship rocket using an innovative structure called "Mechazilla."

About Mechazilla:

- Mechazilla is the massive 400-ft tall rocket-catching structure at SpaceX's Starbase in Texas.
- Equipped with giant mechanical arms **known as "chopsticks,"** it is designed to catch the Super Heavy booster midair as it returns to Earth after launch.

Working of Mechazilla:

- **Launch & Ascent:** Starship and its Super Heavy booster launch from the ground.
- **Booster separation:** The booster detaches from the Starship upper stage at a high altitude.
- **Controlled descent:** The booster descends using precision thrusters to steer its path back to the landing site.
- **Booster catching:** Mechazilla's mechanical arms move into position and catch the booster as it hovers, ensuring a controlled landing.

Significance of Mechazilla:

- **Quick reusability:** Reduces turnaround time for rocket refurbishment and re-launch, making missions more efficient.
- **Cost reduction:** Enables rapid reuse of boosters, lowering overall launch costs significantly.
- **Sustainability:** Enhances the sustainability of space missions by minimizing wear and tear on reusable components.
- **Future of space travel:** Could enable more frequent, affordable, and scalable space missions, bringing humanity closer to interplanetary travel goals.

Insta links:

1. [SpaceX-starship-landing](#)

36. INDIA MOBILE CONGRESS

Context:

Industry leaders have lauded Prime Minister Narendra Modi’s vision for Digital India at the 8th India Mobile Congress during the International Telecommunication Union-World Telecommunication Standardisation Assembly (ITU-WTSA) 2024 in New Delhi.

About India Mobile Congress (IMC) 2024:

- **Edition:** 8th edition of Asia’s premier digital technology exhibition.
- **Co-hosted by:** The Department of Telecommunications (DoT) and Cellular Operators Association of India (COAI).
- **Theme:** “The Future is Now” - focusing on integrating advanced technologies into daily life.
- **Focus areas:** 6G, Artificial Intelligence (AI), semiconductors, satellite communication (Satcom), quantum technology, broadcasting, electronics manufacturing, and security.
- **Significance:**
 - **Technological advancement:** Showcases innovations in AI, 6G, quantum tech, etc., fostering collaboration and progress.
 - **Economic impact:** Expected to attract investments, boosting the tech sector and contributing to India’s economy.
 - **Global collaboration:** Connects 120+ countries, enabling exchange of ideas and best practices.
 - **Startup support:** The Aspire program provides startups with investor access, accelerating growth.

Insta links:

1. [World-telecommunication-and-information-society-day](#)

37. OSSIFICATION TEST

Context:

The Mumbai police have confirmed that Dharmaraj Kashyap, one of the three accused in the murder case of NCP leader and former Maharashtra Minister Baba Siddique, is not a minor. ANI reported that the confirmation came after an ossification test was conducted on him.

Key methods for estimating age:

1. **Ossification test:**
 - **Purpose:** Determines age by assessing bone development and the union of epiphyses in long bones.
 - **Bones used:** Radius, ulna, humerus, tibia, fibula, femur.
 - **Accuracy:** Provides an estimate within a margin of two years (e.g., 16-18 years), allowing for a 6-month error on either side.
 - **Limitations:** Factors such as climate, diet, and heredity can affect ossification rates.
2. **Wisdom teeth:**
 - **Purpose:** The eruption of wisdom teeth (third molars) is used to estimate age.
 - **Age range:** Typically erupts in late teens to early adulthood.
 - **Limitations:** Genetics, oral hygiene, and health can influence the pattern, making this method less accurate if used alone.
3. **Epigenetic clock technique:**
 - **Purpose:** Measures DNA methylation to estimate chronological age.
 - **Mechanism:** Methyl groups are added to DNA, particularly at CpG sites (cytosine preceding guanine).
 - **Use in forensics:** Still under exploration in Indian forensic science.
4. **Radiographic techniques:**
 - **Purpose:** X-rays and CT scans assess bone maturity and degeneration.
 - **Use:** Helpful in identifying bone age and diseases that can indicate age progression.

Insta links:

1. [Ossification test](#)

38. HABER-BOSCH PROCESS

Context:

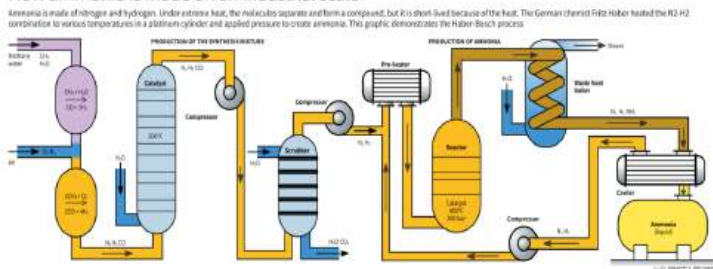
About Haber-Bosch Process:

- **Purpose:** Fixes nitrogen (N₂) from the air with hydrogen (H₂) to produce ammonia (NH₃), essential for manufacturing fertilizers.
- **Development:** Invented by **Fritz Haber** in the early 1900s and industrialized by **Carl Bosch**.
- **Significance:** Considered one of the most important technological advancements of the 20th century,

enabling mass production of fertilizers.

- **Industrial breakthrough:** First large-scale chemical process using high pressure for a chemical reaction.

How ammonia is made on an industrial scale



How it works:

1. **Nitrogen + Hydrogen reaction:** Combines nitrogen from the air with hydrogen under **high pressure** (150–200 atmospheres) and **moderate temperature** (~400–500°C).
2. **Catalyst:** Mostly iron-based catalysts are used to lower the reaction temperature.
3. **Pressure & Temperature:** Higher pressure increases ammonia yield, while lower temperatures favor the reaction but slow down the rate.
4. **Continuous process:** Ammonia is removed from the reaction batch to maintain an equilibrium that promotes product formation.

Insta Links:

1. [Nitrogen pollution](#)
2. [Green-ammonia](#)

39. COPPER ZINC TIN SULFIDE NANOPARTICLES

Context:

Scientists from the Institute of Advanced Study in Science and Technology (IASST), Guwahati, have developed a new photocatalyst that can effectively break down sulfamethoxazole into less harmful byproducts, marking a significant step toward solving this environmental issue.

Need:

- Antibiotic contamination in the environment has become a pressing concern due to the increasing levels of broad-spectrum **antibiotics like sulfamethoxazole (SMX)** being released, leading to antibiotic resistance, ecological damage, and health risks.
- Finding efficient ways to degrade such antibiotics into less hazardous chemicals is essential for mitigating these effects.

About Copper zinc tin sulfide nanoparticles:

- **Photocatalyst developed:** The team synthesized copper zinc tin sulfide (Cu₂ZnSnS₄ - CZTS)

nanoparticles and CZTS-tungsten disulfide (CZTS-WS₂) composite.

- **Composition:** The composite is made from earth-abundant, inexpensive, and non-toxic components using a hydrothermal reaction involving zinc chloride, copper chloride, tin chloride, and tungsten disulfide.
- **Function:** The composite acts as an efficient photocatalyst, which degrades sulfamethoxazole under light exposure.

Significance:

- **Environmental impact:** This photocatalyst helps reduce the harmful effects of antibiotics like sulfamethoxazole in the environment.
- **Efficiency:** The CZTS-WS₂ composite exhibited over 80% radical scavenging efficiency and antibacterial capabilities.
- **Reusability:** The catalyst can be recovered and reused multiple times without losing its effectiveness, making it economically viable.
- **Photostability:** The composite demonstrates excellent photostability, which makes it valuable for long-term applications in light-harvesting and photocatalysis.

Insta links:

1. [Improper-disposal-of-antibiotics](#)

40. JIANGMEN UNDERGROUND NEUTRINO OBSERVATORY

Context:

The Jiangmen Underground Neutrino Observatory (JUNO) in China is set to begin operations in 2025, aiming to gather data on neutrinos to solve fundamental mysteries in particle physics.

Jiangmen Underground Neutrino Observatory (JUNO):

- **Location:** Built 700 meters underground in China’s Guangdong province.
- **Purpose:** Designed to detect neutrinos emitted by nearby **nuclear power plants**, the sun, and Earth’s mantle.
- **Detector:** Features a **600 metric ton spherical detector** with thousands of light-detecting tubes.
- **Timeline:** Expected to start operations in **late 2025**.
- **Collaboration:** Scientists from France, Germany, Italy, Russia, and the U.S. are involved.
- **Global impact:** Aims to surpass similar projects in the U.S. and Europe in neutrino research.

About Neutrinos:

- **Fundamental particle:** Neutrinos are **elementary particles** produced in high-energy processes like nuclear reactions in stars.
- **Hard to detect:** Neutrinos rarely interact with

matter due to their lack of electrical charge.

- **Origins:** Produced by stars, supernovae, and on Earth in nuclear reactors and accelerators.
- **Key in physics:** Studying neutrinos helps understand processes in the sun, the universe's formation, and Earth's interior.
- **Future applications:** Could revolutionize astronomy and medical imaging; potential for **long-distance communication** via neutrinos.

Indian Neutrino Observatory (INO):

- **Proposal:** Conceived in 2005 to study neutrinos using a detector under Tamil Nadu's Bodi West Hills.
- **Budget:** Initially funded at **Rs 1,500 crore** by the Indian government.
- **Approval:** Received environment ministry clearance in 2018.
- **Challenges:** Faces opposition due to environmental concerns, including its location in a **tiger corridor** and potential impact on local ecology.
- **Status:** Construction is stalled due to opposition from **environmentalists** and local government, with no significant progress to date.

Insta Links:

1. [Neutrino-project](#)

41. INDIAAI MISSION

Context:

The IndiaAI Mission has selected eight Responsible AI projects in response to the Expression of Interest (EoI) issued under the Safe and Trusted AI Pillar.

About IndiaAI Mission:

- **Origin:** Launched during the Global Partnership on Artificial Intelligence (GPAI) Summit in 2023, New Delhi, by the Prime Minister of India.
- **Background:** Announced to drive AI innovation and build a comprehensive AI ecosystem in line with the visions of "Making AI in India" and "Making AI Work for India."
- **Aim:** To create an advanced AI infrastructure supporting various sectors, boost AI innovation, enhance data quality, and promote ethical AI practices across the country.
- **Nodal ministry:** Ministry of Electronics and Information Technology (MeitY)
- **Implementing agency:** IndiaAI Independent Business Division (IBD) under the Digital India Corporation (DIC)
- **Key Components:**
 - **IndiaAI Compute Capacity:** Develop AI compute infrastructure with 10,000+ GPUs via public-private partnerships.
 - **IndiaAI Innovation Centre:** Create Large Multimodal Models (LMMs) and sector-

specific foundational AI models.

- **IndiaAI Datasets Platform:** Unified platform providing access to high-quality non-personal datasets for AI research and startups.
- **IndiaAI Application Development Initiative:** Promote AI applications addressing key challenges in sectors like healthcare, agriculture, and governance.
- **IndiaAI FutureSkills:** Expand AI education through new programs at various academic levels and set up Data & AI Labs in smaller cities.
- **IndiaAI Startup Financing:** Easier access to funding for AI startups, with Rs 2,000 crore allocated.
- **Safe & Trusted AI:** Ensure responsible AI practices with indigenous tools and frameworks.

Insta links:

1. [IndiaAI mission](#)

42. ARTIFICIAL STONE

Context:

A recent study published in **Thorax** highlights the emergence of a severe form of **silicosis**—a lung disease caused by inhaling fine silica dust. This is attributed to the high silica content (over 90%) in artificial stone, compared to natural stones like marble and granite, which contain much less silica

About Artificial Stone:

- Artificial stone, also known as **engineered stone or quartz**, is widely used in kitchens due to its aesthetic appeal and durability. However, it poses significant health risks to workers involved in its cutting and polishing.
- **Material Composition:**
 - Made from crushed rocks bound with resins.
 - Contains over 90% silica, compared to 3% in marble and 30% in granite.
- **Advantages:**
 - **Aesthetic appeal:** Smooth, polished look.
 - **Durability:** More resistant to damage than natural stone.
 - **Ease of handling:** Lacks natural imperfections found in natural stone.
- **Health Risks:**
 - Generates fine silica dust when cut or polished.
 - High risk of silicosis, a progressive lung disease caused by silica inhalation.
 - Workers face increased risks due to dry cutting without dust suppression measures like water.

- **Thorax Study Findings:**
 - Documented eight cases of workers, average age 34, with severe lung disease.
 - Conditions include lung transplants, autoimmune diseases, and lung infections.
- **Preventive Measures:**
 - Use of water to suppress dust during cutting.
 - Adoption of nasal filters and other technologies to minimize silica exposure.
 - Advocating for stricter safety measures to protect workers.

Insta Links:

1. [Coal-india-ltd-to-launch-m-sand-projects-in-a-big-way](#)

43. NON-KINETIC WARFARE

Context:

The Parliamentary Standing Committee on Defence has prioritized the discussion on the Indian armed forces' readiness to tackle "hybrid warfare," specifically focusing on non-kinetic warfare.

About Non-Kinetic Warfare:

- **Definition:**
 - Warfare that goes beyond physical combat and involves electronic warfare, cyberattacks, psychological, information, and economic tactics.
 - It can include non-military stakeholders and aims to disrupt or cripple a country's infrastructure or governance.
- **Methods Used:**
 - **Cyber warfare:** Attacking critical infrastructure like power grids, hospitals, and communication networks.
 - **Information warfare:** Spreading disinformation or controlling the narrative to influence public perception and decision-making.
 - **Electronic warfare:** Jamming or intercepting communication systems.
 - **Psychological warfare:** Manipulating public opinion and morale through fear, misinformation, or propaganda.
 - **Economic warfare:** Disrupting a nation's economy by targeting financial systems or trade.
- **Impact:**
 - Non-kinetic warfare can be deadlier than traditional combat, as conflicts can be won without physical confrontation.
 - A well-coordinated cyber or economic attack can destabilize a nation without the need for conventional military force.

- **Examples:**
 - **Russia-Ukraine conflict:** Use of cyberattacks and disinformation.
 - **Israel-Palestine conflict:** Psychological and information warfare tactics.
 - Lebanon: Use of pager blasts as a form of disruption.
- **Counter-Drone Technologies:**
 - **Kinetic options:** Shooting down drones physically.
 - **Non-kinetic options:** Jamming, taking control, or using laser and electromagnetic waves to disrupt drone operations.
- **Importance for India:**
 - As non-kinetic warfare becomes a key component of modern conflicts, India's armed forces must develop both kinetic and non-kinetic capabilities to counter these emerging threats.

