



INSIGHTSIAS

SIMPLIFYING IAS EXAM PREPARATION

SOUTHERN OCEAN

The Southern Ocean is known for having the cleanest air on Earth, a fact previously attributed mainly to minimal human activity.

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GENERAL STUDIES – 1

Topics: Salient features of Indian Society, Diversity of India.

1. IMPACT OF CLIMATE CRISIS ON WOMEN AND GIRLS

Context:

The climate crisis affects everyone differently, with **women and girls** facing disproportionate risks due to existing roles, responsibilities, and cultural norms.

Women experience disproportionate impacts
 due to underlying socioeconomic, political, and legal barriers that limit their choices in the face of climate change.

BARRIERS INCLUDE

- 

Discriminatory laws that limit female workforce participation.
- 

Lack of voice in decision-making at the household, local, national, and international levels.
- 

Limited access to financial resources and often lower pay.
- 

2.5 times more unpaid work and care than men.
- 

Restrictions on land ownership.
- 

Lack of technology and capacity-building resources.

Impact of Climate Crisis on Women and Girls:

Aspect	Impact
Health	Women bear the brunt of climate-related health risks due to caregiving roles, facing challenges from heat waves, extreme weather, and vector-borne diseases.
	Pregnant women and new mothers are vulnerable to malnutrition, childbirth complications, and limited access to maternal healthcare after disasters.
	Additionally, health issues resulting from climate change can exacerbate social issues and strain social support systems
Livelihoods and Income	Women in rural areas rely heavily on climate-sensitive sectors like agriculture, facing income loss and food insecurity from climate-induced factors such as unpredictable weather and soil degradation.
Education and Literacy	Climate disasters disrupt education, with girls more likely to be withdrawn from school due to safety concerns or increased caregiving duties.
Water and Sanitation	Women’s responsibility for water management makes them vulnerable to climate-induced water scarcity and contamination , limiting opportunities for education, income, and community involvement.
	Inadequate access to clean water and sanitation facilities affects women’s health and hygiene , leading to higher rates of waterborne diseases and maternal mortality.
Gender-Based Violence	Interpersonal tensions often escalate during climate-related disasters due to competition for scarce resources like food and shelter. This can lead to increased domestic violence within households.

Prolonged Heat Waves	Prolonged heat poses risks to pregnant women and exposes women and unborn children to pollutants , impacting respiratory and cardiovascular health.
Child Marriage	Climate-induced disasters can lead to child marriage as a coping mechanism , setting back gender equality progress and community resilience.
Disproportionate deaths	Women and children are 14 times more likely than men to die in disasters, according to the UNDP
Rural to Urban Migration	Men’s migration due to extreme weather events leaves women with increased responsibilities, decreased income , and limited access to land and resources, increasing vulnerability to climate impacts.
Decreased Adaptive Capacity	Women’s integration into the informal economy affects their decision-making power and adaptive capacity, leading to greater risks during climate disasters.
Biased Social norms	Lack of access to resources and discriminatory practices restrict women’s ability to adapt to climate change.

Role of Rural women in the fight against climate change

Aspect	Examples of Women’s Contributions to Climate Resilience
Agriculture	In Odisha, women resurrect traditional crops that withstand frequent floods and droughts. Self-Employed Women’s Association (SEWA) teaches women farmers how to respond to shifting climate patterns to support themselves better financially.
Reducing domestic pollution	E.g., Charlot Magayi helps Kenyan women transition from dirty cook stoves to clean ones, improving community health and reducing greenhouse gas emissions. The African program Solar Sister , led by women, helps communities establish small-scale solar systems for energy independence, reducing greenhouse gas emissions and air pollution.
Watershed Management	Women collectives in Nagpur use indigenous techniques to turn parched lands into fertile areas.
Seed Preservation	Rural women in Telangana act as seed guardians , safeguarding native seeds against climate uncertainties.
Sustainable Fishing	Fisherwomen cooperatives in coastal Karnataka advocate for regulated fishing practices and marine life sustainability .
Waste Management	Rural women in coastal Karnataka lead circularity efforts , transforming kitchen waste into compost and promoting waste segregation and recycling.
Agroforestry	Women farmers in the Malnad region practice agroforestry , intercropping native trees with traditional crops to combat erratic rainfall patterns and enhance soil fertility.
Community Influence	Rural women actively participate in community decisions and drive movements, using their vote and voice as agents of change.

Constitutional Rights for safeguarding Vulnerable groups against Climate Change/Disasters:

- Right to Life and Personal Liberty (Article 21):** The Constitution guarantees the right to life and personal liberty, which includes the right to live in a safe environment free from the adverse effects of climate change and disasters (Read the [recent SC ruling here](#))
- Right to Equality (Article 14):** Women and girls are entitled to equal protection under the law, ensuring that they receive equitable treatment and opportunities in climate change adaptation and disaster response measures.
- Right to Health (Article 21):** The Constitution recognizes the right to health as an integral part of the right to life, ensuring access to healthcare services to mitigate health risks posed by climate change and disasters, particularly for pregnant women and children.
- Directive Principles of State Policy (Article 39):** The Directive Principles of State Policy mandate the state to ensure that women are not subject to discrimination and have equal rights to livelihood opportunities.
- Fundamental Duties (Article 51A):** Citizens have a duty to protect and improve the natural environment, including forests, lakes, rivers, and wildlife, which are essential for climate resilience and disaster mitigation efforts that benefit women and girls.
- Protection Against Exploitation (Article 23):** The Constitution prohibits trafficking, forced labour, and other forms of exploitation, safeguarding women and girls from vulnerabilities exacerbated by climate change-induced displacement and migration.

7. **Special Provisions for Women and Children (Article 15):** The Constitution allows the state to make special provisions for the advancement of women and children, including measures to enhance their resilience and adaptive capacity to climate change and disasters.
8. **Protection of Tribal Rights (Article 244):** Indigenous women and girls have constitutionally protected rights to their traditional lands and resources, which are essential for their resilience to climate change impacts.

Steps to Make Climate Crisis Gender Neutral:

1. **Implement social protection programs** providing access to healthcare, education, clean water, and sanitation. This includes **cash transfers, food security initiatives, and insurance schemes** for women and girls affected by climate events.
2. **Support sustainable livelihoods** through poverty alleviation, inclusive economic growth, and sustainable agriculture practices.
3. **Empower women by providing equal access to resources**, which can enhance agricultural yields and promote local solutions, particularly in rural areas.
4. **Gather sex-disaggregated data** to better understand women's diverse roles and experiences as agents of change.
5. **Reduce the impact of prolonged heat waves on vulnerable groups** through heat wave warnings, adjusted work and school timings, and cooling facilities.
6. **Involve urban local bodies and municipalities** in climate action planning and urban design to mitigate heat and improve resilience.
7. **Map key water resources** and develop local plans to improve water access and management for women
8. **Reform State-action plans on climate change** to apply a **gender lens** and implement **gender-transformative strategies**, recognizing the vulnerabilities of all genders.

Conclusion:

To address climate change effectively, **it's crucial to recognize all genders' vulnerabilities and implement gender-transformative strategies** for comprehensive and equitable adaptation. Women shouldn't be viewed solely as victims but as leaders in climate action. State-action plans on climate change must incorporate a gender lens, and legislation and policies should support women's meaningful participation in decision-making processes.

Insta Link:

- [SC: Right against adverse Climate Impacts as Integral to Right to Life and Equality](#)

Mains Link:

Q. 'Climate Change' is a global problem. How will India be af-

ected by climate change? How Himalayan and coastal states of India will be affected by climate change? (2017)

Q.1 Which of the following best describes/describe the aim of 'Green India Mission' of the Government of India? (UPSC 2016)

1. Incorporating environmental benefits and costs into the Union and State Budgets thereby implementing the 'green accounting'.
2. Launching the second green revolution to enhance agricultural output so as to ensure food security to one and all in the future.
3. Restoring and enhancing forest cover and responding to climate change by a combination of adaptation and mitigation measures.

Select the correct answer using the code given below.

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

Ans: C

Q.2 With reference to 'Global Climate Change Alliance', which of the following statements is/are correct? (UPSC 2017)

1. It is an initiative of the European Union.
2. It provides technical and financial support to targeted developing countries to integrate climate change into their development policies and budgets.
3. It is coordinated by World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD).

Select the correct answer using the code given below:

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

Ans: A

Topics: Women and women related issues.

2. 50 YEARS OF CHIPKO MOVEMENT

Context:

The [Chipko movement](#), which originated in the 1970s in the Himalayan villages of Reni and Mandal, marked its **50th anniversary recently**.

What was the Chipko movement?

The Chipko movement **was a non-violent protest that began in the Chamoli district of Uttarakhand (then Uttar Pradesh), India, in 1973**. Led by environmental activists such as **Sundarlal Bahuguna and Gaura Devi**, among others, the movement aimed to prevent the felling of trees in the Himalayan region. The **name "Chipko" comes from the Hindi word meaning "embrace,"** as villagers hugged the trees to prevent

their cutting.

The original Chipko movement dates back to **1730 when Amrita Devi Bishnoi** and over 300 others from the Bishnoi sect sacrificed their lives protesting the felling of **Khejarli trees** in Rajasthan.)

Impact of Chipko Movement:

Impact	Description
Environmental Awareness and Conservation	Raised awareness about deforestation and the importance of conserving forests.
Push to Eco-Feminism	Eco-feminism is a philosophical and political movement exploring the links between ecological issues and women’s experiences.
	It recognizes the importance of traditional knowledge, often held and transmitted by women, in promoting sustainable practices.
	The Chipko movement exemplifies the collective involvement of women in forest conservation, reflecting the principles of Eco-feminism
Local Empowerment	Empowered local communities, particularly women, in protecting natural resources.
Policy Changes	Contributed to the formulation of policies for forest conservation and sustainable resource management.
Inspiration for Similar Movements	Inspired similar movements globally, emphasizing nonviolent direct action and community involvement.
Global Environmental Movement	Became a symbol of the global environmental movement, highlighting grassroots activism.
Recognition of Women’s Role	Challenged traditional gender roles, recognizing women’s crucial role in conservation.
Economic and Cultural Impact	Helped preserve traditional livelihoods and cultural practices linked to the environment.
Education and Research	Spurred interest in environmental science and sustainable development research.
Forest Protection and Re-generation	Protected forests from destruction, aiding in regeneration and ecological benefits.

Other such movements include:

Movement	Year	Place	Leaders	Aim
Save Silent Valley Movement	1978	Silent Valley, Palakkad district, Kerala	Kerala Sastra Sahitya Parishad (KSSP), Sughathakumari	Protection of Silent Valley from a hydroelectric project
Jungle Bachao Andholan	1982	Singhbhum district, Bihar	Tribals of Singhbhum	Against replacing natural sal forest with Teak
Appiko movement	1983	Uttara Kannada and Shimoga districts, Karnataka	Pandurang Hegde (facilitator)	Opposition to felling and commercialization of natural forests and ancient livelihood
Narmada Bachao Andolan (NBA)	1985	Narmada River, Gujarat, Madhya Pradesh, Maharashtra	Medha Patker, Baba Amte, Adivasis, farmers, environmentalists, human rights activists	The movement against the construction of large dams on the Narmada River
Tehri Dam Conflict	1990s	Bhagirathi River, Tehri, Uttarakhand	Sundarlal Bahuguna	Protest against displacement of town inhabitants and environmental consequences of weak ecosystem
Save Dehing-Patkai	2020	Assam	Adil Hussain, Randeep Hooda, Joi Barua, Jadav Payeng, members of AASU, AAMYU	Opposition to opencast mining in Dehing-Patkai Wildlife Sanctuary

Save the Sundarbans	2020	West Bengal	Response to cyclone Amphan , aiming to protect the Sundarbans from further environmental degradation and provide support to affected communities	
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FIG. 1—Locations of activities of main environmental movements in India.

Need of 'New Chipko Movement' at the time of environmental crisis.

- **"We will endure sticks and bullets but save our trees"** – these were the kind of slogans and spirit with which we had conducted the chipko movement in the 1970s and 1980s. **A similar spirit needs** to be displayed and all sections of society have to unite to prevent further degradation of the environment.
- **People should rise and demand from the government their right to live.** Apart from **saving trees**, this time there is a need to fight for **clean air, and pure water too.**
- There is a need to have a **separate environmental vision document** by the government, especially for **Urban India.**

Given the recent events, political parties should expect the **environment to become a focal campaign point, at least in cities.**

- There is also a need for an **environmental roadmap** from the administration and the executive.
- It is important to **study the steps taken by other countries.** For instance, SO2 pollution declined by 75% in China over the last decade while in India it increased by 50%. In China, the SO2 controls were imposed on coal power plants while in the case of India, the measures are delayed until 2022 in some cases.

Conclusion

The Chipko Movement in the 1970s proved as a tipping point for environmental causes not just in India but the rest of the world as well. There is a need for a **“Chipko 2.0”, this time led by the coordination of society and political class.**

About Sunderlal Bahuguna (1927-2021):

He spearheaded the Chipko movement in the 1970s to protect trees in the Himalayas, popularizing the slogan **“ecology is permanent economy.”** He advocated for the integration of ecology and economy, emphasizing their interconnectedness. Bahuguna protested against the **Tehri Dam project, undertaking a 56-day fast.** He also led a **4,800 km padayatra from Kashmir to Kohima** to raise awareness about Himalayan issues. Bahuguna supported women-led movements against the liquor mafia and championed the **Beej Bachao Andolan** to preserve Himalayan biodiversity. He received the **Padma Vibhushan in 2009** for his environmental activism.

Mains Links:

Q. ‘Women’s movement in India has not addressed the issues of women of lower social strata.’ Substantiate your view. (UPSC 2018)

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

3. WORLD BANK WARNS OF SQUANDERED DEMOGRAPHIC DIVIDEND

Context:

The World Bank (as per “Jobs for Resilience, South Asia Development Update”) warned that South Asia, including India, is **not utilizing its demographic dividend effectively.**

What is a Demographic Dividend?

The demographic dividend refers to the **economic growth potential that arises from changes in a population’s age structure.** It occurs when the **proportion of working-age individuals (15-64) in a population** is larger than the dependent population (children and elderly), leading to increased productivity and economic growth. India is expected to enjoy this **window for 37 years starting in 2018 and up to 2055**

Benefits of Demographic Dividend are:

Advantage	Description
Increased Labour Force	A larger workforce boosts economic productivity.
Women’s Workforce Growth	Increased female participation in the workforce , driving economic growth.
Higher Savings Rate	Working-age individuals typically save more, boosting overall savings rates.
Middle-Class Expansion	Demographic dividend fosters the rise of an aspirational middle class , driving economic growth and consumption.
Historical Growth Contribution	In advanced economies, demographic dividends historically contributed up to 15% of overall growth.
Rapid Industrialization and Urbanization	An increased employment-seeking population leads to higher economic activities, driving industrialization and urban growth.
Workforce Expansion	With over 65% of the population in the working age group , India can become a significant global economic powerhouse.

Issues in harnessing demographic dividends (as per the report):

1. **Jobless Growth:** South Asian countries **experience jobless growth, with an employment ratio of only 59% in 2023**, lower than other emerging economies (~70%). This is exacerbated by **exceptionally low shares of women in employment** and weak employment trends in non-agricultural sectors.
2. **Slow Private Investment:** Private investment has slowed, and growth is primarily **driven by public investment.** This imbalance can hinder sustainable economic development and job creation.
3. **Slowing Global Growth:** The region faces challenges due to slowing global growth, which can negatively impact trade, investment, and economic prospects.
4. **Heightened Risks:** Various risks, including geopolitical tensions, climate change, and pandemics, pose additional challenges to harnessing the demographic dividend effectively.

Other challenges include:

1. **Poor Human Capital Formation:** India faces challenges with low employability among graduates and postgraduates, **with only 20-30% of engineers** finding jobs suited to their skills, highlighting a need for skill development.
2. **Low Human Development:** India ranks poor in the **UNDP Human Development Index**, indicating lower life expectancy and education levels compared to other developing countries
3. **Informal Economy: Approximately 216 million people**

in India, primarily in the agriculture sector, are part of the informal economy, facing lower wages, limited social security, and irregular employment, hindering economic growth and stability.

4. **Asymmetric Demography:** The growth in the working-age population is concentrated in some of India's poorest states, requiring the creation of meaningful employment opportunities to fully realize the demographic dividend.
5. **Tilted Sex Ratio and Declining Female Labour Force Participation:** India faces challenges with declining female labour force participation rates, hindering the country's ability to fully utilize its workforce potential and achieve demographic dividend goals.
6. **Psycho-social issues:** India stands **12th on top suicide rates of any country**. There is also a rising issue of drug abuse among youth.
7. **Fatigue and burnout:** Indian youth have been observed to be overworked and fatigued due to rising heat and long working hours.
8. **Radicalization** a combination of these issues has also led youth to be radicalized.

Measures to improve Demographic dividend (as per the World Bank Report)

1. **Openness to International Trade:** Reduce barriers to trade to encourage greater participation in global markets, promoting economic growth and job creation.
2. **Flexible Labour Laws and Efficient Land Markets:** Develop flexible labour laws and efficient land markets to enhance business competitiveness, attract investment, and stimulate job growth.
3. **Infrastructure Investment:** Invest in infrastructure, particularly in transportation and agricultural sectors, to improve connectivity, productivity, and competitiveness, fostering economic development and employment opportunities.
4. **Promote Female Labor Force Participation:** Encourage female labour force participation through measures such as wage subsidies, tax benefits, and initiatives to support work-life balance, ensuring gender equality and maximizing the workforce potential.
5. **Enhance Human Capital:** Improve human capital through education and skill development programs, facilitating the transition of workers from agriculture to non-agriculture sectors, thus boosting productivity and enabling economic diversification.

Other measures needed are:

1. **Boost health investments:** Increase healthcare spending to ensure a productive workforce.
2. **Reform the informal sector:** Simplify regulations and provide credit access.
3. **Invest in the latest technologies:** Support research and development in emerging fields.
4. **Address state diversity:** Collaborate between states to manage demographic transition.

5. **Establish a high-level task force:** Create a dedicated team to oversee demographic dividend.
6. **Manage urbanization:** Plan for the influx of young people into urban areas with adequate amenities and services.
7. **Social security:** As per ILO, **only 24.4 per cent of Indians**, even fewer than Bangladesh (**28.4 per cent**), are under any sort of social protection benefit. So, social security net- Insurance and pension needs to be enhanced.

Conclusion:

MoSPI has released the 'Youth in India 2022' Report, which shows that the population share of the youth is starting to decline whereas the share of the elderly is expected to increase during 2021-2036. This means necessary steps on the economic side and others are needed to empower the youth to prevent the demographic dividend from turning into a demographic disaster.

Insta Links

- [Fertility rate below replacement level](#)

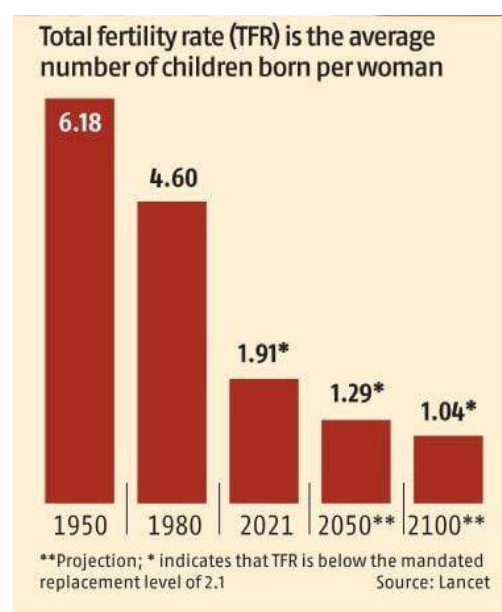
4. INDIA'S DECLINING FERTILITY RATE: OPPORTUNITIES AND CHALLENGES AHEAD

Context:

India's declining fertility rate, recently **projected by The Lancet**, suggests a **demographic transition with potential economic benefits**.

Status of total fertility rate (TFR):

TFR in India has **drastically decreased from 6.2 in 1950 to below 2 in 2021**. It is projected to further decline to **1.29 by 2050** and a concerning level of **1.04** by 2100. This decline is part of a global trend, with the global fertility rate **dropping nearly 50% in the past 70 years**. The United Nations predicts global population growth to **reach 10.9 billion by 2100**, with TFR converging to near replacement level.



The Total Fertility Rate (TFR) of 2.0 in India signifies stable long-term population trends, with two parents replaced by two children, indicating that the country may not experience population decline for 30-40 years due to a substantial youth population.

About TFR:

The Total Fertility Rate (TFR) represents the average number of children a woman would have in her lifetime given current fertility rates. A TFR of **2.1** signifies **replacement-level fertility**, where each generation replaces itself. **TFR below 2.1** suggests a declining population over time as each generation produces fewer children than its predecessor.

Factors contributing to fertility decline include:

Aspect	Progress/Initiative
Family Planning	An increase in the use of modern contraceptive methods contributes to a rise in contraceptive prevalence rate.
Higher Age of Marriage	The introduction of a higher age of marriage, reversible spacing (gaps between children) methods , wage compensation systems to undergo sterilisation, and the promotion of small family norms also worked well over the years.
Women's Empowerment	Improved women's empowerment indicators also correlate with reduced fertility rates.
Government Initiatives	Sustained efforts by the Indian government, including national-level family planning programs, have driven progress.
	Mission Parivar Vikas (2017): Launched to enhance access to contraceptives and family planning services in 146 high fertility districts.
	National Family Planning Indemnity Scheme (NFPIS): Initiated in 2005, provides insurance coverage for sterilization-related complications.
	Compensation Scheme for Sterilization Acceptors: Started in 2014, provides wage compensation to beneficiaries and service providers for sterilization procedures.
	Prime Minister's Appeal (2019): The PM emphasized population control as a patriotic duty during the Independence Day speech.

Negative Implications of Declining Fertility Rate in India:

- The decline in working-age population:** In the next four years, both **Tamil Nadu** and **Kerala** will see the first absolute declines in their working-age populations in their histories.
- Skewed sex ratio:** It remains a danger. **NFHS:** families with at least one son are less likely to want more children than families with just one daughter.
- Geographical divide:** The stark differences between northern and southern States in terms of basic literacy as well as enrollment in higher education, including in technical fields.
- Economic Dependence of Elderly:** The economic dependence of the female elderly is a significant concern; as fewer working-age people will need to support a growing elderly population.
 - Need for pension schemes, long-term care facilities, and healthcare programs for age-related ailments
- High Gender disparities may get aggravated** in the Indian workforce

Positive Implications of Declining Fertility Rate in India:

Aspect	Description
Positive Economic Impact	Changes in age structure with fewer children and more working-age adults. Surplus income from a larger working-age population can boost economic development.
Lower Dependency Ratio	Declining TFR leads to a lower dependency ratio (dependents to working-age population) , allowing for more economic productivity and resource allocation.
Labour Market Dynamics	The larger working-age population may lead to an increased labour supply , potentially lowering wages in some sectors.
	Industries with labour shortages may need to offer higher wages to attract workers
Social Welfare and Healthcare	The ageing population due to declining fertility rates and increased life expectancy demands social welfare and healthcare services for the elderly.

Education and Human Capital	Fewer children may decrease demand for primary and secondary educational infrastructure.
	Investments in higher education and skill development become crucial to prepare a smaller cohort of young adults for a competitive workforce.
Capital Accumulation and Investment	Declining fertility leads to increased household investment in education and fewer children's well-being. Higher savings rates contribute to capital formation , driving economic growth through investments in infrastructure and human capital.
Regional Development and Urbanisation	Declining fertility often accompanies urbanization and regional development. Urban centres become economic hubs, attracting investment, talent, and innovation, promoting infrastructure and enhancing competitiveness.
International Competitiveness	Lower fertility rates result in a younger, more educated workforce, enhancing global competitiveness. A favourable demographic profile improves creditworthiness, investor confidence, and economic stability, attracting foreign investment.

Way forward

- Providing skills:** There is a need for much focus on the betterment of the living standard of living by providing skills to the youth and bridging the gap between the workforce.
- Harnessing demographic dividend:** The focus of one should be on the various dimensions of population like harnessing the potential of demographic dividend.
- Investing in health, and education and employing elderly people** will help societies adapt to inverted population pyramids.
- Behaviour-Change Communication Strategy:** The Government must adopt a targeted social and behaviour-change communication strategy to ensure smooth demographic transition

Conclusion

In navigating these demographic complexities, India has the opportunity to leverage its demographic dividend by investing in education, healthcare, and policies that support a balanced and sustainable population structure.

Insta Links

- [Fertility rate below replacement level](#)

Mains Link:

Q. Discuss the main objectives of Population Education and point out the measures to achieve them in India in detail. (UPSC 2021)

[Topics: Distribution of key natural resources across the world \(including South Asia and the Indian subcontinent\)](#)

5. INDIA'S ARCTIC EXPEDITION: EXPLORING NEW FRONTIERS

Context:

India recently concluded its **first winter expedition to the Arctic in March 2024**, marking a significant milestone in its Arctic exploration endeavours.

What is an expedition?

An expedition is a journey undertaken **for a specific purpose, often involving exploration, scientific research, or achieving a particular goal.** It typically involves travel to **remote or unfamiliar areas**, often with a team of individuals equipped for the challenges of the journey. Expeditions can vary widely in scope, ranging from scientific expeditions to mountaineering expeditions to polar explorations.

The expedition, undertaken by **four Indian climate scientists**, involved rigorous acclimatization and living in extremely cold conditions, including the challenging period of **polar nights with no sunlight.**

India's engagement in the Arctic:

- India's engagement with the Arctic **began when it signed the Svalbard Treaty** in February 1920 in Paris between

Norway, the US, Denmark, France, Italy, Japan, the Netherlands, Great Britain, and Ireland, and the British overseas Dominions and Sweden concerning Spitsbergen. Ever since then, India has been closely monitoring all the developments in the Arctic region.

2. **India initiated its Arctic research program in 2007** with a focus on climate change in the region.
3. The objectives included **studying teleconnections between the Arctic climate and the Indian monsoon**, to characterize sea ice in the Arctic using satellite data, and to estimate the effect on global warming.
4. India has set up a **research station Himadri at Ny-Ålesund, Svalbard, in 2008**
5. **In May 2013, India became an observer state of the Arctic Council** along with five others including China.
6. **India launched its inaugural multi-sensor moored observatory** and northernmost atmospheric laboratory in 2014 and 2016 respectively
7. Till last year, **thirteen expeditions to the Arctic** were successfully conducted.

History of India’s Arctic Research



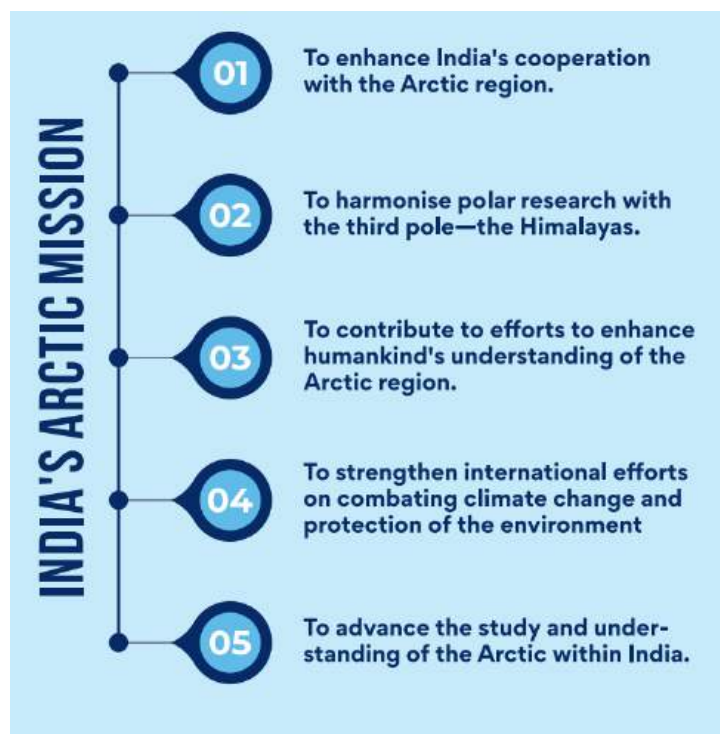
Significance of the Arctic region significant to India:

Key Reasons	Significance of the Arctic Region for India
Climate Impact	Though none of India’s territory directly falls in the Arctic region , it is a crucial area as the Arctic influences atmospheric, oceanographic and biogeochemical cycles of the earth’s ecosystem.
	Establishing research bases and observing Arctic ice systems and glaciers are crucial components of India’s research on Monsoon
Natural Resources	The region holds vast unexplored hydrocarbon reserves and valuable minerals, contributing to India’s resource needs.
Economic Development	India aims to utilize Arctic Sea routes, particularly the Northern Sea Route , to facilitate Indian trade.
Historical Engagement	India’s connection dates back to the Svalbard Treaty in 1920, with ongoing scientific studies and Arctic Council participation.
Global Influence	By engaging in Arctic affairs, India can assert its global presence and contribute to discussions on climate change and resource management.
	China’s investments in the Arctic and Russia’s collaboration with China in granting access to the Northern Sea Route have raised concerns in India

Challenges posed by Arctic Region:

1. **Arctic Amplification:** Rapid warming in the Arctic, known as Arctic amplification, surpasses global warming rates. Thawing permafrost releases greenhouse gases like carbon and methane, accelerating ice melt and further warming.
2. **Rising Sea Level Concern:** Melting Arctic ice contributes to rising sea levels, exacerbating coastal erosion and storm surges. India, with its extensive coastline and port cities, faces significant risks from sea level rise, which exceeds the global average rate along its shores.
3. **Emerging geopolitical Race:** The opening of Arctic shipping routes has intensified geopolitical competition among major powers like the US, China, and Russia.
4. **Threat to Biodiversity:** Arctic warming threatens biodiversity, impacting animal life, plants, and birds dependent on sea ice. Polar bears, in particular, face habitat loss, while shifting fish populations disrupt the **Arctic food web**. Environmental changes, including storms and wildfires, further endanger Arctic ecosystems, such as tundra habitats.

Last Year, India released its [Arctic Policy](#), with the aim of enhancing the country's cooperation with the resource-rich and rapidly transforming region.



Suggestions for India:

1. **Collaborate with Norway for Arctic research**, to enhance research capabilities and knowledge sharing in the Arctic region
2. **Align with Arctic nations on green initiatives**: Foster cooperation with Arctic countries, particularly Denmark and Finland, to promote green energy, sustainable industries, and environmental conservation efforts.
3. **Promote sustainable resource extraction**: Advocate for responsible and sustainable practices in resource extraction in the Arctic.
4. **Ensure policy coherence with the Arctic Council**: Ensure that India's Arctic policy aligns with the objectives and principles of the Arctic Council.
5. **Establish a dedicated nodal body**: Create a specialized agency or department within the Indian government to oversee Arctic research, development, and coordination.
6. **Expand beyond scientific focus**: Broaden India's approach to the Arctic beyond scientific research. Advocate for the **rights of Arctic indigenous communities** and integrate their perspectives into policymaking processes.
7. **Advocate for a global ocean treaty**: Support international efforts to establish a comprehensive global ocean governance framework, with a focus on addressing the unique challenges posed by the Arctic region.

Insta Link:

- [What is happening to Arctic Sea ice?](#)

Mains Link:

Q. How do the melting of the Arctic ice and glaciers of the Antarctic differently affect the weather patterns and human activities on the Earth? Explain. (2021)

Q. What are the economic significances of the discovery of oil in the Arctic Sea and its possible environmental consequences? (2015)

Prelims Link:

The term 'IndARC', sometimes seen in the news, is the name of (USPC 2015)

- (a) an indigenously developed radar system inducted into the Indian Defence
- (b) India's satellite to provide services to the countries of the Indian Ocean Rim
- (c) a scientific establishment set up by India in the Antarctic region
- (d) India's underwater observatory to scientifically study the Arctic region

Ans: D

Topics: Important Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone etc., geographical features and their location- changes in critical geographical features (including water-bodies and ice-caps) and in flora and fauna and the effects of such changes.

6. DEADLY DUBAI FLOODS MADE WORSE BY CLIMATE CHANGE

Context:

Recent deadly storms that **submerged Dubai and caused fatalities in Oman** were likely exacerbated by climate change, with human-induced heat making the record rainfall 10-40% heavier, according to scientists.

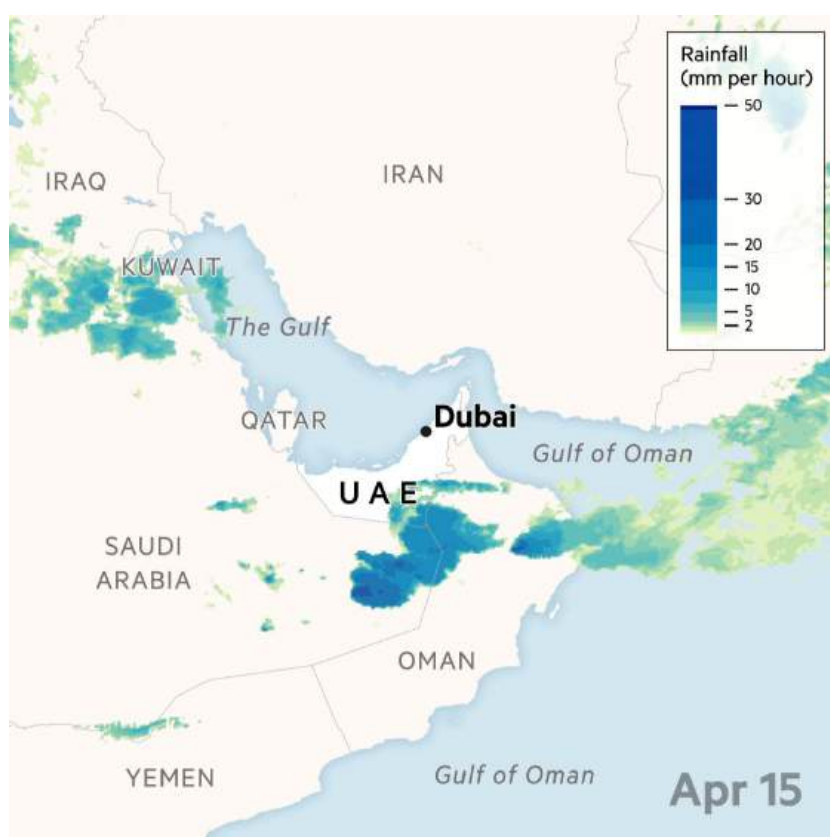
- Meanwhile, across the **Arabian Sea in Mumbai, a humid heatwave** has persisted in recent days, with relative humidity reaching as high as 55%.

Climate of UAE:

The United Arab Emirates (UAE) typically **experiences arid conditions**, with heavy rainfall events being rare. However, a recent historic event saw Dubai receiving **over 142 mm of rainfall within 24 hours**, far surpassing its annual average of **94.7 mm**.

Possible Reasons for Dubai Floods:

Reasons	Description
1. Anticyclone Interaction	The presence of an anticyclone prevented a weather system, known as a western disturbance , from moving over West Asia. This interaction may have contributed to the storm system that caused the heavy rainfall and lightning in Dubai.
2. Cloud Seeding Operations	Reports indicate that the UAE National Centre of Meteorology’s cloud seeding operations might have intensified the rainfall from the storm system. Cloud seeding involves the introduction of substances into clouds to enhance precipitation, which could have amplified the rainfall in Dubai.
3. Dust as Natural Cloud Seeders	Excessive dust in the region could have acted as natural cloud seeders, contributing to the heavy rainfall. Dust particles act as condensation nuclei, facilitating cloud formation similar to the process of man-made cloud seeding.
4. Record Heat and Global Warming	Record heat in recent years, coupled with warming trends in West Asia and the Arabian Sea, created unusual heat conditions. The UAE’s climate has warmed by 0.4°C from the long-term average , as noted in the National Centre of Meteorology’s Annual Climate Assessment 2022. A warmer atmosphere can hold more moisture , leading to heavier rainfall worldwide, including in Dubai.
5. Warm Sea Temperatures and Evaporation	Global warming has resulted in exceptionally warm water in the seas near Dubai , accompanied by warm air above. This combination enhances evaporation and increases the atmosphere’s capacity to hold moisture . Consequently, larger amounts of rainfall occur, as observed in recent heavy downpours in Dubai.
6. Atmospheric Pressure Dynamics	According to a senior forecaster at the UAE’s National Centre of Meteorology, a low-pressure system in the upper atmosphere, combined with low pressure at the surface , resulted in air compression. The pressure squeeze was intensified by temperature differences between the ground level and higher altitudes , creating favourable conditions for powerful thunderstorms.
7. Influence of El Niño and La Niña	Other factors, such as the transition from El Niño to La Niña , could have influenced the weather patterns, potentially contributing to the extreme rainfall in Dubai. El Niño and La Niña events are natural climate phenomena characterized by variations in sea surface temperatures and atmospheric pressure, which can impact global weather patterns.



Reason for possible hot weather in Mumbai:

Mumbai’s hot weather is attributed to a **significant Anticyclonic Effect in the region**. Anticyclones, characterized **by high atmospheric pressure, induce downward-moving winds that compress and heat up, often leading to heat waves**. They can also block other weather systems, exacerbating extreme conditions.

In Mumbai, this anticyclone **created a “heat dome” effect**, further warming the air. Warm air from West Asia and the Arabian Sea was drawn in and heated by sinking motion, **increasing humidity, particularly before the monsoon season**. Additionally, the anticyclone may have inhibited the cooling effect of sea breezes at night, resulting in higher-than-usual nighttime temperatures.

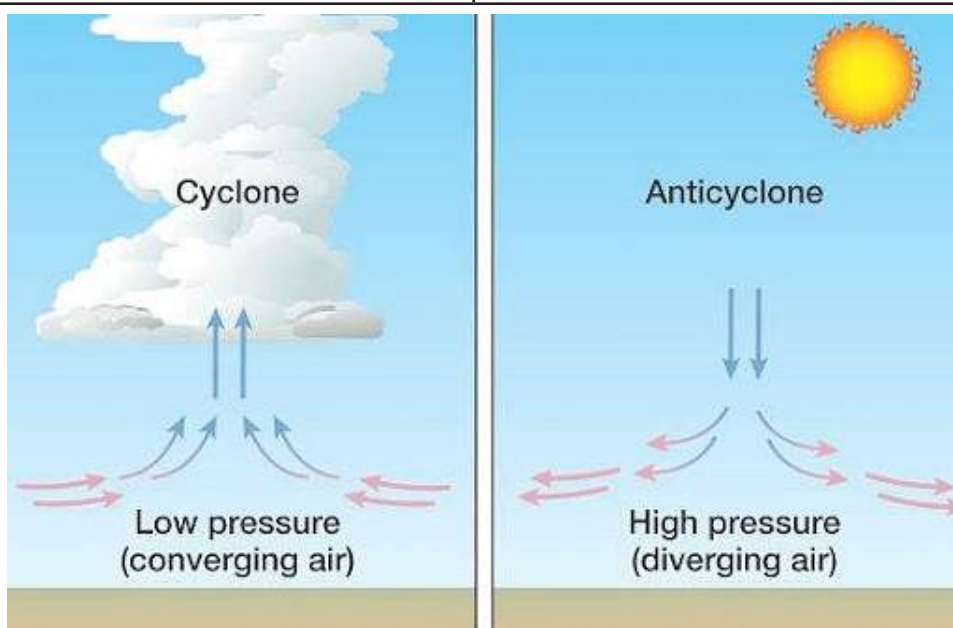
Other extreme events in India:

In 2023, India experienced a series of unprecedented climatic events, signalling a concerning new normal attributed to climate change. February (last year and this year) saw record-breaking temperatures, shattering a 123-year-old record. **Cyclone Biparjoy** formed in the Arabian Sea, lasting 13 days, the longest in over four decades. The India Meteorological Department reported **extreme weather events on 314 of 365 days in 2022**. These events claimed 3,026 lives and damaged about 2 million hectares of crop area.

Monsoon patterns are shifting, with prolonged deficit rainfall followed by intense downpours, a trend strengthening over decades. The interaction between the southwest monsoon and a low-pressure system called the western disturbance is responsible for recent heavy rainfall in northern India.

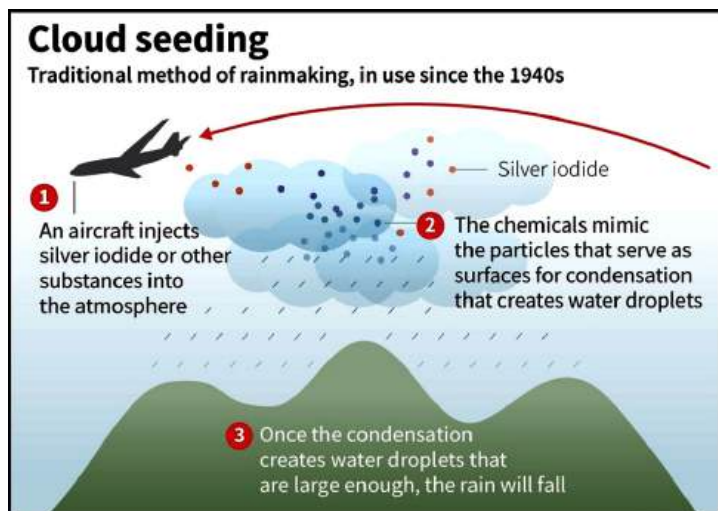
difference between Cyclone and Anticyclone:

Feature	Cyclones	Anticyclones
Atmospheric Pressure	Low	High
Wind Direction	Inward, counterclockwise rotation (Northern Hemisphere)	Outward, clockwise rotation (Northern Hemisphere)
Weather Conditions	Stormy, with heavy rainfall and strong winds	Clear skies, calm conditions
Wind Speed	High	Moderate
Air Movement	Upward, converging towards the centre	Downward, diverging from the centre
Impact on Weather Patterns	Disruptive, causing heavy rain, flooding, and storm surges	Generally stable, may block weather systems and lead to heatwaves
Formation Factors	Form over warm ocean waters with low-pressure systems	Form over cool ocean waters with high-pressure systems



What is Cloud Seeding?

Cloud seeding is a **weather modification technique aimed at enhancing precipitation** in clouds to increase rainfall or snowfall. It involves the introduction of substances, known as cloud seeding agents, into clouds to induce or enhance the formation of ice crystals or raindrops, depending on the type of cloud and desired outcome. Common cloud-seeding agents include **silver iodide, potassium iodide, and sodium chloride**. These agents serve as nuclei around which water vapour can condense and form ice crystals, which then grow and fall as precipitation. Cloud seeding is often used in regions experiencing water scarcity or drought conditions to augment water resources, but its effectiveness and environmental impact remain subjects of debate and ongoing research.



Insta Links

- [El Nino and Monsoon](#)

Mains Link

Q. ‘Climate Change’ is a global problem. How will India be affected by climate change? How Himalayan and coastal states of India are affected by climate change? (UPSC 2017)

Prelims Link

Q. La Nina is suspected to have caused recent floods in Australia. How is La Nina different from El Nino? (UPSC 2011)

1. La Nina is characterised by an usually cold ocean temperature in equatorial Indian Ocean whereas El Nino is characterised by unusually warm ocean temperature in the equatorial Pacific Ocean.
2. El Nino has adverse effect on south-west monsoon of India but La Nina has no effect on monsoon climate.

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

Ans: D

Q. The scientific view is that the increase in global temperature should not exceed 2°C above pre industrial level. If the global temperature increases beyond 3°C above the pre-industrial level, what can be its possible impact/impacts on the world? (UPSC 2014)

1. Terrestrial biosphere tends toward a net carbon source.
2. Widespread coral mortality will occur.
3. All the global wetlands will permanently disappear.
4. Cultivation of cereals will not be possible anywhere in the world.

Select the correct answer using the code given below:

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

Ans: B

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.](#)

1. SC: RIGHT AGAINST ADVERSE CLIMATE IMPACTS AS INTEGRAL TO RIGHT TO LIFE AND EQUALITY

Context:

The Supreme Court has for the first time recognized the right against adverse climate impacts as integral to the right to life and equality.

What is the background of the case?

The recent judgment stemmed from a **petition by wildlife activists aiming to safeguard the critically endangered Great Indian Bustard (GIB)**, found only in Rajasthan and Gujarat.

In April 2021, the Supreme Court issued an order **imposing restrictions on overhead transmission lines** within a vast area, proposing their conversion into underground power lines.

However, the government, citing concerns about hindering India’s global commitments to reduce carbon emissions, requested a modification of the directives.

In March 2024, the Supreme Court revisited the ruling, acknowledging practical challenges such as technical complexities and high costs. Consequently, the court modified its order, **emphasizing the importance of balancing GIB conservation with promoting renewable energy and environmental preservation.**

Key highlights of the Supreme Court judgment include:

1. **Recognition of Constitutional Rights:** Articles 14 (Right to Equality) and Article 21 (Right to Life and Personal Liberty) are highlighted as important sources of the right to a clean environment and the right against adverse effects of climate change.
 - a. SC emphasized constitutional provisions, including Articles 48A (to protect the environment and to safeguard the forests and wildlife), 51A(g) (to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures)
2. **Expansion of Fundamental Rights:** The scope of fundamental rights is expanded to include the right against adverse effects of climate change, with failure to ensure a stable, clean environment impacting the right to life, health, and equality.
3. **The intersection of Climate Change and Human Rights:** The court emphasizes the intersection between climate change and human rights, underscoring the imperative for states to address climate impacts through the lens of rights.
4. **Technical Challenges in Implementation:** The court pointed out technical challenges in implementing the April 2021 order, including limitations of underground power transmission cables and lack of provisions in the Electricity Act for land acquisition.
5. **Formation of Committee:** A nine-member committee of experts was formed to assess the feasibility of undergrounding power lines in specific areas, with a deadline to submit a report by July 31, 2024.
6. **India's Commitment to Renewable Energy:** The court highlighted India's commitment to renewable energy, aiming for 175 GW by 2022 and 450 GW by 2030, viewing the transition to non-fossil fuels as a fundamental necessity for environmental preservation.
7. **Benefits of Renewable Energy Promotion:** The promotion of renewable energy sources is seen as crucial for promoting social equity, poverty alleviation, enhancing quality of life, and fostering inclusive growth and development.

Referral to important Supreme Court judgments:

1. **M.C. Mehta v. Kamal Nath (1996):** Acknowledgment that any disturbance of basic environmental elements is hazardous to "life" within the meaning of Article 21.
2. **Virender Gaur v. State of Haryana (1994):** Recognition that the right to a clean environment is an integral facet of the right to a healthy life.

Impact of Climate Change on Human Rights:

Human Rights	Examples of Impact of Climate Change
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Right to Life	<u>Cyclones, floods, and heatwaves</u> cause casualties. Spread of diseases like dengue and malaria due to changing climate.
Right to Health	Poor air quality in cities like Delhi affects respiratory health. Erratic rainfall affects agricultural productivity and food security.
Right to Water	<u>Rising sea levels contaminate freshwater sources</u> with saltwater intrusion. Water scarcity in regions dependent on monsoon rains.
Right to Livelihood	Farmers face <u>crop failures and income loss due to droughts or floods</u> . Fisherfolk losing access to fishing grounds due to sea level rise.
Right to Shelter	Communities in <u>low-lying coastal areas face displacement</u> due to sea level rise and storm surges. Urban slum dwellers are at risk of losing homes during floods.
Right to Security	Climate change threatens human security by <u>causing resource scarcity, livelihood disruption, cultural erosion</u> , displacement, and migration

Effects of Mitigation and Adaptation Measures on Human Rights:

1. **Mitigation:**
 - a. Hydroelectric projects can displace local communities, destroy ecosystems, and harm downstream populations.
 - b. Biofuel policies may lead to food shortages, water scarcity, deforestation, and displacement of indigenous peoples and farmers.
2. **Adaptation:**
 - a. Some adaptation measures may benefit certain groups while disadvantaging others, such as coastal fortifications.
 - b. Relocation and resettlement programs can pose risks of human rights violations for affected communities.

Measures Taken by India and the World to Protect Human Rights Against Climate Change:

1. **India:**
 - a. Implementation of the National Action Plan on Climate Change (NAPCC), which includes various missions targeting climate change mitigation and adaptation.
 - b. Adoption of renewable energy initiatives like the National Solar Mission and promotion of clean energy sources.
 - c. Integration of climate change considerations into national policies and programs, including water resource management and disaster preparedness.

- d. **Promotion of sustainable agriculture practices** to enhance resilience to climate change impacts.
 - e. **Implementation of the Afforestation and Reforestation programs** to combat deforestation and enhance carbon sequestration.
2. **World:**
- a. The United Nations (through a resolution in 2022) declared **access to a clean, healthy environment** as a **universal human right**.
 - b. Establishment of frameworks for **climate finance, such as the Green Climate Fund**, to support developing countries in their climate change adaptation and mitigation efforts.
 - c. **Promotion of climate-resilient infrastructure and urban planning** to enhance resilience to extreme weather events and sea-level rise.
 - d. **Support for capacity-building initiatives** to enhance the ability of vulnerable communities to adapt to climate change impacts.

UNEP recommendations:

1. **International Cooperation:** Recognize the link between climate change and human rights in the Paris Agreement.
2. **Ensure climate funds' safeguards** fully consider human rights.
3. **Increase financial assistance to developing countries**, especially for adaptation measures.
4. **Pursue domestic GHG reductions** and align adaptation objectives with human rights.
5. **Incorporate human rights norms** into domestic legal frameworks, including climate change laws.
6. **Local Governments and Private Actors:** Local governments should reduce GHG emissions and pursue adaptation objectives. Private actors should adopt policies in line with the **UN Guiding Principles on Business and Human Rights**.

Conclusion:

Climate change and its responses will significantly impact human rights worldwide, affecting both individuals and ecosystems. States must fulfil their obligations to mitigate GHG emissions, protect citizens from climate change, and ensure responses do not violate human rights. More ambitious actions and global cooperation are needed to safeguard human rights effectively.

Mains Link:

Q. Though the Human Rights Commissions have contributed immensely to the protection of human rights in India, yet they have failed to assert themselves against the mighty and powerful. Analysing their structural and practical limitations, suggest remedial measures. (UPSC 2021)

Prelims Link:

Q. Other than the Fundamental Rights, which of the following parts of the Constitution of India reflect/ reflects the principles and provisions of the Universal Declaration of Human Rights (1948)? (UPSC 2020)

1. Preamble
2. Directive Principles of State Policy
3. Fundamental Duties

Select the correct answer using the code given below:

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

Ans: D

Topics: Appointment to various Constitutional posts, powers, functions and responsibilities of various Constitutional Bodies.

2. SUPREME COURT VERDICT ON EVMS

Context:

The recent Supreme Court verdict **confirms the safety of Electronic Voting Machines (EVMs)**, dismissing pleas for a return to paper ballots or 100% verification of votes.

What did the SC say?

Aspect	Supreme Court VVPAT Judgement
On Voter and Voting Process	Voting will continue to take place using EVMs , with 100% of the machines attached to a VVPAT unit. As per the existing provisions, VVPAT slips of five randomly selected Assembly constituencies or segments would be counted to verify with the count of the EVMs.
On Storage of Symbol Loading Units (SLUs)	EC was directed to seal and store SLUs for 45 days post-results declaration. SLUs, memory units used to load election symbols onto VVPAT machines, to be handled like EVMs.
On Candidates' Verification of EVMs	Candidates ranking second or third can request verification of burnt memory semi-controllers in 5% of EVMs per Assembly segment in each Parliamentary constituency. The cost of such verification will be borne by the candidates themselves.
On Feasibility of Counting VVPAT Slips using a Machine	EC urged to examine the feasibility of counting VVPAT slips with a machine , possibly using barcodes for faster counting.

Significance of the Judgement:

The SC judgement holds significant importance as it introduces **measures to enhance trust in India’s voting system**. Firstly, mandating the storage of Symbol Uploading Units (SULs) ensures the **accuracy of vote counting**. Secondly, the rechecking of EVMs addresses candidates’ legitimate concerns, **fostering transparency**. Ultimately, the judgment reaffirms the **credibility of India’s electoral process**.

Issues with the SC Judgment:

- 1. Dismissal of Public Opinion:** The SC’s dismissal of public concerns regarding EVM trust without thorough investigation raises doubts about the transparency of the decision-making process.
- 2. Lack of Empirical Data:** Failure to inquire about empirical data on voter experiences with VVPAT slips undermines the credibility of the judgment.
- 3. Conflict of Interest:** Allowing engineers from EVM manufacturers to verify burnt memory (and no third-party verification) presents a conflict of interest, raising concerns about impartiality.
- 4. Ignoring Counting of VVPAT Slips:** Disregarding the importance of counting VVPAT slips undermines transparency and public trust in the electoral process.

What are EVMs?

The Electronic Voting Machine (EVM) is a **microcontroller-based device developed by the Election Commission of India (ECI)** in collaboration with the Electronics Corporation of India and Bharat Electronics Limited. It was **first used in the Kerala general election in 1982** and consists of a control unit for polling officers and a balloting unit for casting votes.

What are VVPATs?

The Voter Verifiable Paper Audit Trail (VVPAT) is a **system attached to the EVM to verify that votes are cast as intended**. It allows voters to see a printed **slip for 7 seconds**, displaying the serial number, name, and symbol of the chosen candidate.

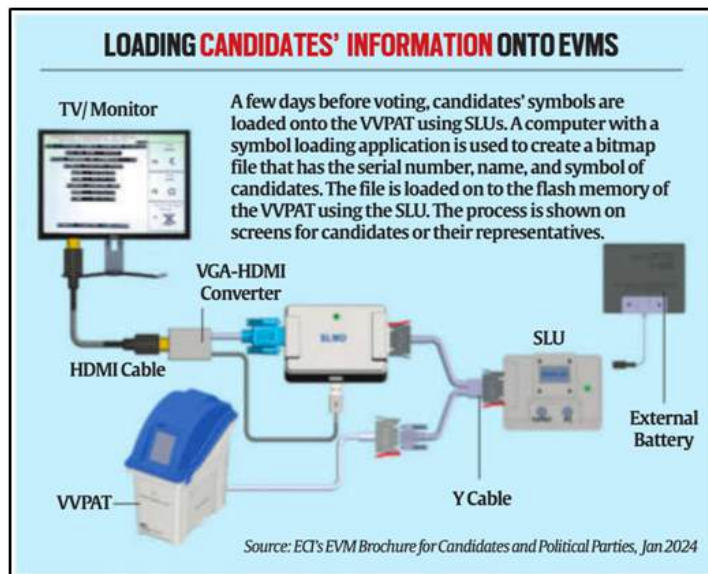
In the Subramanian Swamy Case (2013), the Supreme Court directed the Election Commission to introduce VVPAT in EVMs gradually for the 2014 Lok Sabha elections and instructed the Centre to allocate funds for procurement.

Further, a Supreme Court order in 2019 **mandated VVPAT cross-verification of 5 EVMs** in each assembly segment of a parliamentary constituency.

What are Symbol Loading Unit (SLU)?

It is a small device connected to a laptop or personal computer to load candidate names, serial numbers, and symbols onto the Voter-Verified Paper Audit Trails (VVPATs) under the supervision of a district election officer. Introduced about a decade ago alongside VVPATs, SLUs play a crucial role in ensuring accurate representation during the voting process. They **are used a few days before polling begins** to load sym-

bols onto VVPATs, and after this process, they **are returned to engineers for safekeeping** until the next phase of polling.



Advantages of EVM

Advantages	
1. Cost-effective	Eliminates the need for ballot paper production and printing.
2. Eliminates Booth capturing	Eliminates the possibility of booth capturing, ensuring fairer elections.
3. Administrative ease	Provides convenience for polling officers and speeds up counting.
4. Time efficiency	Reduces election duration and results declaration time.

Advantages of VVPAT:

Advantages	
1. Vote verification	Enables voters to verify that their votes are correctly registered.
2. DRE system	Operates under a Direct Recording Election system , enhancing fraud detection.
3. Electoral transparency	Offers greater transparency by allowing manual vote counting in case of disputes.

Challenges with EVM:

Challenges	
1. Hacking susceptibility	Vulnerable to manipulation and hacking, compromising results, but not proven yet.
2. Limited transparency	Lack of transparency in design and operation undermines evaluation.
3. Security concerns	Risks of unauthorized access, manipulation, or cyberattacks.

Challenges with VVPAT:

Challenges	
1. Small sample size	A limited sample size may not detect faulty EVMs during counting.
2. Technological glitches	Malfunctions due to weather conditions or sensitivity to light.
3. Voter intimidation	Potential for booth-wise profiling and intimidation.
4. Storage concerns	Challenges associated with safe storage and integration with EVMs.

The way forward and Conclusion:

Moving forward, several key steps can enhance the reliability and transparency of the EVM-VVPAT-enabled electoral process. Firstly, **addressing the lacunae in VVPAT technology** is crucial, including measures to **use sustainable inks**, and reduce sensitivity to external factors like heat and light. Secondly, **deploying a proper statistical method for counting votes** will ensure accuracy and integrity. Thirdly, **updating the VVPAT protocol** to allow voters to cancel their vote in case of discrepancies can increase reliability. Additionally, **promoting open-source code review** will enable impartial specialists to evaluate technology's accuracy and security. **Implementing Risk-Limiting Audits (RLA)** for cross-checking electronic tally with VVPAT counts will further enhance integrity. Lastly, **public awareness and education about EVM technology** and security measures are essential to build confidence in the electoral process, rather than reverting to a paper ballot system.

Insta Links

- [Credibility of Electronic Voting Machines](#)

Q. Consider the following statements: (UPSC 2017)

1. The Election Commission of India is a five-member body.
2. The Union Ministry of Home Affairs decides the election schedule for the conduct of both general elections and bye-elections.
3. Election Commission resolves the disputes relating to splits/mergers of recognised political parties.

Which of the statements given above is/are correct?

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

Ans: D

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

3. LIQUOR POLICY: ISSUES IN THE LIQUOR INDUSTRY

Context:

High taxes and excessive licensing in the liquor industry contribute to corruption and financial burdens on consumers.

Indian Constitution views alcohol as an undesirable evil to be regulated. The **Directive Principles of State Policy (Article 47)** encourage the prohibition of alcohol consumption, except for medicinal purposes, aiming to protect citizens' health. While not legally enforceable, these principles guide state action. Additionally, alcohol regulation falls under the **authority of state legislatures according to the Seventh Schedule**, allowing for varying laws across states, from prohibition to private sale.

Distribution of Power on Liquor Control in India:

1. Central Government:

- i. Sets guidelines for **import duties on foreign liquor.**
- ii. **Formulates national-level policies** regarding alcohol advertising and marketing.

2. State Governments:

- i. **Liquor falls under the State List (List II) of the Seventh Schedule**
- ii. Impose state-specific excise duties and taxes on liquor sales.
- iii. Issue licenses for liquor sales and distribution within the state.
- iv. Set regulations on liquor sales, including permitted **operating hours for liquor stores and bars.**
- v. Introduce prohibition laws in certain states (e.g., Gujarat and Bihar).
- vi. Allow liquor sales through government-owned outlets (e.g., TASMAL in Tamil Nadu).
- vii. Implement online liquor sales and home delivery services (e.g., Maharashtra and Delhi).

Approaches to alcohol policy vary across states:

1. **Revenue-Driven Policies:** States like Haryana and Delhi prioritize revenue from alcohol sales, leading to the widespread availability of liquor outlets.
2. **Socio-cultural Factors:** Gujarat maintains prohibition due to cultural and historical reasons while Bihar has prohibition due to socio-economic factors.
3. **Government Control for Safety:** Tamil Nadu regulates alcohol sales through its State Marketing Cor-

poration to enhance safety, particularly in response to past hooch tragedies.

What is the Delhi liquor policy scam?

The Delhi Liquor Scam involves **allegations of corruption and favouritism** in the implementation of **Delhi’s Excise Policy from 2021 to 2022**. The policy aimed to reform the liquor sector by **introducing private firms**, but accusations claim it favoured certain companies with waivers, fee reductions, and multiple licenses. The AAP government denies any wrongdoing, citing increased revenue similar to policies in Punjab. However, the policy faced obstacles, including **resistance from bureaucrats and the LG’s directive to halt implementation, leading to its withdrawal**.

Issues with Alcohol Policies in India:

Issues	Examples
Revenue vs. Health Priorities	Revenue focus overshadows health concerns . Kerala’s rollback of partial prohibition (2018) for financial reasons highlights conflict
Dependence of States on revenue from liquor sales	According to reports, it has been found that, in most states, around 15 to 30 per cent of the revenue comes from liquor . E.g., Karnataka, Uttar Pradesh, Punjab, and West Bengal heavily depend on excise duty from alcohol, contributing over 20% to their own tax revenue .
Inconsistent State Policies	Haryana’s attempts at prohibition failed due to difficulties in controlling illegal distillation and bootlegging , leading to fatalities. Currently, there are five states (Bihar, Gujarat, Lakshadweep, Nagaland, and Mizoram) with total prohibition and some more with partial prohibition
Weak Enforcement of Regulations	For, Alcohol firms flout advertising bans with little government intervention, like during major events such as the cricket World Cup.
Exclusion from GST	States are reluctant to include alcohol in GST due to revenue concerns, preferring individual control over policies. Inclusion could simplify taxation and align it with other products.
Excessive Taxation	High domestic and customs duties exceeding 200% and 150% , respectively, burden consumers financially.
Impact on Health	Consumers opt for cheaper, lower-quality alcohol due to high taxes, increasing health risks, especially among lower-income groups. Hooch tragedies , where illicitly brewed alcohol leads to deaths or illness, occur periodically.
Government Monopoly in Sales	Current policies lead to government monopolies in liquor sales, potentially fostering corruption and hindering private businesses.

Actionable steps to address alcohol policy issues:

- 1. Include Liquor in GST:** Simplify taxation by bringing liquor under **GST**, similar to cigarettes, for a streamlined tax process.
- 2. Encourage Private Distribution:** Transition from government monopolies to private liquor distribution, regulated for safety and age restrictions, to reduce corruption and promote business diversity.
- 3. Reform Licensing Policies:** Simplify licensing procedures for liquor sales in public spaces to reduce bureaucratic obstacles and foster a healthier business environment.
- 4. National Health-Focused Policy:** Develop a national alcohol policy prioritizing public health over revenue, aligned with the WHO’s recommendation of minimizing alcohol consumption.
- 5. Legislative Action on Advertising:** Enforce stricter regulations to ban alcohol advertising and control surrogate advertising by liquor companies.
- 6. Balance Revenue and Health:** Find a balanced approach to alcohol policy that considers both revenue generation and public health impact without compromising either.
- 7. Open Discussion:** Promote open, non-judgmental discussions about alcohol use, challenging traditional views and addressing religious perspectives to foster informed decision-making.

Ethical aspects of Alcohol use in India:

Ethical aspects of alcohol use include **promoting responsible consumption to mitigate social harm, respecting cultural sensitivities, addressing health risks**, minimizing environmental impact, ensuring economic equity, and complying with regulations.

Indian attitudes towards alcohol vary across different dimensions:

- Cultural Views:** Alcohol is perceived differently across Indian cultures. While some communities, particularly upper castes, view it negatively, associating it with **“tamasic” qualities**, others, like many tribal societies, accept it openly.
- Gender Dynamics:** Alcohol consumption by men often negatively impacts women, leading to social protests led by women against alcohol consumption in many communities.
- Alcohol and Religion:** Various religions in India have differing stances on alcohol. Islam forbids it, Christianity tends to be more permissive, and Hinduism does not explicitly prohibit it but emphasizes moderation.
- Medical View:** From a medical perspective, alcohol is recognized as harmful in India. It is associated with an increased risk of heart disease and can adversely affect liver health.

Thinker’s View on Alcohol Use:

Ethical Thinker	View on Alcohol Use
Mahatma Gandhi	Strongly advocated for prohibition of alcohol , viewing it as harmful to individuals and society.
B.R. Ambedkar	Supported regulation and control of alcohol , emphasizing the need to address social and health issues.
Swami Vivekananda	Condemned excessive alcohol consumption , promoting spiritual and moral development as alternatives.
Mother Teresa	Opposed alcohol use due to its detrimental effects on individuals and families, advocating for sobriety.
Plato	Generally opposed to excessive drinking , seeing it as a threat to reason and self-control in society.
Aristotle	Acknowledged moderate alcohol consumption but warned against excess, emphasizing virtue and balance.

For **Why do some Indian states ban alcohol and its impacts?:** [Click Here](#)

Geographical aspects of Liquor in India:
How Liquor is Made:
<ol style="list-style-type: none"> Distillation: Most liquors are made through the process of distillation, where fermented grains, fruits, or vegetables are heated to vaporize the alcohol, which is then condensed back into liquid form. Fermentation: Initially, raw materials like grains (for whiskey), grapes (for wine), or sugarcane (for rum) are fermented using yeast, which converts sugars into alco-

hol and carbon dioxide.

- Ageing:** Some liquors, like whiskey and brandy, are aged in wooden barrels to develop flavour and character. This ageing process can take several years, during which the liquor absorbs flavours from the wood.

Types of Liquor:

- Whiskey:** Made from fermented grains like barley, corn, rye, or wheat.
- Vodka:** Typically made from grains or potatoes and distilled to a high level of purity.
- Rum:** Made from sugarcane or molasses and aged in wooden barrels.
- Gin:** Distilled from grain and flavoured with botanicals like juniper berries, coriander, and citrus peels.
- Tequila:** Produced from the blue agave plant, primarily in Mexico.

Climate Conditions:

The climate conditions required for liquor production depend on the specific type of liquor being produced. For example, grapes used in wine **production thrive in temperate climates with well-defined seasons**, while sugarcane, used in rum production, grows in tropical climates.

States in India Ahead in Liquor Production: Maharashtra, Karnataka, Tamil Nadu, Punjab, and Kerala. Maharashtra is the leading state for wine production in India

Karnataka is the largest-selling state for liquor. India is the third largest market for alcoholic beverages in the world, after China and Russia.

Insta Links:

- [Alcohol Prohibition](#)

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.

4. REGULATING BIG TECH COMPANIES IN INDIA AND THE WORLD

Context:

The US has recently **initiated actions against Big Tech, particularly Google**, which has emboldened other countries like India to address similar disputes with tech giants.

What are Big-Tech Firms?

Big Tech firms refer to **large technology companies that dominate their respective sectors**, wielding significant influence and control over digital platforms and services. These companies typically operate on a global scale and are characterized by their immense market capitalization, extensive user base, and diverse portfolio of products and services.

Examples of Big Tech firms include

1. **Google** (controls the majority of online search traffic and digital advertising revenue)
2. **Amazon** (dominates e-commerce and cloud computing)
3. **Apple** (iPhone, iPad, and MacBook,)
4. **Facebook** (Meta) (Leads the social media landscape)
5. **Microsoft** (software, hardware, and cloud services)

Need for Regulations:

1. **Arbitrary Pricing:** Big Tech’s influence on pricing rules in the digital space, leads to concerns about fairness and competition.
2. **Regulatory Vacuum:** Challenges faced by regulators in keeping pace with rapid tech innovation, leading to reactive rather than proactive measures.
3. **Data Collection and Privacy Concerns:** Big Tech’s extensive data collection practices raise privacy, surveillance, and data security issues.

Specific concerns related to the functioning of Big Tech Firms:

Concerns	Description
Prioritizing In-House Services	Allegations against Alphabet, Apple, and Meta for steering customers towards their in-house services over competitors’ , potentially limiting consumer choice. E.g., Apple prioritizes its App Store and Safari browser in its services
Non-Compliance with DMA of EU	Alphabet, Amazon, Apple, ByteDance, and Microsoft were designated as ‘gatekeepers’ under the Digital Markets Act (DMA) (in 2023) and investigated for non-compliance.
Discriminatory Approach	The European Commission is investigating Google for potential bias in search results , focusing on whether the company favours its own services over competitors. Competition Commission of India has launched a probe into Google’s Play Store pricing policy for alleged discriminatory practices.
Reducing Choices for Customers	In October 2020, the US Department of Justice accused Google of unlawfully maintaining monopolies in search and search advertising markets through anti-competitive practices. They claimed it harmed consumers by limiting search quality, reducing choices, and stifling innovation.
Ecosystem Captivity	The European Commission is investigating whether Apple allows users to uninstall pre-installed apps , change default settings, and choose alternatives easily on iOS. They’re concerned that Apple’s practices might limit user choice within its ecosystem, leading to ecosystem captivity.
Concerns Over ‘Binary Choice’ of Meta	Meta introduced a subscription model in the EU, EEA, and Switzerland , allowing users to use Facebook and Instagram without ads or continue using them for free with personalized ads. Regulators found the model’s “binary choice” insufficient in providing a real alternative for users who don’t consent, failing to prevent data accumulation by gatekeepers.
Antitrust Concerns	E.g., Facebook (Meta) is facing antitrust lawsuits and probes for acquiring potential competitors like Instagram and WhatsApp, along with concerns about its control over digital advertising and social networking markets. Amazon is under antitrust scrutiny for its treatment of third-party sellers, predatory pricing allegations, and potential conflicts of interest as both a retailer and a marketplace operator. Antitrust laws aim to promote fair competition, prevent monopolistic practices, and ensure consumers have access to a variety of high-quality products at fair prices.

Existing governance frameworks in place to regulate technologies for responsible use:

- **Competition Act, 2002 and Competition Commission of India (CCI):** The Competition Act, 2002 is the **primary legislation governing antitrust issues (unfair competitive practices)** in India for regulating Big Tech companies.
 - CCI is responsible for **checking monopolistic practices** and ensuring fair competition.
 - E.g., **Recently CCI imposed heavy penalties on misuse of Google’s dominant position** in the online search market
- **Competition Amendment Bill, 2022:** It mandates the Competition Commission of India (CCI) to establish **regulations for assessing if an enterprise has significant business operations in India.** This strengthens the Commission’s review process, particularly in **digital and infrastructure sectors**, previously underreported due to lower asset or turnover values not meeting jurisdictional thresholds.

- **Information Technology Act, 2000:** The Act provides a legal framework for electronic governance by giving recognition to electronic records and digital signatures.
 - However, the act is old and doesn't cover all aspects of technology misuse.
- **National Regulatory Frameworks:** E.g. **The National Strategy for Artificial Intelligence (2018)**
- **Industry Self-regulation:** Technology companies often develop their own codes of conduct and industry standards to govern the responsible use of technologies. Self-regulation can **provide flexibility and adaptability** to rapidly evolving technologies.
 - However, it **may lack enforceability and uniformity across** different industries and regions.
 - E.g. **self-regulation of OTT platforms**
- **Multi-stakeholder Initiatives:** Collaborative efforts involving governments, businesses, civil society organizations, and academia play a crucial role in technology governance. These initiatives focus on dialogue, knowledge sharing, and best practice development.
 - Examples include the **Global Network Initiative (GNI)** and the **Partnership on AI (PAI)**.
- **The RBI's 'Payments Vision 2025'** aims to regulate big tech and fintech in the payments sector.

Regulation of tech companies in other countries:

Country	Mechanism	Description
Europe	Digital Markets Act (DMA) and Digital Services Act (DSA)	The Digital Markets Act (DMA) aims to ban harmful business practices by large digital players, creating a fairer and more competitive economic space. The Digital Services Act (DSA) targets various online services , including websites, internet infrastructure services, and online platforms.
USA	Anti-trust legislation	The United States has adopted anti-trust legislation to address the dominance of Big Tech companies . These measures include giving states greater power in competition cases and increasing funding for federal regulators.
Australia	Competition watchdog recommendations	The competition watchdog in Australia has recommended tighter regulations for Facebook and Google to improve media competition. Additionally, the Online Safety Act grants the power to force social media companies to delete posts constituting online bullying and imposes fines on companies and hosts involved in the alleged abuse.