Insta links:

1. [Hybrid-warfare](#)

44. 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. [Apothis-asteroid](#)

45. GREEN HYDROGEN FUEL CELL BUS

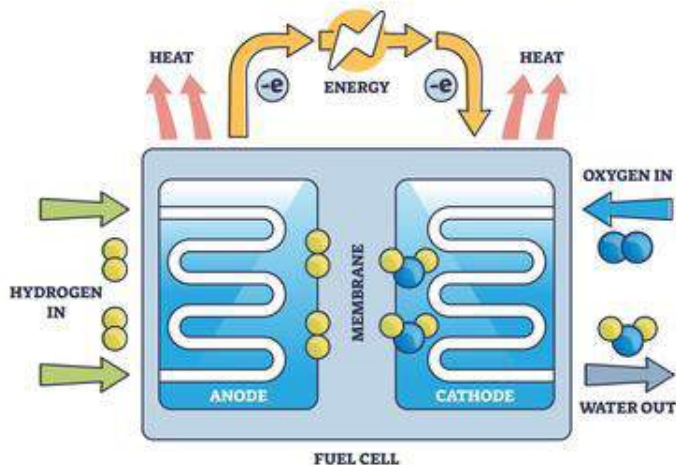
Context:

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](#)

46. 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:

2. [Mission-mausam](#)

47. 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:

2. [Bharat-Gen](#)

48. 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, bio-pharma, 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 bio-manufacturing 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 bioeconomy 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](#)

49. TRANSPONDER TECHNOLOGY

Context:

The Department of Fisheries with the help of the Vessel Communication and Support System under the [Pradhan Mantri Matsya Sampada Yojana](#) has been able to enhance the safety and security of fishermen at sea.

- This initiative, utilizing indigenous **transponder technology developed by ISRO** and implemented by [New Space India Ltd \(NSIL\)](#)

About Vessel Communication and Support System:

- **Launch Date and Cost:** Introduced on August 30,

2024, with a project outlay of ₹364 crore.

- **Objective:** Provides real-time two-way communication for fishermen beyond mobile range, enhancing safety and allowing for timely advisories during emergencies.
- **Technology:** Uses transponders developed by ISRO, enabling precise vessel tracking, speed monitoring, and emergency communication, especially crucial in adverse weather.
- **Application:** The [Nabhmitra Application](#) aids in vessel tracking and provides real-time updates on sea conditions, weather alerts, and cyclone data, contributing to safe navigation.
- **Multilingual Support:** Broadcasts in local languages ensure accessibility for non-English-speaking fishermen, enhancing response time and safety.

About Transponders:

- **Definition:** A transponder is a wireless device that receives incoming signals, amplifies them, and transmits a modified signal back.
- **Primary Functions:**
 - Acts as both a transmitter and receiver (transmitter + responder).
 - Shifts input signal frequency and boosts it.
 - Transponders are categorized into *active* (used in aircraft, RFID) and *passive* (used in devices like credit cards).
- **Types:**
 - **Bent Pipe Transponder:** Converts signal to radio frequency, boosts it, and transmits it back; often used in satellites as a repeater.
 - **Regenerative Transponder:** Processes the signal by demodulating and remodulating it for better accuracy; suitable for digital signals.
- **Comparison:**
 - **Transponder vs. Transceiver:** A transceiver can both send and receive signals without preprogrammed responses, while a transponder is programmed to respond automatically.
 - **Transponder vs. Transducer:** A transducer converts energy types, while a transponder handles signal transmission and response.

Insta Links:

1. [Space-technology](#)
2. [Pradhan-Mantri-Matsya Sampada-Yojana](#)

50. ELECTRIC PROPULSION SATELLITE

Context:

To make its satellites lighter in future, ISRO is going to launch its first home-grown electric propulsion-led spacecraft, **Technology Demonstrator Satellite (TDS-1)** in December.

- This technology shift aims to **reduce the weight of satellites** by substituting chemical fuel with electric propulsion, allowing for a more efficient journey to geostationary orbit.

About Electric Propulsion Satellite (TDS-1):

- **Purpose:** To demonstrate electric propulsion technology for steering satellites using solar-powered ionized gas, reducing reliance on chemical fuel.
- **Benefits:** Cuts down satellite mass drastically by minimizing fuel needs; a four-tonne satellite can be reduced to around two tonnes.
- **Technology:** Utilizes gases like **Argon as fuel, which are ionized using solar power** to create propulsion.
- **Historical use:** First incorporated in **GSAT-9 (South Asia Satellite) in 2017** with imported Russian components.
- **Significance:** Marks a step towards India's space autonomy, as this EPS is fully developed domestically by ISRO.

Insta Links:

1. [Project-200](#)

Environment & Ecology

51. SWALLOWTAIL BUTTERFLIES

Context:

A new study has revealed that the overexploitation of 25 medicinally valuable host plant species is endangering the swallowtail butterflies in the forest habitats of a region in Assam, commonly known as the "citrus belt of the world."

About Swallowtail butterflies:

- **Scientific name:** Family *Papilionidae* (e.g., *Papilio machaon*, *Papilio slateri*).
- **Types:** Includes species like the Blue-striped mime (*Papilio slateri*), Bhutan glory (*Bhutanitis lidderdalii*), and Kaiser-i-Hind (*Teinopalpus imperialis*).
- **Distribution:** Found globally, with 69 species in India's Northeast.
- **IUCN Status:** Some species are globally endangered.
- **Features:** **Large**, colorful butterflies with forked hindwings resembling a swallow's tail.
- **Threats**
 - Overexploitation of host plants including citrus plant (medicinal use).
 - Illegal tree felling and deforestation.
 - Illegal cattle farming in protected areas.
 - Tea cultivation and pesticide use near habitats.
 - Habitat destruction due to shrinking forest cover.
- **Swallowtail Conservation Action Plan**

- The IUCN has designated India's Northeast as a "Swallowtail-rich zone," focusing on conservation efforts in this region to protect 69 species through habitat preservation and sustainable plant use.

- **Citrus Plant**

- **Scientific Name:** *Rutaceae* family.
- **Distribution:** Found in Assam's "citrus belt" with 52 varieties.
- **Reason for decline:** Overharvesting for medicinal purposes and loss of natural habitats.

Insta links:

1. [Why butterfly matters?](#)

52. ELEPHANT CENSUS METHOD

Context:

The Environment Ministry has shelved its elephant census report, 'Status of Elephant in India 2022-23', citing a delay in the census in the Northeast.

Aspect	Old Method (Pre-2002)	New Method (Post-2022)
Direct Count	Simple headcount of elephants based on sightings	Refined direct count through sample block method, where 5 sq km blocks are surveyed
Dung Count	Introduced in 2002: Indirect method based on dung decay rate and defecation rate of elephants to estimate population.	Still used in conjunction with more advanced genetic methods in selected landscapes
Genetic Mark-Recapture	Not used	DNA analysis of elephant dung samples, identifying individual elephants through microsatellite markers
Extrapolation	Elephant numbers extrapolated based on limited observations in certain regions	Extrapolated data combined with genetic data, increasing accuracy for unsurveyed regions
Combined Estimation	Old methods lacked integration with other wildlife data	Now synchronized with tiger census data for better landscape-level management and policy recommendations

Protection status of Elephant:

- **IUCN Status:** Classified as Endangered on the IUCN Red List.
- **Wildlife (Protection) Act, 1972:** Listed in Schedule I for highest protection.
- **CITES:** Included in Appendix I, prohibiting international trade except in rare circumstances.

The new methods of counting elephants, using **genetic mark-recapture models**, offer a more accurate picture of elephant populations. However, habitat loss, conflict, and threats like mining and low-hanging power lines continue to threaten the species.

Insta links:

1. [30 years of Project Elephant](#)

53. MODIFIED ECO-MARK SCHEME

Context:

The Ecomark Scheme was introduced to promote eco-friendly products in alignment with the 'LiFE' (Lifestyle for Environment) mission initiated in 2021.

- The **revised scheme, notified in 2024, replaces the earlier 1991 version**, and focuses on reducing environmental impacts, promoting resource efficiency, and encouraging sustainable production and consumption.

Key features of the scheme include:

- Accreditation of products based on **specific environmental criteria**, ensuring minimal environmental harm.
- **Reduction in energy consumption** and promoting a circular economy by utilizing recycled materials and eco-friendly production methods.
- The scheme mandates **accurate labelling** to avoid misleading claims about product sustainability.
- Implementation is overseen by the **Central Pollution Control Board (CPCB) and Bureau of Indian Standards (BIS)**.

The scheme is a step towards achieving sustainability goals, supporting **both consumer awareness and motivating manufacturers** to adopt eco-friendly practices.

Insta Links:

1. [Eco-mark scheme](#)

54. HALARI DONKEYS

Context:

The endangered Halari donkeys, native to the Halar region of Gujarat, are considered to be intelligent animals which work closely with human beings.

About Halari donkeys:

- **Region:** Found in the Halar region of Gujarat, primarily in Jamnagar and Dwarka districts of Saurashtra.
- **Status:** Considered endangered with a population of fewer than 500.
- **Appearance:** Typically white, larger, and more resilient compared to other donkey breeds.
- **Social behavior:** Intelligent and social animals, form close bonds with humans, often used for transport needs.

Uses

- **Construction:** Historically used in building dams, forts, hilltop temples, and rest houses due to their strength in carrying heavy loads.
- **Community usage:**
 - **Bharwad and Rabari pastoralists:** Used as pack animals during migration.
 - **Kumbhar community:** Employed in pottery work in the Jamnagar region.

Economic value

- **Market price:** Currently valued at over ₹1 lakh each, with rising demand for Halari donkey dairies.
- **Milk production:** Halari donkey milk is known for its sweetness, with powdered milk selling for more than ₹7,000 per kg in international markets, especially for cosmetics.

Conservation efforts:

- **Organizations involved:** Sahjeevan Trust, Gujarat's Animal Husbandry Department, and the National Bureau of Animal Genetic Resources.
- **Actions taken:** Identification of pure-bred male and female donkeys for breeding to increase population.
- **Future needs:** Experts advocate for breeding farms in the native Halar region, requiring more substantial State government resources.

Insta links:

1. [Rajyamata-gomata](#)

55. INDIAN WILD ASS

Context:

The population of wild asses in Gujarat, India, has seen a significant rise, reaching 7,672 as per the 2024 Wild Ass Population Estimation (WAPE). This marks a 26.14% increase from the 6,082 wild asses recorded in 2020.

About Indian Wild Ass:

- **Species and Habitat:**
 - It is a sub-species of the Asian Wild Ass, locally called Khur in Gujarat.
 - Found predominantly in the Little Rann of

- Kutch and Great Rann of Kutch.
- Habitats include desert and grassland ecosystems.
- **Population Data (2024 WAPE):**
 - Highest numbers found in **Surendranagar (2,705), followed by Kutch (1,993), Patan (1,615), Banaskantha (710), Morbi (642), and Ahmedabad (7).**
 - Gender and age distribution in forest areas: 2,569 females, 1,114 males, 584 babies, and 2,206 unclassified wild asses.
- **Conservation Status:**
 - **CITES:** Appendix II
 - **Wildlife Protection Act (1972):** Schedule I
- **Ecological Role:**
 - Contributes to seed dispersal, promoting vegetation growth.
 - Helps in habitat creation by clearing pathways through grazing.
- **Threats:**
 - Human activities like salt farming, agriculture, and cattle grazing.
 - Soil salinity issues due to irrigation canals bringing water to the area.
- **Conservation Efforts:**
 - Continuous rise in population due to state government's efforts since 1976.
 - Use of modern technology like drones and camera traps for population estimation.

Insta Links:

1. [Indian wild ass](#)

56. ANTARCTIC WARMING

Context:

A new study indicates a dramatic increase in plant cover on the Antarctic Peninsula, attributed to rising temperatures, signalling significant ecological changes.

About Antarctic warming:

- **Warming rate:** Antarctica is warming at a rate between 0.22°C to 0.32°C per decade, double the global average of 0.14-0.18°C per decade.
- **Antarctic peninsula:** This region is warming five times faster than the global average, with temperatures now nearly 3°C higher than in 1950.
- **Extreme heatwaves:** The continent has faced record-breaking heatwaves, with temperatures in July 2024 reaching up to 28°C above normal and a peak heatwave in March 2022 showing a rise of 39°C above average.
- **Sea ice loss:** Antarctica's sea ice extent in 2024 was the second smallest on record, closely following the record low in 2023.

Recent study findings:

- **Increased vegetation:** The extent of plant cover on the Antarctic Peninsula has increased 14 times over the past 35 years, expanding from less than 1 sq km in 1986 to nearly 12 sq km by 2021.
- **Greening rate:** The rate of greening increased by over 30% between 2016 and 2021, with vegetation like mosses and lichen thriving due to warmer conditions.
- **Impact on ecosystem:** Rising temperatures and increased plant life may lead to soil formation, creating conditions conducive to invasive species, potentially threatening native flora and fauna.
- **Albedo effect:** More plant life could reduce the peninsula's albedo (reflectivity), absorbing more solar energy and further increasing temperatures, potentially accelerating global warming.

Significance:

- **Indicator of climate change:** The expansion of plant cover highlights the profound impact of climate change even in the most remote and extreme regions.
- **Global repercussions:** Increased temperatures and ice loss in Antarctica contribute to rising sea levels, affecting coastal areas worldwide.
- **Ecological shifts:** The greening of Antarctica raises concerns about altering its ecosystem balance, paving the way for non-native species and impacting native biodiversity.

Insta links:

2. [Impact-of-Antarctic-ice-melting-on-ocean-currents](#)

57. PMECRG & MAHA-EV MISSION

Context:

The newly operationalised Anusandhan National Research Foundation (ANRF) has launched two initiatives: the Prime Minister Early Career Research Grant (PMECRG) and the Mission for Advancement in High-Impact Areas - Electric Vehicle (MAHA-EV) Mission.

About Prime Minister Early Career Research Grant (PMECRG):

- **Origin:** Launched under ANRF to support early career researchers and boost scientific research.
- **Aim:** To foster high-quality innovative research, drive technological progress, and contribute to India's global leadership in science and technology.
- **Features:**
 - Flexible budget for ease of research.
 - Focus on nurturing young researchers.
 - Encourages groundbreaking discoveries and research excellence.
 - Positions India as a leader in Science & Technology by supporting early career researchers.

About Mission for Advancement in High-Impact Areas - Electric Vehicle (MAHA-EV) Mission:

- **Origin:** Part of ANRF’s MAHA scheme designed to address critical scientific challenges and align with national priorities like Atmanirbhar Bharat.
- **Aim:** To develop domestic EV technologies, reduce import dependency, and position India as a global hub for EV component development.
- **Features:**
 - Focus on three critical verticals: EV Batteries and Cells, Power Electronics, Machines, and Drives (PEMD), and EV Charging Infrastructure.
 - Encourages multi-institutional collaboration.
 - Supports India’s transition to electric mobility and fosters domestic innovation in the EV sector.
 - Enhances competitiveness and aligns with India’s goal of achieving a Viksit Bharat by 2047.