Global cooperation can contribute to the development of global standards for technology governance in the following ways:

1. **Information Sharing and Best Practices:** E.g, India can adopt legislation similar to the **EU's Digital Services Act** to regulate India's service marketplace.
2. **Harmonization of Standards:** Global cooperation can facilitate the harmonization of standards across countries and regions **E.g., Algorithmic Accountability**, to identify, assess and penalise harmful algorithmic amplification by Tech companies
3. **Capacity Building and Technical Assistance:** Global cooperation supports capacity-building efforts in developing countries by providing technical assistance and knowledge transfer.
4. **Norm Setting and Policy Guidance:** These norms can address issues such as **AI ethics, privacy protection, autonomous systems, and digital rights**.
5. **Multilateral Governance Mechanisms:** E.g., for regulating the flow of funds, drugs, etc. using the Dark Web and other unregulated technology networks.

The Standing Committee on Finance submitted its report on 'Anti-Competitive Practices by Big Tech Companies' in December 2022.

Key observations and recommendations include:

1. **Regulating Digital Markets:** Evaluate competitive behaviour in digital markets before monopolization occurs, suggesting the **identification of Systemically Important Digital Intermediaries (SIDIs)** and yearly reporting to the Competition Commission of India (CCI).
2. **Digital Competition Act:** Introduce legislation to ensure a fair digital ecosystem.
3. **Self-Preferencing:** SIDIs must not favour their own services over competitors' on their platforms.
4. **Data Usage:** SIDIs should handle user data responsibly, avoiding merging data from core services without consent and restricting data access to third-party services.

5. **Revamping CCI:** Strengthen the CCI with a specialized digital markets unit to monitor SIDIs and address anti-competitive behaviour.
6. **Third-Party Applications:** SIDIs should allow and technically enable the use of third-party applications without transferring data to foreign governments.
7. **Bundling and Tying:** SIDIs should not force users to subscribe to additional services to use their core platform.
8. **Anti-Steering:** SIDIs should not restrict business users from steering customers to offers outside the platform.

Conclusion

Collaborative efforts can help address the challenges posed by emerging technologies, promote ethical and responsible technology use, and ensure a globally inclusive and sustainable digital future.

Insta Link:

[RBI to regulate bigtech and fintech](#)

Mains Link:

Q. There is growing support for regulating big tech companies such as Facebook and Google. Discuss the reasons. (15M)

Prelims Link:

Q. With reference to ‘consumers’ rights/privileges under the provisions of law in India, which of the following statements is/are correct? (UPSC 2012)

1. Consumers are empowered to take samples for food testing.
2. When a consumer files a complaint in any consumer forum, no fee is required to be paid.
3. In case of death of consumer, his/her legal heir can file a complaint in the consumer forum on his/her behalf.

Select the correct answer using the codes given below:

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

Ans: C

Topics: [Bilateral, regional and global groupings and agreements involving India and/or affecting India’s interests.](#)

5. INDIA’S STRATEGIC FOCUS: CENTERING AFRICA IN THE GLOBAL SOUTH VISION

Context:

India’s relationship with African nations is crucial in its **vision for the Global South**, especially as it seeks to **navigate a changing global landscape**.

What is India’s Global South Vision?

India’s Global South Vision emphasizes fostering **strategic partnerships with nations in the Southern Hemisphere**, aiming for **a more equitable and inclusive global order**. It focuses on economic cooperation, **multilateralism, and solidarity** among developing countries to address common challenges and promote sustainable development.

Africa’s Importance for India’s Global South Vision:

1. **Economic Partnerships:** India and Africa boast immense economic potential, with Indian investments exceeding **\$98 billion in 2023** and bilateral trade totalling \$100 billion.
2. **Strategic Influence:** Africa’s presence in **global forums is pivotal for India’s vision of rule-based global governance**, as demonstrated by India’s advocacy for the African Union in the G20 summit.
3. **Energy Security:** Cooperation in the energy sector is crucial, with **Africa possessing 30% of the world’s critical mineral reserves** essential for India’s transition to a low-carbon future, particularly in solar panel and battery production.

Other aspects of India-Africa Relations:

Aspect	Details
Cultural	India’s relations with Africa are deeply rooted in cultural and civilizational ties, reflecting ideologies of “Vasudhaiva Kutumbkam” and “Ubuntu”
Political	India offers assistance in defence capabilities, promoting security cooperation and countering China’s military presence India and Africa cooperate on global issues, advocating for the interests of developing countries and pursuing reforms in global governance institutions
Shared Vision	India views Africa as a foreign policy priority , offering support without conditionality or a hidden agenda. Hamid Ansari has ives 4 imperatives for cooperation between India and Africa <ol style="list-style-type: none"> 1. Common historical experiences and cultural links. 2. Complementarities in strengths and capabilities. 3. A common approach in meeting developmental challenges. 4. Convergence of views of global matters. <p>PM Modi- <i>The warmth and depth of the connections between Indian and African countries have been the pillars of India’s foreign policy, leading to a “strong emotional link”.</i></p>

Development Assistance	India offers training and capacity-building programs through the ITEC program
	India has worked with Japan to create the Asia-Africa Growth Corridor (AAGC)
	India has increased lending to Africa to counter China's influence , including \$32 billion in credit across 42 African countries over the past decade.
Health Collaboration	Indian pharmaceutical companies provide affordable generic medicines
	India deploys medical teams and offers technical assistance to combat diseases like HIV/AIDS, malaria, and Ebola in African countries.
Defence Cooperation	India has signed MoUs with all African nations on the Indian Ocean Rim (IOR)
	Hosts the India-Africa Defence Dialogue (IADD) at the defence ministers' level
	Conducts trilateral maritime exercises to enhance maritime cooperation with countries like Tanzania and Mozambique.
Technology and Digital Cooperation	India sets up a fibre-optic network for satellite connectivity , telemedicine, and tele-education in Africa under the Pan African e-Network Project
	Introduces initiatives like e-VidyaBharti and e-ArogyaBharti (e-VBAB) to provide free tele-education and medical education to African students and healthcare professionals.
Education and Skill Development	Collaboration between Indian and African educational institutions enhances educational opportunities and skill development, facilitated by programs like ITEC.
Renewable Energy and Sustainability	Joint initiatives in renewable energy and sustainable development , such as the International Solar Alliance (ISA) , combat climate change with the participation of 38 African member countries.
Peace-keeping and Diplomacy	India and Africa collaborate in global forums, advocating for peace, stability, and reforms in global institutions like the UN Security Council and the WTO
	India led the proposal for including the African Union in the G20 .

Challenges faced by African countries:

- Misgovernance:** Poor governance, corruption, and lack of accountability e.g., countries like Ethiopia, Sudan, and the Central African Republic face insurgency, ethnic violence, and terrorism
- Unplanned Development:** Rapid population growth, urbanization, and environmental degradation.
- Dominance of Ruling Tribes:** Ethnic and tribal con-

flicts and monopolization of power.

- Inter-Tribal Scrimmage:** Frequent clashes over resources.
- Terrorism:** Threats from Islamic extremism and global networks.
- Changing Climate:** Vulnerability to climate change impacts.
- Runaway Food Inflation:** High food prices affecting millions.
- External Interventions:** Military interventions worsen situations.
- Return of Military Generals:** Reemergence of military leadership.
- Competition and External Players:** Various external actors, including **China, Russia, the US, EU, Japan, Turkey, and UAE**, are actively vying for influence in Africa, seeking market access, resources, and political power.

How can India help Africa?

Area	Strategies
Political Support	Use diplomatic influence to support peace, democracy, and development. Advocate for African interests in global forums. Foster regional cooperation through support for African Union initiatives such as such as the African Continental Free Trade Area (AfCFTA) and the African Peace and Security Architecture (APSA)
Economic Partnership	Enhance trade and investment ties. Provide market access and preferential tariffs. Offer Indian innovations and force multipliers
	Promote India-Africa trade through the creation of an Africa Growth Fund (AGF) to enhance access to finance
Security Cooperation	Provide training, equipment, and intelligence to security forces. Contribute to peacekeeping missions. Collaborate in countering terrorism, piracy, and organized crime
Poverty and Hunger	Adapt Indian microfinance and agricultural practices to empower communities in Africa. Utilize South-South cooperation platforms for knowledge exchange
Health and Disease Burden	Provide affordable healthcare solutions using expertise in generic drug production and telemedicine. Joint research efforts on infectious and neglected tropical diseases
Inclusiveness of Global South	E.g., India advocated for AU's full membership in G20 (accepted under India's G20 Presidency)

Piracy and Terror	Conduct joint military exercises. Share information and capacity-building programs
Climate Action	Collaborate on projects to mitigate climate change impacts. Support initiatives like the Great Green Wall
UN Reforms	Advocate for equitable representation of Africa in international organizations, including the UN Security Council
Implementing the 'Roadmap 2030'	Form a team led by the MEA's Secretary for Africa and a Deputy National Security Adviser. Following this roadmap will bolster India's partnership with Africa, enhancing global stature.
	The Roadmap 2030 is a set of policy recommendations that aims to deepen and diversify the relationship between India and Africa.

Several challenges have hindered the realization of India-Africa's potential. One major obstacle is the **lack of a comprehensive and focused African policy** by India, which has led to a lack of strategic direction in its engagement with African countries.

Additionally, **China's dominant presence in Africa has raised concerns about India's limited involvement and competition in the region.** The disparity in investment between India and China, the impact of multilateral treaties on trade, and issues related to **political instability and terrorism** further complicate the relationship.

Conclusion

India's robust ties with Africa present vast **opportunities for economic, political, and social collaboration.** Prioritizing engagement with African nations is crucial for India's leadership in the Global South. Amid global transformations, the synergy between India and Africa promises a mutually beneficial and prosperous future.

In this regard, **PM Modi** has stated that *"Just as India and Africa fought colonialism together, we will work together for a just, representative and democratic global order that has a voice and a role for one-third of humanity that lives in Africa and India."*

Insta Links:

- [India-Africa ties](#)

Mains Link:

Q. How does India see its place in the economic space of rising natural resource-rich Africa? (UPSC 2014)

Q. Increasing interest of India in Africa has its pros and cons. Critically Examine. (UPSC 2015)

Prelims Link:

Q. Consider the following statements: (UPSC 2016)

1. The India-Africa Summit

<p>2. held in 2015 was the third such Summit</p> <p>3. was actually initiated by Jawaharlal Nehru in 1951</p> <p>Which of the statements given above is/are correct?</p> <p>(a) 1 only</p> <p>(b) 2 only</p> <p>(c) Both 1 and 2</p> <p>(d) Neither 1 nor 2</p> <p>Ans: A</p>

6. DEFENCE DIPLOMACY BY INDIA

Context:

Recently, India announced that it will **send 16 Defence Attachés (DA)** to a number of its missions in Africa and other countries (such as Ethiopia, Djibouti, Mozambique, Ivory Coast, Philippines, Armenia, Poland etc.) **for the first time** in a sign of **expanding focus on military/defence diplomacy**

What are Defence Attachés (DA) and what are their functions?

Defence Attachés (DAs) are **military officers assigned to foreign embassies and diplomatic missions** to represent their country's defence interests abroad. Their primary role is to:

1. **Foster defence cooperation**, promote dialogue, cooperation, and mutual understanding
2. **Facilitate military-to-military relations** (facilitate defence procurements, and promote defense exports)
3. **Gather intelligence** on defence-related matters in the host country
4. **Serve as liaisons** between their home country's defence establishment and the host nation's defence authorities
5. **Provide strategic advice** to their governments on defence policy, regional security issues, and emerging threats

Status of DAs:

The number of **Defense Attachés from other countries in India exceeds 120**, in contrast, India previously had just around 50 defence wings abroad.

The Vienna Convention on Diplomatic Relations, 1961, grants diplomatic status to Defense Attachés (DAs). According to the Convention, DAs are classified as members of the diplomatic staff, affording them full immunity while serving in their diplomatic capacity.

Need for additional Defence Attachés by India:

Need	Description
1. Enhanced Defence Engagement	India's increasing defence engagement with multiple countries necessitates more military attachés to effectively manage and strengthen these relationships.
	India has defence cooperation agreements of one kind or the other with over 50 countries.

2. Achieving Defence Targets	The target for 2024-25 is Rs 1,75,000 crore worth of total annual defence production , which would include an export target of worth ₹35,000 crore.
3. Facilitating Defence Procurements	Several African countries have expressed interest in buying Indian military equipment, hardware, and platforms . India has provided a line of credit to African countries to buy military platforms and weaponry from India
4. Securing Supply Chains	In light of emerging challenges to global supply chains esp. strategic minerals such as Gold, Cobalt (in Ghana) etc.
5. Mitigating National Security Risks	With the changing dynamics of national security threats, more attachés can help identify and mitigate potential risks by enhancing intelligence gathering and sharing. E.g., In Central Asia, India has an air force facility and a military hospital, to manage risks from Afghanistan and other countries
6. Strengthening Defence Diplomacy	Additional attachés can bolster India's defence diplomacy efforts by expanding its presence in key strategic regions and enhancing bilateral and multilateral cooperation.
7. Defending partner countries	E.g., As per the terms of the Indo-Bhutan treaty , India has discharged its obligation to defend the security of Bhutan. It has maintained a key Indian military training establishment in Bhutan since 1969.

What is Defence Diplomacy?

Defence diplomacy is the **strategic use of a country's military capabilities** to advance its foreign policy objectives through cooperation with other nations.

India's steps towards defence diplomacy:

- Establishment of additional Military Wings:** These wings are optimized from existing billets and aim to bolster defence cooperation and presence in these regions.
- Engagement through Joint Exercises:** Indian armed forces have been participating in joint exercises with foreign armies, **engaging with 110 countries** through defence cooperation activities (E.g., military exercises like Milan and Malabar)
- Multilateral Engagement:** India has been actively engaging in multilateral forums and conferences such as the **Indo-Pacific Armies Chiefs Conference (IPACC) and the India-Africa Army Chiefs' Conclave (IACC)**
- Defense Exports:** E.g., Recent deals with countries like the **Philippines for Brahmos cruise missiles**

demonstrate India's growing defence export capabilities and partnerships.

- Regional Focus:** India has been focusing on enhancing defence ties with Southeast Asian nations (through its **SAGAR doctrine** initiative), particularly in the context of the South China Sea disputes. This includes supplying defence platforms, joint production initiatives, and conducting naval war drills with countries in the region.
- Strategic Partnerships:** India has been deepening defence cooperation with countries like **Vietnam, Indonesia, and Malaysia** through various agreements, joint exercises, and supply contracts. These partnerships aim to bolster maritime security and counter aggressive behaviour in the region, particularly from China.
- Support for International Law:** India has expressed support for international law, including the **United Nations Convention on the Law of the Sea (UNCLOS)**, particularly in the context of the South China Sea disputes.
- Humanitarian Assistance:** India leads in **Humanitarian Assistance and Disaster Relief (HADR) operations** in the region, coordinating with partner countries and conducting exercises like **PANEX-21 with BIMSTEC nations**.
- Engagement in West Asia:** India fosters security cooperation with West Asian monarchies through joint naval exercises, signalling a shift from traditional dynamics and addressing emerging challenges in the region.
- India has a substantial presence in **UN Peacekeeping Forces**

To know about [India's Defence Exports Reaching an All-time High: Click Here](#)

Conclusion:

India is focusing on **managing the fallout from Afghanistan while addressing Chinese assertiveness in the Indo-Pacific**. Leveraging defence forces for regional diplomacy, India aims **to sustain cooperative engagement and partnerships**, requiring increased investment in naval capabilities. The **Russo-Ukraine war underscores** the need for India to diversify its defence portfolio and prioritize indigenous technology. To align foreign and defence policies, national interests should be paramount.

Mains Link:

Q. Foreign Direct Investment (FDI) in the defence sector is now set to be liberalized: What influence this is expected to have on Indian defence and economy in the short and long run? (UPSC 2014)

Prelims Link:

Q1. Consider the following in respect of the Indian Ocean

Naval Symposium (IONS): (UPSC 2017)

1. The inaugural IONS was held in India in 2015 under the chairmanship of the Indian Navy.
2. IONS is a voluntary initiative that seeks to increase maritime cooperation among navies of the littoral states of the Indian Ocean Region.

Which of the above statements is/are correct?

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

Ans: B

Q2. Which one of the following is the best description of 'INS Astradharini', that was in the news recently? (UPSC 2016)

- (a) Amphibious warfare ship
- (b) Nuclear-powered submarine
- (c) Torpedo launch and recovery vessel
- (d) Nuclear-powered aircraft carrier

Ans: C

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

7. ISRAEL-IRAN CONFLICTS: CHALLENGES AND SOLUTIONS

Context:

Iran recently launched a **series of air strikes on Israel, employing 200-300 drones** and ballistic missiles. The attacks, executed by **Iran's para-military force**, the Iranian **Revolutionary Guard Corps**, were in response to Israeli war jets targeting an **Iranian consulate in Syria**. Iran dubbed the attack "**Operation True Promise**".

The attack signals a **significant escalation in the ongoing conflict between Israel and Iran**, moving beyond previous skirmishes involving **Israel and Hamas**.

Events that led to the Attack:

Event	Date	Description
US Withdrawal from Iran's Nuclear Deal	2018	Israel praises the US withdrawal from the Iran nuclear deal, which it had lobbied against, viewing it as a historic move by President Trump.
Assassination of Iran's Army General	2020	Israel welcomes the assassination of General Qassem Soleimani by a US drone strike in Baghdad, prompting retaliatory missile attacks by Iran on American bases in Iraq.
 Hamas Attack on Isreal	October 2023	Hamas, supported by Iran, launched a missile and land attack on Israel, leading to Israeli airstrikes on Gaza in response.
Israel Raids	November 2023	Israel conducts raids on medical facilities in Gaza, citing Hamas's presence, and using them for warfare.
Houthi Group's Red Sea Incident	November 2023	The Iran-backed Houthi group's landing on a cargo vessel in the Red Sea initiates the 'Red Sea Crisis,' contributing to regional tensions and supply chain issues.
Escalation of Israel's Ground Offenses	December 2023	Israel intensifies ground offensives in Gaza, resulting in a rise in casualties and refugees, prompting international calls for a peaceful resolution.
Airstrike on the Iranian Embassy	April 2024	Suspected Israeli airstrike on the Iranian embassy in Damascus results in casualties, heightening tensions further.
Iran's Missile Attack on Israel	April 2024	Iran launches a missile attack on Israel, allegedly in response to an Israeli strike on Iran's consulate in Syria, marking the first direct attack on Israel from Iranian territory.
Isreal strikes back	April 2024	Isreal attacked Iran's airforce base (however, denied by Iran)

Iran and Israel's Conflict:

Iran and Israel have a **long-standing history of enmity**, largely stemming from **ideological and geopolitical differences**.

Period	Key Events
Pre-1979 Iran-Israel Ties	Iran recognized Israel after its formation in 1948. Despite the Arab-Israeli conflict, Iran established diplomatic ties with Israel.
	During Mohammad Reza Shah Pahlavi's rule from 1941 to 1979 , Iran pursued a pro-Western foreign policy. Despite economic boycotts from Arab states, Iran maintained diplomatic ties with Israel and even sold oil to Israel.
	Israel, under Prime Minister David Ben Gurion , adopted the "periphery doctrine," forming alliances with non-Arab, mainly Muslim, countries like Turkey and pre-revolution Iran to counter Arab hostility.
The 1979 Revolution	Iran's Islamic Revolution led to a shift in view towards Israel as an occupier of Palestinian land. Ayatollah Khomeini labeled Israel as "Little Satan."
Post-1979 Shadow War	Both countries engaged in indirect conflicts through proxies and limited strategic attacks . Israel targeted Iranian nuclear facilities through a computer Virus (Stuxnet). Iran supported anti-Israel militant groups like Hezbollah and Hamas.

Fig: Iran's Proxy groups



Impact of Middle-East Escalation:

Impact	Description
Increasing Regional Escalation	Heightened tensions could lead to military action, escalating the conflict regionally. Other countries such as Syria, Lebanon and Saudi Arabia could be drawn into a broader conflict.
	Israel is believed to be nuclear-capable therefore conflict can lead to a nuclear flashpoint
Potential to Disrupt Oil Supplies	Escalation could disrupt crude oil supplies , impacting global oil prices and economies heavily reliant on oil imports.
	With Iran being a key producer of crude oil within OPEC , volatility in oil prices may increase due to disruptions in shipping routes and geopolitical tensions.
Spike in Inflation and Capital Outflow	Increased geopolitical tensions may lead to commodity price hikes and capital outflows , affecting global markets.
Trade and Travel Disruptions	Recent events include Iran seizing an Israel-linked ship near the Strait of Hormuz and Houthis hijacking a commercial ship in the Red Sea. These incidents affect global trade routes.

India faces challenges **balancing relationships with Iran and Israel**, aiming to maintain stability in the region.

Aspect	Israel's Importance for India	<u>Iran's Importance for India</u>
Economic and Commerce	India is Israel's third-largest trade partner in Asia. Bilateral merchandise trade has grown significantly.	Iran has been a major supplier of crude oil to India , contributing significantly to India's energy security.
Defence	India imports critical defence technologies from Israel . Nearly 41% of Israel's defence exports go to India.	Both countries share geopolitical concerns, especially regarding terrorism and stability in the region.
Energy	India has exploration licenses for natural gas extraction from Israel's gas fields , diversifying the relationship.	US sanctions on Iran have impacted India's oil imports , highlighting Iran's importance for India's energy needs.
Science & Technology	India-Israel Industrial R&D Fund promotes joint projects.	Strategic collaboration on space projects, including satellite launches, strengthens bilateral ties.
Strategic Location	Israel connects the Red Sea to the Mediterranean Sea through land	Iran's strategic location (including Chabahar Port) enhances India's connectivity and economic interests in the region.

India's Position:

India calls for **immediate de-escalation and a return to diplomacy** to resolve conflicts. India's position is on the 'Two-State Solution' of the Israel-Palestine conflict.

What should India do?

India must carefully balance engagements with key regional actors in the Middle East, considering their diverse interests and orientations. India **should prioritize non-ideological engagements** in the region to support its expanding interests in the Middle East.

What Should be done to de-escalate the situation?

- UN Reaction:** The UN urges Iran and Israel to **show restraint** amid escalating tensions in the Middle East. The Secretary-General warned against further escalation and mutual accusations, emphasizing the need for peace.
- Sustainable Ceasefire and Two-State Solution:** Israel should accept a ceasefire in Gaza, open borders for humanitarian aid, and work **towards a two-state solution** for long-term peace.
- Dialogue and Diplomacy:** International mediation and direct talks facilitated by neutral parties could build trust and find common ground between Iran and Israel.
- Addressing Nuclear Proliferation Concerns:** Iran should adhere to the **JCOA and allow international inspections**, while Israel could recognize Iran's right to peaceful nuclear energy.
- Regional Cooperation:** Promoting cooperation within regional organizations could address security concerns and foster stability.
- Long-Term Vision for the Middle East:** Establishing a comprehensive security architecture and addressing underlying issues can contribute to peace and reconciliation.

7. **Normalization of Relations:** Steps towards diplomatic normalization, such as exchanging ambassadors and reopening embassies, could promote peace, as seen in recent agreements between Israel and some Arab states.

Insta Link:

[Gaza conflict: India-Israel Relations](#)

Prelims Link:

Q. The term “two-state solution” is sometimes mentioned in the news in the context of the affairs of (UPSC 2018)

- (a) China
- (b) Israel
- (c) Iraq
- (d) Yemen

Ans: B

[Topics: Important International institutions, agencies and fora, their structure, mandate.](#)

GENERAL STUDIES – 3

[Topics: Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.](#)

1. INDIA’S DEFENCE EXPORTS REACHES AN ALL-TIME HIGH

Context:

India’s defence exports soared to a record high of **Rs. 21,083 crore** in FY 2023-24, marking a remarkable growth of **31 times over the past decade** and a **32.5% increase** from the previous fiscal year.

Key achievements:

1. **Record High Exports:** Indian defence exports reached an all-time high of Rs. 21,083 crores in FY 2023-24, indicating a substantial growth trajectory.
2. **Remarkable Growth:** The defence export sector witnessed a remarkable growth of **31 times over the past decade**, compared to FY 2013-14, showcasing significant expansion and development.
3. **Increased Export Authorizations:** The number of export authorizations rose to 1,507 in FY 2023-24, indicating a growing demand for Indian defence products and technologies in the global market.
4. **Private Sector Contribution:** The private sector played a significant role, contributing approximately **60% to defence exports**, highlighting the increasing participation and capability of private defence firms in meeting export demands

How does high defence export help India?

Benefit	Explanation
Economic Growth	Boosts the economy through increased revenue, job creation, and enhanced manufacturing capabilities.
	It reduces India’s import dependence . India allocates around 1.8% of its GDP towards defence spending
Technological Advancement	Drives innovation and technological growth in the defence sector, fostering advancements in other industries.
Diplomatic Relations	Strengthens diplomatic ties with importing countries, facilitating strategic partnerships and cooperation.
Global Influence	Enhances India’s stature in the global arena, positioning it as a reliable defence partner.
	India has been successful in exporting products such as personal protective items, offshore patrol vessels, and avionics to countries like Maldives, Sri Lanka, Russia, France, Nepal, Mauritius, Sri Lanka, Israel, Egypt, the UAE, and Chile
Self-Reliance	Reduces dependency on imports, promoting indigenous production and self-sufficiency in defence capabilities.
Military Modernization	Supports modernization of armed forces by providing access to advanced technologies and equipment.
Balance of Trade	Contributes to a positive balance of trade, helping to offset costs of defence procurement and imports.
Integration with Global Defense Value Chain	Exporting defence products to major countries like Italy, Nepal, etc., integrates India into the global defence value chain, enhancing its strategic relevance and influence in the international arena.

Steps taken by India:

Steps	Related Steps Taken
Enhanced Foreign Direct Investment (FDI)	Liberalization of FDI policy allowing up to 74% FDI under automatic route and 100% by government approval (e.g., The Swedish Arms Major SAAB’s Announcement : First 100% FDI project for manufacturing Carl Gustav M4 rocket system in India.)
Innovation for Defence Excellence (iDEX)	Launch of iDEX scheme involving Start-ups & Micro, Small and Medium Enterprises (MSMEs).

Defence Acquisition Procedure (DAP) 2020	Implementation of new procurement category - Buy (Global-Manufacture in India) . The Defence Acquisition Procedure ensures 50% indigenous content in procurement.
Establishment of Defence Industrial Corridors	Establishment of two Defence Industrial Corridors in Uttar Pradesh and Tamil Nadu
Priority to the procurement of capital items falling in the Buy Indian (IDDM) Category	Notification of four ' Positive Indigenization Lists ' of a total of 411 items of Services and three 'Positive Indigenization Lists' of a total of 3,738 items of Defence Public Sector Undertakings (DPSUs).
	Simplification of Industrial licensing process with longer validity period.
	Rationalized Defence Product List which required an Industry License.
	Launch of an indigenization portal namely SRIJAN to facilitate indigenisation by Indian Industry including Micro, Small and Medium Enterprises (MSME).
Financial Investments	Increased Domestic Procurement Budget: From 40% to 75% of the total capital procurement budget dedicated to domestic procurement.
	Increasing Private Contributions
DRDO	Review of Defence Research and Development Organisation (DRDO) and focus on building " Fit to Purpose " capabilities
Participation of Women	Initiatives like Nari Shakti and the opening of Sainik Schools and the National Defence Academy to women have significantly increased the participation of women in the armed forces.
Naval Platform Development	Development of naval platforms including projects like the INS Vikrant and Project 17A frigates.
Other Developments	Launch of Mission DefSpace

Issues with India's defence exports include:

- 1. Failure to Convert Interest into Business Action:** Despite interest from countries like Indonesia, Malaysia, and others in products like **BrahMos and Akash missile** systems, India has struggled to translate this interest into concrete business deals.
- 2. Inability to Secure Big Naval Defence Orders:** India has faced challenges in securing significant naval de-

fence orders from countries such as Oman, Myanmar, Mauritius, and Vietnam.

- 3. Lack of Competitiveness:** Indian defence products are often perceived as having lower quality and higher costs compared to major exporters like the US, Russia, and Israel.
- 4. Limited Export Portfolio:** India's defence exports are restricted to a few countries and product categories, hindering its ability to fully tap into the global defence market.
- 5. Bureaucratic Hurdles:** The defence export process in India involves bureaucratic hurdles and red tape, making it challenging for exporters to navigate.
- 6. Unclear Policy:** India lacks a well-defined defence export policy, leading to confusion and uncertainty among potential exporters.
- 7. Dependence on Imports:** Despite strides in indigenization, India still relies heavily on imports for its defence equipment, limiting its capacity to export advanced defence technology.

To boost its defence exports, India can focus on:

- 1. Dedicated Export Infrastructure:** Establishing specialized infrastructure for training, market intelligence, and handholding of defence exporters, including training programmes for PSU officers and setting up a **dedicated Export Promotion Council for the Defence Sector**.
- 2. Trade Support:** Providing dedicated support from regulatory agencies to streamline approval processes for production and export compliances, and facilitating participation in trade fairs, Buyer-Seller Meets, and knowledge-sharing platforms.
- 3. R&D Infrastructure:** Exploring joint or co-development opportunities with other countries through the Department of Defence Production, and being open to sharing R&D infrastructure with potential buyers, such as offering fighter aircraft or rocket launcher systems developed through joint/co-development arrangements.

Conclusion

Self-reliance in defence manufacturing is significant not only for India's defence capabilities but also for ensuring sovereignty and security. Building a **private industrial base** with **proactive policies, funding RnD, creating low-interest regimes** to bring down capital costs, addressing **issues of exchange rates** and providing **stability** can help India's defence manufacturing sector become **globally competitive**.

Mains Link:

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- (d) Nuclear-powered aircraft carrier

Ans: C

2. INDIA'S DECLINING NET HOUSEHOLD SAVINGS

Context:

Recent data from the Reserve Bank of India reveals that **India's net household savings are at a 47-year low, standing at 5.3% of the GDP in the fiscal year 2023, down from 7.3% in 2022.**

- This decline is accompanied by a **sharp increase in household debt** (at 5.8% of GDP) reaching the **second-highest level** since the 1970s.

What is the Household Saving Rate?

The Household Saving Rate **refers to the percentage of disposable income that households save instead of spending on consumption.** It is a key economic indicator that reflects the propensity of households to save for the future.

Household savings consist of three main parts:

- Financial assets:** This includes cash, bank deposits, retirement funds, insurance policies, stocks, and other investments.
- Physical assets:** These are investments in tangible assets like real estate, land, and property.
- Gold and silver ornaments:** Savings in the form of precious metals like gold and silver jewellery or bullion.

A higher saving rate indicates greater financial prudence and potential for investment, while a lower saving rate may suggest higher consumer spending and less savings for future needs.

Household net savings are the total money and investments families have, like deposits, stocks and bonuses, minus any money they owe, like loans and debt.

Why are domestic savings important for India's economy?

Domestic savings are **vital for India's economy as they fuel investment** in key sectors like infrastructure and industries. This capital formation supports economic growth, job creation, and prosperity.

What is Household debt?

Household debt refers to the total amount of money that individuals owe to creditors, such as banks, financial institutions, or other lenders.

Reasons for declining Household savings in India and Increasing Household Debt:

Reasons for Declining Household Savings in India	Reasons for Increasing Household Debt
Low-interest rates discourage saving	Higher borrowing for consumption , including consumer durables
Rising inflation reduces purchasing power	Increased reliance on debt to fund expenses and investments
Global Economic uncertainty (such as the Russia-Ukraine war, and Gaza Crisis) led to precautionary saving	Growth in non-mortgage loans , such as farm and business loans
Changing consumer mindset favouring current consumption over saving for the future	Credit widening , with more borrowers taking out loans, rather than credit deepening
Lack of adequate financial literacy and planning	
Increasing costs of living outpacing income growth	

As households borrow more to support consumption, their savings diminish. Increased borrowing means **more income goes toward debt repayment**, reducing the amount available for savings.

The fall in household savings can have several macroeconomic implications:

- Increased household debt:** The fall in household savings means people have less money set aside for the future, which can lead to more borrowing.
- Impact of high-interest rates:** Policy measures like higher interest rates aimed at controlling inflation can inadvertently lead to increased household debt levels, potentially trapping them in a debt cycle.
- Effect on demand:** High-interest rates can weigh on households' ability to consume, thereby **reducing demand in the economy.**

4. **Fragility and joblessness:** This shift towards a more financialized economy could make the economy fragile and potentially lead to job losses
5. **Rising inequality** - The rise in financial liabilities with falling asset levels could be a sign of rising inequality.
6. **Dependence on foreign capital** – A dip in household savings would lead to more dependence on foreign capital to fund growth.

Steps to Increase Household Savings in India:

1. Implement initiatives to **enhance financial literacy among households**, empowering them to make informed decisions about savings and investments.
2. **Introduce tax incentives or deductions for savings instruments** such as retirement accounts, fixed deposits, and insurance policies to encourage households to save more.
3. **Government Savings Schemes:** Promote government-sponsored savings schemes like the [Public Provident Fund \(PPF\)](#), [National Savings Certificate \(NSC\)](#), and [Sukanya Samridhi Yojana \(SSY\)](#) to attract households to invest in safe and secure avenues.
4. **Employer Contributions:** Encourage employers to contribute to their employees' retirement savings through schemes like the Employees' Provident Fund (EPF) and the [National Pension System \(NPS\)](#).
5. **Financial Inclusion:** Expand access to banking and financial services in rural and underserved areas to include more households in the formal financial system, offering them opportunities to save.

Steps to Reduce Household Debt in India:

1. **Debt Counseling Services:** Establish debt counseling services to provide guidance and support to households struggling with debt management,
2. **Regulation of Lending Practices:** Implement stricter regulations on lending practices by financial institutions to prevent predatory lending and discourage households from taking on excessive debt burdens.
3. **Debt Relief Programs:** Introduce debt relief programs or schemes to assist households facing financial hardship esp. farmers.
4. **Alternative Financing Options:** Promote alternative financing options such as peer-to-peer lending, microfinance, and community-based savings and credit groups as alternatives to traditional banking loans, offering households access to affordable credit sources with reasonable terms and conditions.

Conclusion:

While some interpret **reduced savings in India as a sign of confidence in future income prospects**, others express concerns about **financial fragility and sustainability**, especially given **India's low per capita income among G20 nations**. The situation underscores the delicate balance between consumption aspirations, inadequate public amenities, and

income instability for Indian households.

Insta Links:

[Household Consumption Expenditure Survey 2022-23](#)

Prelims Link:

Q. As per the NSSO 70th Round "Situation Assessment Survey of Agricultural Households", consider the following statements: (UPSC 2018)

1. Rajasthan has the highest percentage share of agricultural households among its rural households.
2. Out of the total agricultural households in the country, a little over 60 percent belong to OBCs.
3. In Kerala, a little over 60 percent of agricultural households reported to have received maximum income from sources other than agricultural activities.

Which of the statements given above is/are correct?

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

Ans: C

Q2. In a given year in India, official poverty lines are higher in some States than in others because (UPSC 2019)

- (a) poverty rates vary from State to State
- (b) price levels vary from State to State
- (c) Gross State Product varies from State to State
- (d) quality of public distribution varies from State to State

Ans: B

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.

3. CROP DIVERSIFICATION IN INDIA

Context:

West Bengal farmers are shifting from wheat cultivation to more lucrative options like bananas, lentils, and maize, especially in border districts like Murshidabad and Nadia.

Reasons Behind the Shift from Wheat Production:

1. **Wheat Blast Disease:** The emergence of wheat blast disease in Bangladesh in 2016 led to a two-year ban on wheat cultivation in border areas of West Bengal. This prompted farmers to explore alternative crops due to the severe yield losses caused by the fungal infection.
2. **Economic Viability:** Farmers have turned to alternative crops like bananas due to their higher profitability compared to wheat. Stagnant wheat prices and concerns over water consumption further incentivized the shift.

3. **Shift to Higher Output Crops:** Maize cultivation has surged in the area, with production increasing eightfold from 2011 to 2023. Despite lower prices per quintal compared to wheat, maize offers **higher per-hectare output and demand from poultry and food processing industries**, making it a lucrative alternative.
4. **Pulses and oilseed production** have also seen significant growth in the region.

Other reasons for this shift in West Bengal and other parts of India:

1. **Nutrient deficiency in soil:** Continuous cultivation of the same crops depletes specific nutrients from the soil, leading to soil nutrient deficiency and decreased microfauna population. **Example:** Rice-wheat system in Northwestern India replacing traditional crops like pulses and oilseeds.
2. **Resource use efficiency:** Monocropping reduces resource-use efficiency. Introducing diverse crops and cropping patterns helps revive soil health and improve resource-use efficiency.
3. **Urbanization:** Increased food demand due to population growth and urbanization stresses agricultural land, leading to crop intensification and substitution of food crops with commercial crops.
4. **Infrastructure facilities:** Improved irrigation, transport, storage, and marketing facilities allow farmers to diversify towards more profitable crops.
5. **Government incentives:** Initiatives like [Paramparagat Krishi Vikas Yojana](#) and state government financial incentives encourage farmers to change cropping patterns.
6. **Erratic rainfall:** Sudden adverse weather conditions like erratic rainfall, drought, and pest outbreaks compel farmers to diversify their cropping patterns for risk mitigation.

What is Crop Diversification?

Crop diversification refers to the **practice of growing a variety of crops on a farm instead of focusing on just one or a few crops**. Crop diversification in India represents a **strategic shift from the traditional monoculture farming practices towards a more varied cultivation** approach. Through diversifying crops, farmers can **reduce dependency on a single crop**, thereby **increasing resilience against climatic and economic fluctuations**

Types of crop diversification:

Type of diversification	Nature of diversification	Potential benefit
Improved structural diversity	Makes crops within field more structurally diverse	Pest suppression
Genetic diversification in monoculture	Cultivation of mixture of varieties of same species in a monoculture	Disease suppression, Increased production stability
Diversify field with fodder grasses	Growing fodder grasses alongside of food/pulse/oilseed/vegetables	Pest suppression, opportunity to livestock farming
Crop rotations	Temporal diversity through crop rotations	Disease suppression, Increased production
Polyculture	Spatial and temporal diversity of crops	Insect, pest disease suppression, climate change buffering
Agro-forestry	Growing crops and trees together	Pest suppression and climate change buffering
Mixed landscapes	Development of larger-scale diversified landscapes through mixture of crops and cropping system with multiple ecosystems	Pest suppression, climate change buffering and increased production stability
Micro-watershed based diversification	Integration of crop with other farming components for year round income and employment generation, besides sustaining soil	Insect, pest and disease suppression, climate change buffering and increased production, employment and income

The trend of crop diversification in India:

- **Towards Cash crops:** e.g., growing more cash crops like fruit and vegetables instead of food grains.
- **Shifted to horticulture:** Since good inputs (seeds and know-how) are available, farmers are growing horticultural crops along with or as an alternative to food grains.
 - **India produces 10% of the world's production of fruits** and holds the first place in the case of fruits like papaya, mango, and banana, among others.
- **Water intensive to water efficiency patterns:** Some water intensive Food grains (paddy) and cash crops (such as sugarcane) losing interest in favour of water-efficient crops or pulses and oil seeds.
 - These are not only water-efficient but also climate-resilient.
- **Organic farming:** Many regions of the country have also seen an increase in cropping area under organic farming. States like **Sikkim** have become fully organic states.
- **ZBNF:** Many states like **Maharashtra, and Telangana** are promoting [Zero Budget Natural farming](#), under it use of chemicals for growing crops is discouraged.

Significance/Benefits of Crop Diversification in India:

Significance	Description
For farmers	Income Stabilization: In Karnataka, the cultivation of millets, alongside traditional crops, has provided farmers with an alternative income source, buffering them against the price volatilities of mainstream crops.
	Market Demand Fulfillment: By growing organic produce in Sikkim, farmers are tapping into the growing market demand for organic food, both domestically and internationally, ensuring higher profitability.
	Reduced Price Dependency: Farmers in Tamil Nadu diversifying into pulses and oilseeds have found these crops to be less subject to international price fluctuations than cash crops like cotton and sugarcane.
	Alternative Market Channels: In Kerala, diversification into spice crops like turmeric and ginger has opened up new market channels, including export markets, offering farmers lucrative alternatives.
Environment	Reduced chemical use benefits the environment.
	Pest and Disease Management: Intercropping can reduce the need for chemical pesticides, promoting natural pest control.
	Availability of water: Promotes efficient water use, reducing irrigation demands.
	Soil Health Improvement: Planting leguminous crops improves soil fertility, benefiting subsequent crops.
Government	Improves food security and nutrition, reducing malnutrition and anaemia.
	Enhances socio-economic status through quality food production.
Trade	Reduces import dependence, particularly for pulses and oilseeds, benefiting the economy.
	Market Opportunities: Diversifying into niche markets, like organic farming, can lead to higher prices for produce.
	Source of Biofuels: Crops like Jatropha and Pongamia can be used for biofuel production, offering additional income streams for farmers and contributing to energy security
Risk Reduction	Diversification helps in mitigating the impact of adverse weather conditions, such as drought, by ensuring some level of harvest.

Government Initiatives for Crop Diversification

1. **National Food Security Mission (NFSM):** Encourages farmers to **grow pulses and oilseeds** in addition to cereals.
2. **Pradhan Mantri Krishi Sinchai Yojana (PMKSY):** Focuses on **improving water use efficiency** through **micro-irrigation**, supporting the cultivation of less water-intensive crops.
3. **Paramparagat Krishi Vikas Yojana (PKVY):** Promotes **organic farming**, facilitating **diversification into high-value organic crops**.
4. **Rashtriya Krishi Vikas Yojana (RKVY):** Provides **flexibility and autonomy to states** to prioritize their agriculture and allied sector investments, including diversification efforts.
 - 4.1. **Crop Diversification Programme (CDP),** a sub-scheme of Rashtriya Krishi Vikas Yojana (RKVY) is being implemented in the **Original Green Revolution States viz: Haryana, Punjab & Western Uttar Pradesh** since 2013-14 to **divert the area of water-intensive paddy crop to alternative crops** like pulses, oilseeds, coarse cereals, Nutri cereals etc
5. **Mission for Integrated Development of Horticulture (MIDH):** Aims at holistic growth of the **horticulture sector**, encouraging farmers to **diversify into horticultural crops**.

- Mera Pani-Meri Virsat Scheme (Haryana):** Provides financial aid to farmers transitioning from paddy cultivation to water-saving alternatives such as pulses, oilseeds, millets, and vegetables.

Challenges with the Crop Diversification in India:

- Market Risks and Limited Opportunities:** Farmers may hesitate to switch from established crops like rice and wheat due to fluctuating market prices and limited demand for alternative crops, potentially leading to income loss.
- Financial Constraints:** Diversifying crops requires additional investment in seeds, equipment, and knowledge, which smallholder farmers may lack. Creating a market for nutritious crops like millet also requires investment in processing facilities.
- Lack of Infrastructure and Storage:** Perishable diversified crops need specialized storage and transportation facilities, which are often lacking in rural areas. Without proper infrastructure, there's a risk of spoilage, resulting in wasted produce and lost income.
- Clash With Dietary Habits:** Crop diversification could disrupt established market dynamics and consumption patterns in regions where rice and wheat are staple foods, potentially affecting market acceptance and farmer livelihoods.

The way forward and Conclusion:

Moving forward, India can explore innovative approaches to promote crop diversification and sustainable agriculture. One such avenue is **agri-tourism and 'U-Pick' farms**, where tourists can engage in experiential agriculture by harvesting fruits and vegetables directly from the fields. This not only offers farmers additional income but also **fosters a connection between consumers and agriculture**, promoting appreciation for diversified crops.

Moreover, advancements in gene editing techniques like **CRISPR** present an opportunity for **biofortification**, enhancing the nutritional value of crops to address malnutrition concerns and open new markets for biofortified produce.

Additionally, **integrating regenerative agriculture practices such as cover cropping, composting, and no-till farming** with diversified crop rotations can contribute to sustainable diversification. These practices not only improve long-term crop yields but also sequester carbon, mitigating the impacts of climate change on agriculture.

Mains Links:

Q. How did India benefit from the contributions of Sir M. Visvesvaraya and Dr. M.S. Swaminathan in the fields of water engineering and agricultural science respectively? (UPSC 2019)

Q. Explain various types of revolutions, that took place in Agriculture after Independence in India. How have these rev-

olutions helped in poverty alleviation and food security in India? (UPSC 2017)

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

4. DISINVESTMENT IN INDIA: A KEY AGENDA FOR THE NEXT GOVERNMENT

Context:

The Union Finance Minister recently reaffirmed the **government's commitment to the privatisation policy**. The policy, part of the Aatmanirbhar Bharat package, aims for **disinvestment in both strategic and non-strategic sectors**, with a plan to maintain minimal presence of central public-sector enterprises (CSEs).

What is Disinvestment?

Disinvestment is the process of **reducing or liquidating government ownership in a company or asset**, typically through the sale of shares or assets to private or public investors. It is often undertaken to raise capital, improve efficiency, or reduce government intervention in the economy.

Process of Disinvestment in India:

In India, the disinvestment process is overseen by **the Department of Investment and Public Asset Management (DIPAM)**, operating under the Ministry of Finance. DIPAM's main goal is to **manage the government's investments in public sector** enterprises and supervise the disinvestment of government equity in these enterprises. Additionally, in 2005, the government established the **National Investment Fund (NIF)** to serve as a channel for the proceeds generated from the **disinvestment of Central Public Sector Enterprises**. The creation of NIF aimed to ensure transparent and efficient utilization of these funds for various developmental purposes.

Approaches:

- Minority Disinvestment:** Govt. retains >51%, ensuring control.
- Majority Divestment:** Govt. hands control but retains some stake.
- Complete Privatisation:** 100% control transferred (full privatisation)

Methods of Disinvestment:

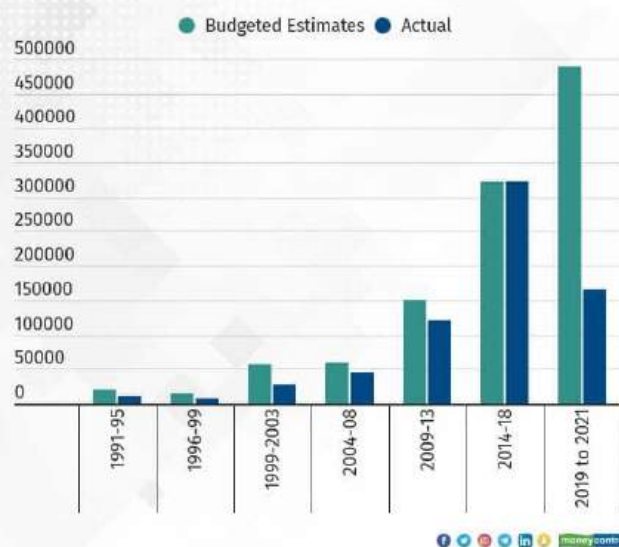
Methods	Description
Initial Public Offering (IPO)	Offer of shares by an unlisted Public Sector Enterprise (PSE) or the Government to the public for subscription for the first time.

Further Public Offering (FPO)	Offer of shares by a listed Public Sector Enterprise (PSE) or the Government to the public for subscription.
Offer for Sale (OFS)	Auction of shares by promoters through the Stock Exchange platform. This method has been extensively used by the Government since 2012.
Strategic Sale	Sale of a substantial portion of Government shareholding (up to 50% or as determined) of a PSE along with transfer of management control.
Institutional Placement Program (IPP)	Offering where only Qualified Institutional Buyers can participate. These buyers are perceived to possess the expertise to invest in capital markets.
CPSE Exchange Traded Fund (ETF)	Disinvestment through the ETF route allows the simultaneous sale of the Government's stake in various PSEs across diverse sectors through a single offering.

Trends of Disinvestment in India:

The trend of disinvestment in India has evolved significantly since 1991. **Initially slow** due to political constraints, it **gained momentum in the late 1990s** and early 2000s, with significant earnings between 1999 and 2004. However, between 2004 and 2009, disinvestment slowed again due to political pressures. **From 2009 to 2014, there was a resurgence, with earnings rising to INR 1.2 lakh crore.** Since 2014, there has been a rapid increase in disinvestment revenues, totalling **INR 4.48 lakh crore by 2020.** Recent initiatives like the **Atmanirbhar Bharat package** and the **National Monetisation Pipeline** aim to further enhance private sector participation and unlock the value of public assets.

DISINVESTMENTS UNDER VARIOUS GOVERNMENTS



In recent years, the government has **largely met or exceeded its disinvestment targets**, notably surpassing goals in 2017-18 and 2018-19. In the **fiscal year 2023-24**, the revised estimate for disinvestment revenue was **Rs 30,000 crore**, lower than the initially budgeted Rs **51,000 crore**.

Recent examples of disinvestment in India:

1. IPO of **3.5% LIC shares**
2. Privatisation of **Air India**
3. **Sale of minority holdings in CPSEs** including IDBI Bank, SCI, Concor, and others

Latest Disinvestment Policy

The latest disinvestment policy **classifies the public sector into strategic and non-strategic sectors.**

1. **In non-strategic sectors**, the government will exit all businesses except for a **'bare minimum'** presence in four key strategic sectors:
 - i. Atomic energy, space and defence
 - ii. Transport and telecommunications
 - iii. Power, petroleum, coal, and other minerals
 - iv. Banking, insurance, and financial services
2. States will be **incentivized for disinvestment** in their public sector companies.

This policy marks a **departure from past approaches**, providing a framework for deciding the **ownership pattern of 439 CPSEs**. It also includes the monetization of surplus land and the creation of the National Land Monetization Corporation.

Challenges related to Disinvestment in India:

Challenges	Description
Political Sensitivity	Disinvestment is a politically sensitive issue in India , with opposition from various political parties and trade unions.
Valuation Complexity	Valuing public sector enterprises can be challenging due to their unique structures and market conditions, leading to potential discrepancies.
Labour Concerns	Disinvestment often raises fears among employees regarding job security and wage cuts, leading to potential resistance and labour unrest.
Investor Appetite	Finding suitable buyers for shares in public sector enterprises (e.g., in the case of Air India), especially those with poor financial performance, can be difficult.
Regulatory Hurdles	Disinvestment processes are subject to complex regulatory frameworks, including approval requirements and compliance standards.
Legal Risks	Disinvestment decisions and processes can face legal challenges , including disputes over valuation, terms, and adherence to regulations.
Bureaucratic Delays	Bureaucratic procedures and decision-making processes can slow down the disinvestment process, leading to inefficiencies and delays.
Economic Impact	Disinvestment proceeds may impact government revenue streams and fiscal deficits , requiring careful management and planning for economic stability.
Private monopoly	Complete privatization can lead to public monopolies transforming into private monopolies , which may exploit their dominant position to raise service costs and maximize profits.

Way Forward:

1. NITI Aayog recommends:
 - i. Direct submission of disinvestment proposals to CCEA for faster processing.
- a. **Appointment of advisors and asset valuers** to expedite disinvestment.

- b. **Establishment of an independent professional agency** to accelerate the Asset Monetization Program.

2. **Increase operational autonomy and governance measures** for PSEs, such as listing on stock exchanges, to enhance transparency and performance.
3. **Provide fair valuation of government entities** to boost bidder confidence in the disinvestment process.
4. **Reduce government involvement in the management and operations of PSEs** by reforming boards and organizational structures to attract more buyers and achieve better valuations.
5. **Communicate the economic benefits of disinvestment** to counter political resistance and public scepticism.
6. **Focus on selling assets based on market appeal** rather than solely unloading underperforming ones, including profitable enterprises.

Conclusion:

Disinvestment is vital for **India's economic growth**. Experts note that transferring ownership of PSEs to private entities through disinvestment enhances economic efficiency. They also suggest that the **size of disinvestment alone doesn't significantly improve PSU performance**; rather, changes in leadership and market factors like innovation and technology drive economic efficiency.

Insta Links:

- [Disinvestment of Public Sector Units \(PSUs\)](#)

Prelims Links:

Q1. In the context of governance, consider the following: (UPSC 2010)

1. Encouraging Foreign Direct Investment inflows
2. Privatization of higher educational Institutions
3. Down-sizing of bureaucracy
4. Selling/offloading the shares of Public Sector Undertakings

Which of the above can be used as measures to control the fiscal deficit in India?

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

Ans: D

Q2. Why is the Government of India disinvesting its equity in the Central Public Sector Enterprises (CPSEs)? (UPSC 2011)

1. The Government intends to use the revenue earned from the disinvestment mainly to pay back the external debt.
2. The Government no longer intends to retain the management control of the CPSEs.

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

Ans: D

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

5. OPPORTUNITIES AND CHALLENGES OF GREEN HYDROGEN IN INDIA

Context:

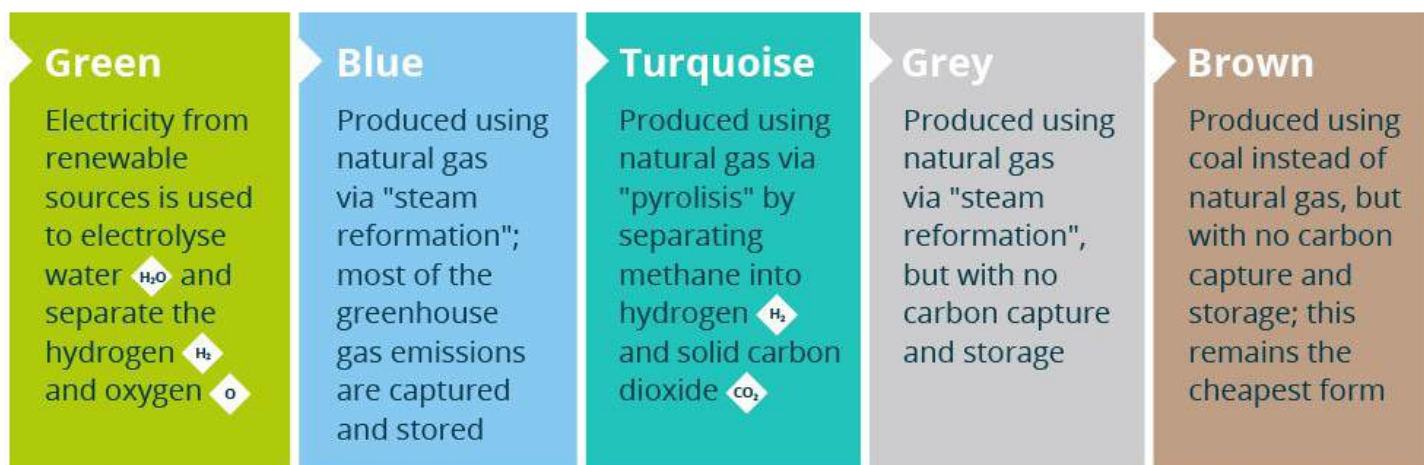
India is making strides in embracing green hydrogen as a promising alternative fuel, evident from the **Ministry of New and Renewable Energy's Rs 496 crore scheme supporting pilot projects**.

Definition of Green Hydrogen:

Green hydrogen is produced through a process called electrolysis, where water is split into hydrogen and oxygen **using renewable energy sources** such as solar or wind power.

In August 2023, the Union Ministry of New & Renewable Energy, Government of India, provided a definition for green hydrogen, specifying it as having a well-to-gate emission (encompassing water treatment, electrolysis, gas purification, drying and compression of hydrogen) **not exceeding 2 kg CO2 equivalent per kg H2**. In contrast, grey hydrogen (produced using fossil fuels), on average, **emits 10 kg of CO2 per kg of H2 produced**.

Five shades of hydrogen



Nodal Agency:

The Bureau of Energy Efficiency (BEE) (under the Union Ministry of Power) is the nodal authority responsible for accrediting agencies for monitoring, verifying and certifying green hydrogen production projects.

Initiatives for Green Hydrogen:

1. Oil India Limited (OIL) recently commissioned **India's first 99% pure green hydrogen** plant in eastern Assam's Jorhat
2. **NTPC (in Kawas, Surat) has started India's 1st Green Hydrogen Blending** operation in the Piped Natural gas (PNG) Network.
3. **The Petroleum and Natural Gas Regulatory Board (PNGRB)** has given approval for a 5% blending of green hydrogen with PNG (later to be scaled to 20%)
4. **Pune Municipal Corporation (PMC)** has collaborated with business management consultant
5. **The Green Billions (TGBL)** to manage its waste and generate it into useable green hydrogen (under the waste-to-hydrogen project)
6. **Strategic Clean Energy Partnership (SCEP)** to mobilise finance and speed up green energy development
7. The Union Minister of Petroleum & Natural Gas launched **India's inaugural Green Hydrogen Fuel Cell Bus** in New Delhi in September 2023.

Significance of Green Hydrogen energy:

- **Emission reduction:** IEA (International Energy Agency) points out, that the method of obtaining **green hydrogen would save the 830 million tonnes of CO2** that are emitted annually when Hydrogen is produced using fossil fuels.
- **Viable alternative:** With green hydrogen, if the **production costs fall by 50 % by 2030**, it could certainly evolve as one of the fuels of the future. Also, hydrogen is **easy to store**, which allows it to be **used subsequently for other purposes** and at times other than immediately after its production.
- **Energy Security and Independence:** As fossil fuels are finite and susceptible to global supply fluctuations, green hydrogen fosters energy independence.
- **Creating New Industries and Jobs:** According to IRENA, the green sector employed 11 million people in 2018, with projections of over 42 million jobs by 2050.
- **Decarbonizing Difficult-to-Decarbonize Sectors:** Sectors like heavy industry and aviation, hard to decarbonize, can benefit from green hydrogen substitution. This helps mitigate their significant carbon emissions.

Applications of Green Hydrogen:

Applications	Details
Agriculture Sector	Green hydrogen can replace traditional fertilizers in agriculture by producing carbon-free ammonia.
	Ammonia production currently relies on fossil fuels, but green ammonia offers improved efficiency and reduced soil acidity.
	Green hydrogen-powered farm machinery , such as tractors and harvesters, can reduce greenhouse gas emissions in agriculture.
Water Management	Green hydrogen can power desalination plants , converting saltwater into freshwater for sustainable water management.
Transport Sector	Hydrogen fuel cells in vehicles produce zero emissions and offer a longer range and faster refuelling compared to battery electric vehicles.
Industrial Sector	Green hydrogen production using excess renewable energy can reduce energy costs and promote sustainable development.
	On-site production and storage make green hydrogen a reliable energy source, reducing dependence on the electricity grid.
	Green hydrogen production from waste materials like municipal solid waste and agricultural waste can reduce waste and promote sustainability.
	Using green hydrogen to power fuel cells increases energy efficiency compared to traditional combustion engines, reducing overall energy consumption.

Challenges in Green Hydrogen Production:

Not Sufficient	Green hydrogen constitutes less than 1 per cent of the world’s hydrogen production and usage (as per the Global Hydrogen Review 2023 by the IEA)
	Green hydrogen production needs to grow significantly to align with Net Zero Emissions goals.
Energy Inefficient	30% of renewable energy is lost while producing hydrogen
Carbon Emissions	Existing methods involve fossil fuels with high carbon emissions.
Low Adoption	Low-emission hydrogen adoption in various sectors is slow.
Economic Sustainability	Low economic sustainability of extracting green hydrogen.
	For transportation fuel cells, hydrogen must be cost-competitive with conventional fuels and technologies on a per-mile basis
Access to Critical Minerals	Access to critical minerals such as nickel, platinum group metals and rare earth metals could hinder scaling up electrolyser manufacturing capability in India
Safety Issues	Green hydrogen is highly flammable , requiring specialized handling and storage. Establishing safety protocols and regulations is essential for ensuring its safe management.

Government Initiatives for Bio and Green Hydrogen:

Initiative	Key Points
Global Biofuel Alliance	Leading efforts to establish global standards for hydrogen from biomass.
National Hydrogen Mission	Targeting a production increase to 5 million metric tonnes (MMT) by 2030, meeting 40% of domestic requirements.
Production Linked Incentive (PLI) Scheme	Proposing a Rs 15,000-crore PLI scheme for electrolysers.
Green Hydrogen Mission	Development of Green Hydrogen Production Capacity of at least 5 MMT (Million Metric Tonne) per annum; Renewable energy capacity addition of about 125 GW in the country by 2030
	Strategic Interventions for Green Hydrogen Transition (SIGHT): Funding domestic electrolyser manufacturing and green hydrogen production.
	Green Hydrogen Hubs: Identifying and developing states/regions for large-scale hydrogen production/utilization.
	Strategic Hydrogen Innovation Partnership (SHIP): Under this Public-private partnership framework R&D will be facilitated under the mission.
International Collaboration	Actively partnering with other countries, research institutions, and private entities for expertise and technology development.
Renewable Energy Integration	Integrating green hydrogen production with India's expanding renewable energy capacity for improved efficiency and sustainability.

The Ministry of New and Renewable Energy (MNRE) (In collaboration with the Ministry of Road Transport & Highways) **in India has launched a new pilot project for the production of Green Hydrogen with the following components:**

1. **Funding Allocation:** Rs 496 crore allocated until 2025-26.
2. **Pilot Project Support:** Focus on testing green hydrogen as a vehicle fuel.
3. **Infrastructure Development:** Establishment of hydrogen refuelling stations.
4. **Project Execution:** Selected company or consortium as executing agency.
5. **Viability Gap Funding (VGF):** Approval by MNRE based on project appraisal.
6. **Timeframe:** Completion of pilot projects within two years.

To learn about [Bio-hydrogen Click here](#)

Way forward:

1. **Reduce Production Cost:** Develop efficient technologies for electrolysis. Integrate green hydrogen production with renewable energy.
2. **Implement Regulatory Incentives:** Offer tax credits and subsidies to promote adoption.
3. **Improve Infrastructure:** Establish dedicated infrastructure and supply chains. Develop efficient and cost-effective supply chains.
4. **Coordinate Among Stakeholders:** Ensure alignment of policies, standards, and regulations.
5. **Raise Awareness and Capacity:** Educate potential users and producers about benefits. Demonstrate safety and feasibility in various sectors.
6. **Develop skills and competencies** for production and utilization.

Insta Links:

[India's green hydrogen challenge](#)

Mains Links:

Q. What are the key features of the National Clean Air Programme (NCAP) initiated by the Government of India? (UPSC 2020)

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

6. CHALLENGES POSED BY RENEWABLE ENERGY PROJECTS IN INDIA

Context: The challenges posed by renewable energy development, particularly in the context of solar parks, underscore the complex intersection between sustainable energy goals and local socio-economic and environmental concerns.

India’s Renewable Energy Status:

India is the **world’s third-largest emitter** of greenhouse gases. In the fiscal year 2023-24, **India added over 18 GW of renewable energy capacity**, a 21% increase from the previous year, led by solar (approx. 13 GW) and wind (approx. 2 GW) installations. Total installed capacity has risen from over 76 GW in 2014 to approx. 179 GW by October 2023, nearly **2.34** times higher.

India aims to install 500 GW of renewable energy capacity by 2030, significantly up from the previous 450 GW target.

Examples of large-scale solar Park in India:

Solar Park Name	Location	Capacity	Land Area
Khavda Solar and Wind Park	Near Vighakot village, Kutch, Gujarat	30 GW	72,600 hectares
Pavagada Solar Park	Karnataka	2,050 MW	13,000+ acres
Bhadla Solar Park	Bhadla village, Jodhpur District, Rajasthan	2.25 GW	14,000 acres
Kurnool Ultra Mega Solar Park	Kurnool district, Andhra Pradesh	1,000 MW	Almost 6,000 acres
Charanka Solar Park	Gujarat		

Large-Scale Renewable Energy Parks: Positive Impacts

- Steady Income for Landowners:** Farmers in areas like Pavagada, Karnataka, gain a reliable annual income by leasing their land to solar parks.
- Renewable Energy Production:** These parks play a vital role in India’s renewable energy output, reducing reliance on fossil fuels and supporting the country’s goal of achieving Net Zero emissions by 2070.
- Employment Opportunities:** The development of large-scale renewable energy projects creates job opportunities locally, fostering employment growth in the regions where they are established.

Challenges Posed by the Renewable Energy Projects:

Issue	Description
Land Use Challenge	Large-scale renewable energy projects, especially solar parks, require extensive land use. India may need 50,000-75,000 sq. km of land, about half the size of Tamil Nadu, to achieve its Net Zero targets. This poses a challenge as it may lead to the conversion of agricultural land.
Impact on Food Security	Conversion of agricultural land for renewable energy could affect food security. India needs at least 400,000 hectares of land by 2030 to meet renewable goals , potentially disrupting agricultural practices and reducing available farming land.
Loss of Common Lands	Near Bhadla, Rajasthan , solar parks have led to the loss of sacred common lands and grazing areas, negatively impacting local farmers and pastoralists.
Resource Competition	Large water demand for maintaining solar panels can conflict with local water needs, impacting water security.
Biodiversity and Ecosystem Disruption	Construction of solar parks can lead to biodiversity loss, especially in sensitive ecosystems like deserts, impacting the overall ecological balance.

Regional Divide in Renewable Energy Projects:

According to the Central Electricity Authority’s report on Optimal Generation Capacity Mix, by 2030, solar and wind will make up almost **51 per cent** of total generation capacity and almost **31 per cent** of all generated power. If these projections materialise, they are likely to have **major fiscal consequences for the coal-rich states of the East (where the majority of poor people live)**

The concentration of RE assets in West and South

India’s massive RE build-out so far has largely benefited **western** and **southern** states. In August 2023, **92.5 per cent** of all grid-connected RE generation came from **eight states(Central Electricity Authority)**.

The main reasons behind this are;

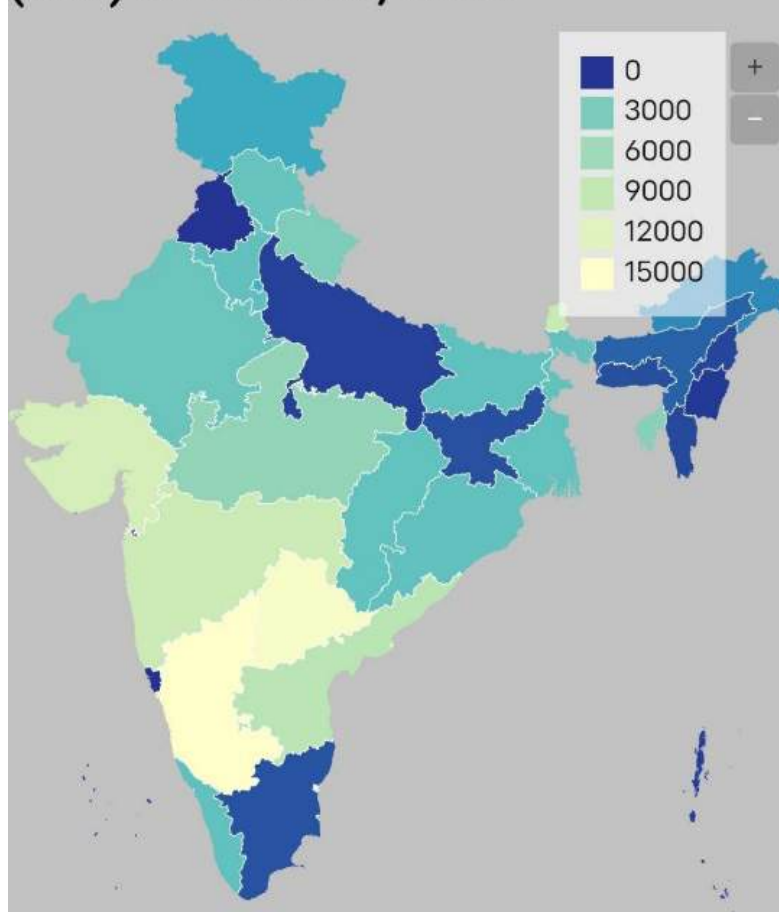
- Higher insolation and wind density:** Instrumental in the generation of solar and wind power respectively.
 - Eg: Rajasthan for solar power and Tamil Nadu for wind power.
- Favourable state finances:** Coal-rich states **lack diversity** in terms of revenue sources and experience **higher fiscal strain**.

- Eg: States like **Jharkhand** and **Odisha** depend a lot on **coal royalties**.
- 3. **Investment environment:** Southern and Western states have better **fiscal and budgetary condition** that promotes **investor confidence**.
- 4. **Land availability and cost of RE:** According to **Bridge to India**, a renewable power consultancy, the lack of easy **availability of renewable resources and land** together are the main hindrances in the growth of renewable energy in the eastern region.

Impacts on the revenue of coal-rich states

1. **The decline in royalties:** Coal royalties as a proportion of overall state revenue will decline as **coal growth starts slowing** later this decade
2. **Increase in cost of power:** The cost of **power procurement** will increase as new RE contracts are layered on top of existing commitments for firm power.
3. **Increase in power import:** **Grid-scale energy storage technologies** are unlikely to be adopted at a large scale by the end of the decade. Since most coal-rich states have **limited grid-scale RE-deployment**, they will have to import more power from other states.
4. **Worsen budget deficits:** Declining royalties and increasing imports could worsen the budget deficits of RE-poor power-importing states by almost **8.66 per cent on average**(beyond the norms of the **FRBM Act, 2003**).
5. **Displacement of RE integration costs:** By giving **inter-state transmission waivers** to an entire generation of new RE projects, the integration costs of the energy transition are **displaced onto state PSU balance sheets** without necessarily facilitating **compensatory investment** in upgraded transmission capacity, which can better manage the variability of the new RE projects.
6. **Global market dynamics:** International demand for cleaner energy sources could influence India's **energy export market**. States with significant renewable energy assets may benefit from such global dynamics, potentially affecting the **overall economic landscape**.

Installed Renewable Power Capacity (MW) till June 30, 2020



Way forward

Action	Description
Expand Community Engagement	Involve local communities in planning and decision-making for solar park developments to align projects with local needs, similar to community leasing in Pavagada.
Revise Legal Frameworks	Strengthen laws to require Environmental and Social Impact Assessments for solar parks, preventing adverse effects on local communities and ecosystems.
Promote Agrivoltaics	Implement agrivoltaic systems combining agriculture with solar energy , providing dual land use for energy production and farming, maximizing land efficiency and supporting local economies.
Enhance Training Programs	Develop targeted training programs to equip local populations with new skills, ensuring they benefit from shifts in employment opportunities due to renewable energy projects.
Balanced Regional Development	Give RE-poor states a bigger stake in the energy transition, reviving the philosophy of balanced regional developmentalism, and providing preferential lending for RE projects in these states.
Greater Voice in Federal Power Negotiations	Provide RE-poor states with a greater voice in federal power negotiations, possibly through the revival of institutions like the Inter-State Council.
Financial Transfers to RE-poor States	Ensure explicit financial transfers to RE-poor states through mechanisms like the Finance Commission, promoting collaborative industrial policy through just transition mechanisms.

Conclusion

Green industrial policy should not be the exclusive privilege of historically well-endowed states. Otherwise, the energy transition will simply be yet another **drain of resources** from India's least developed to its most developed regions. Policy measures that **support both**

the decline of **traditional** energy sources and the rise of **renewables** will play a key role in managing these transitions effectively.