About Anusandhan National Research Foundation (ANRF):

- **Origin:** Operationalised in 2024, chaired by the Prime Minister during its first Governing Board meeting.
- **Ministry:** Ministry of Science & Technology.
- **Aim:** To bridge the gap between academic research and industrial applications, aligning R&D with national priorities.
- **Function:**
 - Promotes inclusive growth, scientific advances, and innovation.
 - Facilitates industry-aligned translational research.
 - Supports capacity building and global positioning of India in key sectors.

Insta links:

1. [National-research-foundation](#)

58. KAZIRANGA NATIONAL PARK

Context:

Kaziranga National Park in Assam, renowned for its one-horned rhinoceros, has now earned recognition as the second-largest butterfly diversity hub in India, after Namdapha National Park in Arunachal Pradesh.

Butterflies in Kaziranga:

1. **Species diversity:** Kaziranga is home to 446 butterfly species, making it the second-most diverse butterfly hub in India.
2. **Newly recorded species:** 18 new species, including Burmese Threering, Glassy Cerulean, and Peacock Oakblue, have been documented.
3. **Butterfly conservation:** The first-ever Butterfly

Conservation Meet-2024 highlighted the importance of butterfly conservation and raised awareness of Kaziranga’s butterfly diversity.



About Kaziranga National Park:

1. **Location:**
 - Situated in Golaghat and Nagaon districts of Assam.
2. **UNESCO World Heritage Site:**
 - Declared a national park in 1974 and a UNESCO World Heritage Site, housing two-thirds of the world’s one-horned rhinoceros’ population.
3. **Biodiversity:**
 - Hosts a variety of fauna, including royal Bengal tigers, leopards, capped langurs, and migratory birds.
 - Known for its tall elephant grass, water lilies, and wet alluvial grasslands.
4. **Flora and Fauna:**
 - Famous for elephant grasses, rattan cane, and aquatic plants like water hyacinths.
 - Important species include Bengal florican and western hoolock gibbon, India’s only ape species.
5. **Ecological importance:**
 - Largest undisturbed area in the Brahmaputra Valley floodplains, offering critical habitats for diverse wildlife.

Insta links:

3. [Kaziranga-National-Park](#)

59. 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](#)

60. 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:

2. [Helopeltis-theivora/spider](#)

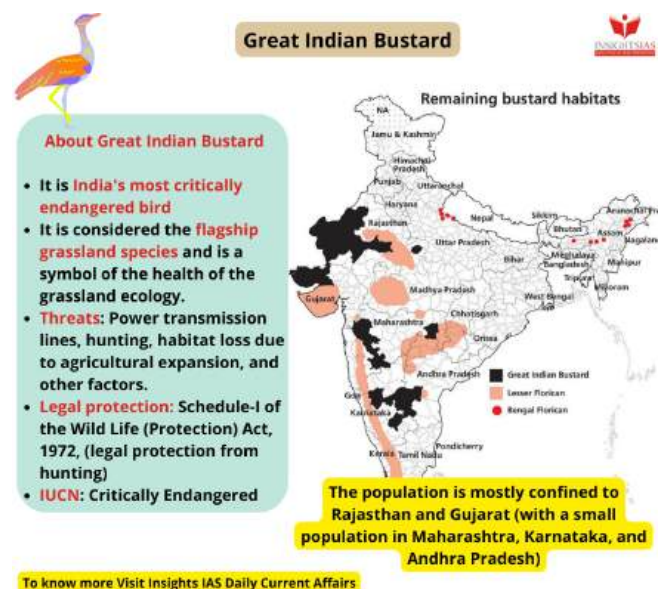
61. GREAT INDIAN BUSTARD

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

Remaining bustard habitats

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](#)

62. INDIAN FLAP SHELL 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](#)

63. 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](#)

64. 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:

2. [Coal](#)
3. [Indias-coal-and-lignite-production](#)

65. TARDIGRADES

Context:

Researchers have discovered the mechanisms behind the extraordinary radiation resistance of a newly identified species of **tardigrades**, *Hypsibius henanensis*, which may have future applications in space travel, nuclear cleanup, and cancer therapy.

About Tardigrades:

- **Habitat:** Found globally in terrestrial, marine, and freshwater environments, from extreme Arctic cold to Antarctic depths and high altitudes.
- **Extreme survivors:** Known for enduring extreme radiation, temperatures ranging from 150°C to -272°C, and decades without food or water.
- **Unique physiology:** These tiny, eight-legged, multicellular creatures can revive from a dried, lifeless state even after several years.
- **Size and structure:** Microscopic but multicellular, they are among the most resilient life forms on Earth, earning nicknames like "**water bears**" and "**moss piglets**" due to their appearance and habitat preferences.
- **Tardigrades' radiation resistance:**
 - **Genetic adaptation:** *Hypsibius henanensis* has 14,701 genes, with 30% unique to tardigrades, that activate under radiation to protect and repair DNA.
 - **DNA repair mechanisms:** Uses a specific protein, TRID1, to quickly repair DNA double-strand breaks caused by radiation.
 - **Mitochondrial and DNA repair proteins:** Produces proteins crucial for mitochondrial function and DNA repair, enhancing survival after radiation exposure.
 - **Antioxidant pigments (Betalains):** Produces betalains that neutralize harmful chemicals generated by radiation, preventing cellular damage.

Insta Links:

2. [Marine-Tardigrade](#)

66. SURGE IN GLOBAL GREENHOUSE GAS

Context:

The [World Meteorological Organization](#) (WMO) has reported a record rise in global greenhouse gas (GHG) levels, highlighting a surge in carbon dioxide emissions and the warming effects on global temperatures.

Greenhouse gas surge:

- **CO₂ concentration increase:** 2023 saw **2.3 parts per million (ppm)** rise in CO₂ levels from 2022, marking the twelfth consecutive year of over 2 ppm increases.
- **Global warming record:** 2023 surpassed the previous record held in 2016, with temperatures **1.48°C above pre-industrial levels (1850-1900)**.
- **Carbon cycle:** About **50% of CO₂ emissions** remain in the atmosphere, **30% absorbed by land**, and **25% by oceans**.
- **India's contribution:** India's GHG emissions grew by **6.1% in 2023**, now accounting for **8% of global emissions**, with historical contributions standing at

3%.

- **Radiative forcing increase:** Since 1990, radiative forcing (warming effect) from GHGs has risen by 51.5%, with CO₂ contributing 80% of this increase.

67. BANDHAVGARH TIGER RESERVE

Context:

Four [elephants](#) were found dead, with five others in poor health, at Bandhavgarh Tiger Reserve in Madhya Pradesh.



About Bandhavgarh Tiger Reserve:

- **Location:** Situated between the Vindhyan and Satpura ranges in Umaria district, Madhya Pradesh.
- **Status:** Designated a national park in 1968, it gained [Tiger Reserve](#) status in 1993.
- **Topography:** Known for valleys, hills, and plains with the historic Bandhavgarh Fort, associated with Lord Rama and his brother Lakshmana, prominently located.
- **Vegetation:** Features tropical moist deciduous forests, including sal, mixed forests, and grasslands, with bamboo on the lower slopes.
- **Flora:** Includes notable species like Saj (*Terminalia tomentosa*), Dhaora (*Anogeissus latifolia*), Arjun (*Terminalia arjuna*), and Amla (*Emblica officinalis*).
- **Fauna:** Hosts the Royal Bengal Tiger noted for the highest density of tiger population in India and globally.

Insta Links:

1. [30-years-of-Project-Elephant](#)

68. DURGESH ARANYA ZOOLOGICAL PARK

Context: Himachal Pradesh's upcoming Durgesh Aranya Zoological Park in Kangra's Dehra constituency is set to become India's first zoo certified by the Indian Green Building Council

(IGBC) for sustainable and eco-friendly infrastructure.



About Durgesh Aranya Zoological Park:

- **Location:** Situated in the Bankhandi area of Kangra's Dehra assembly constituency, Himachal Pradesh.
- **Unique attractions:** The park will feature 34 enclosures within its Van Vaibhav Path and Biodiversity Court, housing 73 species, including Asiatic lions, crocodiles, gharials, and indigenous birds.
- **Sustainability:** With a budget of ₹619 crore, it emphasizes eco-friendly design and will be the first zoo to earn IGBC certification.
- **Tourism and employment impact:** Aims to attract tourists, create jobs, and promote eco-tourism in Kangra, reinforcing its status as Himachal Pradesh's "Tourism Capital."

About Indian Green Building Council (IGBC):

- **Established:** Formed in 2001 as part of the Confederation of Indian Industry (CII).
- **Headquarters:** Based in Hyderabad, India.
- **Role:** India's leading body for green building certification, offering programs to promote sustainable architecture.
- **Services:** Provides certification, develops rating systems for eco-friendly buildings, and conducts training on green construction practices.
- **Global representation:** One of five countries on the World Green Building Council board, engaging in international discussions on sustainability at events like COP.
- **Rating criteria:** Evaluates projects based on categories like energy and water efficiency, hygiene, innovation, and sustainable practices.

Insta links:

1. [Green-buildings](#)

Defence

69. THERMOBARIC WEAPONS

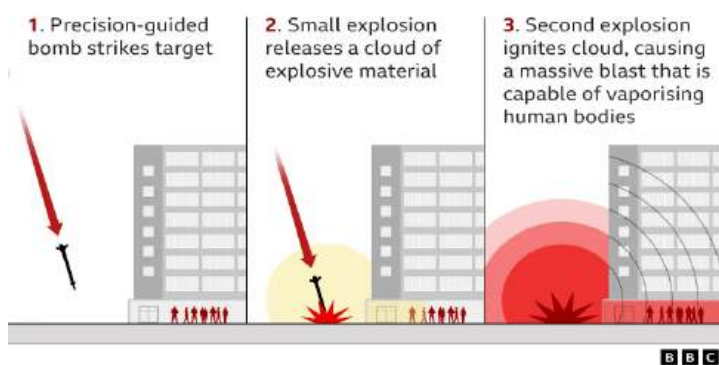
Context:

Russia's use of ODAB-1500 thermobaric weapons in Ukraine has garnered attention due to their extremely destructive effects.

About Thermobaric weapons:

1. **Thermobaric weapons** use the atmosphere's **oxygen** to fuel an explosion.
2. Release a **fuel cloud** that ignites, causing a high-temperature explosion.
3. Results in an immense **blast wave** and a vacuum effect by consuming nearby oxygen.

How thermobaric weapons work



Features

1. **Two-stage explosion:** First disperses fuel, then ignites it.
2. **Effective in enclosed spaces:** Highly destructive in buildings, bunkers, or tunnels.
3. **Human impact:** Can rupture organs and cause severe injuries due to pressure changes.
4. **Not specifically banned:** No explicit ban, but targeting civilians could violate the **Hague Conventions**.

History and Origin

1. Developed by the **U.S.** and **Soviet Union** during the Cold War.
2. Used by the **U.S.** in 2001 against **al-Qaeda** in Afghanistan.
3. **Russia** has deployed these in Chechnya and Ukraine.

Insta Links:

1. [Cluster bombs & Thermobaric weapons](#)

70. PM E-DRIVE

Context: The government yesterday launched the PM Electric Drive Revolution in Innovative Vehicle Enhancement

(PM E-DRIVE) scheme that has a financial outlay of Rs 10,900 crore over a period of two years.

About PM E-DRIVE SCHEME:

- **Ministry:** Ministry of Heavy Industries (MHI).
- **Scheme replaces:**
 - It replaces the Faster Adoption and Manufacturing of Electric Vehicles in India Phase II (**FAME India Phase II**).
- **Aim:**
 - The scheme aims to accelerate the transition to electric vehicles by offering incentives and building a robust EV charging ecosystem.
- **Financial Outlay:** Rs. 10,900 crores for a period of two years.
- **Subsidies and Incentives:**
 - Subsidies will promote electric two-wheelers (e-2Ws), three-wheelers (e-3Ws), e-ambulances, e-trucks, and other emerging EVs.
- **Features:**
 - **E-buses:** Rs. 4,391 crores allocated for the procurement of 14,028 e-buses by state transport units.
 - **E-vouchers:** Aadhaar-authenticated e-vouchers for EV buyers will be introduced, signed by both the buyer and dealer, and uploaded on the PM E-DRIVE portal for facilitating demand incentives.
 - **E-ambulances:** Rs. 500 crores allocated for e-ambulances, with safety standards set in consultation with the Ministry of Health and Family Welfare (MoHFW).
 - **Demand aggregation:** Managed by Convergence Energy Services Limited (CESL) in cities with populations exceeding 40 lakhs (e.g., Delhi, Mumbai, and Kolkata).

Insta Links:

1. [E-Vehicle Policy](#)

71. ODISHA LEOPARD POPULATION

Context:

Odisha's leopard population has **increased by 22%**, rising from 568 to 696 in two years between 2022 and 2024, despite ongoing concerns about poaching and the illegal trade of leopard skins in the State.

Key Findings from the Odisha Leopard Estimation 2024:

- **Leopard Population Increase:** The number of leopards increased by 22%, rising from 568 to 696 between 2022 and 2024.
- **Geographical Spread:** Leopards are found both within and outside protected areas, with 45% residing outside designated protected zones.

- **Key Habitats:**
 - **Similipal Tiger Reserve:** The largest leopard population, serving as a source population for surrounding areas like Hadagarh and Kuldiha wildlife sanctuaries.
 - **Satkosia and Hiraakud wildlife divisions:** Identified as other key habitats with substantial leopard populations.
- **Challenges:** The population still lags behind the 2018 census estimate of 760, and poaching remains a significant threat with 116 leopards killed between 2018 and 2024.



National Leopard Census (India 2022):

- **National Population:** The leopard population in India stands at 13,874, reflecting an 8% increase from 12,852 in 2018.
- **Top States for Leopards:** Madhya Pradesh has the highest number of leopards (3,907), followed by Maharashtra (1,985), Karnataka (1,879), and Tamil Nadu (1,070).
- **Methodology:** Surveys were conducted using foot patrols and camera traps, yielding over 85,000 images of leopards across 18 states.

Leopard census methodology:

- **Camera traps:** Identification of leopards based on unique rosette patterns.
- **Foot surveys:** Monitoring of pug marks, scrapes, and scats to estimate leopard presence.

Insta Links:

1. [Snow leopard](#)

72. VERY SHORT-RANGE AIR DEFENCE SYSTEM

Context:

The Defence Research and Development Organisation (DRDO) successfully conducted three flight tests of the fourth-generation miniaturized Very Short-Range Air

Defence System (VSHORADS) at the Pokhran Field Firing Ranges in Rajasthan.