Insta Links:

[Perspective- India's Green Energy Transition](#)

Prelims Link:

Q. Consider the following statements regarding 'Earth Hour': (UPSC 2014)

1. It is an initiative of UNEP and UNESCO.
2. It is a movement in which the participants switch off the lights for one hour on a certain day every year.
3. It is a movement to raise awareness about climate change and the need to save the planet.

Which of the statements given above is/are correct?

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

Ans: C

Q. With reference to 'Water Credit', consider the following statements: (UPSC 2021)

1. It puts microfinance tools to work in the water and sanitation sector.
2. It is a global initiative launched under the aegis of the World Health Organisation and the World Bank.
3. It aims to enable poor people to meet their water needs without depending on subsidies.

Which of the statements given above are correct?

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

Ans: C

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.

7. PREVENTION OF MONEY LAUNDERING ACT (PMLA): IMPORTANCE AND CONCERNS

Context:

The [article](#) discusses the Prevention of Money Laundering Act (PMLA), which was **initially aimed at combating the laundering of drug money** but has expanded to include various unrelated offences over time.

Recently, the **Punjab and Haryana High Court clarified that courts can release an accused of money laundering from police custody** without fulfilling the conditions mandated by the Prevention of Money Laundering Act (PMLA), 2002

What is Money Laundering?

Money laundering is a process used to **hide the origins of illegally obtained money**, making it appear legitimate. It involves three stages:

1. **Placement**, where illicit funds enter the financial system
2. **Layering**, where funds are moved through complex transactions to conceal their source
3. **Integration**, where laundered funds are re-introduced as legitimate.

Methods include structuring, trade-based laundering, shell companies, and real estate transactions.



About PMLA:



Prevention of Money Laundering Act (PMLA)

The Act was enacted in 2002 in response to India's global commitment (including **Vienna Convention**) to combat money laundering.

Department of Revenue



The PMLA enables authorities to:

- **Confiscate the property** earned from illegally gained proceeds.
- **Appoint the Adjudicating Authority and Appellate Tribunal** to deal with the matter connected with money laundering
- **The act adds the concept of 'reporting entity'** which would include a banking company, financial institution, intermediary etc.

Appellate Tribunal

- **Composition:** Chairperson+ Two other Members
- **Qualifications:** For Chairperson (Should have been a Judge of the Supreme Court or qualified to be judge of a High Court); For Member (A member of the Indian legal service/revenue service/ economic service/ etc.)
- **Tenure:** Term of **five years** or till the age of 65 years, whichever is earlier.
- **Functions:** It hears appeals against the orders of the Adjudicating Authority and the authorities under the PMLA.

Enforcement Directorate (ED) (est. 1956, HQ: New Delhi) is a multi-disciplinary organization mandated to enforce PMLA.

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Need for Prevention of Money Laundering Act (PMLA):

Global Urgency: Prompted by global concerns over **drug trafficking**, the PMLA was enacted to prevent the laundering of proceeds from drug crimes, in line with UN conventions.

1. **Establishment of FATF:** Following the establishment of the **Financial Action Task Force (FATF)** in 1989, measures like the PMLA were adopted to combat money laundering worldwide.
2. **UNGA Resolution:** A 1990 resolution by the UN General Assembly emphasized the need for legislation to **prevent drug money laundering**, prompting India to enact the PMLA.
3. **Narasimham Committee Recommendations:** Recommendations from the Narasimham Committee highlighted the necessity of addressing money laundering within India's financial system, contributing to the formulation of the PMLA.
4. **Adherence to International Standards:** The PMLA aligns with international standards and recommendations, ensur-

ing India’s compliance with global efforts to combat money laundering.

- Legislative Authority and Scope:** Enacted under [Article 253 of the Constitution](#) (it empowers the government to make laws for implementing the international conventions), the PMLA enables India to remain in alignment with world standards on Money Laundering.

Amendment to PMLA: Recently in **2023**, the Finance Ministry amended the Prevention of Money Laundering Act (PMLA) and rules in line with the recommendations of the **FATF**.

Recent amendments made to the Prevention of Money Laundering Act (PMLA):

- Defines PEPs (Politically Exposed Persons):** Individuals who have been entrusted with prominent public functions by a foreign country, thereby bringing Indian **legal uniformity** in line with FATF norms
- For Cryptocurrencies:** Virtual digital assets (VDA) trade has been brought under PMLA.
 - New rules mandate **crypto exchanges and intermediaries** dealing in virtual assets to maintain the **KYCs of their clients** and **report suspicious transactions** to financial intelligence units.
- Due diligence documentation requirements:** It has now been extended. It now includes the submission of details such as **names of persons holding senior management positions, names of partners, etc.**
- Beneficial Owners’:** Lowered the threshold for identifying beneficial owners by reporting entities, where the client is acting on behalf of its beneficial owner.
 - The term ‘beneficial owner’ refers to those with the entitlement of **more than 25%** of shares or capital or profit of the company, which has now been **reduced to 10%**.
- NPOs:** Reporting entities are now required to **register details of the client** if it’s a non-profit organization (NPO) on the **DARPAN portal** of **NITI Aayog**.
- Clarification on Proceeds of Crime:** Proceeds of Crime now encompass not only property derived from scheduled offences but also from any criminal activity related or similar to the scheduled offence.
- Redefined Money Laundering:** Previously dependent on a predicate or scheduled offence, money laundering is now treated as a distinct standalone crime through an amendment.

Crucial Role Played by PMLA:

Role	Examples
Legal Framework	The PMLA provides a legal basis for investigating and prosecuting cases such as the 2G spectrum scam and the AgustaWestland case
Asset Seizure and Confiscation	Enforcement agencies, under the PMLA, have seized assets worth millions of dollars in cases like the Nirav Modi and Vijay Mallya frauds
International Compliance	India’s adherence to FATF recommendations, as mandated by the PMLA, has facilitated international cooperation in cases like the Panama Papers scandal
Financial Intelligence Unit (FIU) Coordination	The FIU-India, established under the PMLA, coordinates with law enforcement agencies to analyze financial data and detect suspicious transactions, contributing to successful prosecutions in cases like the HSBC black money probe
Monitoring Financial Transactions	Mandatory reporting of high-value transactions by banks under the PMLA has led to the detection of suspicious activities, as seen in cases like the INX Media money laundering case
Enhanced Due Diligence	Banks and financial entities, under PMLA regulations, conduct rigorous KYC checks to prevent money laundering e.g., PMC Bank scam
Establishing the Source of Funds	Through PMLA investigations, authorities have been able to establish the source of illicit funds, as seen in cases like the Saradha chit-fund scam
Deterrent to Criminals	High-profile convictions, such as in the Satyam scam , serve as examples of the deterrent effect of PMLA enforcement.

Challenges with PMLA Enforcement:

- Definition of “Proceeds of Crime”:** Some argue it’s overly broad, risking the inclusion of lawful transactions.
- Inclusion of Non-Drug Offences:** PMLA encompasses offences beyond its original focus, diluting its purpose.
- The burden of Proof on Accused:** Critics find the burden of proof unreasonably high, potentially impacting fair trials.
- Concerns of Overreach:** E.g., Opposition political parties have alleged misuse of PMLA by ED to arrest party authorities [including the sitting CM of Delhi](#)
- Stringent Bail Conditions:** In 2018, the Supreme Court found aspects of the PMLA bail provision **unconstitutional in Nimesh Tarachand Shah vs Union of India**, citing violations of [Articles 14 and 21](#).
 - However, in **2022, the Court upheld the validity of key provisions** empowering the Enforcement Directorate (ED) to arrest, conduct searches, seizures, and attach proceeds of crime.

6. **Lack of Written Communication for Arrest:** Arrests without written communication violate constitutional rights. Challenges in PMLA Enforcement:
7. **Complex Legal Procedures:** Legal intricacies can lead to delays and inefficiencies in prosecution.
8. **Inadequate Training and Resources:** Enforcement agencies may lack the necessary resources for effective implementation.

Reforming PMLA, 2002: Key Suggestions

1. **Parliamentary Committees:** Recommended periodic reviews and amendments to the PMLA to address emerging challenges and ensure its relevance and effectiveness.
2. **Refinement of “Proceeds of Crime” Definition:** Define “Proceeds of Crime” precisely to avoid ambiguity.
3. **Reassessment of Burden of Proof:** Evaluate the burden of proof, ensuring fairness and constitutional rights.
4. **Safeguards Against Officer Overreach:** Establish oversight to monitor law enforcement actions.
5. **Review of Stringent Bail Conditions:** Streamline bail procedures without compromising investigations.
6. **Periodic Review and Amendment:** Establish a mechanism for periodic review and amendment of PMLA.
7. **Enhanced Independence and Transparency of ED:** Improve reporting and disclosure of ED activities.
8. **Public Awareness and Education:** Conduct campaigns to educate the public on PMLA’s purpose and procedures.
9. **Consultative Approach:** Engage in open dialogues to address concerns and gather diverse perspectives.

Conclusion:

The PMLA serves as a critical tool in India’s arsenal against money laundering. However, to fully leverage its potential, **addressing the challenges** in its implementation is **essential**. **By strengthening the framework and execution of the PMLA**, India can more **effectively combat the complex and evolving nature of money laundering**.

Insta Links:

- [EDITORIAL ANALYSIS: Questionable searches under the Money Laundering Act](#)

Mains Link:

Q. Discuss how emerging technologies and globalization contribute to money laundering. Elaborate measures to tackle the problem of money laundering both at national and international levels. (UPSC 2021)

GENERAL STUDIES – 4

Examples of Ethics

1. EXAMPLE 1: BAN ON DIVERSITY PROGRAMS IN THE US

Context:

Many U.S. universities have ended diversity programs, impacting minority students.

What are Diversity Programs?

Diversity programs in US universities **aim to address inequalities by giving special consideration to minority students**, such as Black, Indian American, Hispanic, and Native American students. These programs include initiatives like affirmative action in admissions, **race-based scholarships, and diversity, equity, and inclusion (DEI) programs**. They seek to promote diversity and provide opportunities for underrepresented groups in higher education.

Ethical issues concerned here are:

1. **Equal Opportunity vs. Meritocracy:** The debate over whether affirmative action and diversity programs promote equal opportunity for minority students or undermine the principle of meritocracy
2. **Academic Freedom vs. Ideological Control:** The restrictions and bans on diversity, equity, and inclusion (DEI) programs raise concerns about academic freedom and the imposition of ideological control over educational institutions
3. **Ethical Responsibilities of Institutions:** Universities and educational institutions grapple with their ethical responsibilities to promote diversity, equity, and inclusion
4. **Ethical implications of rolling back diversity** initiatives prompt questions about societal moral obligations to address systemic racism and promote equity.
5. **Systemic Inequality:** The long-standing inequalities faced by minority students in higher education, including disparities in access to resources, opportunities, and representation

2. EXAMPLE 2: SENDING INDIAN WORKERS TO CONFLICT ZONE

Context:

The first batch of **64 Indian construction workers from Haryana and Uttar Pradesh** is heading to Israel amid the Gaza war. Israeli construction industry requested **100,000 Indian workers** to replace Palestinians.

The NSDC International (**with 49% government ownership**), facilitates Indian workers' mobility to Israel under a **Government-to-Government agreement**

Advantages:

- Economic Opportunity:** Indian workers have access to higher wages in Israel compared to their home country, providing economic opportunities for them and their families.
- Skill Development:** Workers gain valuable skills and experience through international work, potentially improving their long-term employability and earning potential.
- Diplomatic Relations:** Facilitating the movement of workers between India and Israel strengthens diplomatic ties and promotes cooperation between the two nations.
- Meeting Labour Demand:** Israel's construction industry benefits from the influx of skilled labour to fill gaps created by the cancellation of Palestinian work permits.

Ethical Concerns:

- Safety and Security:** Sending workers to a conflict zone raises concerns about their safety and well-being amid ongoing violence and instability.
- Exploitation:** There's a risk of workers from outside Israel being mistreated or exploited, particularly if they lack adequate legal protections or support systems.
- Moral Dilemmas:** Workers may face ethical dilemmas when witnessing or being exposed to violence, suffering, or human rights abuses, potentially leading to psychological trauma.
- Displacement of Local Workers:** Importing foreign labour may negatively impact local Palestinian workers by reducing job opportunities or driving down wages in the region's labour market.

A framework agreement ensures the safety of Indian workers in Israel:

- Indian workers receive equal labour rights as Israeli citizens.
- They are provided with proper lodging, medical insurance, social security coverage, and lawful wages and benefits.

3. EXAMPLE 3: FALI S NARIMAN

Fali S Nariman's legal career spanned 74 years, during which he played a pivotal role in shaping Indian constitutional law. Known for his unwavering principles, Nariman was not only a successful lawyer but also a moral guide to governments, the judiciary, and the legal fraternity

Ethical lessons from his life:

Fali S Nariman exemplified ethical values throughout his career, demonstrating **integrity, courage, and accountability**. One notable example is his **acknowledgement of past errors**, such as **defending Union Carbide after the Bhopal tragedy**. Despite the professional ramifications, Nariman had the courage to admit his mistake, showcasing his commitment to ethical conduct over personal gain.

Additionally, his principled stands during critical junctures, such as **resigning from the post of Additional Solicitor General during the Emergency** and returning the brief of the Gujarat Government in protest against attacks on the Christian community, underscored his unwavering commitment to upholding **ethical principles in the face of adversity**.

4. EXAMPLE 4: LIVING WILL

Context:

Recently, **30 people in Thrissur in Kerala** have executed living wills.

What is a Living Will?

A living will is **a legal document that allows individuals to outline their preferences for medical care or the termination of medical support** in situations where they are unable to make those decisions themselves. It details their wishes regarding treatments, life-sustaining measures, and end-of-life care, ensuring that their desires are respected and followed by healthcare providers and family members.

The Supreme Court's 2018 ruling affirmed the **right to die with dignity** and eased procedures for creating living wills.

Ethical Issues with Living Will:

- Autonomy vs. Accuracy:** While living will **uphold individual autonomy** by allowing people to express their healthcare preferences, there may be concerns about the **accuracy of these preferences over time** or whether they truly reflect the individual's wishes at the time of decision-making.
- Interpretation Ambiguity:** Instructions in living wills can lead to disagreements.
- Emotional Challenges:** Creating a living will can be emotionally difficult for individuals and families.
- Cultural and Religious Conflicts:** Living wills may clash with cultural or religious beliefs.
- Legal Framework Variability:** Laws surrounding living will vary, posing fairness and accessibility concerns.
- Quality of Life Assessments:** Deciding on life-sustaining treatments raises subjective quality of life issues.

Different countries have varying laws regarding euthanasia and assisted suicide:

1. **NETHERLANDS, LUXEMBOURG, and BELGIUM** permit both euthanasia and assisted suicide for individuals experiencing “unbearable suffering” with no chance of improvement.
2. **SWITZERLAND** prohibits euthanasia but permits assisted dying in the presence of a doctor or physician.
3. **CANADA** initially allowed euthanasia and assisted dying for mentally ill patients, but this decision has faced widespread criticism.
4. **The US** has diverse laws across states, with euthanasia permitted in some, such as Washington, Oregon, and Montana.
5. **The UK deems euthanasia illegal** and considers it equivalent to manslaughter.

To know more about the Legal aspect of [Living Will Click Here](#)

5. EXAMPLE 5: LONGEVITY INDIA INITIATIVE

Context:

The [Indian Institute of Science \(IISc\)](#) has launched the ‘[Longevity India Initiative](#)’ to promote [healthy ageing by researching](#) overcoming challenges associated with growing older.

The initiative focuses on [identifying early disease indicators, researching ageing biomarkers, and developing new therapeutics and technologies](#).

Ethical Values exhibited by the Initiative are:

1. **Respect for Human Dignity:** By challenging the idea that ageing is inevitable and aiming to increase human healthspan
2. **Collaboration and Partnership:** The involvement of multiple stakeholders, including researchers, clinicians, industry partners, philanthropists, and civil society
3. **Equity and Inclusivity:** By considering factors like lifestyle and culture, especially in a diverse country like India
4. **Responsibility and Accountability:** The initiative recognizes the urgency of addressing the growing burden of ageing in the country and emphasizes the need for diverse stakeholders to come together and take responsibility for developing solutions.

6. EXAMPLE 6: MISUSE OF PUBLIC MONEY BY THREE IAS OFFICERS

Context:

[Three senior IAS officers](#) from the Chandigarh Administration made unauthorized expenditures of over Rs 6 lakh

during a trip to Paris in 2015. The recent audit report highlighted [that they changed hotels and overstayed for a meeting meant for a lower-ranking official](#).

The ethical issues highlighted in this case:

1. **Misuse of Authority:** The senior IAS officers [misused their authority](#) by making unauthorized expenditures and changing the purpose of the trip to Paris.
2. **Financial Impropriety:** The officers incurred unauthorized expenses amounting to over Rs 6 lakh, which were not justified and did not follow proper procedures.
3. **Lack of Transparency:** The officers did not obtain proper approvals or certificates regarding the visit, and the [purpose of the trip was misrepresented](#).
4. **Breach of Trust:** By overstaying and switching hotels without proper authorization, the officers breached the trust placed in them by the government and taxpayers.
5. **Violation of Norms:** The officers exceeded the allowed duration for foreign travel, did not obtain necessary approvals, and disregarded established norms and procedures.

7. EXAMPLE 7: NESTLE INFANT MILK IN POORER COUNTRIES HAS A HIGHER SUGAR CONTENT COMPARED TO DEVELOPED COUNTRIES.

Context:

Public Eye, a Swiss investigative organization, along with the International Baby Food Action Network, uncovered this issue. The [World Health Organization \(WHO\)](#) warns that early exposure to sugar can lead to a lifelong preference for it, heightening the risk of obesity and other chronic diseases.

Ethical Issues in this case:

1. **Health Impact:** Higher sugar content in infant milk can lead to health issues such as obesity and chronic illnesses, especially considering the vulnerability of infants.
2. **Transparency:** There’s a lack of transparency regarding the nutritional content of Nestle infant milk, particularly in poorer countries
3. **Targeting Vulnerable Populations:** Marketing products with higher sugar content to poorer countries, where health resources and education might be limited, can be seen as exploitative and unethical.
4. **Equity:** Discrepancies in sugar content between products sold in different countries can raise questions about equity and fairness in access to healthier nutritional options.
5. **Breach of trust:** Selling an inferior product breaches consumer trust.

Regulations: The [Codex Alimentarius](#) sets global standards for food safety and quality, established by the joint effort of the [Food and Agriculture Organization](#) and [WHO](#). In India, the [Food Safety and Standards Act 2006](#) defines regulations and establishes the Food Safety and Standards Authority of India as the apex regulatory body for ensuring food safety and quality.

8. SIBLING RELATIONSHIPS ARE IMPORTANT

Context:

A recent study proves that [Sibling Rivalry is Good for Children](#)

Sibling relationships offer a **blend of camaraderie and competition**, shaping identity and social skills while providing companionship and support. Celebrations like [National Siblings Day in the U.S.](#), [Brothers and Sisters Day in Europe](#), and [Raksha Bandhan in India](#) highlight the importance of cherishing these bonds.

Fighting among siblings is not just inevitable, it is educational. How?

Aspect	Explanation
Development of Conflict Resolution Skills	Sibling fights often serve as a training ground for conflict resolution. Children learn negotiation, compromise, and problem-solving skills by resolving disputes with their siblings.
	For example, two siblings arguing over sharing toys might learn to negotiate and find a compromise where they take turns playing with the toys.
Understanding of Different Perspectives	Sibling conflicts provide opportunities for children to understand different viewpoints and empathize with others
	For instance, if siblings disagree over which TV show to watch, they learn to consider each other's preferences and compromise, enhancing their empathy and understanding.
Assertion of Personal Boundaries	Sibling fights help children establish and assert personal boundaries . Through disagreements, they learn to communicate their needs and preferences assertively, fostering independence and self-confidence.
	For example, if siblings argue over borrowing clothes, they learn to respect each other's belongings and set boundaries.
Preparation for Real-world Challenges	Dealing with conflicts among siblings prepares children for challenges they may encounter in other relationships and social settings . By navigating disagreements with siblings, children develop skills to handle conflicts with peers, colleagues, and friends in the future.
	For instance, resolving disputes over chores with siblings can teach children how to negotiate and collaborate in group projects at school or work.
Cultivation of Resilience	Sibling conflicts teach children to cope with adversity and bounce back from disagreements . Through conflicts, they learn to manage emotions, adapt to changing situations, and maintain relationships despite disagreements, fostering resilience.
	For example, siblings who argue over sharing snacks may learn to forgive and forget, strengthening their bond and resilience.

Sibling rivalry arises from competition for **parental attention, resources, and status**. It can stem from perceived inequalities or differences in treatment. While it may lessen with age, it can persist into adulthood, albeit in different forms such as jealousy or comparison.

Views of Thinkers:

Thinker	Perspective
Confucius	Emphasized the importance of family harmony and filial piety , considering sibling relationships as foundational for societal harmony
Mahatma Gandhi	Advocated for strong family bonds, including sibling relationships, as a source of support and solidarity
Rabindranath Tagore	Highlighted the role of siblings in shaping one's identity and values : Bonds formed in childhood have a lasting impact on an individual's character and worldview.

Sigmund Freud	Acknowledged the complex dynamics of sibling relationships : Rivalry and affection playing crucial roles in shaping behaviour.
Jean Piaget	Noted that sibling interactions contribute to cognitive development , as children learn social skills, perspective-taking, and problem-solving through their interactions and conflicts with siblings.
Margaret Mead	Recognized siblings as influential socializing agents, shaping attitudes, beliefs, and behaviours , and contributing to the transmission of cultural norms and values within a family and society.

9. ETHICAL CONCERNS REGARDING MISUSE OF SOCIAL MEDIA

Context:

The Supreme Court has expressed concern over the **misuse of social media platforms**, initiating contempt proceedings against an Assam legislator for a misleading Facebook post about a pending case.

Factors responsible for misuse of Media:

The misuse of social media platforms stems from various factors, including the **rapid growth of the internet coupled with the anonymity it provides, the expanding user base, and the ambiguity surrounding the legal responsibilities** of social media platforms. Additionally, advancements in artificial intelligence, such as **deepfake technology**, have exacerbated the issue, while the **absence of robust grievance redressal mechanisms** further compounds the problem.

Negative Impact of Misuse of Media:

The negative impacts of this misuse are far-reaching, leading to the propagation of prejudiced narratives based on incomplete or inaccurate information, excessive trolling, and unjustified public opinions. Furthermore, it results in **defamation, invasion of privacy, the dissemination of morphed images**, and disrespect to religious sentiments. There is also a growing concern about the fear of bias in judicial decisions due to public pressure and the spread of disharmony, financial fraud, and incitement of violence.

In response, governments have implemented measures such as the **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules 2021** and the **establishment of PIB's Fact Check Unit** to address misinformation. They have also issued advisories to intermediaries and taken actions like blocking OTT platforms from publishing obscene or vulgar content.

The ethical issues in the case include:

- Misuse of Freedom of Expression**: Posting misleading information on social media under the guise of freedom of speech can mislead the public and undermine the integrity of the judiciary.
- Integrity of the Judiciary**: False claims about court proceedings can erode public trust in the judicial system and compromise the administration of justice.
- Accountability of Public Figures**: Elected officials, like the Assam legislator in this case, have a responsibility to uphold ethical standards and avoid spreading misinformation, especially regarding legal matters.
- Social Media Abuse**: The case highlights the broader issue of social media abuse, including trolling and spreading false information, which can have serious consequences for individuals and institutions.

Views of Thinkers:

Thinker	Perspective
Mahatma Gandhi	Warned about the potential misuse of technology for nefarious purposes, emphasizing the need for ethical considerations and responsible use to prevent harm to society.
Plato	Expressed concerns about the power of rhetoric and persuasion in shaping public opinion, cautioning against the manipulation of truth and dissemination of false information through media .
S w a m i Vivekananda	Highlighted the importance of moral and ethical values in technological advancements , urging individuals to use social media responsibly and ethically to promote positive social change.
Marshall McLuhan	Introduced the concept of the "global village" and the pervasive influence of media on society , raising concerns about the homogenization of culture and the loss of critical thinking skills.
Amartya Sen	Stressed the importance of freedom of expression in a democratic society but cautioned against the unchecked spread of misinformation, advocating for measures to ensure media accountability.

10. VOLUNTARY CODE OF ETHICS FOR SOCIAL MEDIA PLATFORMS

Context:

The Election Commission of India (EC) requested X (formerly Twitter) to take down four election-related posts, citing violations of the **Model Code of Conduct (MCC)**. X complied with the requests but disagreed with the orders, citing freedom of expression. The EC reminded X of the **Voluntary Code of Ethics for social media platforms, established in 2019**, which includes rules for spreading awareness about elections and timely action on legal requests.

The Internet & Mobile Association of India (IAMAI) and its members agreed to adhere to the **“Voluntary Code of Ethics” during all future elections.**

Aim: The code, aimed at addressing paid advertisements that breach Election Commission norms, was implemented during the last Lok Sabha polls in 2019.

Social media platforms took action on 909 reported violations during the last Lok Sabha polls, marking the first voluntary adoption of such norms by internet-based companies for online poll campaigns.

Features of the Code of Ethics:

Feature	Description
No political campaign in the last 48 hours before polling	Social media platforms will not allow any political campaigns to run during this period to enable voters to make informed decisions without campaign influence.
Information, education, and communication campaigns	Platforms will conduct campaigns to raise awareness about electoral laws and related instructions.
Dedicated grievance redressal channel	Platforms have established a channel to address complaints reported by the Election Commission of India (ECI) with high priority.
Notification mechanism for potential violations	ECI can notify platforms of potential violations of electoral laws, including Section 126 of the Representation of the People Act, 1951 , through a dedicated mechanism.
Pre-certification of political advertisements	All political advertisements must be pre-certified by the Media Certification and Monitoring Committees, following the Supreme Court’s directions.
Transparency in paid political advertisements	Platforms will ensure transparency in paid political advertisements, utilizing their existing labels/disclosure technology for such ads.

Challenges in enforcing the Code of Ethics:

Enforcing the code of ethics on social media presents significant challenges due to its **extensive penetration and the ability of anyone to upload content**, making regulation by the Election Commission of India (ECI) or social media platforms nearly impossible. The ECI can only address content brought to its attention, leaving much unregulated. **Fake news proliferates** despite government efforts and political proxy advertisements via fan pages complicate matters. Social media platforms express concerns about **encroachment on their freedoms, including privacy and freedom of speech**. Establishing and staffing a monitoring mechanism for social media content is daunting, and the effectiveness of such monitoring remains uncertain.

Suggestions:

The way forward involves **social media platforms promptly adhering to the Election Commission of India’s (ECI) directives** regarding content and taking swift action accordingly. Users must be **educated to differentiate between fake and accurate news**. Social media platforms are urged to **operate within moral frameworks during elections**, fostering constructive engagement. They should also ensure **content alignment with global peace and harmony**. Political parties should commit to fair social media usage. Monitoring public content is essential for fair elections. Like candidate expenditure limits, political parties should have similar restrictions. ECI should enforce a 48-hour ban on political advertisements on social platforms. Additionally, dedicated ECI machinery is necessary to manage political content on social media during elections.

11. UK: DEPORTATION OF ASYLUM SEEKERS TO RWANDA

Context: The UK Parliament **passed a bill allowing asylum seekers** arriving irregularly to be deported to Rwanda, a move spearheaded by Chancellor Rishi Sunak to **curb Channel crossings**. Despite opposition, the bill cleared both houses and is set to become law. It will apply to **anyone who arrives in the UK without prior permission**, even if their aim is to claim asylum on legitimate grounds

However, critics, argue that it's **cruel and ineffective**.

Ethical issues include:

1. Questions about the **safety and well-being of individuals** being sent to Rwanda
2. The fairness of the **deportation process**
3. The potential for exploitation or harm of vulnerable populations
4. By overriding laws preventing deportation and compelling courts to treat Rwanda as a “safe country,” **there’s a clear violation of the rule of law**.
5. **Rwanda’s human rights record**, marred by allegations of ill-treatment of dissidents, journalists, and refugees, raises serious doubts about the ethical implications of such a decision.
6. Sending refugees to a country where **they may face persecution violates the core principle of non-refoulment** in international refugee law, as outlined in the **1951 Refugee Convention** and its 1967 protocol.

Thinkers’ Views:

Ethical Thinker	View on Asylum Seekers and Refugees
Mahatma Gandhi	Advocated for compassion and support towards asylum seekers and refugees, emphasizing the principles of nonviolence and empathy.
Rabindranath Tagore	Emphasized the importance of hospitality and universal brotherhood , promoting acceptance and integration of refugees into society.
Swami Vivekananda	Would likely advocate for providing refuge to those in need, viewing it as a moral duty and an expression of humanitarianism .
Nelson Mandela	Emphasized the importance of solidarity and support for refugees, drawing from his own experience of fighting against discrimination and injustice.
Aung San Suu Kyi	Advocated for the protection of refugees’ rights and the promotion of democracy and human rights as essential for ensuring their well-being and dignity.

India’s stance on refugees:

India is not a party to the Refugee Convention, as it hasn’t ratified either the 1951 Convention or its 1967 Protocol, and India **lacks a national refugee protection framework**. Nonetheless, India extends asylum to numerous refugees from neighbouring states and adheres to **UNHCR’s guidelines** for other nationals, particularly from Afghanistan and Myanmar. For asylum-seekers from non-neighbouring countries, India conducts **Refugee Status Determination (RSD) before granting asylum**

12. MISLEADING ADVERTISEMENTS AND ISSUES RELATED TO IT

Context:

The Supreme Court has urged the government **to take action against Fast Moving Consumer Goods (FMCG) companies for using misleading advertisements**, especially those targeting families with babies and schoolchildren.

In another case, the Supreme Court **criticized the Union government for its inaction against Patanjali Ayurved over misleading advertisements** and ordered the company’s MD Acharya Balakrishna and co-founder Yoga guru Ramdev to **submit their public apology** published in newspapers.

Concerns were raised amid **reports of higher sugar content in Nestle’s baby food products**.

What are Misleading Advertisements?

Misleading advertisements are **promotional messages or claims that deceive or mislead consumers** about the characteristics, benefits, or efficacy of a product or service. These ads may contain false or exaggerated information, leading consumers to make purchasing decisions based on inaccurate perceptions



Examples of misleading advertisements:

Company	Misleading Claim
Detox Tea Co.	“Lose 10 lbs in 7 days with our tea”
Beauty Products Inc.	“Eliminates wrinkles in one day”
Bourn Vita	“Our drink is low in sugar” (when it contains high sugar content)
Fresh Teeth Inc.	“Whitens teeth 10 shades in one use”
Hair Care Co.	“Regrows hair in 2 weeks”
Social Networking Inc.	“100% safe and secure”

Impact of misleading advertisement:

Impact	Examples
Loss of Customer Trust	Volkswagen used deceptive advertising to market their diesel cars as environmentally friendly, causing damage to the environment and a loss of trust in the company by customers.
Negative Brand Image	PepsiCo’s advertising campaign for Aquafina bottled water, which claimed the water was “ pure, perfect and refreshing, ” was misleading because the water was sourced from tap water.
Legal Consequences	L’Oreal was sued by the Federal Trade Commission (USA) for advertising that their anti-ageing creams could mimic the effects of a surgical facelift.
Health Impact	For example, sugary drinks such as soda are associated with many health problems.
Ethical impact	Unfair Competition, Breach of Trust, Deception and Manipulation

Legal provisions against misleading advertisements:

Legal Provisions	Description
CCPA’s Guidelines to Prevent False or Misleading Advertisements	Issued in 2022, these guidelines cover goods, products, and services, and aim to prevent false or misleading advertising.
Food Safety and Standards Regulations, 2018	Specifically deals with food (and related products), and regulates product claims, while the above guidelines deal with goods, products and services.
Cable Television Network Rules, 1994	Advertisements must not draw inferences that it has “ some special or miraculous or supernatural property or quality, which is difficult to prove.
FSS Act 2006	Misleading ads are punishable under Section 53 of the Food Safety and Standards Act, 2006.
Consumer Welfare Fund	Set up under the Central Goods and Services Tax (CGST) Act, 2017 , this fund promotes and protects the welfare of consumers.
Central Consumer Protection Council	Monitors and enforces consumer protection laws facilitates consumer education, and provides consumer redressal mechanisms.
Consumer Protection (E-Commerce) Rules, 2020	These mandatory rules require sellers to take back defective or deficient goods , withdraw services, or provide refunds if goods or services do not meet the description on the platform.
Advertising Standards Council of India (ASCI)	A self-regulatory organization that monitors ads and deals with complaints against them in India.
	The Advertising Standards Council of India (ASCI) had previously released guidelines on dark patterns in digital advertisements , urging companies not to mislead customers through omission, exaggeration, implication, or ambiguity.

Thinker’s view on Misleading Advertisements:

Ethical Thinker	Views
Mahatma Gandhi	Misleading people is a violation of truthfulness and honesty.
Chanakya	Emphasized the importance of ethical conduct in business and the detrimental effects of deceptive practices.

Swami Vivekananda	Advocated for truth and integrity, promoting the welfare of society.
Immanuel Kant	Misleading people violate the principle of treating individuals as ends in themselves, rather than means to an end.

Insta Links

- [Regulating misleading advertisements](#)

Mains Links

Q. Do you think that the brand ambassadors of products should be held accountable for misleading advertisements and endorsements? Examine. (250 Words)

Prelims Links

Consider the following statements: (UPSC 2018)

1. The Food Safety and Standards Act, 2006 replaced the Prevention of Food Adulteration Act, 1954.
2. The Food Safety and Standards Authority of India (FSSAI) is under the charge of the Director General of Health Services in the Union Ministry of Health and Family Welfare.

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: A

13. GUIDELINES FOR THE ELIMINATION OF CORPORAL PUNISHMENT IN SCHOOLS (GECP)

Context:

The Tamil Nadu School Education Department has released Guidelines for the [Elimination of Corporal Punishment](#) in Schools (GECP), focusing on safeguarding students' physical and mental well-being.

The guidelines, issued jointly by the **Director of School Education and the Director of Elementary Education**, address various forms of harassment, in line with the [Right to Education Act, 2009](#). Measures include **awareness camps, prompt complaint resolution, and the establishment of monitoring committees at each school**. Affirmative actions against corporal punishment and promoting a positive environment are also emphasized. **District-level officers are instructed to ensure schools** implement these guidelines effectively.

What is Corporal Punishment?

Corporal punishment **refers to the use of physical force against students** as a means of discipline or punishment in educational settings. It can include actions such as hitting, spanking, or other forms of physical punishment inflicted by teachers or school authorities on students.

Key legal provisions related to the prohibition of corporal punishment:

1. **Article 39 of the Constitution**: Mandates the State to protect childhood and youth from exploitation, including physical and mental abuse.
2. **Right of Children to Free and Compulsory Education (RTE) Act 2009**: Section 17 of the Act explicitly prohibits physical and mental harassment of children in schools, making it a punishable offence.
3. **NCPCR guidelines**: The National Commission for Protection of Child Rights (NCPCR) provides guidelines for eliminating corporal punishment. This includes promoting positive engagement with children and establishing Corporal Punishment Monitoring Cells in every school to ensure compliance with anti-corporal punishment measures.

Ethical Issues with Corporal Punishment:

Ethical Issue	Description
Physical and psychological harm	Corporal punishment can cause physical injuries, anxiety, low self-esteem, and other mental health issues.
Perpetuation of violence	By using violence as a disciplinary measure, corporal punishment may normalize and perpetuate violence in society.
Discrimination and disproportionate impact	Corporal punishment may be applied disproportionately or discriminatorily based on factors such as gender, race, or socioeconomic status.
Ineffectiveness as a disciplinary measure	It may fail to promote positive behavioural changes or moral development, teaching children to fear punishment rather than learn from their mistakes.
Impact on education	Corporal punishment can lead to higher school dropout rates and poor learning outcomes due to the atmosphere of fear and intimidation it creates in classrooms.

Thinker’s views on Corporal Punishments:

Thinker	View on Corporal Punishment
Mahatma Gandhi	Opposed corporal punishment, advocated for nonviolent methods of discipline and education.
Rabindranath Tagore	Condemned corporal punishment, believed in nurturing individual creativity and moral development through positive reinforcement.
Maria Montessori	Advocated against corporal punishment, and promoted child-centered education focused on nurturing independence and self-discipline.
Jean-Jacques Rousseau	Opposed corporal punishment, believed in the natural goodness of children and the importance of freedom in education.
John Dewey	Criticized corporal punishment, and emphasized experiential learning and democratic principles in education.

14. DIGITAL DILEMMA: CHILDREN’S DIGITAL SCREEN TIME

Context:

In several studies, it has been found that **screen time among children is more than 2 hours a day**

Reasons for the increase in children’s screen time:

- Role Modeling:** Children mimic their parents, family, and peers.
- Educational and Recreational Needs:** Mobile use surged during the COVID-19 pandemic for learning and entertainment.
- Working Parents:** Mobile phones are often given to children for safety and communication.
- Accessibility:** The widespread availability of smartphones, tablets, and computers has made screens more accessible than ever.

In today’s digital age, children are increasingly immersed in screens, from smartphones to computers, raising concerns about their health. While screens offer educational and entertainment opportunities, **excessive screen time has health implications:**

- Sedentary Lifestyle:** Leads to obesity and cardiovascular issues.
- Sleep Disruption:** Blue light affects sleep quality and duration.
- Eye Strain:** Causes discomfort and vision problems.
- Behavioural Issues:** Linked to attention deficits and impulsivity
- Cognitive ability and social skills:** High screen time can hinder the development of important Cognitive, social and emotional skills, such as empathy.
- Cyber Bullying and Child Abuse:** Incidents of bullying and abuse are rising. Young girls are more prone to them.

Recent initiatives in child well-being:

- WHO Guidelines:** It recommends **no screen time for babies under 2 years old**, with limited screen time for those aged 2 to 4. Additionally, implementing parental controls and filters can help block access to unsuitable content and products, ensuring a healthier screen time experience for children.

2. **Manodarpan Initiative:** Launched by the Ministry of Education, it provides psychosocial support to students for mental health and emotional well-being.
3. **CCPWC (Cyber Crime Prevention against Women and Children) Scheme:** An initiative of the Ministry of Home Affairs aimed at preventing cybercrime against women and children, ensuring a safe online environment.

To mitigate risks, strategies include **setting limits, promoting active screen use, creating screen-free zones, leading by example**, and educating families. Balancing screen time with other activities is crucial for children’s holistic development.

CONTENT FOR MAINS ENRICHMENT

Context	Usage
1. EMPATHIC VOICE INTERFACE (EVI)	<p>Context: Hume AI has developed the world’s first conversational AI with emotional intelligence, named Empathic Voice Interface (EVI).</p> <ul style="list-style-type: none"> • This technology can interpret human emotions and respond with empathy, aiming to enhance human well-being. • Powered by an empathic large language model (eLLM), EVI understands tones of voice and word emphasis to optimize interactions. • Its integration capability allows it to power various applications, potentially revolutionizing fields like AI assistants, customer support, and therapy <p>The ethical values of the company named after philosopher David Hume revolve around building AI that prioritizes human goals and emotional well-being. This approach is guided by the recognition that emotions play a crucial role in driving human choices and overall well-being. By focusing on these principles, the company seeks to develop AI systems that not only understand human emotions but also work to enhance them, ultimately contributing to a more ethically grounded and human-centric approach to artificial intelligence development</p>
2. BILINGUAL BRAILLE AT POLLING BOOTHS	<p>Context: Bilingual Braille signage in English and Tamil will be available at all polling stations across 30 Assembly constituencies in the Puducherry Union Territory for the upcoming Lok Sabha election.</p> <p>This initiative aims to facilitate visually-impaired voters in casting their ballots independently. The Braille signage will contain candidate details, allowing voters to easily identify and vote for their chosen candidate. Additionally, visually impaired voters have the option to bring a companion if they prefer, as per Rule 49N of the Conduct of Elections Rules, 1961.</p> <p>Ethical values depicted in the scenario:</p> <ol style="list-style-type: none"> 1. Inclusivity: Braille signage ensures equal access to voting. 2. Empathy: Independent voting options show understanding for visually impaired voters. 3. Transparency: Clear Braille signage enhances electoral process clarity. 4. Accountability: Officials ensure support for visually impaired voters. 5. Respect: Accommodations reflect dignity and autonomy.

<h3 style="color: red;">3. INNOVATIVE TAX-ES</h3>	<p>Context: Toronto's latest tax innovation, the 'stormwater charge,' aims to tackle urban flooding by penalizing properties with excessive concrete.</p>		
	Type	Tax	Description
	Historical Unusual Taxes	Russia's Beard Tax	In 18th-century Russia, a tax was levied on beards to encourage a more Western, clean-shaven appearance.
		Britain's Window Tax	In the same era, British homes were taxed based on the number of windows, a strategy aimed at the wealthy
	Modern Unusual Taxes	Toronto's 'Stormwater Charge'	This proposed tax in Toronto is based on the ratio of permeable to impermeable surfaces on properties, intending to mitigate flooding.
Switzerland and Germany's Dog Tax		Depending on the breed and weight of the dog , owners can be taxed differently, with larger breeds like Bull Terriers and Great Danes incurring higher taxes.	
Sweden's Baby Name Tax		A tax is imposed on families choosing names that are deemed confusing, offensive, or hard to pronounce , such as the case of a family who named their daughter Metallica.	
<p>These taxes serve diverse purposes: influencing behaviour, raising funds, promoting social norms, targeting specific groups, and regulating choices.</p>			

In news	How to use?
<h3 style="color: red;">4. UNHRC RESOLUTION ON INTERSEX PEOPLE</h3>	<p>Context: The United Nations Human Rights Council recently made a historic decision by adopting a resolution aimed at combating discrimination and harmful practices against intersex people.</p> <p>Who are Intersex people? Intersex people are individuals born with sex characteristics (such as sexual anatomy, reproductive organs, hormonal patterns, and/or chromosomal patterns) that do not align with typical binary notions of male or female bodies. They may have any gender identity or sexual orientation. Experts estimate that up to 1.7% of the population are born with intersex traits. Intersex individuals are distinct from transgender individuals, as the former's physical characteristics do not necessarily match their gender identity.</p> <p>The resolution calls upon member states to address root causes of discrimination, such as stereotypes and misinformation, and to ensure the rights to bodily integrity and autonomy for intersex individuals.</p> <p>The resolution on intersex rights promotes ethical values such as combating discrimination, ensuring the highest attainable standard of physical and mental health, and addressing root causes of human rights violations.</p>

<p>5. RISING ROLE OF WOMEN IN FINANCE AND WORKFORCE</p>	<p>Context: More Indian women are actively participating in financial decision-making, with 98% of urban women involved in long-term family decisions, including household financial investments, according to the recent AMFi-CRISIL report.</p> <ul style="list-style-type: none"> • Female LFPR up to 41.5% (Oct 2023) from 24.6% (2017-18), with rural women showing a faster growth rate • 47% of women make independent financial decisions. Autonomy varies with income, age, and affluence stage <p>Challenges in Women’s Financial Autonomy: Socio-cultural: Patriarchy, gender stereotypes., Lower workforce participation, gender pay gap, unpaid domestic work burden</p> <p>Significance of Women’s Role in Financial Decision-Making:</p> <ol style="list-style-type: none"> 1. Social Impact: Empowerment, gender equality, reduced conflict, better education, and healthcare. 2. Economic Impact: Financial literacy, wealth management, entrepreneurship, and innovation. <p>Values exhibited:</p> <ol style="list-style-type: none"> 1. Gender equality: Addressing disparities and promoting equal opportunities. 2. Social justice: Reducing gender-based discrimination and fostering inclusivity. 3. Empowerment: Enhancing autonomy and decision-making power. 4. Fairness: Ensuring equitable treatment and opportunities for all genders. 5. Respect: Valuing diverse perspectives and contributions in the workforce.
<p>6. JAPAN’S “WOMENOMICS” REFORMS</p>	<p>‘Womenomics’ refers to a set of economic policies and reforms aimed at promoting women’s participation in the workforce and enhancing gender equality in the economy.</p> <p>The term was popularized in Japan under the administration of Prime Minister Shinzo Abe as part of his broader economic agenda known as ‘Abenomics.’</p> <p>The ‘womenomics’ reforms in Japan included various initiatives:</p> <ol style="list-style-type: none"> 1. Improving access to childcare and early childhood education to enable more women to enter or re-enter the workforce. 2. Enhancing support for work-life balance, including flexible working arrangements and parental leave policies. 3. Promoting women’s leadership and career advancement through initiatives such as gender diversity targets and mentorship programs. 4. Increasing efforts to combat gender discrimination and bias in the workplace. 5. Encouraging businesses to create a more inclusive and supportive environment for women employees. <p>‘Womenomics’ seeks to leverage the untapped potential of women in the workforce to drive economic growth, address demographic challenges, and achieve greater gender equality in society.</p>
<p>7. NTPC’S GIRL EMPOWERMENT MISSION</p>	<p>Context: NTPC launches a new edition of the Girl Empowerment Mission, aligning with the Government of India’s Beti Bachao, Beti Padhao initiative. The program aims to tackle gender inequality by nurturing girls’ imaginations and offering them opportunities for development.</p> <p>Starting April 2024, nearly 3,000 underprivileged children will benefit from the 1-month workshop across 42 locations, totalling over 10,000 beneficiaries. It will include programmes for empowering girls through leadership development and holistic skill-building in health, hygiene, safety, fitness, sports, and yoga.</p>
<p>Why in News?</p>	<p>How to Use in Answers?</p>

<p>8. KUSUM JAIN</p>	<p>Context: Kusum Jain, a champion for children’s rights, founded the Parents Forum for Meaningful Education (PFME) to address injustices faced by school children. She fought against corporal punishment and challenged exam secrecy laws, aiming to ensure transparency and dignity for students. Despite facing challenges and personal injury, she remained steadfast in her advocacy, leaving behind a legacy of tireless dedication to the cause.</p> <p>Ethical Values Shown by Her:</p> <ol style="list-style-type: none"> Advocacy: Kusum Jain demonstrated a commitment to advocating for children’s rights and well-being. Courage: She showed bravery in challenging entrenched systems and fighting for meaningful change. Persistence: Despite facing obstacles and setbacks, Kusum Jain remained steadfast in her pursuit of justice for children. Compassion: She exhibited care and concern for the welfare of children affected by injustices in the education system. Integrity: Kusum Jain maintained a strong sense of moral principles and honesty in her advocacy efforts. 															
<p>9. 4PS (POLITICAL LEADERSHIP, PUBLIC FINANCING, PARTNERSHIPS, AND PARTICIPATION)</p>	<p>Context: India’s development strategy, characterized by the 4Ps (Political Leadership, Public Financing, Partnerships, and Participation), has led to significant success in national programs.</p> <p>Explanation of each of the 4Ps using Swachh Bharat Mission (SBM) Example:</p> <table border="1" data-bbox="416 837 1506 1581"> <thead> <tr> <th>P</th> <th>Explanation</th> <th>Examples</th> </tr> </thead> <tbody> <tr> <td>Political Leadership</td> <td>Setting the vision, direction, and institutional framework for development initiatives.</td> <td>Government’s initiative to tackle open defecation through the Swachh Bharat Mission. Creation of institutional mechanisms to implement large-scale programs.</td> </tr> <tr> <td>Public Financing</td> <td>Allocation of financial resources by the government towards development projects and initiatives.</td> <td>Allocation of approximately \$20 billion towards sanitation initiatives under the SBM. Investment in infrastructure development for poverty reduction.</td> </tr> <tr> <td>Partnerships</td> <td>Collaborative efforts involving multiple stakeholders to achieve development goals.</td> <td>Collaboration with international organizations like the World Bank, NGOs, and local administrations for implementing the SBM. Partnership with communities and media.</td> </tr> <tr> <td>People’s Participation</td> <td>Engagement and involvement of communities in development activities, fostering ownership and sustainability.</td> <td>Empowering communities to build toilets and end open defecation under the SBM. Women and girls leading efforts to declare villages open defecation-free.</td> </tr> </tbody> </table> <p>Usage: The 4Ps framework can be used to explain the success of schemes in India e.g. Swachh Bharat Mission, Mission Lifestyle etc.</p>	P	Explanation	Examples	Political Leadership	Setting the vision, direction, and institutional framework for development initiatives.	Government’s initiative to tackle open defecation through the Swachh Bharat Mission . Creation of institutional mechanisms to implement large-scale programs.	Public Financing	Allocation of financial resources by the government towards development projects and initiatives.	Allocation of approximately \$20 billion towards sanitation initiatives under the SBM. Investment in infrastructure development for poverty reduction.	Partnerships	Collaborative efforts involving multiple stakeholders to achieve development goals.	Collaboration with international organizations like the World Bank, NGOs, and local administrations for implementing the SBM. Partnership with communities and media.	People’s Participation	Engagement and involvement of communities in development activities, fostering ownership and sustainability.	Empowering communities to build toilets and end open defecation under the SBM. Women and girls leading efforts to declare villages open defecation-free.
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10. INNOVATION TRAP

What is the Innovation trap?

It refers to **a situation where organizations strive to innovate but inadvertently fall into patterns of thinking and behaviour that stifle genuine creativity** and progress. This trap often arises when organizations prioritize conformity, rely too heavily on past successes, or resist challenging the status quo.

Explanation using example:

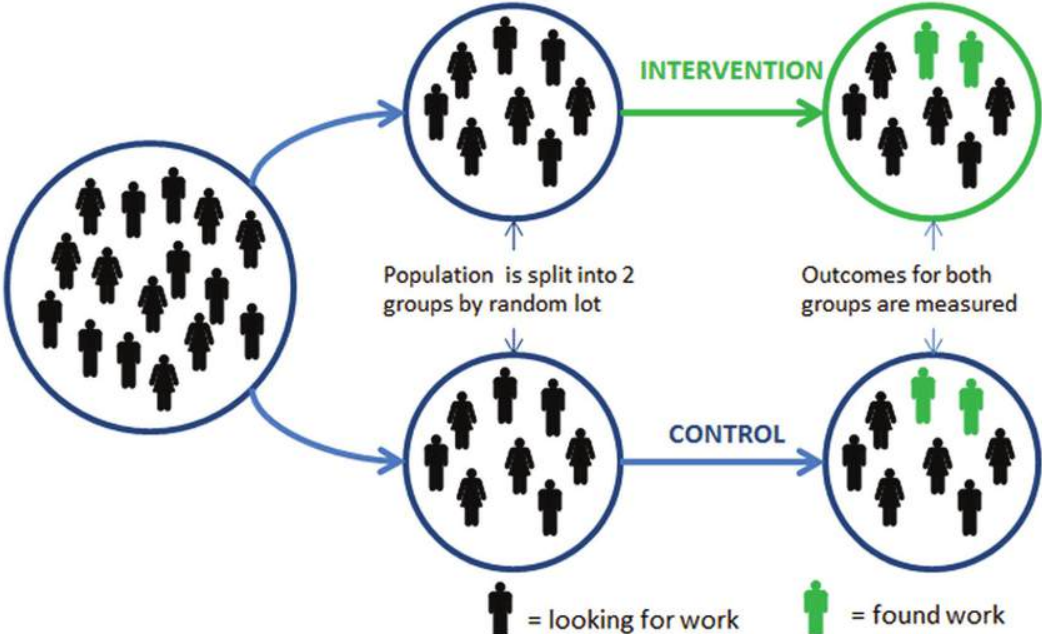
Kodak's downfall can be attributed to its reluctance to embrace digital photography despite inventing the first digital camera in 1975. Instead of capitalizing on this innovation, Kodak continued to focus on its traditional film business, believing that digital photography was just a passing fad. This lack of foresight and innovation allowed competitors like Canon and Nikon to gain a foothold in the digital camera market.

How does the "Elephants in Denmark" trick demonstrate 'Herd Mentality'?

It is a **mental exercise that demonstrates herd behaviour and conformity** in decision-making. Participants are **asked to follow a series of steps** involving multiplication, addition, subtraction, and association with letters and words, **ultimately leading them to think of a grey elephant in Denmark**. The trick reveals how individuals, despite believing they are making unique choices, often end up following a predetermined pattern or suggestion, akin to herd mentality.

How to Overcome Innovation Trap and Herd Mentality?

1. **Encourage alternative thinking:** Foster a culture that values diverse perspectives and encourages employees to challenge conventional wisdom.
2. **Empower outliers:** Identify individuals who challenge the status quo and support them in developing and implementing innovative ideas.
3. **Create a culture of experimentation:** Promote a mindset where failure is seen as a learning opportunity, and provide resources for experimentation and exploration.
4. **Measure outcomes, not just outputs:** Shift focus from simply generating ideas to evaluating the impact and effectiveness of those ideas in achieving organizational goals.
5. **Establish structured recognition programs:** Reward and recognize individuals and teams that demonstrate innovative thinking and drive meaningful change.
6. **Foster collaboration and open communication:** Encourage cross-functional collaboration and create channels for sharing ideas and feedback across the organization.

WHY IN NEWS?	HOW TO USE IN ANSWERS?
<p>11. RANDOMIZED CONTROL TRIALS (RCTS)</p>	<p>Context: Randomized Control Trials (RCTs), pioneered by <u>Sir Austin Bradford Hill</u>, revolutionized TB treatment.</p> <p>What is RTC?</p> <p>Randomized Control Trials (RCTs) are a type of scientific experiment commonly used in medical research and other fields to assess the effectiveness of interventions or treatments. In an RCT, participants are randomly assigned to either the treatment group, which receives the intervention being studied, or the control group, which does not receive the intervention or receives a placebo. This random assignment helps ensure that any differences observed between the two groups are due to the intervention itself and not to other factors.</p>  <p>Randomized controlled trials (RCTs) have revolutionized medicine, providing an impartial way to assess treatment efficacy. They've led to major breakthroughs like aspirin preventing heart attacks, HIV antiretroviral therapies, and COVID-19 vaccines. RCTs tested streptomycin, the first effective antibiotic for TB, transforming TB management. Sir Austin Bradford Hill's work introduced the 'Bradford Hill Criteria,' vital in modern epidemiology. These criteria confirmed links between factors like alcohol and heart disease, and smoking and lung cancer, shaping public health policies and perceptions.</p> <p>Kremer and fellow economists Abhijit Banerjee and Esther Duflo won the 2019 Nobel Prize winner in Economics for experiments using RTCs</p>

<p>12. 'MILLION MIYAWAKI' PROJECT</p>	<p>Context: The Embassy of Israel in India has joined the 'Million Miyawaki' project, aimed at improving air quality in Indian cities through mass afforestation in urban spaces. In collaboration with the Million Miyawaki Foundation, the embassy will plant a million trees in Delhi-NCR, creating forest-like Miyawaki plantations with up to 30 locally sourced species (as part of Earth Day celebrations)</p> <p>About Miyawaki Method: It is inspired by Japanese botanist Akira Miyawaki, and boosts greenery in compact spaces. It fosters multi-layered forests with quick growth, mimicking natural biodiversity. Though they lack some natural forest attributes like medicinal properties, they serve as effective carbon sinks and mitigate ecological damage from activities like mining.</p> <p>What is Earth Day? Earth Day, originating in 1970 after widespread protests against environmental degradation is now observed globally on April 22nd. Coordinated by EARTHDAY.ORG, formerly Earth Day Network, its aim is to mobilize a massive environmental movement for transformative change.</p> <p>Notably, the Paris Agreement, a landmark climate accord, was signed on Earth Day in 2016. It underscores a collective responsibility, as outlined in the 1992 Rio Declaration, to achieve a balance between economic, social, and environmental needs for present and future generations. Other important environmental days include World Water Day on March 22nd, World Biodiversity Day on May 22nd, and World Environment Day on June 5th. Additionally, Earth Hour, an initiative by the World Wildlife Fund for Nature (WWF), occurs annually on the last Saturday of March, urging individuals worldwide to switch off lights from 8:30 pm to 9:30 pm to raise awareness about climate change and environmental conservation.</p>
<p>13. LIBERAL DEMOCRACY</p>	<p>Context: The recent student protests on US campuses against the war in Gaza, have highlighted a complex crisis involving liberal democracy, universities, and the nature of protest itself.</p> <p>The protests reflect a crisis of liberal democracy due to the political system's failure to address atrocities in Gaza and its impact on young people's (primarily students) sense of political agency. Additionally, the crackdown on free speech during these protests signals a deeper crisis of democracy and polarization within the United States.</p> <p>What is Liberal Democracy? Liberal democracy is a form of government characterized by the protection of individual rights and freedoms, the rule of law, free and fair elections, and a system of checks and balances. It emphasizes principles such as equality before the law, freedom of speech, press, and assembly, and the separation of powers between different branches of government.</p> <p>The solution to address the crisis of liberal democracy stemming from student protests in universities involves promoting dialogue and understanding between students and university administrations, respecting freedom of speech and expression while ensuring safety and order on campus, and encouraging constructive engagement with issues through channels such as forums, debates, and student-led initiatives.</p>

FACTS FOR PRELIMS

GS-1

1. MOHINIYATTAM

Context:

The Kerala Kalamandalam, a prestigious cultural institution, **has announced a significant policy change allowing male dancers to learn Mohiniyattam**, a classical dance form previously reserved exclusively for women.




Context: The Kerala Kalamandalam, a prestigious cultural institution, has announced a significant policy change allowing male dancers to learn Mohiniyattam



About Mohiniyattam:

Name: Dance of Mohini (a form of Lord Vishnu)
Theme: Story of dance of Vishnu in Mohini form

Features:

- Performed by **Women** (mostly solo)
- **Gentle footwork** (no thumping of footsteps)
- **Beauty and grace** is dominant (Lasya aspect)
- Integrates some elements of Bharatnatyam (grace) and Kathakali (vigor)
- Revived by **V N Menon and Kalyani Amma**
- **Costume:** Kasavu Saree (white colored with gold brocade) and Ghungroo

The Sangeet Natak Academy recognizes eight classical dance in India- Bharatanatyam, Kathak, Kuchipudi, Odissi, Kathakali, Sattriya, Manipuri and Mohiniyattam

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2. 100 YEARS OF VAIKOM SATYAGRAHA

Context:

The Vaikom satyagraha, **initiated in 1924 in Vaikom, Travancore**, marked the beginning of **temple entry movements in India**

About	Description
Vaikom Satyagraha (March 30, 1924 to November 23, 1925)	It was a historic non-violent movement against untouchability and caste discrimination in the country . It marked the start of temple entry movements across India.
Issue	The Kingdom of Travancore had a rigid and oppressive caste system , and the people belonging to the oppressed classes, especially the Ezhavas, had no right to walk on the four roads surrounding the Vaikom Mahadeva temple (District: Kottayam, Kerala)
Leaders	Spearheaded by Congress leader T.K. Madhavan ; K.P. Kesava Menon (then secretary of Kerala Congress) and Congress leader and educationist K. Kelappan (also known as Kerala Gandhi)
The course of the Movement	The Congress Untouchability Committee decided to start the movement at the Mahadeva temple in Vaikom . On March 30, 1924, volunteers from three different communities were sent to walk on the prohibited roads each day.

Support to the Movement	'Periyar' E.V. Ramasamy was requested to lead the campaign
	Members of forward castes marched from Travancore to the royal palace at Thiruvananthapuram, in a show of solidarity for the social reform
	Akalis (Sikhs) from Punjab gave their support by opening a community kitchen (langar) for the volunteers
	Chattampi Swamikal and Sree Narayana Guru gave support to the movement.
	Mahatma Gandhi arrived at Vaikom in March 1925 to arrive at a compromise and settle the issue once and for all.
The success of the Movement	<ul style="list-style-type: none"> • Oppressed castes were given the right to move on public roads in the vicinity of all temples in Travancore. • The movement paved the way for the historic Temple Entry Proclamation (1936) by the Maharaja of Travancore, which lifted the age-old ban on the entry of marginalized castes into Travancore temples. • It was one of the most non-violent struggles against caste oppression and discrimination.

3. KUCHIPUDI

Context:

Kuchipudi, a traditional dance-drama performance, has evolved from being male-dominated to a **classical dance form with the prominence of female dancers across India.**

- However, in the **village of Kuchipudi in Krishna district, Andhra Pradesh**, the art form faces challenges, **including a lack of interest among the younger generation and insufficient government support.**



Kuchipudi

Context: In the village of Kuchipudi in Krishna district, Andhra Pradesh, where the art form of Kuchipudi originated faces challenges.



About Kuchipudi

Kuchipudi is a **classical Indian dance form.**

It is a dance-drama that **combines Nritta (pure dance), Nritya (expressional dance), and Natya (drama).**

The dance is characterized by its **intricate footwork, graceful movements, and subtle facial expressions.**

It is also known for its **faster tempo and requires dancers to sing and lip sync the lyrics while dancing.**

The Sangeet Natak Academy recognizes eight classical dance in India- Bharatanatyam, Kathak, Kuchipudi, Odissi, Kathakali, Sattriya, Manipuri and Mohiniyattam

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4. VOLCANIC VORTEX RINGS

Context:

Mount Etna, Europe's largest and among the most active volcanoes, has been producing rare smoke rings known as volcanic vortex rings.

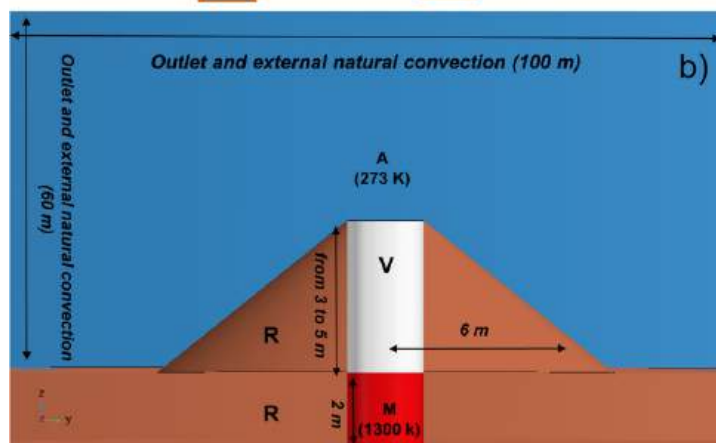
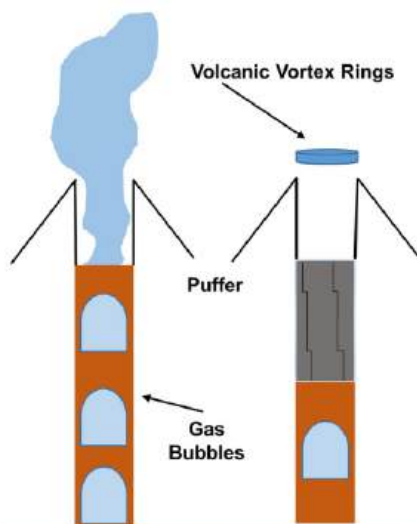
- These circular rings of gas, primarily water vapour, emerge from a newly formed pit crater on the volcano's north side.

How Volcanic Vortex Rings are formed?

- The phenomenon occurs when gas is rapidly released through a nearly circular vent, forming perfectly circular rings.
- Volcanic vortex rings were first observed at Etna in 1724 and have since been documented at various volcanoes worldwide.
- They can linger in the air for up to 10 minutes but may disintegrate quickly in windy conditions.

Volcanological Scheme

a)



About Mount Etna:

Mount Etna is an active volcano on the east coast of Sicily, Italy, and the tallest active volcano in Europe at 3,329 meters (11,014 feet).

It's also the largest of Italy's three active volcanoes and is about twice the height of Mount Vesuvius.

Mount Etna is known for its volcanic activity, which has been documented since 1500 BCE, and is a UNESCO World Heritage Site

5. GIANT ROGUE WAVES

Context: A University of Melbourne expedition to the Southern Ocean has uncovered that wind is a significant factor in the creation of massive rogue waves.

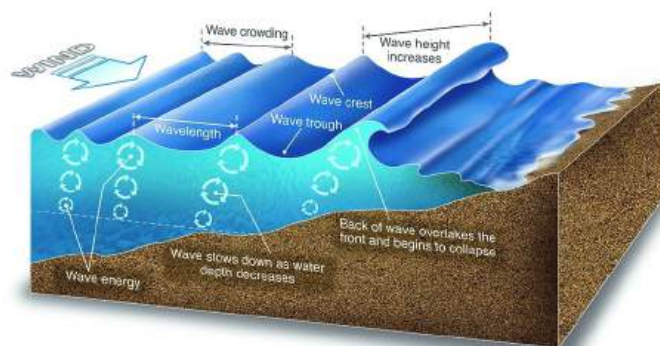
- The team utilized advanced technology to capture three-dimensional images of ocean waves, revealing insights into their behaviour.
- They found that rogue waves arise from strong winds and unpredictable waveform patterns, with the wind playing a crucial role in their formation during the 'young' stage of waves.

About Rogue Waves:

Rogue waves are large, unpredictable, and dangerous ocean waves that are at least twice the height of the surrounding waves.

They can be formed when multiple wave crests pass through a single point, or from a combination of waves and currents.

Rogue waves are rare, but they can be a threat to ocean liners, capital ships, and land structures.

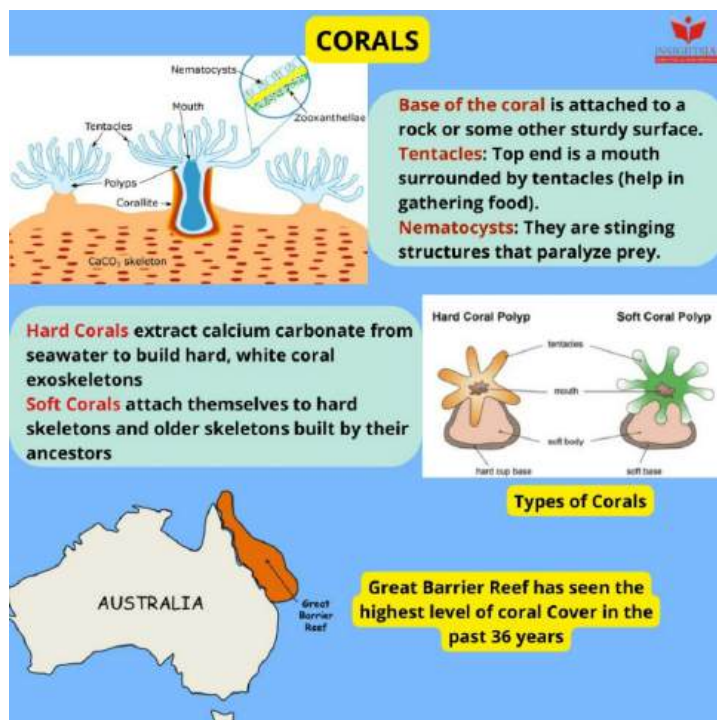


6. FOURTH GLOBAL MASS CORAL BLEACHING EVENT



Context:

NOAA's Coral Reef Watch (CRW) and the International Coral Reef Initiative (ICRI) have confirmed the occurrence of the fourth global mass coral bleaching event in 2023-2024.

- This event, the second in the last decade, coincides with unprecedented ocean heat recorded in 2023 and 2024.



Rivers in News





River Name	Jiadhal River	Noyyal River
Issues	Disruption of flow due to climate change	Pollution and choking by plastics and sewage
Origin	Lower Himalayan ranges in Arunachal Pradesh	Velliangiri Hills (South-Kailash) in Tamil Nadu
Tributary of	Brahmaputra (northern tributary)	Joins the Cauvery River
Flows Through	Assam, meets Brahmaputra near Majuli Island	Coimbatore, Tiruppur, Karur, Erode districts
Characteristics	Flashy river, prone to sudden floods with high sediment load and debris, frequently changes course during flash floods	The Central Government provides financial assistance from the National River Restoration Fund , managed by the Ministry of Jal Shakti
		





7. GI TAGS GRANTED TO 60 PRODUCTS

Context:





Over 60 products from across India have received **Geographical Indication (GI) tags**, marking the largest batch of GI tags awarded at once.




Some of the Major products GI tagged are:

Region	Product	Description
Assam	Asharikandi Terracotta Craft	<p>Asharikandi Terracotta Craft refers to a traditional craft form practised in the village of Asharikandi in Assam. It involves the creation of pottery and other decorative items using locally sourced terracotta clay.</p> 
	Pani Meteka Craft	<p>It refers to a type of traditional craft that involves weaving straw or reeds into decorative objects such as baskets, hats, and ornaments.</p> 
	Sarthebari Metal Craft	<p>Exquisite metalwork, particularly in brass and bell metal.</p> 
	Jaapi (Bamboo Head-gear)	<p>Traditional Assamese hat made from bamboo and leaves.</p>  <p><small>www.alltheinteresting.com</small></p>

Mishing Handloom Products	Textiles woven by the Mishing community
Bihudhol	<p>Traditional drum used in Assam's Bihu celebrations.</p> 
Bodo Dokhona	<p>Traditional attire of Bodo women.</p> 
Bodo Eri Silk	Fabric made from the silk of <i>Samia ricini</i> , known as the fabric of peace.
Bodo Jwmgra	<p>A traditional scarf is part of Bodo culture.</p> 
Bodo Gamsa	<p>The traditional dress worn by Bodo men.</p> 

	<p>Bodo Thorkha</p>	<p>Musical instruments are integral to Bodo culture.</p> 
	<p>Bodo Sifung</p>	<p>Long flute used in Bodo music.</p> 
<p>Varanasi</p>	<p>Banaras Thandai</p>	<p>Traditional drink made with milk, nuts, seeds, and spices.</p> 
	<p>Banaras Tabla</p>	<p>Percussion instrument rooted in Banaras' musical tradition.</p> 
	<p>Banaras Shehnai</p>	<p>Wind musical instrument synonymous with Banaras' cultural ethos.</p> 

	<p>Banaras Lal Bharwa-mirch</p>	<p>A specific variety of stuffed red chilli is typical of Banaras.</p> 
	<p>Banaras Lal Peda</p>	<p>A sweet delicacy made from condensed milk, famous in Banaras.</p> 
<p>Tripura</p>	<p>Pachra-Rignai</p>	<p>Traditional dress is worn by women in Tripura on special occasions.</p> 
	<p>Matabari Peda</p>	<p>Sweet preparation is unique to the Matabari area in Tripura.</p> 

<p>M e g h a - l a y a</p>	<p>Garo Textile Weaving</p>	<p>Textiles woven by the Garo community, incorporating traditional motifs and techniques.</p> 
	<p>Lyrnai Pottery</p>	<p>Traditional pottery from the Lyrnai area, known for its distinctive style and utility (also called Black Pottery of Meghalaya)</p> 
	<p>Chubitchi</p>	<p>Alcoholic beverage.</p> 

About GI Tags:

A Geographical Indication (GI) is a **designation used on products with a specific geographical origin**, indicating qualities or reputation linked to that origin. To date, around **635 products in India** have been given the GI tag. The **first GI tag** in the country was given two decades ago to the famous **Darjeeling tea**.

Internationally recognized **under the Paris Convention**, GI is part of **Intellectual Property Rights (IPRs)**, covered by the **WTO's TRIPS Agreement, Madrid Agreement, and Lisbon Agreement**.

In India, GI registration is governed by the **Geographical Indications of Goods (Registration and Protection) Act of 1999**. Administered by the Registrar of Geographical Indications (RGI), it identifies **agricultural, natural, or manufactured goods**, providing legal protection **for 10 years (renewable)**. The **Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry**, oversees GI registration, offering protection against unauthorized use, promoting exports, and ensuring quality and distinctiveness.






8. SRINAGAR (CONSIDERED FOR WORLD CRAFT CITY)

Context:

Srinagar is being considered for the **prestigious World Craft City (WCC) title** by the **World Crafts Council International (WCCI)**.