VSHORADS: Key features and details:

- **Type:** Fourth-generation Man Portable Air Defence System (MANPAD).
- **Design and development:** Indigenously developed by DRDO's Research Centre Imarat (RCI), Hyderabad, in collaboration with other DRDO laboratories and industry partners.
- **Purpose:** Designed to counter low-altitude aerial threats like helicopters and low-flying aircraft.
- **Range:** Capable of engaging targets at a range of up to 6 km.
- **Technologies incorporated:**
 - **Dual-band IIR seeker:** Ensures precise tracking and targeting of aerial threats.
 - **Miniaturised reaction control system:** Enhances missile maneuverability.
 - **Integrated avionics:** Provides advanced targeting and control.
 - **Dual-thrust solid motor:** Powers the missile for fast response and interception.
- **Portability:** Lightweight and portable design for quick deployment over difficult terrains.
- **Operational capability:** Demonstrated hit-to-kill capability against high-speed targets in various engagement modes (approaching, receding, and crossing scenarios).
- **Development status:** Trials completed with production agencies engaged, paving the way for early user trials and mass production.

Insta Links:

2. [VSHORADS](#)

73. SMALL MODULAR REACTORS

Context:

Nearly 20 years after the India-US civil nuclear deal was signed, Holtec International, a privately-held US company, has emerged as a potential catalyst to finally unlock the commercial potential of the pact.

About Small Modular Reactors (SMRs):

- **Definition:** Advanced nuclear reactors with a power capacity of up to 300 MW per unit, about one-third the size of traditional reactors.
- **Features:**
 - **Small:** Compact size, making them versatile for different sites.
 - **Modular:** Can be factory-assembled and transported for on-site installation.
 - **Reactors:** Use nuclear fission to generate heat and produce energy.

Advantages

- **Longevity:** Designed to operate for 40-60 years with

over 90% capacity factors.

- **Low-Carbon Electricity:** Efficient in generating large amounts of clean energy.
- **Flexibility:** Ideal for remote locations and can be paired with renewable energy in hybrid systems.
- **Cost Efficiency:** Reduced fuel needs, lower staffing, and off-site manufacturing save construction time and costs.
- **Repurposing Sites:** Can be installed on decommissioned thermal power plant sites using existing infrastructure.

Safety Features

- **Enhanced Safety:** Smaller core damage risk, improved seismic isolation, and passive safety features reduce potential radioactive leaks.
- **Simple Design:** Lower likelihood of uncontrolled radioactive releases compared to traditional reactors.

Disadvantages

- **Limited Availability:** Not yet widely used for power generation.
- **Economic Viability:** Requires large-scale production to be cost-effective.
- **Regulatory Challenges:** Licensing for SMRs is complex and costly, designed primarily for larger reactors.

Insta links:

1. [Bharat-small-reactors](#)

74. LSAM 12 (MISSILE CUM AMMUNITION BARGE)

Context:

The Indian Navy marked a significant milestone with the launch of the 'Missile Cum Ammunition Barge, LSAM 12 (Yard 80)', the sixth vessel in the series of eight barges designed to transport ammunition and supplies.

About LSAM 12 (Missile Cum Ammunition Barge)

- **Project details:** Sixth barge of the 08 x Missile Cum Ammunition Barge project, aimed at enhancing the operational logistics of the Indian Navy.
- **Manufacturer:** Built by M/s SECON Engineering Projects Pvt Ltd, Visakhapatnam, an MSME shipyard.
- **Contract:** Agreement for building the barges was signed between the Ministry of Defence (MoD) and SECON on 19 Feb 2021.
- **Purpose:** Facilitates the transportation, embarkation, and disembarkation of ammunition and supplies to naval platforms at jetties and outer harbours.
- **Design and testing:** Indigenously designed under

the regulations of the Indian Register of Shipping with model testing conducted at the Naval Science and Technological Laboratory, Visakhapatnam.

- **Make in India initiative:** Symbolizes India's push for self-reliance in defense manufacturing and aligns with the Government's Make in India policy.

Insta Links:

1. [LSAM 12](#)

75. T-90 BHISHMA TANK

Context:

In a significant stride towards self-reliance, the Indian Army has successfully overhauled its first T-90 Bhisma tank, marking a critical step in enhancing its operational readiness.

About T-90 Bhisma Tank:

- **Origin:** The T-90 Bhisma is a main battle tank of the Indian Army, procured from Russia in 2001, with deliveries starting in 2004.
- **Specifications:**
 - Weighs approximately 47 tonnes.
 - Measures 9.6 meters in length and 2.8 meters in width.
 - Can reach speeds up to 60 km/h, making it highly maneuverable in various terrains like forests and marshes.
- **Firepower:**
 - Equipped with a 125 mm smoothbore gun, capable of firing different types of shells.
 - Features an anti-aircraft gun that can target within a range of 2 kilometers and fire up to 800 shells per minute.
- **Advanced Features:**
 - Sports a new turret weapon station with an upgraded 125 mm gun.
 - Integrated with a highly automated digital fire control system (FCS) to effectively target enemy tanks, self-propelled guns, and other armored targets.
 - Includes a guided missile system capable of destroying armored targets, even those with explosive reactive armor (ERA), with a range of up to 5 kilometers.
- **Crew:**
 - Operated by a crew of three: commander, gunner, and driver.
- **Protection:**
 - Equipped with a Nuclear-Biological-Chemical (NBC) protection system to safeguard the crew in hazardous environments.

Insta links:

1. [Ladakh-security](#)

76. THAAD MISSILE SYSTEM

Context:

In response to escalating tensions in West Asia, particularly with Iran's missile attacks on Israel, the U.S. has decided to deploy the Terminal High Altitude Area Defense (THAAD) missile system to bolster Israel's air defense.

About THAAD:

- **Purpose:** THAAD is a missile defense system designed to intercept and destroy short- to medium-range ballistic missiles during their final flight phase.
- **Key features:**
 - Uses a powerful radar to detect incoming missiles.
 - Does not rely on warheads; instead, it uses kinetic energy to destroy missiles, making it a safer defense system.
- **Range:** THAAD can hit targets at ranges of 150 to 200 kilometers.
- **Contractor:** Lockheed Martin is the primary contractor behind the THAAD system.
- **Deployment:** First deployed in 2008, THAAD is considered a complementary system to the Patriot missile defense but covers a wider area of defense.

Insta links:

[Why-china-is-opposing-thaad-defence-systems-in-south-korea](#)

77. SAMARTHAK VESSEL

Context:

The first of two multi-Purpose Vessels (MPVs) for the Indian Navy, built by L&T Shipyard, was launched at Kattupalli, Tamil Nadu.

- The ship, named 'Samarthak,' is part of India's broader efforts to promote indigenous shipbuilding in line with the 'Aatmanirbhar Bharat' and 'Make in India' initiatives.

About Samarthak Vessel:

- **Name:** Samarthak, meaning 'Supporter,' symbolizing its multi-dimensional capabilities.
- **Shipyard:** L&T Shipyard, Kattupalli, Tamil Nadu.
- **Specifications:**
 - **Length:** 106 meters.
 - **Width:** 16.8 meters.
 - **Speed:** Maximum of 15 knots.
- **Capabilities:**
 - Towing ships.
 - Launching and recovering targets.
 - Operating unmanned autonomous vehicles.
 - Serving as a platform for trials of indigenous weapons and sensors.

- **Significance:** The ship demonstrates India's growing capabilities in indigenous shipbuilding, aligned with national defense and economic strategies.

Insta links:

1. [Survey-vessel-Sandhayak](#)

78. 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](#)

79. 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-berge](#)

80. 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:

2. [SSBN](#)

81. FAST PATROL VESSELS

Context:

The Indian Coast Guard (ICG) launched two Fast Patrol Vessels (FPVs) '[Adamya](#)' and '[Akshar](#)', marking a milestone in its commitment to enhanced maritime security and indigenous manufacturing.

- These vessels, built by Goa Shipyard Ltd. (GSL) with over 60% indigenous content, are part of an eight-vessel contract valued at Rs. 473 crores.

About Fast Patrol Vessels (FPVs):

- **Dimensions:** 52 meters in length and 8 meters in breadth; displacement of 320 tons.
- **Performance:** Equipped with a Controllable Pitch Propeller-based propulsion system, with a top speed of 27 knots.
- **Indigenous manufacturing:** Over 60% of components are domestically sourced, supporting India's self-reliance in defense.
- **Primary roles:**
 - **Fisheries protection:** Monitoring foreign trawlers in Indian waters.
 - **Coastal patrol:** Regular patrols of the Exclusive Economic Zone (EEZ) and coastal areas.
 - **Anti-smuggling:** Prevents smuggling activities in Indian maritime territory.
 - **Search and rescue:** Conducts search and rescue missions for distressed vessels or personnel.
 - **Communication link:** Provides essential communication channels during conflicts or emergencies.
 - **Escort services:** Escorts coastal convoys during hostilities or wartime conditions.

Insta links:

1. [Operation-Sajag](#)

82. MILITARY EXERCISES

Context:

India participated in two notable joint exercises involving its Special Forces: **Exercise VAJRA PRAHAR** with the United States and **Exercise GARUD SHAKTI** with Indonesia.

About Exercise VAJRA PRAHAR:

- **Participants:** Indian Army Special Forces and the US Army Green Berets.
- **Location:** Orchard Combat Training Centre, Idaho, USA
- **Purpose:** To enhance cooperation, joint operations capability, and interoperability between Indian and US Special Forces.
- **Training Focus:**
 - Execution of joint missions in desert and semi-desert conditions.
 - Tactics, including joint planning, reconnaissance missions, use of Unmanned Aerial Systems, and psychological warfare.

About Exercise GARUD SHAKTI:

- **Participants:** Indian Parachute Regiment (Special Forces) and Indonesia's Special Forces, Kopassus.
- **Location:** Cijantung, Jakarta, Indonesia.
- **Purpose:** To boost cooperation, enhance tactical knowledge, and improve interoperability between Indian and Indonesian Special Forces.
- **Training Focus:**
 - Special operations in jungle terrain, strikes on terrorist camps, and tactical drills.
 - Sharing information on weapon systems, equipment, and specialized techniques.

Insta Links:


2. [Bilateral-and-Multilateral-military-exercises](#)

INSIGHT SHORTS

Topic	Why in news?
1. IDEX (ADITI 2.0) CHALLENGE	Offers 19 challenges in AI, Quantum Tech, anti-drone systems, with grants up to ₹25 crore for iDEX winners.
2. DISC 12 CHALLENGE	Presents 41 challenges in UAVs, AI, and communication, including MIRA initiative, with grants up to ₹1.50 crore for start-ups/MSMEs.
3. INDIAN INSTITUTE OF FOREIGN TRADE	The iconic India Pavilion at the Expo City in Dubai will host the first overseas campus of Indian Institute of Foreign Trade (IIFT).
4. NEPAL AND INDIA	Both nations have reached the B2B Framework Agreement regarding the development of petroleum infrastructure in Nepal.
5. FRANCE AND INDIA	Both nations jointly will be setting up an aeronautics cluster as well as developing an Indo-French campus for professional training in aeronautics and space.
6. LORD'S RESISTANCE ARMY	A <u>Ugandan</u> 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.
7. GREAT INDIAN BUSTARD	<ul style="list-style-type: none"> • <u>Suda, a three-year-old male</u> 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. • <u>Tony, a five-year-old female GIB</u> 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 <u>Sam breeding centre</u> is one of <u>two main sites</u> dedicated to the Great Indian Bustard conservation project. Alongside the <u>Ramdevra centre</u>, it plays a vital role in the breeding and recovery of the species.
8. JOYA-LA BARRETA PARK	People attend a stargazing and comet-watching gathering at Joya-La Barreta ecological park in <u>Queretaro, Mexico</u>

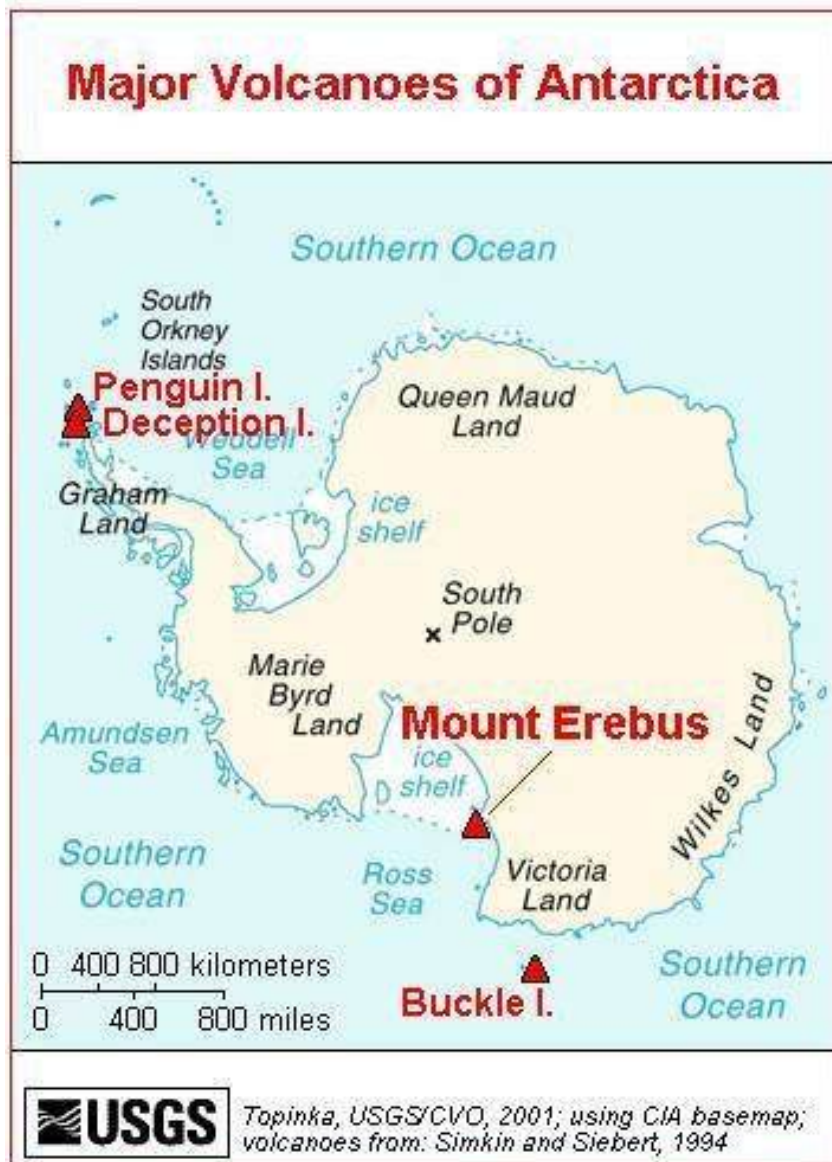
MAPPING

INTERNATIONAL

Place	Why in News?
<p>1. CANARY ISLAND</p>	<p>Context: Rescue crews renewed the search for about 48 migrants missing since their boat capsized near the Spanish island of El Hierro in what threatens to be the deadliest such incident in 30 years of crossings from Africa to the Canary Islands</p>  <p>About Canary Islands:</p> <ul style="list-style-type: none"> • The archipelago located in Atlantic Ocean, 1,300 km south of Spain and 115 km west of Morocco. • Part of Spain. • Originated from millions of years ago volcanic eruptions. • Subtropical climate with warm temperatures and minimal seasonal variation. • Rich volcanic soil supports diverse vegetation with plant species varying based on elevation. <p>El Hierro Island:</p> <ul style="list-style-type: none"> • Location: El Hierro is the southernmost and westernmost of the Canary Islands, located off the coast of Africa. • Features: Known as the “Meridian Island”, El Hierro is the second-smallest of the main Canary Islands, covering an area of 268.51 square kilometers. <ul style="list-style-type: none"> ○ The island is characterized by volcanic landscapes, rugged terrain, and a subtropical climate. • Capital city: Valverde and the island has a population of about 11,659 (2023).