Arts and Crafts of Srinagar City:

Craft	Description
<p>Pashmina shawls</p>	<p>Luxurious woollen shawls made from the wool of Pashmina goats are known for their softness and warmth.</p> 
<p>Carpets</p>	<p>Hand-woven carpets featuring intricate designs and vibrant colours, often showcasing traditional motifs.</p> 
<p>Papier mâché</p>	<p>Decorative objects crafted using molded and painted paper pulp.</p> 
<p>Walnut wood carving</p>	<p>Beautiful furniture pieces, decorative panels, and small items such as boxes and bowls.</p> 

<p>Hand-knotted carpets</p>	<p>Meticulously handcrafted carpets with elaborate patterns and designs, made using traditional techniques passed down through generations.</p> 
<p>Kani shawls</p>	<p>Shawls are woven using the Kani technique, where each thread is individually looped and woven into the fabric, creating intricate patterns and designs.</p> 
<p>Khatamband (wooden ceiling)</p>	<p>Traditional woodwork features intricate geometric patterns and designs, commonly seen in ceilings and architectural features.</p> 
<p>Sozni embroidery</p>	<p>Delicate embroidery is done with fine needlework, embellishing fabrics with intricate patterns and motifs.</p> 
<p>Crewel embroidery</p>	<p>Embroidery style using wool threads to create elaborate designs on fabrics like cotton or silk (typically features floral motifs)</p> 

About WCC:

The World Craft City (WCC) initiative was **launched in 2014 by the World Crafts Council International (WCCI)**, a Kuwait-based organization. It acknowledges the contributions of **local authorities, craftspeople, and communities** to cultural, economic, and social development worldwide. WCC aims to **establish a network of craft cities** globally, promoting the principles of the creative economy and preserving traditional crafts.

9. ATOMIC CLOCKS

Context:

India is deploying **atomic clocks nationwide to synchronize all digital devices with Indian Standard Time**, enhancing uniformity and national security.

About Atomic Clocks:

Topic	Information
Atomic Clock	An atomic clock is a highly accurate timekeeping device that combines a quartz crystal oscillator with an atom , typically caesium or hydrogen, to measure time precisely. It uses the consistent frequency of atoms to maintain accurate time, making it more stable than conventional quartz clocks.
	It was Invented in 1955 by Louise Essen . It combines a quartz crystal oscillator with an atom for precise timekeeping.
Types of Atomic Clocks	Caesium and hydrogen maser atomic clocks
	Hydrogen maser clocks are more accurate and used in scientific research.
Working	Quartz crystal oscillators are commonly used in modern clocks, vibrating at a precise frequency when voltage is applied. However, they become slightly slow every hour and require frequent adjustments.
	Atomic clocks are like super accurate timekeepers . They use special atoms, usually caesium atoms , which vibrate at a very steady rate. By sending microwaves to these atoms, we can make them vibrate even more regularly . Then, we compare these vibrations with the vibrations of a quartz crystal in a regular clock . The most advanced atomic clocks lose just one second every 300 billion years .
Atomic Clocks in India	Council of Industrial and Scientific Research (CSIR)-National Physical Laboratories (NPL) New Delhi maintains Indian Standard Time with caesium and hydrogen maser clocks.
	CSIR-NPL are now setting up new atomic clocks in Bhubaneswar, Jaipur, and Hyderabad , in addition to the existing ones in Faridabad and Ahmedabad . By June, these new clocks will be installed, and the government will require all device manufacturers to sync with Indian Standard Time .
	Currently, timekeeping relies on satellites , but the government aims to connect all atomic clocks using optical cables for enhanced security.
Implementation	By the Ministry of Consumer Affairs and NPL . It will ensure “one nation, one time” by June this year.
Need for Indigenous Atomic Clocks	Ensures national security and independence in timekeeping.
	During the Kargil War in 1999 , the US turned off GPS for the Indian Army, causing location inaccuracies. This prompted India to develop its own precise clock.
	At present, most software operating modules, such as Windows and Android, rely on US-based Network Time Protocol servers .
Indian Standard Time (IST)	Only four countries—the United States of America, The United Kingdom, Japan and South Korea— have developed their atomic clocks
Indian Standard Time (IST)	Indian Standard Time (IST) was adopted on September 1, 1947 , with only one-time zone for the whole country. It is calculated from 82.5 degrees East longitude , near Mirzapur (Allahabad, UP). IST is 5.5 hours ahead of Greenwich Mean Time (GMT)

10. SWELL WAVES

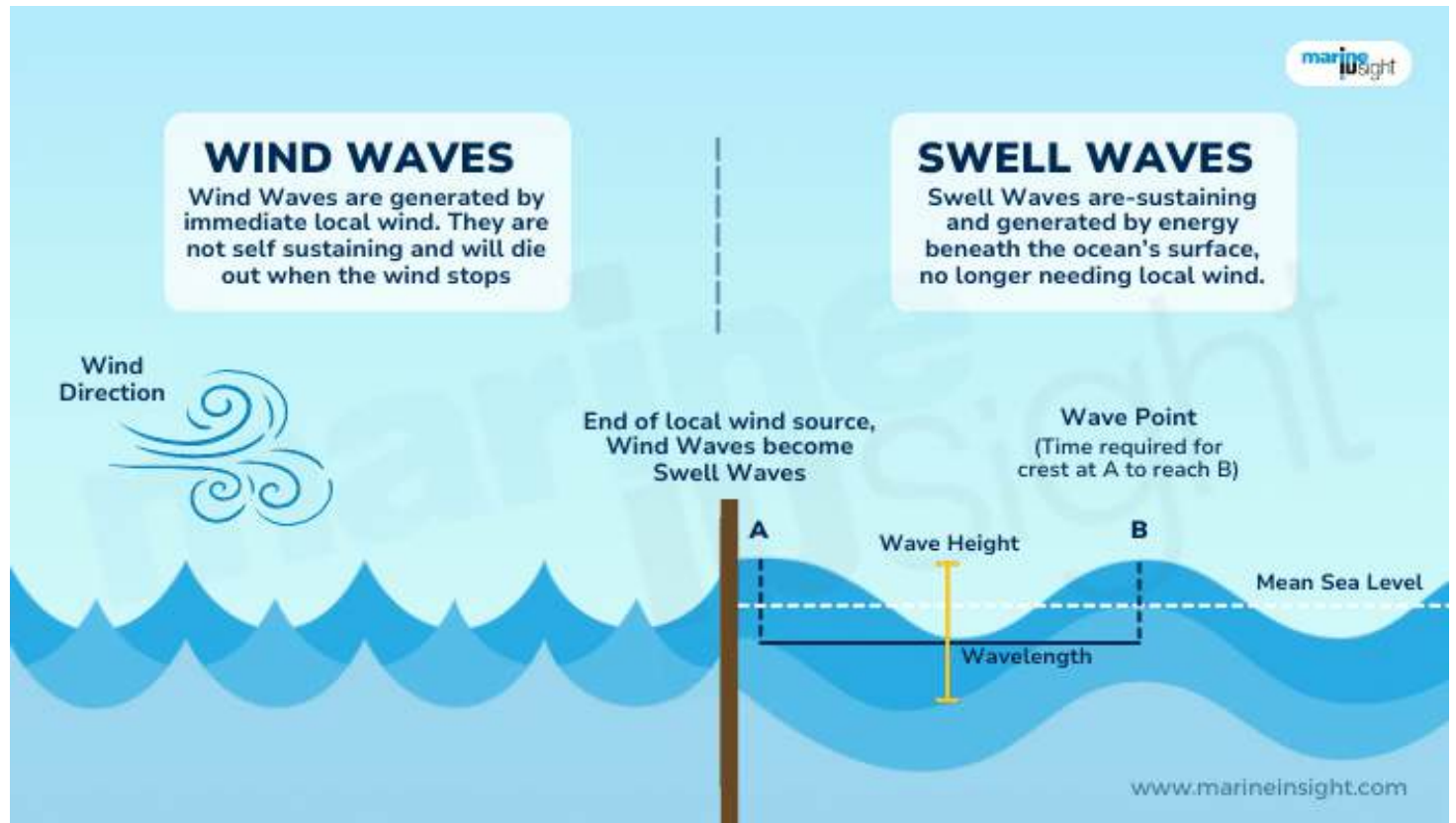
Context: Coastal areas **in southern and central Kerala** experienced **inundation from swell waves**, locally known as ‘**Kallakkadal**,’ prompting **alertness from disaster management authorities**.

- The **phenomenon is not common for this time of the year**, as noted by the fishing community.

Swell waves refer to **ocean waves that have travelled over long distances** from their area of origin, usually generated by **distant weather systems or storms**.

These waves typically have a **consistent and smooth appearance** and **can travel thousands of kilometres across the ocean's surface without breaking**.

Swell waves are a significant factor in **shaping coastal areas and can cause inundation and erosion when they reach shore**.



11. NEGATIVE LEAP SECOND

Context:

A recent study suggests that the **accelerated melting of glaciers and ice sheets in Greenland and Antarctica** due to climate change is affecting Earth's **rotation, potentially postponing the need for a "negative leap second"** to keep **clocks aligned with Coordinated Universal Time (UTC)**.

- As the redistribution of liquid from melting ice slows down Earth's rotation, the **previously anticipated implementation of the negative leap second in 2026 may be delayed until 2029 or later**.

A negative leap second refers to a **proposed adjustment to Coordinated Universal Time (UTC)** where **one second would be subtracted from the standard timekeeping system**.

This adjustment was **intended to compensate for the Earth's gradually increasing rotational speed**, which would make days slightly shorter over time.

It is opposite of **positive leap second (one-second addition to clocks)**. It is done when length of day is rising (Earth is spinning more slowly).

12. 125 YEARS OF KODAIKANAL SOLAR OBSERVATORY

Context:

The 125th anniversary of Kodaikanal Solar Observatory (KSO) was celebrated **recently on April 1, 2024**, by the **Indian Institute of Astrophysics (IIA)**

Aspect	Description
What is Kodaikanal Solar Observatory (KoSO)?	It is an observatory owned and operated by the Indian Institute of Astrophysics . Established in 1899 , it is located in Kodaikanal , Tamil Nadu, and focuses on solar studies
Need for such an observatory	The great Drought of 1875-1877 emphasized the need for solar studies to understand weather patterns. India's geographical significance further underscores the importance of such research, given its impact on global weather.
Origin	The concept originated in the late 19th century. Solar Physics Observatory was approved in August 1893. The foundation stone was laid by Lord Wenlock in 1895 . March 14, 1901 , marked the commencement of systematic observations
Location	Palani Hills of Tamil Nadu The place was chosen due to its favourable atmospheric conditions and high-altitude, dust-free environment . These factors provide clear and stable viewing conditions for solar observations, making it an ideal site for studying the Sun's activities and phenomena.
Instruments at KoSO	Initially focused on sunspots, prominences, and solar radiation. Advanced instruments include the H-alpha telescope and the White Light Active Region Monitor (WARM)
Significant achievements of KoSO	Identified the Evershed Effect (a phenomenon observed in sunspots where gas flows radially outward from the centre of the sunspot) Expanded research scope to cosmic rays , radio astronomy, ionospheric physics, and stellar physics
About the Indian Institute of Astrophysics	Indian Institute of Astrophysics (founded in 1971; HQ: Bengaluru), is an autonomous research institute wholly funded by the Department of Science and Technology . IIA conducts research primarily in the areas of astronomy, astrophysics and related fields
About Kodaikanal	Kodaikanal is a hill town in the southern Indian state of Tamil Nadu . It's set in an area of granite cliffs, forested valleys, lakes, waterfalls and grassy hills.



13. 5,200-YEAR-OLD HARAPPAN SETTLEMENT

Context:

Archaeologists, have unearthed a **5,200-year-old Harappan settlement** at Padta Bet in Gujarat’s Kachchh district, near [the Juna Khatiya necropolis](#).

- The excavation revealed **evidence of Early Harappan to Late Harappan period occupation**, including **pottery, artefacts, animal bones, and structural remains**.
- Unique ceramics suggest a **local pottery tradition**, while the **site’s strategic location atop a hillock** offered a commanding view of the **surrounding landscape and access to water from a nearby stream**.
- Artefacts such as **semi-precious stone beads, tools, and animal bones indicate animal domestication and shellfish exploitation**.

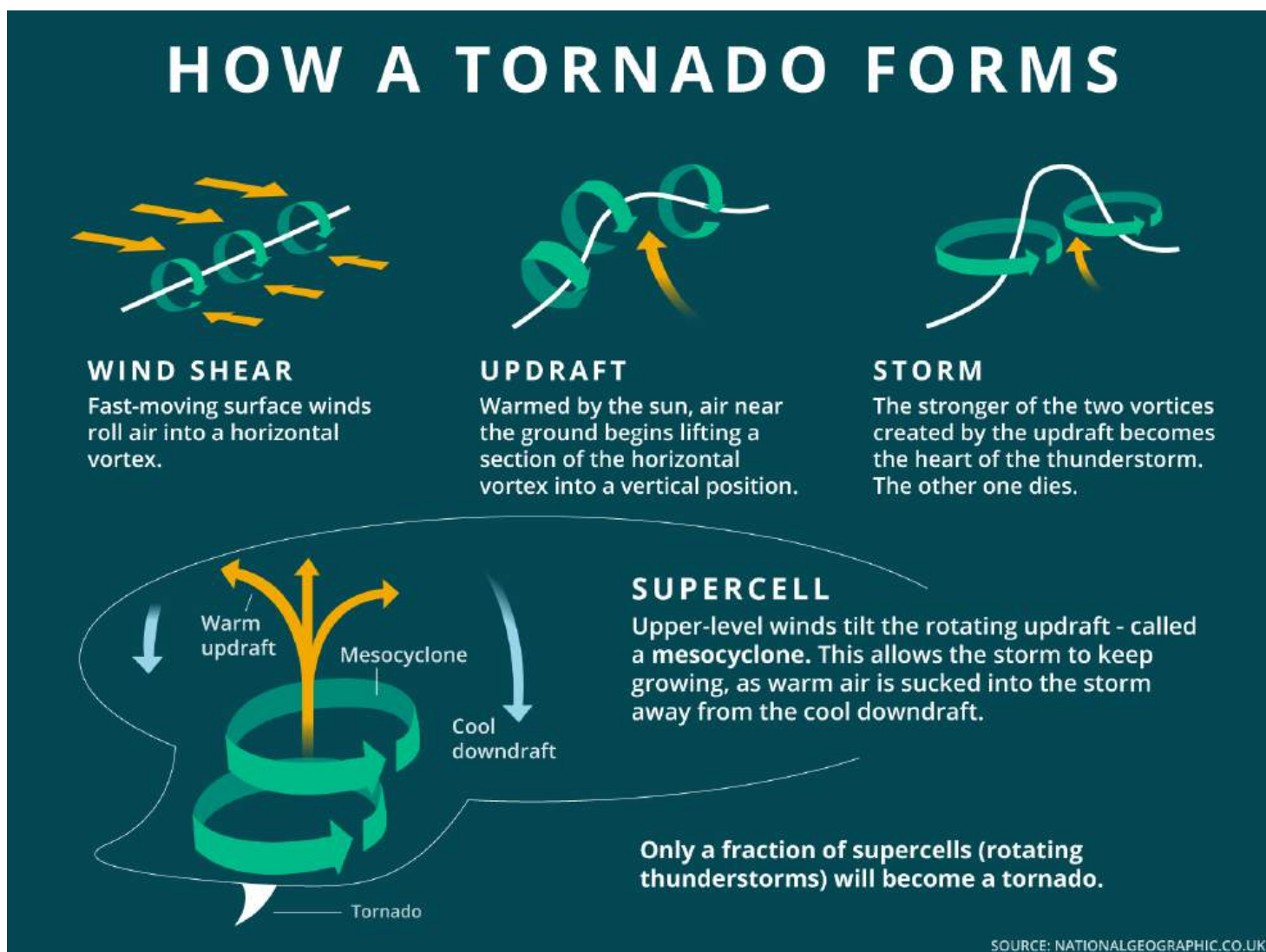
14. IMD WARNS OF MORE TORNADOES IN THE BAY OF BENGAL

Context:

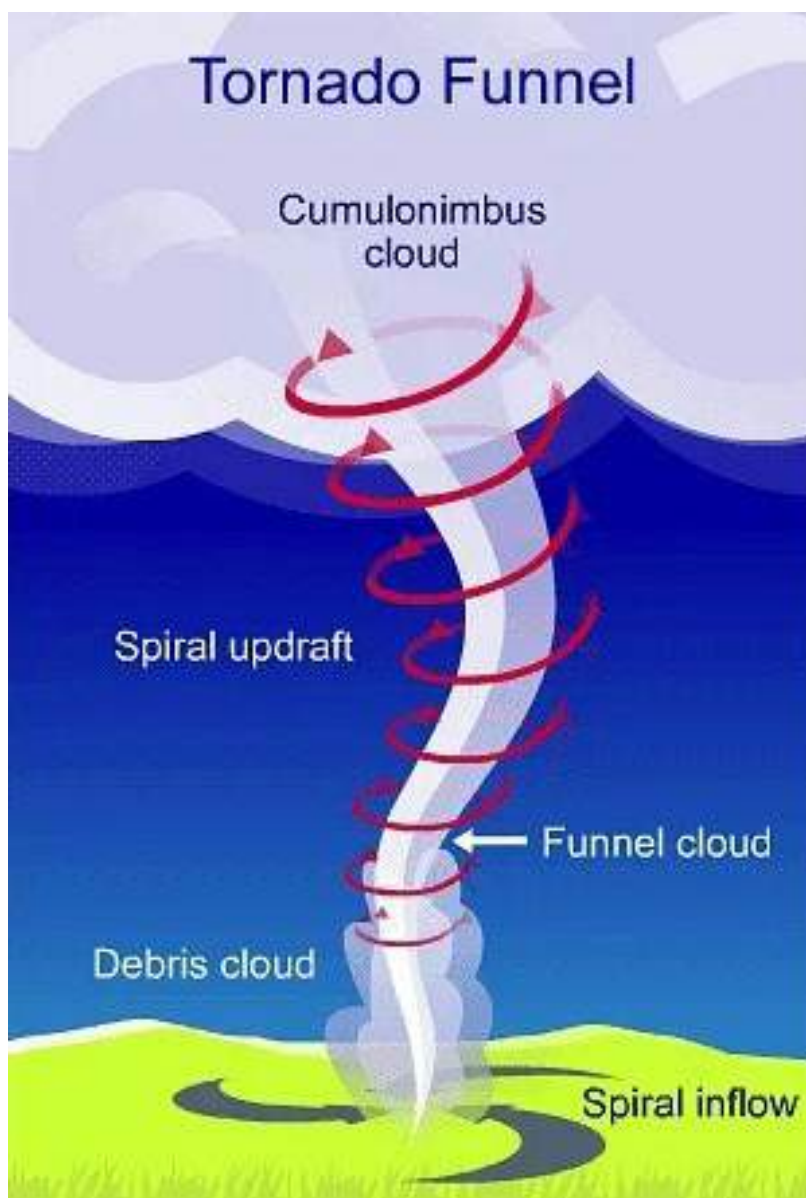
IMD warns of more tornadoes in West Bengal after a recent one killed 5 and over 100 injured in Jalpaiguri.

What is a Tornadoes?

A tornado is a rapidly rotating column of air that extends from a thunderstorm to the ground. It is often visible as a **funnel-shaped cloud** and is capable of causing significant damage to structures and landscapes.



Structure of a Tornado:



Aspect	Tornado	Tropical Cyclone
Definition	A rapidly rotating column of air that extends from a thunderstorm to the ground.	A large-scale, atmospheric wind and rainstorm that rotates around a low-pressure centre .
Location	Typically occurs over land	Typically occurs over oceans
Size	Much smaller in size , with diameters on the order of a few hundred meters.	Much larger in size , with diameters ranging from tens to hundreds of kilometres.
Formation	Forms from severe thunderstorms	Forms over warm ocean waters
Duration	Short-lived , lasting from a few seconds to a few hours.	Can last for several days , moving across large distances.
Speed	Moves more slowly, typically at speeds of 10 to 20 mph (16 to 32 km/h)	Moves quickly, with forward speeds ranging from 30 to 70 mph (48 to 113 km/h)
Wind Shear	Require substantial vertical shear of horizontal winds	Require very low values of tropospheric vertical shear
Temperature Gradient	Produced in regions of large temperature gradient	Generated in regions of near-zero horizontal temperature gradient
Damage	Can cause localized , but severe damage, including the destruction of buildings and trees.	Can cause widespread damage , including flooding, storm surges, and high winds.

15. IKSHVAKU-ERA

Context:

Recently around **3,730 lead coins** were unearthed in an **earthen pot at Phanigiri**, a **renowned Buddhist heritage site in Telangana**.

- The coins, bearing an **elephant symbol on the obverse** and a **Ujjain symbol on the reverse**, are **believed to belong to the Ikshvaku period**.
- **Phanigiri is considered an important Buddhist monastery located strategically on the hilltop**, along the ancient trade route connecting the west and east coast of the Deccan.

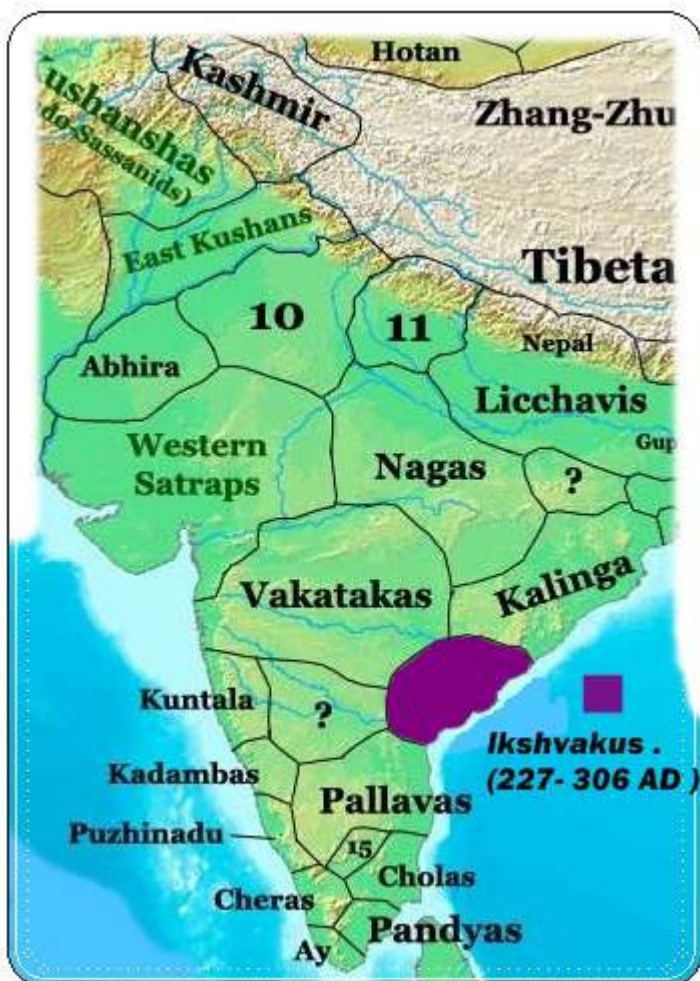
About the Ikshvaku era:

During the **third and fourth centuries CE**, the **Ikshvaku dynasty ruled the eastern Krishna River valley** from their capital at **Vijayapuri (modern Nagarjunakonda in Andhra Pradesh)**.

Also known as **the Andhra Ikshvakus or the Ikshvakus of Vijayapuri**, they were Shaivites following **Vedic rituals**, but **Buddhism flourished during their reign**.

They practised both **Buddhism and Brahminism**, evident in **their architectural projects**.

The dynasty's reign marked a **period of cultural and religious growth** but ended with the rise of **Pallava rule**.



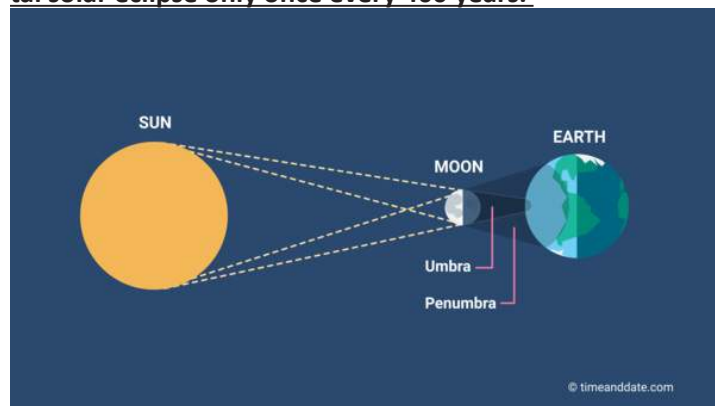
16. TOTAL SOLAR ECLIPSE

Context:

A **total solar eclipse** will cross **North America, passing over Mexico, the United States, and Canada**. This type of solar eclipse is a **rare event for any particular spot**.

- According to Royal Museums Greenwich, **once a place on Earth witnesses a total solar eclipse, it will be about 400 years before that part sees the next one**.
- A **total solar eclipse is a rare event because it occurs when the Moon passes directly between the Earth and the Sun**, casting a shadow on the **Earth's surface**.
- Total solar eclipses are **infrequent because the Moon's orbit is tilted with respect to the Earth's orbit around the Sun**, causing the **Moon's shadow to usually pass above or below the Earth**.
- Additionally, the umbra, or **the darkest part of the Moon's shadow where a total eclipse is visible, covers only a small portion of the Earth's surface during each event**.

Consequently, a specific location on Earth may **witness a total solar eclipse only once every 400 years**.



17. ARCTIC'S POLAR VORTEX

Context:

In a surprising turn of events, **scientists observed the Arctic's polar vortex spinning in the opposite direction**, marking one **of the six strongest occurrences of its kind since 1979**.

- The polar vortex is a **massive spinning wheel of freezing cold air** that forms **high in the atmosphere near the North Pole**, held together by a **strong west-to-east wind current**.
- This wind current, often referred to as the **polar night jet, can reach speeds comparable to a Category 5 hurricane**.
- The reversal in the vortex's direction was attributed to **"Sudden Stratospheric Warming events,"** which caused an **influx of ozone from lower latitudes around the Arctic**.

About Polar Vortex:

The polar vortex is a **large, persistent circulation of frigid air located in the stratosphere and typically centred near the**

Earth's poles.

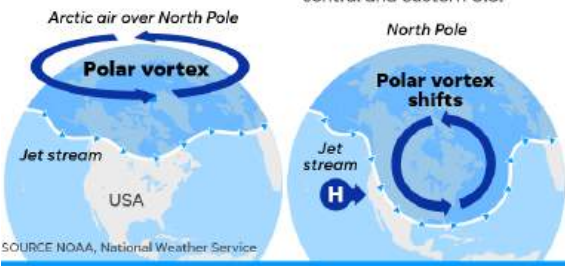
It is **characterized by a strong wind current** that circulates from **west to east, trapping cold air within the polar regions during the winter months.**

The polar vortex plays a **crucial role in maintaining the polar climate and can influence weather patterns in mid-latitude regions.**

Occasionally, **disruptions in the polar vortex can occur, leading to phenomena such as sudden stratospheric warming events**, which can result in shifts in weather patterns and colder temperatures in regions outside of the polar areas.

What is the polar vortex?

The polar vortex is a large area of cold air high up in the atmosphere. It normally spins above the North Pole. A chunk of the polar vortex sometimes slides down toward the U.S. This helps funnel bitterly cold Arctic air over the central and eastern U.S.



18. SOUTHERN OCEAN

Context:

The **Southern Ocean** is known for having the **cleanest air on Earth, a fact previously attributed mainly to minimal human activity.**

- However, recent research has **unveiled that clouds and rain play a significant role in keeping the air pristine.**

Role of clouds:

- The Southern Ocean experiences **unique cloud patterns, particularly honeycomb-shaped clouds, which regulate climate by reflecting or allowing sunlight.**
- These clouds **generate sporadic but intense rain showers, effectively washing aerosol particles out of the air.**

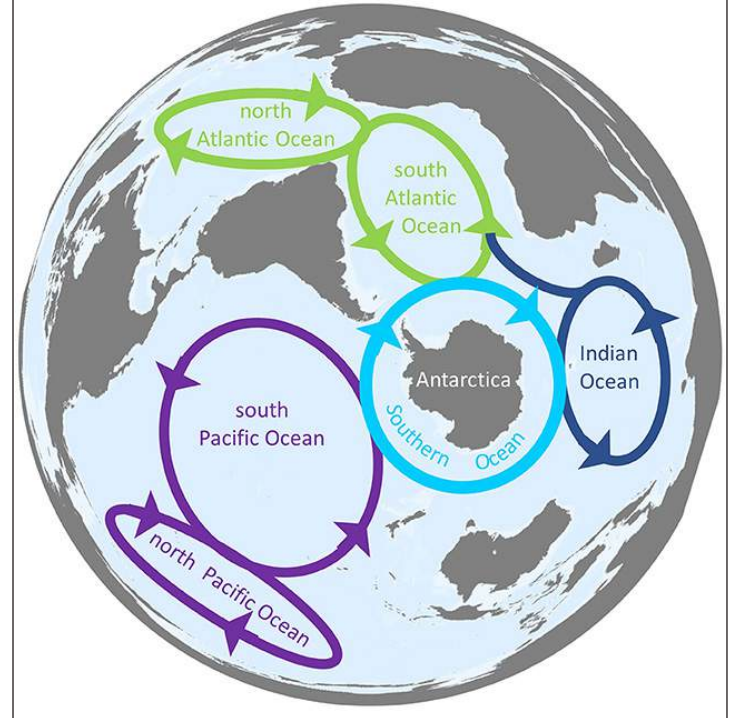
About Southern Ocean:

The Southern Ocean is the body of water that **surrounds Antarctica and is bounded by the continents of Antarctica, South America, Africa, and Australia.**

It is the **southernmost ocean on Earth and is characterized by its vast expanse of open water, strong currents, and harsh climate conditions.**

The Southern Ocean plays a **critical role in regulating global**

climate and ocean circulation patterns.



19. MOUNT RUANG

Context:

Indonesian authorities issued a **tsunami alert after Mount Ruang volcano** erupted five times, expelling ash and lava.

- The Centre for Volcanology and Geological Disaster Mitigation issued the **highest-level alert, warning of potential hazards including the collapse of the volcano into the sea, which could trigger a tsunami.**
- Indonesia, with **120 active volcanoes**, faces frequent **volcanic activity due to its location along the Ring of Fire.**

Volcano Mount Ruang erupts in Indonesia

Column of sulphur dioxide (SO₂) in the atmosphere as of April 17 at 0000 GMT, in mg/m²



20. TRIBES IN NEWS

Tribe	Description
Shompen Tribe	Shompen tribe, residing in the dense rainforests of Great Nicobar Island , cast their first vote in the Lok Sabha Election .
	Belonging to the Mongoloid group , they are one of the Particularly Vulnerable Tribal Groups , with an estimated population of 229 according to the 2011 Census. They live a semi-nomadic lifestyle , hunting wild pigs, pythons, monitor lizards, and crocodiles.
Pahariya tribe	Jharkhand's Pahariya tribe, primarily residing in Jharkhand and West Bengal, aims for seed independence through community-led Seed banks .
	Pahariya engage in shifting agriculture and worship deities specific to their households , clans, and villages. The Pahariyas speak the Mal Pahariya language influenced by local dialects and have a mixed language of Santali, Bengali, and Hindi.

21. ROSS ICE SHELF

Context:

Researchers have discovered that **the massive Ross Ice Shelf makes sudden jumps twice a day**.

- These sudden shifts, **akin to tremors along earthquake faults**, could **weaken the Ross Ice Shelf over time, potentially accelerating ice melt** rates and contributing to sea level rise.
- A sudden jump occurs when **two sections of ice press against each other (rubbing creates tension)**, just as tectonic plates on Earth cause earthquakes.
- The research team emphasises **that icequakes and fractures** are natural occurrences on ice shelves.



22. CHITHIRAI FESTIVAL

Context:

Lord Kallazhagar’s annual ritual in Alagar Temple, Madurai during the Chithirai festival saw thousands of devotees gathering to witness his ceremonial entry into the Vaigai river.

The festival, merging narratives of Lord Kallazhagar and Goddess Meenakshi’s marriage, holds historical significance and promotes harmony.

About Alagar Temple:

It is situated at the base of Alagar hills in Madurai, Tamil Nadu, and is one of Lord Vishnu’s 108 abodes, revered as Kallazhagar. Enclosed by fortress walls, it boasts six corridors and is mentioned in the Tamil epic Silappadikaram and Alvars’ hymns. The temple’s mandapam pillars showcase Nayaka’s art style, adding to its historical and architectural significance.

About Vaigai River:

It originates in the Western Ghats (Varushanad Hills) and flows through the Pandya Nadu region of Tamil Nadu. Stretching 258 kilometres, it ultimately joins the Palk Strait near the Pamban Bridge in Ramanathapuram district. Vaigai holds historical significance as it flowed through Madurai, the capital of the ancient Pandya kingdom, and is mentioned in Sangam literature.



23. AVAR NOMADS OF EUROPE

Context:

Recent ancient DNA analysis sheds light on the vanished Avar nomads of Europe, revealing intricate family ties and social dynamics.

They uncovered a patrilineal society where men maintained lineage continuity, while women fostered social cohesion through marriage outside their paternal community. Additionally, the study identified unique social practices such as levirate unions and highlighted a transition in lineage coinciding with political shifts.

About Avars:

They were the nomadic people from eastern central Asia, who thrived from the 6th to 9th centuries. Seen as successors to the Huns, they were hired by the Byzantine Empire for military campaigns. A strict patrilineal descent system characterized their society, and they avoided inbreeding, engaging in limited intermarriage with non-Avar groups. They were renowned for their way of life and warfare.

24. BRU COMMUNITY

Context:

In a historic moment, Bru voters in Tripura participated in the Lok Sabha elections for the first time, having previously voted only in assembly elections. These voters, resettled from relief camps, cast their ballots at various polling stations across the state.

About the Bru community (also known as Reangs):

They historically inhabited Mizoram, Tripura, and parts of southern Assam. In Tripura, they are recognized as a Particularly Vulnerable Tribal Group (PVTG). Following ethnic conflicts in 1997, over 30,000 Brus fled Mizoram and sought refuge in Tripura. In 2020, a quadripartite agreement was signed to facilitate their permanent settlement in Tripura, involving the Centre, Tripura and Mizoram governments, and Bru representatives.

25. DECREASING SOLAR RADIATION AVAILABILITY IN INDIA

Context:

Solar radiation available for electricity conversion in India is decreasing, attributed to increased aerosol load and clouding.

Scientists from IMD suggest installing more efficient solar panels to counter this. Their analysis, based on data from 13 stations from 1985 to 2019, showed a decline in solar photovoltaic (SPV) potential across various locations.

India's solar energy capacity stands at about 81 GW, with a potential of 748 GW peak. The country ranks 5th globally in solar power capacity. Initiatives like the PLI Scheme and Solar Park Scheme aim to promote solar power.

GS-2

1. ASSOCIATION OF DEMOCRATIC REFORMS (ADR) DATA

Context:

An analysis by the **Association of Democratic Reforms (ADR)** reveals **concerning statistics about sitting Lok Sabha MPs in India.**

Key Findings:

- Out of **514 MPs analyzed, 44% face criminal charges, with 29% facing serious charges like murder, attempt to murder, and crimes against women.**
- Among those facing serious charges, **nine have murder cases against them.**
- Additionally, **5% of sitting MPs are billionaires, with assets exceeding ₹100 crore.**
- **Uttar Pradesh, Maharashtra, Bihar, Andhra Pradesh, Telangana, and Himachal Pradesh** stand out with more than **50% of their MPs facing criminal charges.**
- The report also provides insights into the **educational background, age, and gender distribution among sitting MPs**, revealing that **73% have graduate or higher educational qualifications, while only 15% are women.**

The **Association for Democratic Reforms (ADR)** is a **non-partisan, non-governmental organization in India that works for electoral and political reforms**, and to strengthen democracy and improve governance.