2. MOUNT EREBUS

Context: Mount Erebus in Antarctica, the southernmost active volcano, stands out by not only being active in the extreme cold but also emitting micro-crystals of gold.



About Mount Erebus:

- **Location:** Ross Island, Antarctica; southernmost active volcano on Earth.
- **Volcano type:** Stratovolcano, characterized by a conical shape formed from layers of lava and ash.
- **Discovery:** Discovered in 1841 by British explorer Sir James Clark Ross, named after his ship HMS Erebus.
- **Elevation:** Stands at 3,792 meters (12,441 feet), the second-highest volcano in Antarctica.
- **Lava lake:** Known for its persistent lava lake, active since at least 1972, one of the few long-lived lava lakes globally.
- **Eruptions:** Features Strombolian eruptions, with occasional ejection of molten lava bombs.
- **Proximity to research stations:** Monitored closely due to its proximity (40 km) to McMurdo Station (U.S.) and Scott Base (New Zealand).

Insta Links:

1. [Mount Erebus](#)

3. VUHLEDAR

Context: In Ukraine, Russian troops have taken complete control of the eastern city of Vuhledar.



1. Vuhledar Overview

2. • Located in Volnovakha Raion, Donetsk Oblast, eastern Ukraine.
3. • Positioned on an elevated plain, offering strategic importance.
4. • Russia aims to advance north to reach regional transportation hubs.
5. • Developed in the 1960s, intended to become a major economic center linked to Donbas region’s coal industry.
6. • Located in a historically coal-rich area, Vuhledar’s economy is linked to coal mining.

4. LITTLE PRESPIA LAKE

Little Prespa Lake’s Decline and Impact



- Located on the Albanian-Greek border, mostly in Greek territory, with a small part in Albania.
- Part of a transboundary ecosystem rich in biodiversity, home to species like the Dalmatian pelican.
- Crucial for local biodiversity, supporting various species of birds, fish, and plants.
- Environmental threats include climate change, human interference, and the diversion of the Devoll River for irrigation.
- Current condition: 430 hectares of the lake in Albania have dried up or turned into swamps.
- Cultural & economic impact: Fishing was a primary livelihood, now relying on cattle grazing due to lake deterioration.

5. CHAGOS ARCHIPELAGO

Context: The U.K. and Mauritius have reached an agreement on the return of the Chagos Archipelago to Mauritian sovereignty, resolving a long-standing dispute. This development, involving the strategic Diego Garcia base, is seen as a completion of Mauritius' decolonisation process.



Chagos Archipelago History

- Claimed by Britain and Mauritius in 1814.
- Separated by U.K. in 1965 to form British Indian Ocean Territory (BIOT).
- Diego Garcia leased to U.S. in 1966 for military base, displacing native Chagossian population.
- Legal disputes persist, with Mauritius claiming sovereignty since 1968.
- International Court of Justice ruled in 2019 to return Chagos Islands to Mauritius.

Geographical location of Chagos Archipelago:

- Location: Central Indian Ocean, 1,600 km south of India's southern tip.
- Key Islands: Diego Garcia, Peros Banhos, Danger Island.
- Climate: Tropical marine, moderated by trade winds.
- Disputed Nations: U.K., Mauritius, U.S. due to Diego Garcia military base.

6. MY QUYNH SAFARI PARK

Context: An outbreak of the H5N1 bird flu virus has caused the deaths of several large carnivores in zoos in southern Vietnam. This highlights the risks posed by zoonotic diseases not just to wildlife but also to human health, as the virus has the potential to infect mammals and, in rare cases, humans.

Cause:

- The animals, including **47 tigers, 3 lions, and a panther, died due to the H5N1 bird flu** virus, confirmed by the National Center for Animal Health Diagnosis. The virus, typically associated with avian species, caused fatalities among these large mammals in August and September 2024.



Zoo locations:

1. **My Quynh Safari Park:**

- **Location:** Long An Province, southern Vietnam.
- **Distance:** South of Ho Chi Minh City.
- **Proximity:** It is a private safari park known for housing various wildlife, including large carnivores.

2. **Vuon Xoai Zoo:**

- **Location:** Dong Nai Province, near Ho Chi Minh City.
- **Distance:** Approximately 40 km northeast of Ho Chi Minh City.
- **Proximity:** Close to urban centers, making it a popular tourist attraction with a variety of animals.

Note: For exam purpose just try to remember the parks and zoo name, which country it is located in and why it was in news.

7. SUDAN CIVIL WAR

Context: The Sudanese Armed Forces (SAF) launched a major offensive against the paramilitary Rapid Support Forces (RSF) in Khartoum and Bahri. Thus, the war which was quiet for a few months has gained momentum again. Eighteen months into the civil war, the UN said that more than 20,000 people have been killed.

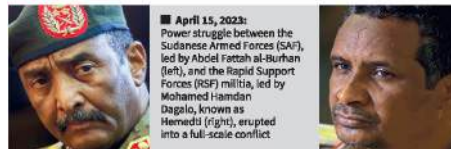
Places in news:

A multifaceted war

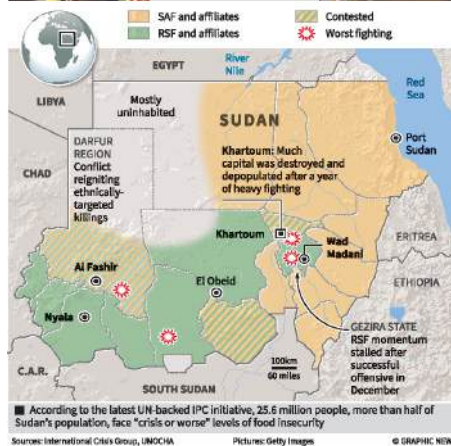
The ongoing civil war in Sudan has killed more than 20,000 people, according to the United Nations. Additionally, the International Organization for Migration has estimated a record 10,890,722 internally displaced people in Sudan.



To the brink: Displaced people queue for food aid at a camp in Gedaref, Sudan on September 23, AFP



April 15, 2023: Power struggle between the Sudanese Armed Forces (SAF), led by Abdel Fattah al-Burhan (left), and the Rapid Support Forces (RSF) militia, led by Mohamed Hamdan Dagalo, known as Hemedti (right), erupted into a full-scale conflict.



1. **Khartoum and Bahri:** Major sites where the Sudanese Armed Forces (SAF) launched a renewed offensive against the Rapid Support Forces (RSF).
2. **Omdurman:** One of the conflict zones that experienced spread of violence beyond the initial fighting in Khartoum.
3. **El Fasher:** Located in Darfur, heavily impacted by clashes and a critical area in the ongoing humanitarian crisis.
4. **Darfur and Kordofan States:** Regions facing severe humanitarian issues, including famine and ethnic-targeted violence due to the conflict.
5. **Zamzam Camp, North Darfur:** Declared as having famine conditions, hosting nearly 500,000 internally displaced persons (IDPs).
6. **Jazeera State:** Facing food insecurity crisis similar to conditions in Zamzam camp due to the ongoing conflict.
7. **El Fashaga Region:** Border area with Ethiopia, witnessing frequent clashes over agricultural land amid the ongoing instability.
8. **Abiey Region:** Disputed land between Sudan and South Sudan, with increased ethnic violence and over 100 casualties reported.

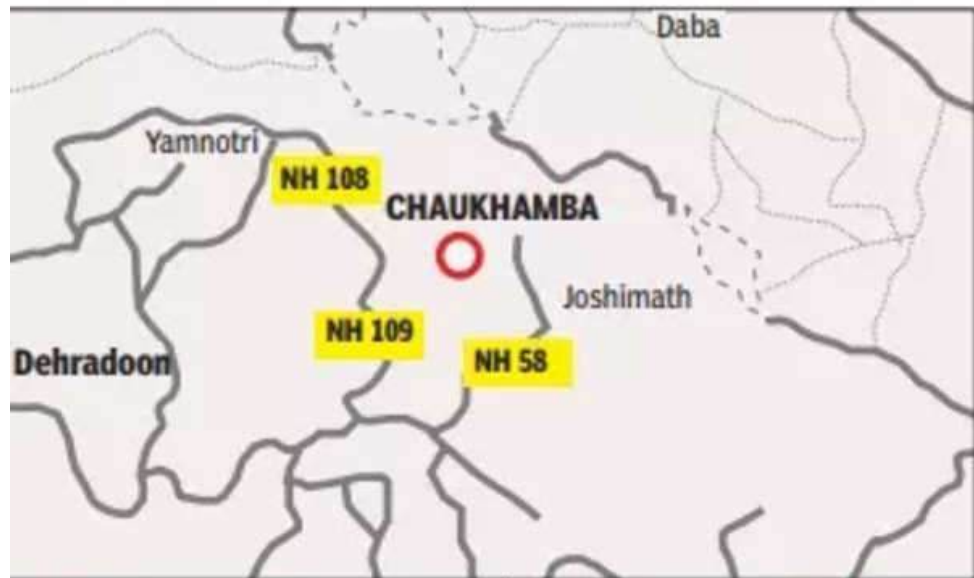
Insta links:

1. [Darfur-Sudan](#)

8. CHAUKHAMBA III PEAK

Context: Recently, two foreign climbers, Michelle Theresa Dvorak (USA) and Fay Jane Manners (UK), were rescued from an elevation of 6,015 meters near the Chaukhamba III peak in Chamoli district, Uttarakhand.

4 SDRF MEMBERS DEPLOYED AT BASE CAMP



Challenges faced by stranded climbers:

- 1) Extreme cold conditions
- 2) Threat of avalanche and snow storm
- 3) Living in hostile conditions without a tent
- 4) Living at such high altitude without essential supplies
- 5) Living in isolation
- 6) Threat of hypothermia
- 7) Lack of oxygen

Challenges faced by the rescue team:

- 1) Bad weather condition for helicopters to fly at such high altitude
- 2) Difficult terrain for the rescue personnel to physically climb the mountain
- 3) No communication network in the area.
- 4) No exact information about the location of the stranded climbers

About Chaukhamba:

- **Location:** Part of the Gangotri Group in the Garhwal Himalayas, Uttarakhand, India.
- **Proximity:** Located west of Badrinath at the head of the Gangotri Glacier.
- **Summits:**
 - **Chaukhamba I:** 7,138 m (23,419 ft) — the tallest in the Gangotri range.
 - **Chaukhamba II:** 7,070 m (23,196 ft).
 - **Chaukhamba III:** 6,995 m (22,949 ft).
 - **Chaukhamba IV:** 6,854 m (22,487 ft).
- **Significance:** Forms the eastern anchor of the Gangotri Glacier and a prominent massif in the Garhwal Himalayas.

Insta links:

1. [Gangotri-national-park](#)
2. [Char-dham](#)

9. NILE RIVER BASIN COOPERATIVE FRAMEWORK AGREEMENT

Context: The Nile River Basin Cooperative Framework Agreement (CFA) came into force on October 13, 2024, after over a decade of negotiations, aiming to promote equitable and sustainable use of the Nile’s water resources.



About Nile River Agreement:

1. **Origin:** The CFA replaces colonial agreements from 1929 and 1959 that gave Egypt veto powers over Nile usage.
2. **Amendments:** The CFA introduces Article 14b, ensuring no significant effect on water security for any Nile Basin State.
3. **Nations involved:** Negotiated among nine Nile Basin countries (Burundi, DR Congo, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, Uganda) and later ratified by five nations (Burundi, Ethiopia, Rwanda, Tanzania, Uganda) and South Sudan acceded.
4. **Nations rejecting:** Egypt and Sudan opposed the CFA, particularly Article 14b, citing concerns about water security.

Nile River Facts:

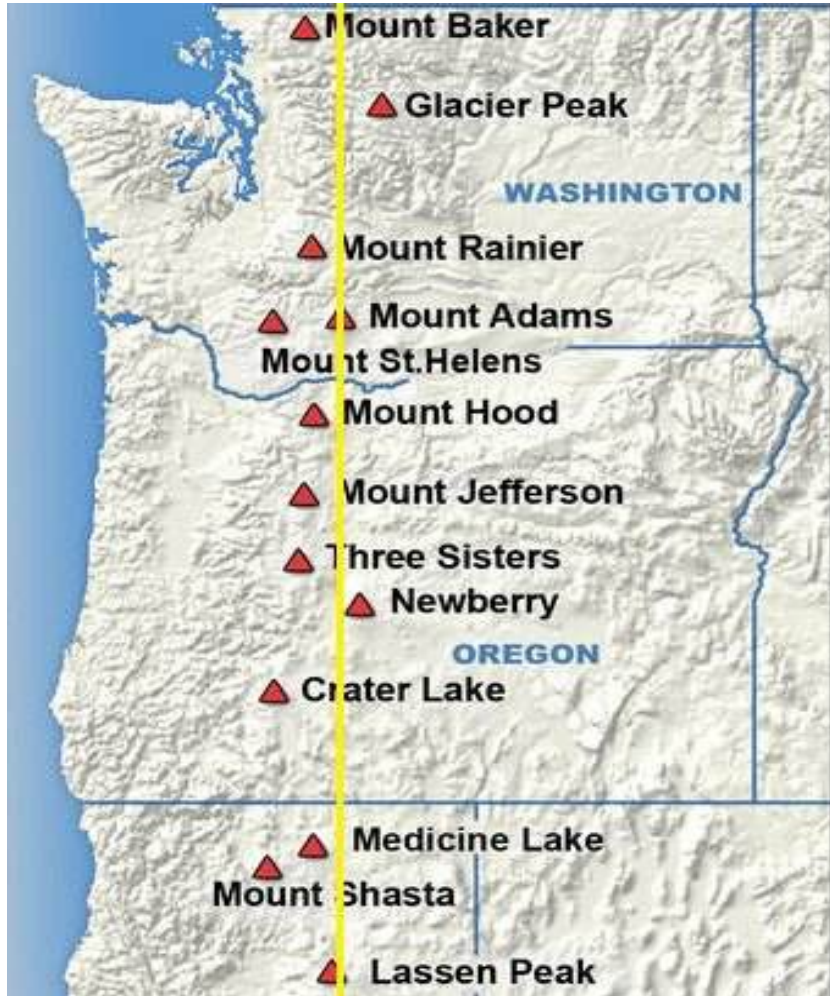
1. **Length:** The Nile is one of the world’s longest rivers, stretching approximately 6,695 kilometers.
2. **Sources:** Main sources include Lake Victoria, the Blue Nile, the White Nile, and the Kagera River.
3. **Countries involved:** The Nile Basin includes parts of Tanzania, Burundi, Rwanda, Congo (DRC), Kenya, and Egypt.
4. **Delta:** The river forms an arcuate delta as it flows into the Mediterranean Sea.
5. **Principal streams:** The Nile is fed by three main tributaries – the Blue Nile, Atbara, and White Nile.

Insta links:

1. [River-Nile](#)

10. MOUNT ADAMS

Context: Mount Adams, the largest volcano in Washington, has shown an increase in seismic activity after lying dormant for thousands of years, recent reports suggest.



About Mount Adams:

- **Location:** Washington State, USA.
- **Height:** 12,277 feet (3,742 meters), making it the largest active volcano in Washington by volume.
- **Width:** 18 miles (29 kilometers).
- **Volcanic field:** Lies within the Mount Adams volcanic field, a 1,250 sq.km area with over 120 basaltic volcanoes.
- **Glaciers:** Supports over 10 active glaciers, providing vital water to surrounding ecosystems.
- **Last eruption:** Occurred between 3,800 and 7,600 years ago.

Stratovolcano characteristics:

- **Definition:** Tall, steep, cone-shaped volcanoes.
- **Composition:** Built from layers of ash and lava.
- **Eruption style:** Magma is viscous and gas-rich, causing explosive eruptions.
- **Formation:** Occur at tectonic plate margins where continental plates override oceanic plates.
- **Prevalence:** Comprise ~60% of Earth's volcanoes, with 85% around the Pacific's "Ring of Fire."

Insta links:

2. [Types of volcano](#)
3. [Mount-Ruang-Indonesia](#)

11. ITALY-ALBANIA MIGRATION PACT

Context: The first people to be intercepted at sea by the Italian navy under a controversial migration deal with Albania are on their way to the Balkan nation to have their asylum claims processed.

About Pact:

1. **Migration pact signed:** Italy’s far-right Prime Minister, Giorgia Meloni, and Albanian Prime Minister, Edi Rama, signed a pact in November 2022 to manage asylum claims of migrants.
2. **Asylum processing in Albania:** Under the agreement, migrants intercepted at sea are sent to Albania, where their asylum claims are processed.
3. **Screening criteria:** Only men from “safe” countries such as Bangladesh and Egypt are sent to Albania; vulnerable individuals, including women, children, and men with illnesses or signs of torture, are taken to Italy.
4. **Places in news:**
 1. **Schëngjin:** Port where intercepted migrants arrive in Albania.
 2. **Gjadër:** Location of the former Albanian air force site used to hold migrants while processing their asylum claims.
 3. **Lampedusa:** Southern Italian Island where vulnerable migrants are taken after screening.



Insta links:

1. [Albania](#)

12. COOGEE BEACH

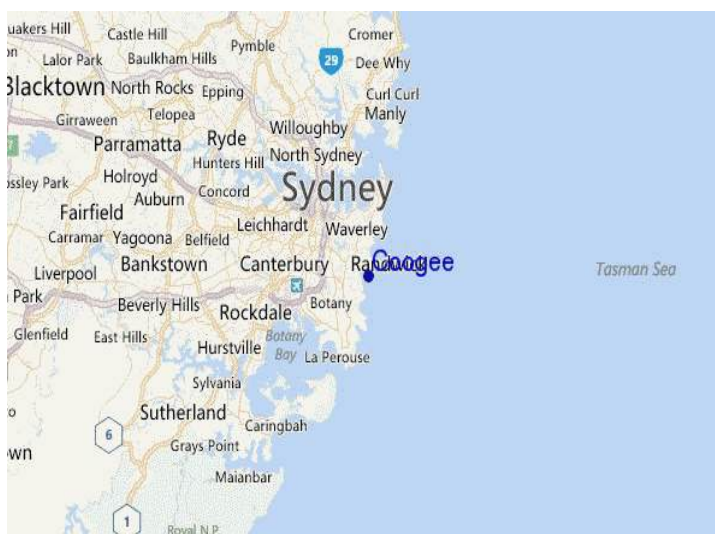
Context:

Tar balls:

- **Formation:** Result from **oil spills**, forming when oil mixes with seawater, sand, and debris, creating a hardened substance.
- **Size & texture:** Vary from small pebbles to fist-sized, with smooth or rough surfaces depending on environmental exposure.
- **Environmental impact:** Pose significant hazards to marine life and human health due to toxic components like **polycyclic aromatic hydrocarbons (PAHs)**.

Location in the news:

- **Coogee Beach, Sydney:** On October 15, 2024, black, ball-shaped debris, potentially tar balls, were discovered along the length of the beach.



Insta links:

2. [Brown carbon tar balls](#)
3. [Australia](#)

13. HWANGE NATIONAL PARK

Context: Hwange National Park, Zimbabwe’s largest wildlife reserve, recently became the center of attention due to the discovery of three poached lions.

About Hwange National Park:

- **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:**
 - 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:**
 - Poaching, though under control, continues to target species like lions, elephants, and rhinos.
 - Trophy hunting contributes to challenge.



Insta links:

1. [ZiG](#)

14. REFUGEE CAMPS IN THE GAZA STRIP

Context: Israeli military strikes resulted in the deaths of at least 45 Palestinians in the Gaza Strip, primarily affecting the northern regions, according to Palestinian health officials.

Places in news:

The United Nations Relief and Works Agency ([UNRWA](#)) provides essential services within eight recognized refugee camps in the [Gaza Strip](#). However, the agency does not police or govern these camps, as those responsibilities lie with local authorities.

- **Beach Camp:** Densely populated along the coast.
- **Bureauj Camp:** Central Gaza camp, heavily affected by conflicts.
- **Deir El-Balah Camp:** Serves many refugees in central Gaza.
- **Jabalia Camp:** Largest camp in Gaza Strip, faces overcrowding and poor infrastructure.
- **Khan Younis Camp:** Serves a large population in southern Gaza.
- **Maghazi Camp:** Smaller central Gaza camp, affected by economic hardships.
- **Nuseirat Camp:** More populated near Bureij.
- **Rabah Camp:** Located near Gaza-Egypt border, heavily impacted by border conflicts



NOTE: These locations and names are very important for prelims; please make note of them.

Insta links:

2. [Israel-Palestine-issue](#)
3. [UNRWA](#)

15. NEOM PROJECT

Context: Saudi Arabia has taken a significant step toward realizing its ambitious NEOM project by opening its first luxury tourism site, an island called Sindalah.



About NEOM project:

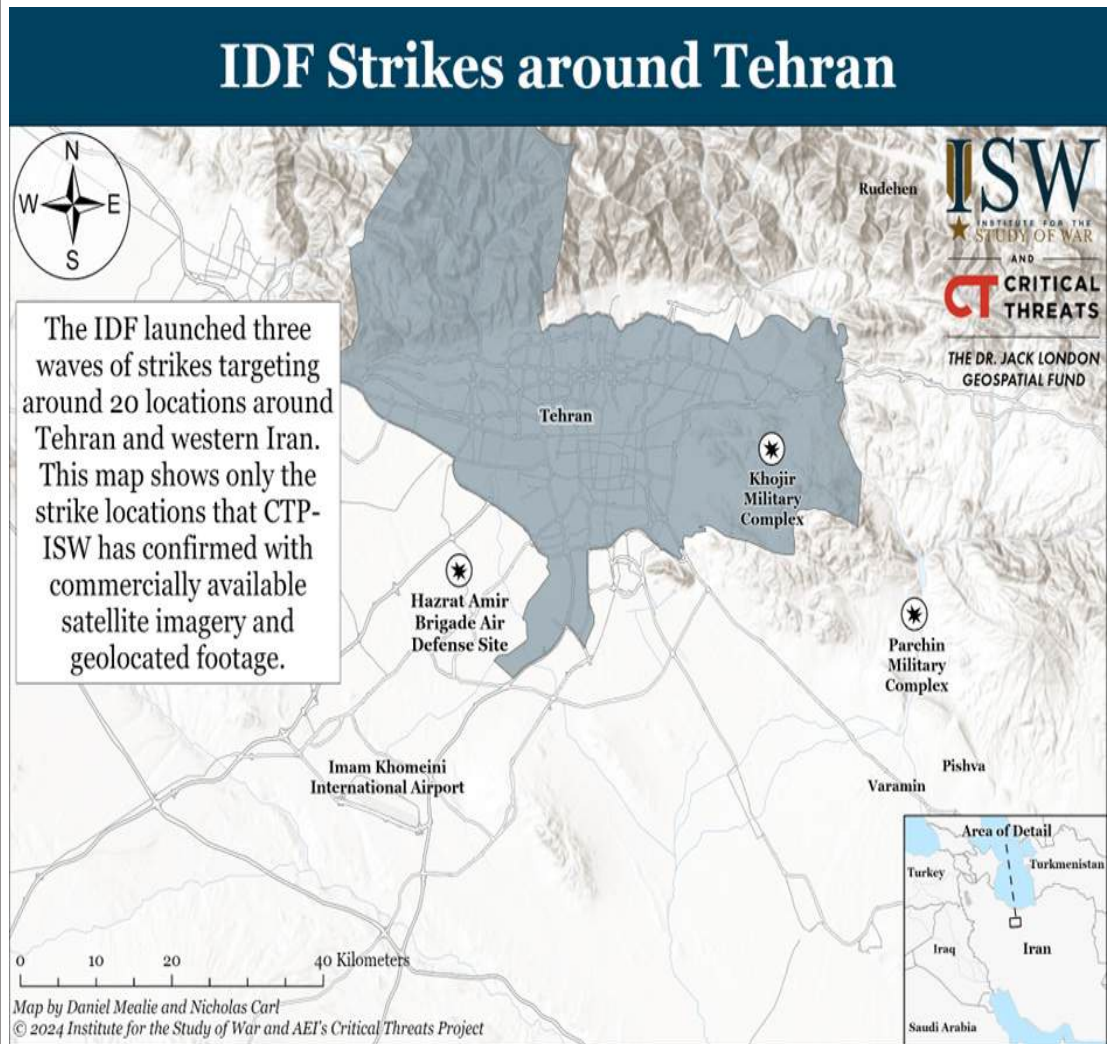
- **Purpose:** NEOM seeks to establish Saudi Arabia as a global luxury tourism and investment hub while advancing sustainable, high-tech urban development.
- **Features:** It includes innovative concepts like *The Line*, twin skyscrapers spanning 170 km, a floating industrial complex called *Oxagon*, and *Trojena*, a mountainous skiing and leisure area.
- **Sindalah Island:** The first open site, Sindalah is a 840,000 square-meter luxury island aiming to attract global tourists and investors with high-end facilities, yachting berths, and a capacity of up to 2,400 guests daily by 2028.

Insta links:

4. [India - Saudi Relations](#)

16. IRANIAN MILITARY BASES

Context: Recent satellite imagery reveals damage at two Iranian military bases following a suspected Israeli airstrike. The **Parchin base**, historically linked to Iran’s nuclear activities, and **Khojir**, associated with ballistic missile development, both sustained damages.



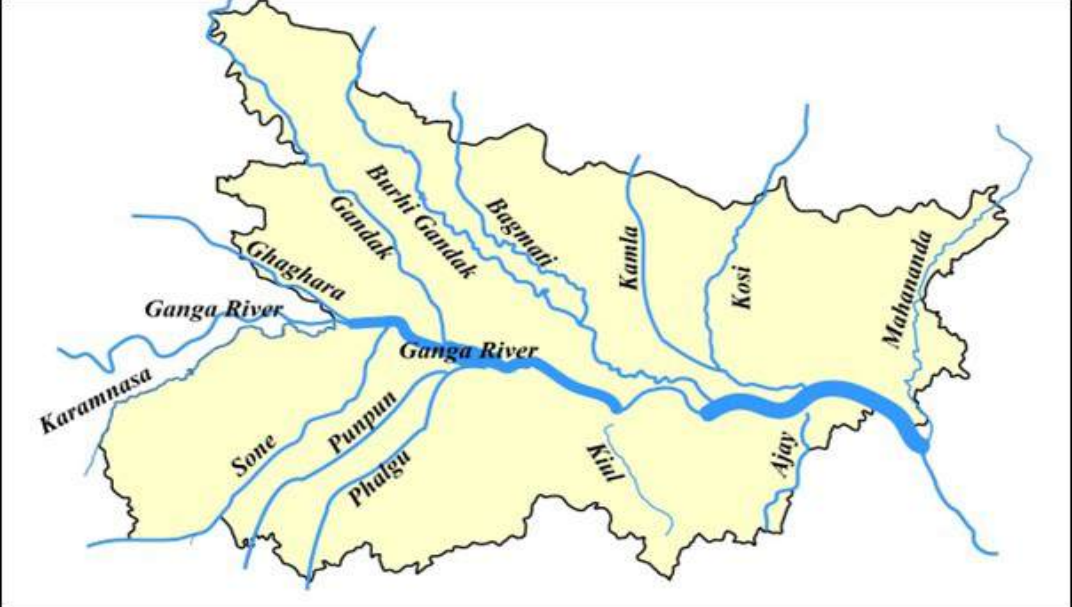
Locations in news:

- **Parchin Military Base:**
 - **Location:** Approximately 40 kilometers southeast of Tehran, near the Mama-lu Dam.
 - **Significance:** Historically linked to Iran’s nuclear weapons program. The IAEA has suspected it as a test site for explosives that could trigger a nuclear weapon.
 - **Damage:** Satellite imagery shows one building destroyed and others damaged. The site includes “**Taleghan 2**,” a facility identified as containing an explosive testing chamber and flash X-ray system.
- **Khojir Military Base:**
 - **Location:** Roughly 20 kilometers from Tehran, this base includes underground facilities and a tunnel system.
 - **Significance:** Known for housing missile production facilities and is vital to Iran’s ballistic missile program.
 - **Damage:** Satellite images reveal destruction at two structures, impacting Iran’s missile manufacturing capability.

Insta links:

1. [Places in News](#)

INDIAN

Place	Why in News?
<p>1. BAGMATI RIVER</p>	<p>Context: The death toll due to persistent downpours triggered flooding and landslides across Nepal rose to 112, according to the Nepal Police database.</p>  <p>About Bagmati River:</p> <ol style="list-style-type: none"> Origin: Bagdwar in the Shivapuri Hills, located northwest of the Kathmandu Valley, Nepal, at an elevation of around 2,690 meters (8,825 feet). Course: <ul style="list-style-type: none"> It flows through the Kathmandu Valley, passing through Chovar Gorge. The river then flows southward through the Shivalik Range and into the Terai region of Nepal. It enters the Indian state of Bihar and flows southeastward, eventually joining the Burhi Gandak River. Countries: Flows through Nepal and India. Tributaries: Manohara and Bishnumati Rivers. End: The river empties into the Burhi Gandak River after a course of 360 km (225 miles). Cities: Kathmandu, Lalitpur, and Birgunj in Nepal, and it passes through rural regions in Bihar, India. Cultural Significance: <ul style="list-style-type: none"> The river is considered sacred by Hindus and Buddhists. <p>It is home to the famous Pashupatinath Temple (UNESCO World Heritage Site) in Kathmandu and the Gokarneswor Temple.</p>

2. ETURNAGARAM WILDLIFE SANCTUARY

Context: A catastrophic weather event flattened an estimated 50,000 trees over 332 hectares in Eturnagaram Wildlife Sanctuary in Mulugu, Telangana



About Eturnagaram wildlife sanctuary:

- **Location:** Situated in Mulugu district, Telangana, near the borders of Maharashtra and Chhattisgarh, 100 km from Warangal and 250 km from Hyderabad.
- **Established:** Declared a wildlife sanctuary in 1952 by the Hyderabad Nizam Government.
- **Area:** Spans over approximately 806 sq. km.
- **Water bodies:** Dayyam Vagu stream divides the sanctuary, with the Godavari River also flowing through it.
- **Flora:** Dominated by tropical dry deciduous forests with species like teak, bamboo, madhuca, and terminalia.
- **Fauna:** Home to diverse wildlife including tigers, leopards, panthers, wolves, sloth bears, blackbucks, nilgai, sambar, and four-horned antelope. Hosts reptiles like Muggers crocodiles, cobras, pythons, and kraits.
- **Cultural significance:** Contains the famous Sammakka-Saralamma Temple within its boundaries.

Insta links:

3. [Eturnagaram-amrabad-wildlife-sanctuaries](#)

3. GANGA-RAMCHAK AND GANGARAM-CHAK-BHADULIA COAL MINE

Context: At least five people were killed in an explosion at a coal mine in West Bengal's Birbhum district.



Places in news:

1. **Birbhum District, West Bengal:**

- **Location:** Birbhum is located in the western part of the state of West Bengal, India.
- **Mineral extracted:** Known for coal mining, with several mines operating in the region, including the Gangaramchak and Gangaramchak-Bhadulia coal mines.

2. **Gangaramchak and Gangaramchak-Bhadulia coal mine:**

- **Location:** These coal mines are situated in the Khoyrasole block of Birbhum district, West Bengal.
- **Mineral extracted:** Primarily coal, used for energy production by the West Bengal Power Development Corporation Ltd. (WBPDC).

3. **Khoyrasole Block:**

- **Location:** A block under Lokpur police station in Birbhum district, West Bengal.
- **Mineral extracted:** Coal mining activities are prominent in this area.

4. **Mohammad Bazar Area, Birbhum district:**

- **Location:** A locality in Birbhum district, West Bengal, India.
- **Mineral extracted:** Known for stone quarrying and mining activities, including the presence of explosive materials used for mining operations.

Insta links:

4. [Coal-sector-reforms](#)

4. PADMAJA NAIDU HIMALAYAN ZOOLOGICAL PARK

Context: The Red Panda Program of Darjeeling’s Padmaja Naidu Himalayan Zoological Park has been selected as a finalist for the World Association of Zoos and Aquariums (WAZA) Conservation Award 2024.

About Red Panda

- **Diet:** Primarily herbivorous, consuming bamboo, berries, acorns, and occasionally small mammals.
- **Behavior:** Shy, solitary, and arboreal; uses its bushy tail for balance and warmth in winter.
- **Habitat:** Lives in the mountainous forests of Bhutan, China, India, Myanmar, and Nepal, with nearly 50% of its habitat in the Eastern Himalayas.
- **Conservation Status:**
 - **IUCN Red List:** Endangered
 - **CITES:** Appendix I
 - **Wildlife Protection Act 1972 (India):** Schedule I
- **Threats:** Habitat loss due to deforestation and decline in bamboo forests are major threats to red panda populations.

About Padmaja Naidu Himalayan Zoological Park:



- **Location:** Darjeeling, West Bengal, India.
- **Established:** 1958; situated at an elevation of 7,000 feet (2,134 m).
- **Size:** 67.56 acres (27.3 hectares), making it the largest high-altitude zoo in India.
- **Specialization:** Focuses on breeding animals adapted to alpine conditions, with successful programs for species like snow leopards, Himalayan wolves, and red pandas.
- **Conservation Efforts:**
 - Plays a central role in India’s red panda conservation and breeding efforts.
 - Houses a Biobanking and Genetic Resource Facility to preserve gametes, tissues, and DNA of endangered species.
- **Recognition:** Attracts around 300,000 visitors annually and is a member of the World Association of Zoos and Aquariums (WAZA).
- **Legacy:** Named after Padmaja Naidu, the daughter of Sarojini Naidu, in recognition of her contributions to Indian society.

Insta links:

5. [Red panda](#)

5. KARANPURA COALFIELD

Context: Recent studies using microscopic palynomorphs, organic remains, and geochemical assessments have indicated significant hydrocarbon generation potential in the South Karanpura coalfield, specifically in the eastern Sirka region of Jharkhand.



About South Karanpura coalfield:

- **Location:** Situated in the Ramgarh district of Jharkhand, India, forming an elongated strip along the Chingara fault.
- **Reserves:** Covers an area of approximately 195 square kilometers, with coal reserves estimated at 5,757.85 million tonnes.
- **Mineral richness:** Primarily consists of coal, carbonaceous shale, and sandstone layers, known for its significant deposits of workable coal.
- **Recent features:** High potential for hydrocarbon generation, especially in the eastern Sirka coalfield compared to the Giddi coalfield, with promising conditions for coal bed methane and shale gas exploration.

About Shale gas:

- Shale gas and oil **are unconventional natural resources**. They are found **at 2,500-5,000 metres below** the earth's surface.
- They are deeper in comparison to conventional crude oil found at 1,500 metres. The process of extracting shale oil and gas requires **deep vertical drilling followed by horizontal drilling**.
- The most common way to extract shale gas is '**hydraulic fracturing**' (**fracking**). Shale gas is trapped under low permeable rocks.

Insta links:

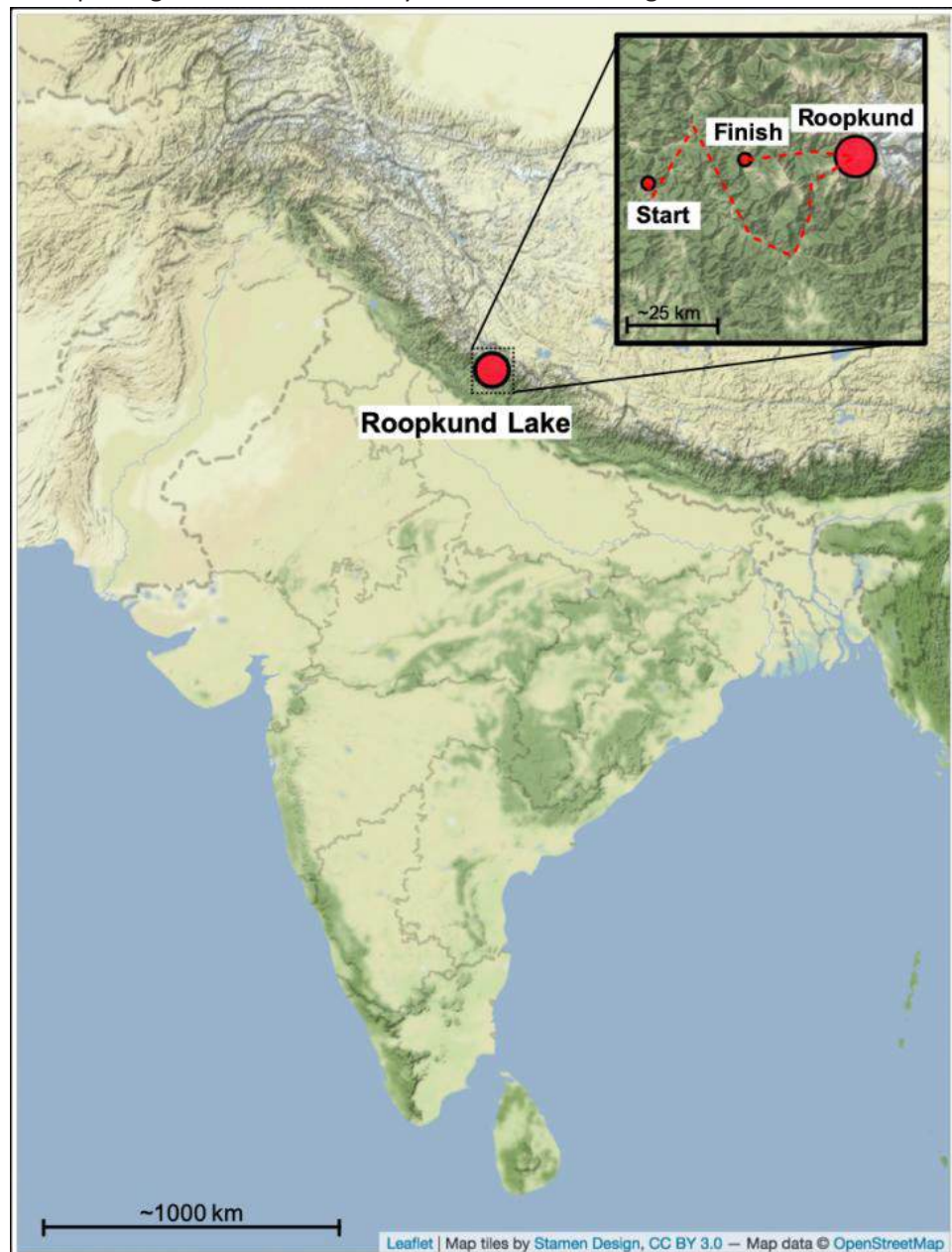
4. [DD NEWS](#)

6. ROOPKUND LAKE

Context: Roopkund Lake, the site has drawn significant attention due to the mystery surrounding the skeletons' origins. However, environmental changes linked to climate change are shrinking the lake, raising concerns about its future.

About Roopkund lake:

- **Origin:** Glacial lake at Mt Trishul base in Uttarakhand, India.
- **Feeds by melting snow and glaciers.**
- **Geographical location:** Chamoli district, Nanda Devi National Park.
- **Historical mystery:** The lake contains human skeletons that date back to 850 AD, with DNA studies suggesting two distinct groups of people, likely pilgrims, who died from a hailstorm.
- **Current issue:** Climate change is shrinking the lake, reducing its depth and area due to shifting precipitation patterns and increased silting from moraine slides, impacting both the lake's ecosystem and cultural significance.



Insta links:

5. [Nature](#)

7. SRI SINGEESWARAR TEMPLE

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.



About Singeeswarar Temple (Mappedu):

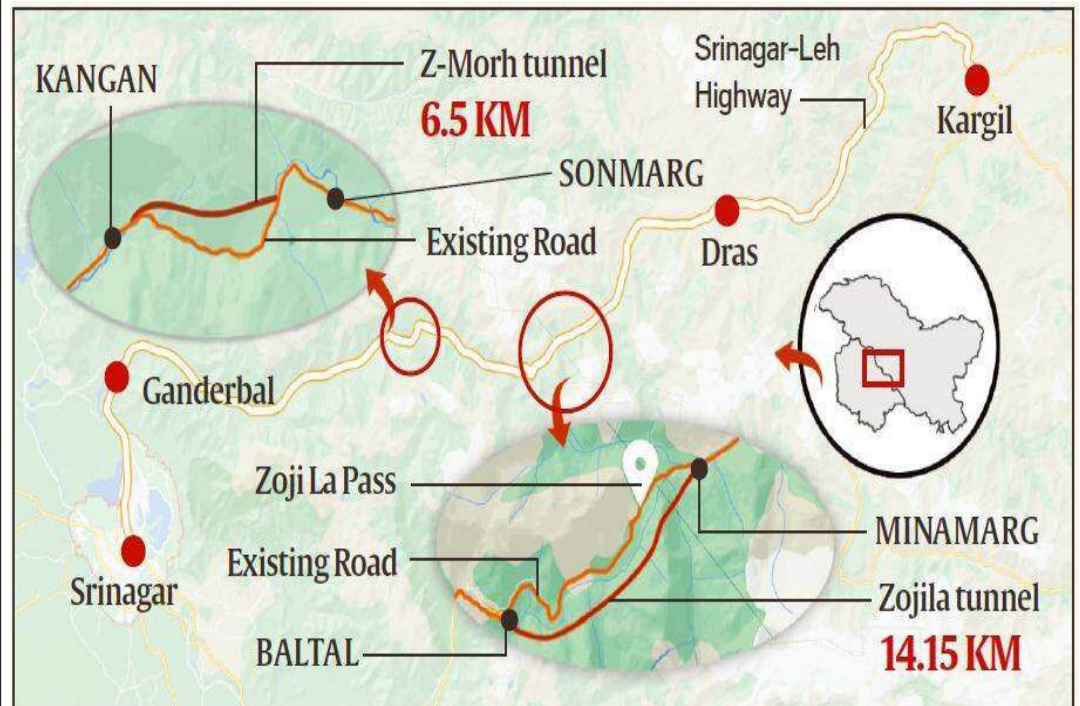
- **Location:** Situated in Mappedu, Tiruvallur district, Tamil Nadu, approximately 20 km from Poonamallee on the Chennai-Poonamallee-Perambakkam highway.
- **Construction:** Built in 976 A.D. by Aditya Karikal Chola II, the elder brother of Rajaraja Chola.
- **Renovation:** In the 16th century, Ariyanatha 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:

4. [Temple-architecture](#)

8. 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.



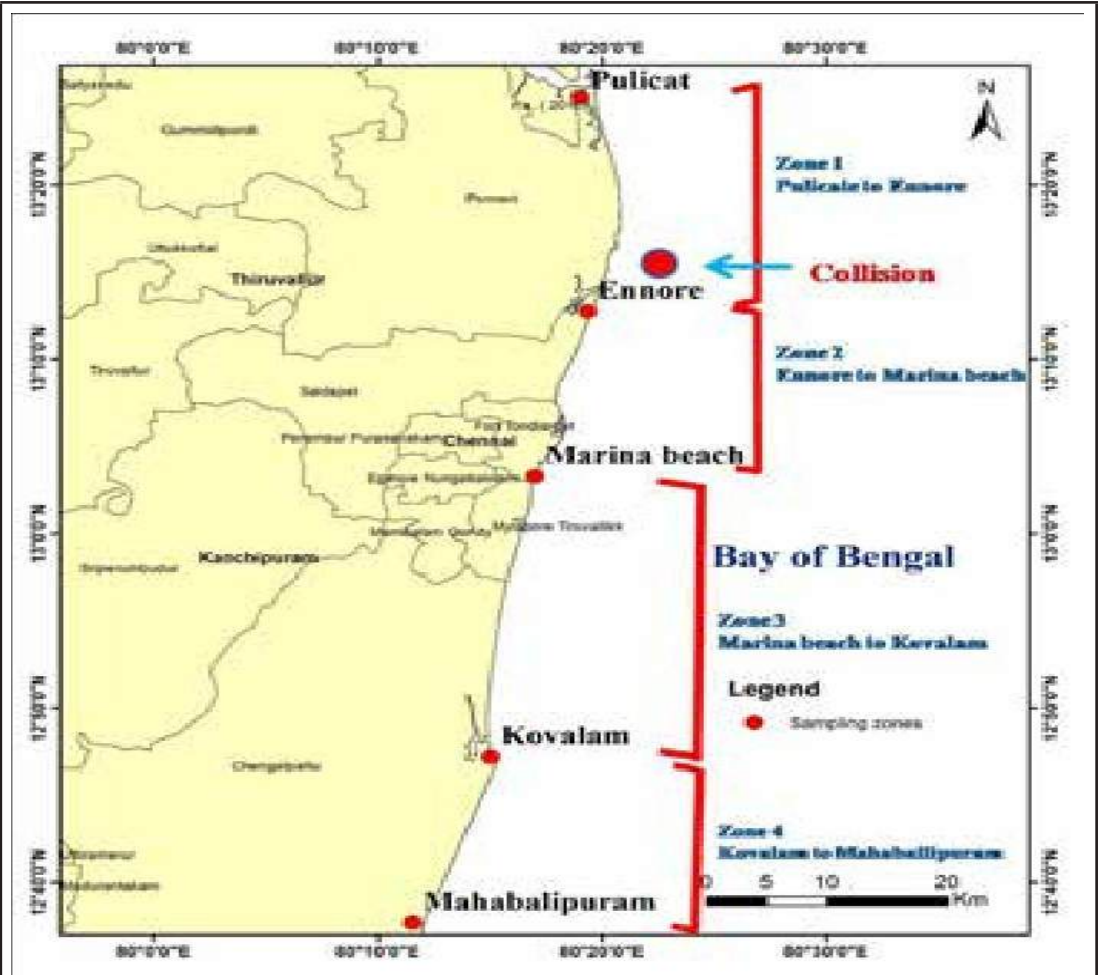
About Z-Morh Tunnel:

- **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:

3. [Z Morh tunnel](#)
4. [Sela-tunnel-](#)

9. 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:

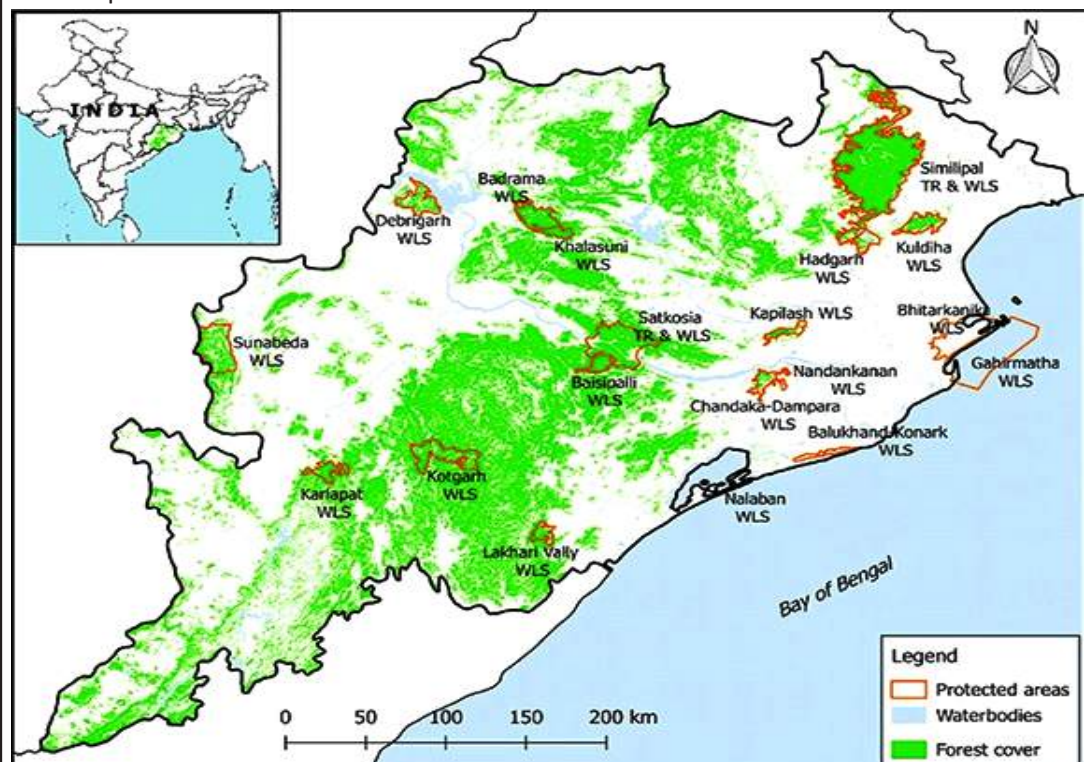
5. [Bioluminescence](#)

10. 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.



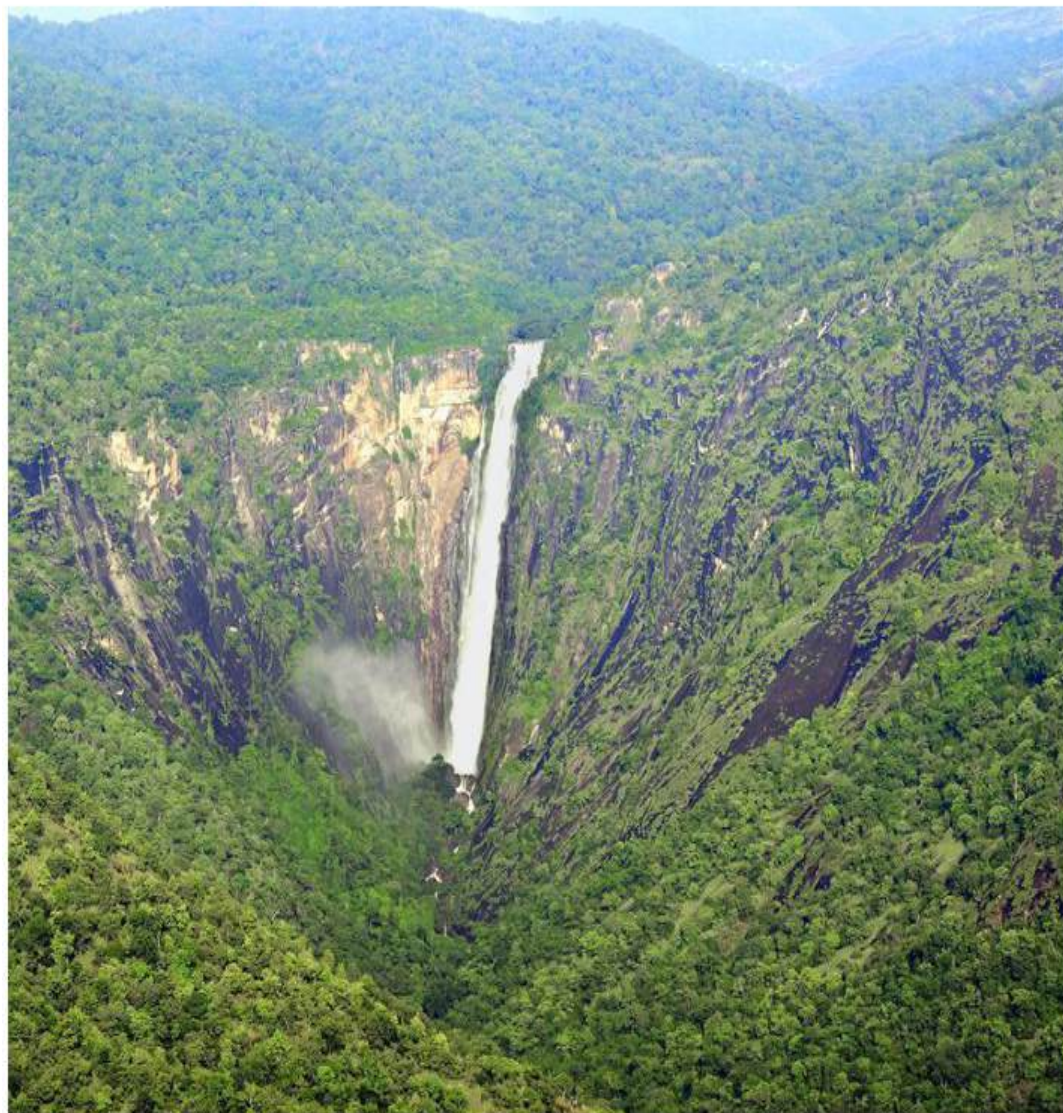
Insta links:

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

11. 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:

3. [Type of falls](#)
4. [Lonavala waterfalls](#)

12. 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:

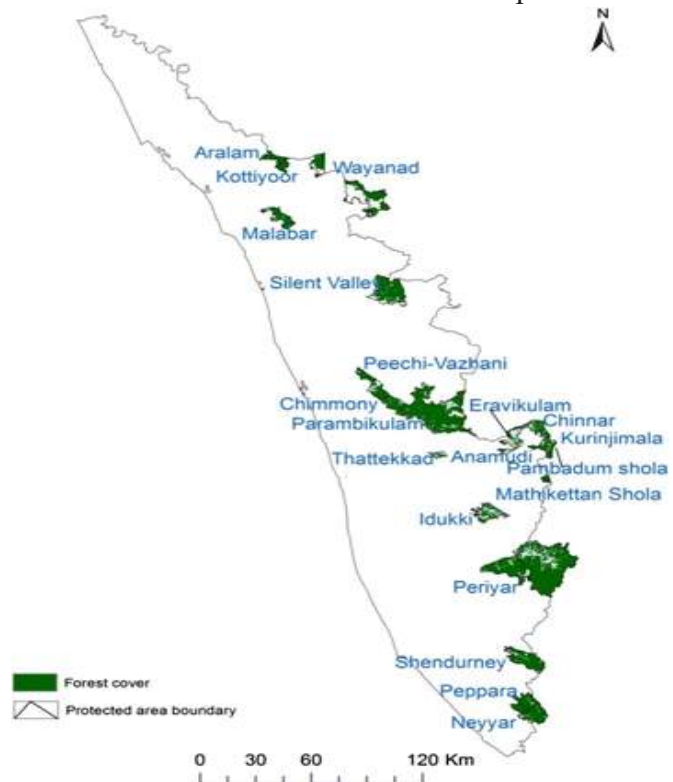
7. [Israel-Palestine-issue](#)
8. [Hambantota-port](#)

13. 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 Mullayar**.
- **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 Mannans, Paliyans, Malayarayans, Mala Pandarams, Uralis, and Ulladans, who live within the reserve.

Insta links:

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

14. DHOLAVIRA

Context: The Prime Minister’s Office (PMO) has flagged concerns regarding the poor preservation, lack of tourist facilities, and halted excavation activities at Dholavira, an ancient Harappan city and UNESCO World Heritage Site.

About Dholavira:

- **Significance:** Dholavira is an important archaeological site from the Indus Valley Civilization, inhabited from 3000 BCE to 1800 BCE.
- **Location:** Situated in Kutch District, Gujarat, between the seasonal streams of Mansar and Manhar.
 - Dholavira is the **fifth largest site** of the [Indus Valley Civilization](#) in the sub-continent.
- **UNESCO status:** Designated a World Heritage Site in 2021.
- **City layout:** Comprises a walled city and cemetery, featuring a Castle with a Bailey, Ceremonial Ground, Middle Town, and Lower Town.
- **Key features:** Notable for its advanced water management system, with 16 reservoirs and channels, step wells, and large public baths.
- **Historical insights:** Dholavira’s remains reveal insights into urban planning, trade, governance, and Harappan culture, showcasing fortifications, gateways, workshops, and residential units.



Insta links:

10. [Aspects-of-Dholavira](#)

15. PETRAPOLE LAND PORT (MAITRI DWAR)

Context: Union Home Minister inaugurated a new passenger terminal building and the 'Maitri Dwar' cargo gate at Petrapole Land Port on the India-Bangladesh border in West Bengal.



About Maitri Dwar:

- **Location:** Positioned at **Petrapole Land Port** on the India-Bangladesh border in West Bengal.
 - Located in the **North 24 Parganas district**.
- **Purpose:** Designed to streamline cross-border cargo movement and support increased trade between India and Bangladesh.
- **Capacity:** Handles around 600-700 trucks daily, boosting the efficiency of cargo handling across the border.
- **Facilities:** Provides integrated infrastructure for customs, immigration, and security for seamless cross-border processing.
- **Significance:** Enhances India-Bangladesh trade relations by supporting nearly 70% of the land-based trade between the two countries.
 - Petrapole is **South Asia's largest land port** and handles a significant portion of India-Bangladesh land-based trade.

Insta Links:

3. [India Bangladesh Relations](#)

16. SAMBHAR LAKE

Context: Over the past three days, **164 migratory birds** were found dead at Sambhar Lake in Rajasthan, raising concerns about a possible recurrence of avian botulism, which previously caused the deaths of around 18,000 birds in 2019.

Why in news:

- **Mysterious bird deaths:** 164 migratory birds, including Northern Shovelers and Black-winged Stilts, were found dead at Sambhar Lake.
- **Suspected cause:** Preliminary analysis suggests **avian botulism, a bacterial illness** that affects birds in low-oxygen environments.
- **Response actions:** Local authorities, with support from the State Disaster Response Force (SDRF), are removing dead birds to prevent the spread of the disease, and officials from multiple departments are coordinating conservation efforts.



About Sambhar Lake:

- **Location:** Situated in Nagaur and Jaipur districts, **Rajasthan**, 80 km southwest of Jaipur.
- **Largest saltwater lake:** India's biggest inland saline lake, spanning over 200 sq. km.
- **Shape and feed:** Elliptical in shape, fed by ephemeral streams like Mendha and Runpangarh.
- **Ramsar site:** Designated as a Ramsar site in 1990, marking it as a wetland of international importance.
- **Migratory birds:** Key winter habitat for flamingos, pelicans, and various migratory birds, especially during winter.
- **Salt production:** Produces approximately 210,000 tonnes of salt annually, making Rajasthan one of India's top salt-producing states.

Insta links:

2. [Places in News](#)