It was **founded in 1999 by professors from the Indian Institute of Management (IIM).**

The ADR's goals include: **Electoral and political reforms, Empowering the electorate, Greater accountability of political parties, and Inner-party democracy and transparency.**

2. FIRST-EVER NUCLEAR ENERGY SUMMIT

Context:

World leaders from over **30 countries (including India)** and the EU convened at the recently **inaugurated Nuclear Energy Summit in Brussels**, emphasizing nuclear power's role in achieving energy security, climate goals, and sustainable development.

Key Takeaways from the Nuclear Energy Summit:

1. **Promotion of Nuclear Energy:** The summit aimed to promote nuclear energy as a vital component of achieving **low-carbon electricity production.**
2. **Historic Inclusion in Global Stocktake:** Following its inclusion in the Global Stocktake at COP28 in 2023,

nuclear energy's deployment was emphasized for accelerating its role in combating climate change.

- a. **The Global Stocktake monitors the Paris Agreement's (2014) progress** and links national contributions to its goals. Its aim is to enhance climate ambition by evaluating collective efforts.
 - b. Currently, nuclear energy is **responsible for around 25% of global low-carbon electricity production**
3. **Atoms4NetZero Initiative:** The Summit collaborates with **IAEA's 'Atoms4NetZero'** program, aimed at supporting Member States' efforts to utilize nuclear energy in achieving net zero emissions.
 4. **Technological Advancements:** Advances such as Fusion Energy, and Small Modular Reactors (SMRs), with capacities of up to 300 MW(e) per unit, were highlighted as promising developments in nuclear technology.
 5. **Challenges:** Safety concerns post-Fukushima, vulnerability to cyber-attacks, and high upfront costs were acknowledged as challenges that need to be addressed for the wider adoption of nuclear energy.
 6. **IAEA's Role:** The International Atomic Energy Agency (IAEA), as the organizer, underscored its role in promoting safe, secure, and peaceful nuclear technologies worldwide.

Status of Nuclear Energy in India:

Nuclear energy contributes about **3% to India's electricity generation**, with 23 reactors in operation, **producing 7480 MW**. There are **at least ten more reactors** that are under construction, and the capacity is supposed to **triple to 22,480 MW by 2031-32.** Most reactors are **Pressurized Heavy Water Reactors (PHWRs)**.

India's first 700 MWe PHWR unit, the **Kakrapar Atomic Power Project (KAPP-3)**, started in 2021. The government plans to establish new plants like the one in **Gorakhpur, Haryana**. India is developing "**Bhavni**," its first indigenous thorium-based nuclear plant, **utilizing Uranium-233**. The experimental thorium plant "**Kamini**" is already operational in **Kalpakkam**

About IAEA (founded: 1957; HQ: Vienna, Austria)

The IAEA promotes safe and peaceful nuclear technologies worldwide. It operates under the **UN system** and oversees nuclear inspections under the NPT. The Additional Protocol allows it to verify peaceful nuclear material use. **India is a member.**

3. NICES PROGRAMME

Context: The **National Information System for Climate and Environment Studies (NICES)**, operated by **ISRO and other ministries**, invites Indian researchers to **combat climate change.**

- Potential areas include **Space-based ECVs, Climate Indicators, Climate Change Challenges, and Weather Extremes.**

The **National Information System for Climate and Environment Studies (NICES) program** was conceptualized in 2012 and is operated by the **Indian Space Research Organisation (ISRO)** and the Department of Space, along with other ministries, under the framework of the National Action Plan on Climate Change.

Its primary objective is to **generate and disseminate long-term Essential Climate Variables (ECVs)** derived from **Indian and other Earth observation satellites**, which are essential for understanding Earth's climate.

4. BIMSTEC CHARTER

Context:

Nepal's Lower House of Parliament endorsed the **BIMSTEC Charter recently.**

- The BIMSTEC Charter aims to **enhance collaboration** among member countries, including **Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand**, in areas such as economic prosperity, social progress, and connectivity.
- **BIMSTEC, established in 1997**, seeks to foster cooperation and development in the region.

The BIMSTEC Charter is a **foundational document that outlines the principles, objectives, and framework for cooperation among member states** of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (**BIMSTEC**).

It establishes the **legal basis for the organization** and **defines its structure, functions, and decision-making processes.**

The charter aims to **promote regional cooperation and integration** among **BIMSTEC member countries**, which include **Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand.**

Key areas of cooperation covered by the **charter include economic development, trade, investment, technology transfer, connectivity, and people-to-people exchanges.**

The endorsement and ratification of the BIMSTEC Charter by **member states are essential for its implementation and the effective functioning of the organization.**

5. POLITICAL PARTIES' SYMBOLS

Context:

The Election Commission of India (ECI) allocates symbols to **political parties and candidates based on the Election Symbols (Reservation and Allotment) Order, 1968.**

- Recognized parties have **reserved symbols**, while

unrecognised parties are allotted free symbols during elections.

- Unrecognised parties can **apply for a common symbol if they meet certain criteria**, including **securing at least 1% of votes in the previous election** or **having elected representatives.**
- The recent **denial of a common symbol to Viduthalai Chiruthaigal Katchi (VCK) and the allotment of a new symbol to Naam Tamilar Katchi (NTK) have raised questions.**

The current rules may need amendment to ensure fair treatment based on past electoral performance and representation.

6. DRAFT MODEL RULES FOR CHILDBIRTH REGISTRATION

Context:

The **Home Ministry has drafted Model Rules** requiring parents to **record their religion separately when registering the birth of a child**, departing from the previous practice of recording the family's religion.

- The **Registration of Births and Deaths (Amendment) Bill, 2023**, allows the birth certificate to serve as a **single document for various purposes such as admission to educational institutions**, obtaining a driving license, and registering for Aadhaar.
- The bill also **facilitates digital registration and aims to establish national and state-level databases of registered births and deaths**, facilitating efficient delivery of public services and benefits.
- Additionally, it includes provisions for **collecting the Aadhaar numbers of parents for birth registration.**

7. 75 YEARS OF NATO

Context:

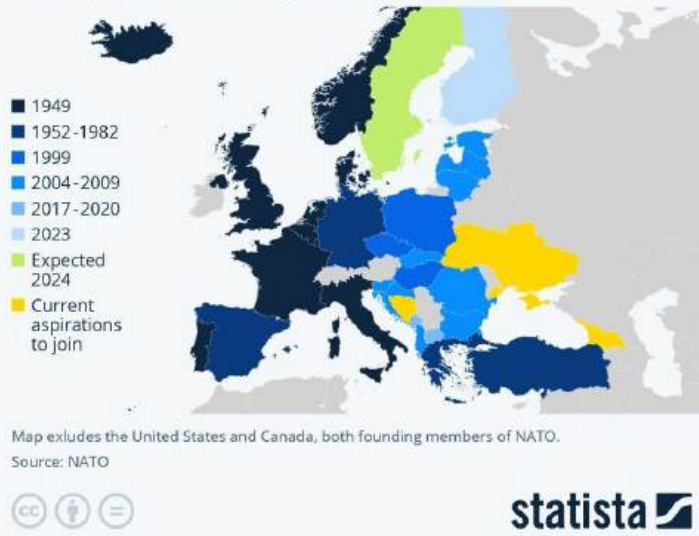
NATO, founded in 1949, celebrates 75 years with recent expansion and renewed unity.

NATO (North Atlantic Treaty Organization) is a military alliance of 32 countries from North America and Europe. It aims to **safeguard the freedom and security of its members** through collective defence against aggression.

NATO	Details
Formation	1949 (HQ: Brussels, Belgium)
Members	32 member countries (as of 2023, including Finland and Sweden)
Founding Members	Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom, and the United States
Article 5 of NATO	A key provision of the NATO treaty states that an attack on one member is an attack on all members . It has been invoked only once after the 9/11 terrorist attacks in the United States. However, NATO's protection does not extend to members' civil wars or internal coups.
Alliances	Euro-Atlantic Partnership Council (EAPC), Mediterranean Dialogue, Istanbul Cooperation Initiative (ICI) Visit Insights IAS Daily CA for outcomes of the Conference

Sweden To Join NATO After Approval From Hungary

European countries by year they joined NATO



3. Supporting non-proliferation efforts
4. Addressing climate change and economic challenges

About GCC:

The Gulf Cooperation Council (GCC) (est. 1981; HQ: Riyadh (Saudi Arabia)) is a **political and economic union** formed by **Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates**. It aims to promote cooperation among member states. Initially proposed as a **“Gulf Union” for deeper coordination**, its military arm, the **Peninsula Shield Force**, was created in 1984.



8. SUVIDHA PORTAL

Context:

Since the announcement of General [Elections 2024](#), **over 73,000 applications have been received on the Suvidha Portal, with more than 44,600 requests approved.**

- The portal ensures **transparency and a level playing field for political parties and candidates by adhering to the First in First out principle.**
- It caters to a wide range of **permission requests such as organizing rallies, opening temporary party offices, and distributing pamphlets.**
- The data available on the portal aids in **scrutinizing election expenditures, contributing to greater accountability.**

Requests were **highest from Tamil Nadu, West Bengal, and Madhya Pradesh, with minimum requests from Chandigarh, Lakshadweep, and Manipur.**

The Suvidha portal is a **technological solution created by the Election Commission of India (ECI) to facilitate fair and transparent elections.**

9. GULF COOPERATION COUNCIL (GCC)

Context:

The [Gulf Cooperation Council \(GCC\)](#) launched its **‘Vision for Regional Security’ in December 2023**, aiming to establish a **comprehensive framework for regional security.**

Key highlights include:

1. Prioritizing negotiation over conflict
2. Combating terrorism and extremism

10. PALESTINIAN MEMBERSHIP APPLICATION REFERRED TO UN COMMITTEE

Context:

The **United Nations Security Council** president has referred the **Palestinian Authority’s application for full UN membership to the committee on new member admissions.**

- The committee will assess the **application’s compliance with U.N. membership requirements before potentially advancing it for a formal Security Council vote**

To become a UN member:

- A state submits an application to **the Secretary-General, accepting Charter commitments.**
- The application is **reviewed by the UNSC, needing approval from 9 of 15 members and no vetoes from the 5 permanent members.**
- If approved, it **goes to the General Assembly, requiring a two-thirds majority vote.**
- Membership becomes **effective upon the adoption of a resolution.**

11. PRINCIPLES FOR HARMONIOUS CONSTRUCTION

Context:

The Supreme Court, while refusing to condone a 5659-day delay in an appeal, outlined eight principles deciding an application for condonation of delay.

These include:

- the public policy basis of limitation laws,
- the strict interpretation of Section 3 and liberal interpretation of Section 5 of the Limitation Act,
- the balance between substantial justice and adherence to limitation laws,
- discretionary power of courts to condone delays,
- lack of entitlement based on others' relief,
- non-necessity to consider case merits in delay condonation,
- and adherence to statutory provisions in deciding delay condonation applications.

The Doctrine of Harmonious Construction is a legal principle used to interpret statutes and resolve conflicts between laws or different parts of the same law.

When there's inconsistency between statutes or provisions, the doctrine requires interpreting them in a way that harmonizes their application.

This ensures that all provisions are given effect and the statute is understood as a whole.

The principle assumes that Parliament intends for all provisions to work together without contradiction.

12. BILATERAL INVESTMENT TREATY

Context:

The Prime Minister's Office (PMO) has directed the commerce ministry to review the model text of bilateral investment treaties (BITs) and propose enhancements to facilitate business operations.

- This move is prompted by India's previous losses in international arbitration cases against companies like Vodafone and Cairn Energy over retrospective tax imposition.
- Model text of BIT: Union Cabinet adopted new Model BIT text in 2015, which replaced Indian Model BIT, 1993.

BITs are crucial for protecting and promoting investments between nations, and they are a focal point in India's negotiations with countries like the UK and the European Free Trade Association (EFTA).

13. PEACE CLAUSE IN WTO

Context:

India has invoked the peace clause at the WTO for the fifth consecutive time for the marketing year 2022-23, as it breached the prescribed subsidy limit for rice.

- Despite breaching the 10% domestic support ceiling, there are no immediate repercussions due to the peace clause, which provides immunity until a permanent solution is found.
- India justifies its actions as necessary to meet domestic food security needs.

The peace clause in the World Trade Organization (WTO) refers to an agreement that temporarily shields developing countries from legal challenges for breaching the domestic support limits on agricultural subsidies.

It was established during the WTO's Bali Ministerial Conference in 2013.

This clause allows developing countries to provide subsidies beyond the prescribed limits for certain agricultural products, such as rice and wheat, without facing immediate repercussions.

The peace clause provides immunity until a permanent solution is found, allowing developing countries to support their domestic agricultural sectors while negotiations continue on more permanent subsidy rules.

14. CANDIDATES' RIGHT TO PRIVACY FROM VOTERS

Context:

The Supreme Court ruled that candidates have a right to privacy from voters and are not required to disclose every aspect of their personal life and possessions.

The judgment came in a case where an MLA's election was challenged for not declaring vehicles as assets. The Court ruled in favour of the MLA, stating that once sold, vehicles cannot be considered assets.

Statutory provisions regarding declarations by Election candidates as per RPA 1951:

1. Section 33 of the Representation of People's Act (RPA), 1951, governs nominations for election candidates and requires valid information presentation.
2. Section 36 of the RPA, 1951, allows scrutiny of nominations by returning officers, who can reject nominations for defects of a 'substantial character'

What did SC say?

1. Supreme Court ruled that voters' right to know is not absolute.
2. A candidate's privacy on matters irrelevant to their candidature is not a corrupt practice under Section

123 of the RPA, 1951.

3. **Non-disclosure of certain personal items** is not a substantial defect under Section 36 of the [RPA, 1951](#).
4. Candidates are **not obligated to disclose every item** of movable property they own.
5. **Suppressing information about expensive items** like watches can be a substantial defect. Ownership of simple items may not constitute a defect in disclosure.

Voters in India have certain rights protected by the Election Commission of India (ECI) and the Constitution:

1. **Right to Know:** Voters have the right to know about candidates' criminal records, financial status, manifesto, etc.
2. **Voting rights of NRIs:** Non-resident Indians (NRIs) can vote in Indian elections.
3. **Voting rights of Prisoners:** Prisoners are not permitted to vote.
4. **NOTA (Right Not to Vote):** Voters can choose NOTA if they feel none of the candidates are suitable.
5. **Tendered Voting Rights:** Voters can vote separately if someone else has wrongly voted on their behalf.
6. **Voting rights of Disabled or Infirm Citizens:** The ECI assists disabled or infirm citizens in casting their votes.

15. CURATIVE PETITION

Context:

The Supreme Court's decision to **allow a curative writ petition in the DMRC case** signifies an **expansion of its powers beyond constitutionally prescribed processes**.

- The **curative writ, a sparingly used judicial innovation**, aims to **correct grave miscarriages of justice**, as **established in the 2002 Rupa Hurra v Ashok Hurra case**.
- However, the exercise of **curative jurisdiction in a commercial case raises questions about the finality of the Supreme Court's rulings** and the **principle of minimum judicial interference**.

Curative petition is entitled, if petitioner establishes

- Violation of **principles of natural justice**; Judge failed to **disclose his connection with the subject matter** or there is an **apprehension of bias and judgement adversely affects petitioner**.

16. REPRESENTATION OF THE PEOPLE ACT, 1951

Context: The **Election Commission (EC)** has issued a **directive to crackdown** on **anonymous political hoardings**, requiring the **disclosure of the names of their publishers and printers for traceability and accountability**.

- This move aims to **regulate campaign financing and ensure accountability** if the content **violates the Model Code of Conduct or statutory provisions**.
- This decision follows representations **received by the EC regarding hoardings lacking identification of printers or publishers**.
- **Section 127A of the Representation of the People Act, 1951**, mandates the **prominent display of the name and address of the printer and publisher on election-related material**.

This directive **holds printers, publishers, and licensees/contractors of urban local bodies** accountable for **political advertisements published on outdoor media**.

17. MISLEADING ADVERTISEMENTS

Context:

The Supreme Court declined a second apology from **Baba Ramdev and Patanjali** in a contempt case over **misleading advertisements**.

What are Misleading Advertisements?

Misleading advertisements are **promotional messages or claims that deceive or mislead consumers about the characteristics, benefits, or efficacy** of a product or service. These ads may contain false or exaggerated information, leading consumers to make purchasing decisions based on inaccurate perceptions

The Supreme Court criticized the **deliberate violations of the Drugs and Magic Remedies Act**.

The **Drugs and Magic Remedies (Objectionable Advertisements) Act of 1954** prohibits misleading claims about drugs and magic remedies. **Section 4 prohibits false impressions** about a drug’s true character, while Section 5 bans the advertisement of magic remedies for treatment, defining them as items alleged to have miraculous powers for diagnosis, cure, or mitigation.

18. REPORTS IN NEWS

Reports	Descriptions
IMF’s Global Financial Stability Report 2024	Key findings: The IMF warns of rising cyber threats endangering macro-financial stability, with extreme losses reaching \$2.5 billion . Cyberattacks have nearly doubled since the pandemic, with financial firms, especially banks, facing the brunt.
	India ranks 10th in cybercrime , with advance fee payment frauds being the most common, according to the World Cybercrime Index developed by the University of Oxford and UNSW Canberra
Plastic Overshoot Day 2024 Report	Released by Earth Action
	Key Findings: In 2024, it’s projected for September 5th globally and April 23rd in India . There has been over 7% rise in global plastic waste since 2021, with 12 countries responsible for 60% of mismanaged plastic waste, including China, India, and Russia.
	India is categorized as a Low-Waste-Producing Polluter with a high Mismanaged Waste Index (MWI)
	Plastic Overshoot Day (similar to Earth Overshoot Day) marks when global plastic waste surpasses the world’s capacity to manage it, leading to pollution.
Global hepatitis report 2024	Released by WHO
	India accounted for over 11% of the global burden of hepatitis B & C cases , ranking second after China.
	Hepatitis is liver inflammation caused by various factors, such as drugs, alcohol, and autoimmune disorders. Symptoms can range from jaundice and fever to chronic illness. The five main strains are A, B, C, D, and E, with B and C leading to chronic disease, liver cirrhosis, cancer, and death. While a vaccine exists for type B , none is available for type C.
	World Hepatitis Day, observed on July 28 each year , aims to raise awareness about viral hepatitis and its global impact.
	Government initiatives to tackle hepatitis include: the National Viral Hepatitis Control Program (aiming to eliminate viral hepatitis as a public health threat by 2030 in India); Universal Immunization Programme (UIP) (provides free vaccination against hepatitis B and other vaccine-preventable diseases, including tuberculosis, polio, pneumonia, and measles, among others)
Financing for Sustainable Development Report 2024	Released by United Nations Department of Economic and Social Affairs (UNDESA)
	Key findings: Developing countries face a significant financing gap for achieving Sustainable Development Goals (SDGs), estimated between \$2.5 trillion and \$4 trillion annually . Systemic risks like the COVID-19 pandemic and more frequent disasters strain national financing frameworks
	Recommendations: Enhance tax capacity to boost tax revenue for SDGs.
	UN DESA (HQ: New York City; est.1948) , supports countries in making informed decisions by offering information via publications, databases, and international discussions at forums like the UN General Assembly and ECOSOC . It releases report the World Social Report (since 1997)

19. INDIA-MAURITIUS TAX TREATY

Context: India and Mauritius amended their **double taxation avoidance agreement (DTAA)** to include a **principal purpose test (PPT)** aimed at curbing tax avoidance.

- However, the **amended protocol has not been ratified or notified by the Income Tax Department**.
- There were concerns that **investments through Mauritius might face increased scrutiny by tax authorities**, potentially **affecting past investments as well**.

Double taxation occurs when the **same income is taxed twice in two different jurisdictions before it becomes net income.**

To address this issue and encourage international economic activities, **countries sign Double Taxation Avoidance Agreements (DTAAs).**

These agreements establish **agreed-upon tax rates and jurisdictions for specific types of income received by tax residents of one country from another country.**

DTAA aims to prevent **international double taxation and promote capital investment, trade, and economic activities between the signatory nations.**

The agreements may cover various categories of **income, depending on the types of businesses and holdings citizens have in each other's countries.**

20. FINANCIAL SERVICES INSTITUTIONS BUREAU (FSIB)

Context:

The **Financial Services Institutions Bureau (FSIB)** has recommended **Manoj Mittal**, currently the **Managing Director of IFCI**, as the **new Chairman and Managing Director of the Small Industries Development Bank of India (SIDBI).**

- Additionally, **Sanjay Shukla has been selected as the Managing Director of the National Housing Bank (NHB)**

About FSIB:

Constituted in 2022 **under Department of Financial Services (Ministry of Finance)**, by **Central Government replacing Bank Board Bureau.**

The **Financial Services Institutions Bureau (FSIB)** is an organization responsible for selecting directors for **state-owned banks and financial institutions in India.**

It acts as a **head-hunter, identifying and recommending suitable candidates** for leadership positions within the **financial sector.**

21. HOMOEOPATHY SYMPOSIUM

Context:

The **Homoeopathy Symposium** concluded with **a call for global collaboration to enhance the efficacy and acceptance of Homoeopathy worldwide.**

- The event, attended by **over 6,000 participants including President of India**, and seven Padma awardees, focused on **research, clinical practice, and market insights in Homoeopathy.**

Homoeopathy is a system of **alternative medicine based on the concept of "like cures like."**

Developed in the **late 18th century by German physician Samuel Hahnemann**, homoeopathy operates on the **principle of using highly diluted substances to stimulate the body's natural healing processes.**

According to homoeopathic theory, **illnesses can be treated by administering extremely small doses of substances that**, in larger amounts, would **produce symptoms similar to those of the illness itself.**

22. ADJUDICATING AUTHORITY UNDER PMLA, 2002

Context:

The Adjudicating Authority under the **Prevention of Money Laundering Act, 2002 (PMLA)** has confirmed the attachment of assets belonging to the Congress party-promoted National Herald newspaper.

What is Adjudicating Authority under PMLA, 2002?

The Adjudicating Authority under the **Prevention of Money Laundering Act, 2002 (PMLA)** is responsible for **confirming provisional attachment orders** (within 180 days) issued by the **Enforcement Directorate (ED)** in cases of suspected money laundering. It ensures that assets suspected to have been acquired through proceeds of crime are properly dealt with according to the law. Once confirmed by the authority, the attachment order allows the ED to take possession of the assets, leading to potential confiscation if the accused is convicted.

The accused can **continue to use the property until the adjudicating authority approves the seizure.** After, the **adjudicating authority's approval, ED will take control of it.**

After the Adjudicating Authority confirms the attachment, the accused can take the following actions:

1. **Right to appeal:** The accused can challenge the confirmation order at the PMLA's Appellate Tribunal within **45 days**
2. **Appellate tribunal:** If the Appellate Tribunal confirms the order, the accused can appeal to the High Court.
3. **Status of property:** The owner cannot access the property until the trial is completed unless it's released.
4. **Final confirmation:** Once confirmed, for residential property, the ED takes possession after the owner vacates.
5. **Conviction outcome:** If convicted, the trial court may order confiscation and transfer ownership to the central government.



Prevention of Money Laundering Act (PMLA)

The Act was enacted in 2002 in response to India's global commitment (including **Vienna Convention**) to combat money laundering.

Department of Revenue



The PMLA enables authorities to:

- **Confiscate the property** earned from illegally gained proceeds.
- **Appoint the Adjudicating Authority and Appellate Tribunal** to deal with the matter connected with money laundering
- **The act adds the concept of 'reporting entity'** which would include a banking company, financial institution, intermediary etc.

Appellate Tribunal

- **Composition:** Chairperson+ Two other Members
- **Qualifications:** For Chairperson (Should have been a Judge of the Supreme Court or qualified to be judge of a High Court); For Member (A member of the Indian legal service/revenue service/ economic service/ etc.)
- **Tenure:** Term of **five years** or till the age of 65 years, whichever is earlier.
- **Functions:** It hears appeals against the orders of the Adjudicating Authority and the authorities under the PMLA.

Enforcement Directorate (ED) (est. 1956, HQ: New Delhi) is a multi-disciplinary organization mandated to enforce PMLA.

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23. HOME VOTING

Context:

The **Election Commission of India (ECI)** has introduced a **ground-breaking initiative** for the **2024 Lok Sabha elections**, providing the option of **home voting for elderly citizens above 85 years of age and Persons with Disabilities (PwDs) with a 40% benchmark disability.**

- This initiative aims to **enhance inclusivity and accessibility in the electoral process.**

Additional steps taken by the Election Commission (EC) to promote inclusive voting include:

1. **Abolishing Form-M requirement for Kashmiri migrants** residing in Jammu and Udhampur, simplifying the voting process for them.
2. **Implementing Systematic Voter's Education and Electoral Participation (SVEEP)** to engage Persons with Disabilities (PwDs) and educate their friends, families, and polling officials.

3. **Introducing the proposed Multi-Constituency Remote Electronic Voting Machine (RVM)**, enabling migrant voters to vote from their current place of residence.
4. **Allowing voting by postal ballot for special voters, service voters** (including members of the armed forces, police forces serving outside their states, and government employees serving outside India), voters on election duty, and electors subjected to preventive detention.
5. **Facilitating proxy voting**, allowing registered electors, particularly service voters, to delegate their voting rights to a representative of their choice.

24. PRERANA PROGRAM

Context:

Recently the **inaugural alumni meet** of the **Prerana Program** was conducted virtually.

- The event aimed to **assess the program’s impact and facilitate the exchange of insights among participants.**
- It featured **students sharing positive experiences and the transformative effects of the program on their lives.**

About Prerana Program:

- The **Prerana Program**, which began its pilot phase in January 2024, **has involved students from various states and Union Territories, focusing on nine value-based themes.**
- It aimed to **foster mentorship, encourage alumni engagement, and highlight the program’s influence in driving positive change within communities.**

25. NATIONAL HUMAN RIGHTS COMMISSION (NHRC) OF INDIA

Context:

During the recent **Statutory Full Commission meeting organized by the National Human Rights Commission (NHRC) of India**, chaired by Justice Shri Arun Mishra, the emphasis was placed on the need for collaborative strategies among all seven National Commissions to ensure the protection of human rights, particularly for vulnerable and marginalized sections of society.

Aspect	Details
Establishment	Established in 1993 as a statutory body under the Protection of Human Rights Act (PHRA), 1993 , as amended by the Protection of Human Rights (Amendment) Act, 2006. Its establishment aligns with the Paris Principle , which sets out the international minimum standards for national human rights institutions.

Composition	Consists of a Chairperson, five full-time Members , and seven deemed Members. Deemed Members include Chairpersons of other key National Commissions such as the National Commission for Scheduled Castes, etc. The Protection of Human Rights (Amendment) Act, 2019 , provided that a Judge of the Supreme Court can be appointed as Chairperson in addition to the person who has been the Chief Justice of India.
Tenure	The tenure for both the Chairperson and Members is three years or until the age of seventy years.
Powers and Functions	Has all the powers of a civil court while trying a suit under the Code of Civil Procedure, 1908. Can inquire into any violation of human rights or negligence in the prevention of such violation by a public servant, either suo motu or on a petition. Can intervene in proceedings regarding allegations of human rights violations pending before a court.
Key Initiatives	Guidelines to check the misuse of the power of arrest by the police. Elimination of manual scavenging.
Challenges	The Global Alliance for National Human Rights Institutions (GANHRI) deferred its re-accreditation mainly due to political interference in appointments, involving the police in probes into human rights violations, etc. Without accreditation, NHRC will be unable to represent India at the UN Human Rights Council

26. TOP-TIER SECURITY PARTNER

Context:

Australia’s new National Defence Strategy (NDS) highlights **India as a top-tier security partner**, emphasizing the importance of its **Comprehensive Strategic Partnership in contributing to stability in the Indo-Pacific region.**

- The strategy aims to **deepen defence cooperation with India** through practical initiatives and information sharing.
- **Australia** plans to **allocate \$330 billion** to its **Integrated Investment Programme (IIP)** over the next decade, indicating a **commitment to enhancing defence capabilities.**
- This investment is expected to **raise defence spend- ing to around 2.4% of Gross Domestic Product by**

2033-34.

[India and Australia](#) are also finalizing agreements for **co-operation in hydrography and air-to-air refuelling**, further enhancing their strategic partnership.

27. NATIONAL ORGAN AND TISSUE TRANSPLANT ORGANISATION (NOTTO)-ID

Context:

The Union Health Ministry has mandated that all cases of organ transplants, whether from living or deceased donors, must be assigned a **unique National Organ and Tissue Transplant Organisation (NOTTO)-ID for both the donor and the recipient.**

- This directive aims to **curb commercial dealings in organs**, particularly those involving foreign citizens.
- Hospitals are required to **generate the NOTTO-ID from the NOTTO website.**

NOTTO is a national-level organization under **MOHFW** which undertakes **activities of coordination and networking for the procurement and distribution of Organs and Tissues.**

28. CHILDCARE LEAVE

Context:

The **Supreme Court** declared that **denying childcare leaves to mothers of children with disabilities violates the state's constitutional duty to ensure gender equality in the workforce.**

- The court emphasized that **women's participation in the workforce is a constitutional requirement under Article 15**, and **denying childcare leaves could force them to quit their jobs**, especially if they **have children with special needs.**
- The court also involved the Central Government in the case and ordered the state to **reconsider childcare leave policies in line with the RPWD Act.** Top of Form

Rule 43-C of the Central Civil Services (Leave) Rules, 1972 provides for **2 years (730 days) of CCL to female employees with children under 18 years** of age to look after their kids. There's **no age limit in case of disabled child.**

29. ASEAN FUTURE FORUM

Context:

India's External Affairs Minister, delivered remarks at the **1st ASEAN Future Forum.**

- India supports **ASEAN unity and centrality**, emphasizing the **importance of a strong and unified ASEAN in the Indo-Pacific region.**

About ASEAN Future Forum:

- It was **proposed by Vietnam** at the **43rd ASEAN Summit in 2023.**
- It is a **common platform for ASEAN member states**

as well as partner countries to **share new ideas and policy recommendations.**

- It aims to contribute to **promoting and shaping ASEAN's development path.**

30. MATERIAL RESOURCE OF THE COMMUNITY(ARTICLE 39 (B))

Context:

The Maharashtra government informed the Supreme Court that the **phrase "material resources of the community"** encompasses both public and private resources, subject to judicial review for redistribution.

The case concerns **Article 39(b) of the Constitution, directing the state to distribute material resources for the common good.** The SC bench, comprising nine judges, seeks clarity on **whether privately owned resources fall under this provision.**

Judicial views on "material resources of the community" under Article 39(b) vary:

1. In **State of Karnataka v Shri Ranganatha Reddy (1977)**, the majority **opinion of SC excluded private properties from this category**
2. **SC: Mafatlal Industries Ltd v Union of India (1996)** supported a broad interpretation of "material resources" to include both natural and man-made, private and public properties.

Private Property owners contest the state's authority to acquire properties for redistribution, citing violations of the **Right to Equality under Article 14.**

31. ARTICLE 244(A) OF INDIAN CONSTITUTION

Context:

The people of the **Diphu Constituency (Assam)** have been demanding the implementation of **Article 244(A) of the Constitution.**

Article 244(A) of the Constitution allows for the creation of an **autonomous state within Assam**, specifically in tribal areas such as **Karbi Anglong**. This provision, added through the **Constitution (Twenty-second Amendment) Act of 1969**, grants significant powers to the autonomous state, including its own Legislature or Council of Ministers. Notably, it provides **more autonomy compared to the existing Autonomous Councils** under the **Sixth Schedule by granting control** over law and order.

The history of this provision traces back to **the 1950s when demands for a separate hill state emerged among certain tribal populations of undivided Assam.** By the 1980s, this demand had escalated into an armed separatist insurgency, with Karbi groups at the forefront. Leaders of Karbi Anglong

and North Cachar Hills, part of this movement, were given the option to remain in Assam or join Meghalaya. They chose to stay in Assam based on promises of greater powers, including those outlined in Article 244(A).

32. NOMINATION IN ELECTION

Context:

In the Surat Lok Sabha constituency, the **BJP candidate won uncontested** due to the rejection of the Congress candidate’s nomination papers (due to alleged discrepancies in the signatures of his proposers) and the withdrawal of other candidates. The Congress alleged coercion of their proposers and appealed to the Election Commission (EC).

Nominations in elections follow specific criteria outlined in the Representation of the People Act, 1951 (RoPA). Section 33 of the RoPA specifies the requirements for valid nominations, including the need for proposers from the respective constituency. The **Returning Officer (RO) can reject nominations** if signatures are found to be not genuine, as per Section 36 of the RoPA.

Section 33 of the Representation of the People Act, 1951 also outlines eligibility criteria for contesting Lok Sabha elections:

- Individuals aged 25 or above can run from any constituency
- Proposers, those supporting the candidacy, must be from the same area.
- Candidates from recognized parties require one proposer, while independents or smaller parties need ten.
- Up to four sets of nomination papers with different proposer groups can be submitted to ensure acceptance despite issues with one set.

To date, **Over 35 candidates have been elected unopposed to the Lok Sabha**, mostly in the first two decades after independence, with the last instance in 2012.

Legal Recourse: The Election Commission (EC) is unlikely to address the request directly due to constitutional and legal provisions (Article 329(b) of the Constitution and the Representation of the People Act). Election petitions challenging the decision **must be filed before the respective High Court**. While the RP Act recommends concluding trials within six months, this timeline is often not met

33. UNCTAD REBRANDED AS ‘UN TRADE AND DEVELOPMENT’

Context:

UNCTAD, the United Nations Conference on Trade and Development, has undergone a significant rebranding as “UN

Trade and Development” to mark its **60th anniversary**.

- This strategic move reflects its commitment to enhancing its impact and amplifying its voice on behalf of developing countries.
- The rebranding initiative includes a new visual identity aimed at better reflecting the organization’s work and values.
- The organization will adopt its new name and logo across all official channels in the six UN languages.

About UNCTAD:

The United Nations Conference on Trade and Development (UNCTAD) is a permanent intergovernmental organization that promotes the interests of developing countries in world trade.

It was established by the United Nations General Assembly on December 30, 1964 and has its headquarters in Geneva.

UNCTAD’s work focuses on trade, development, finance, technology, investment, and sustainable development.

It collects data, conducts research, and analyses policies to help countries frame policies in these areas.

UNCTAD also outlines recommendations for realigning the global debt architecture with developing countries’ needs.

34. STAR CAMPAIGNERS

Context:

Several political parties have released the list of their star campaigners for the upcoming Lok Sabha General Elections.

- The Representation of the People Act, 1951, defines rules around star campaigners, who are leaders of political parties appointed for campaigning.
- A recognised political party can appoint a maximum of 40-star campaigners while a registered un-recognized political party can appoint up to 20.
- These campaigners can incur travel expenses for campaigning without affecting candidates’ expenditure limits.

GS-3

1. 1MYAC – ONE MILLION YOUTH ACTIONS CHALLENGE

Context:

The 1 Million Youth Actions Challenge (1MYAC) by the UN Climate Change Learning Partnership (UN CC:Learn) aims to mobilize youth aged 10 to 30 to take concrete actions for a sustainable future, with a goal of reaching 1,000,000 youth actions.

- It focuses on promoting four Sustainable Devel-

opment Goals (SDGs): clean water and sanitation, responsible consumption and production, climate action, and life on land.

- 1MYAC was **founded by the Swiss Agency for Development and Cooperation (SDC) and the RéSEAU.**

The **One UN Climate Change Learning Partnership (UN CC:Learn)** is a collaborative initiative of more than **30 multilateral organizations** that support countries in **designing and implementing climate change**. UN CC:Learn offers information on climate change and free online courses.

2. IMPACT OF AI BOOM ON INTEREST RATES

What are Interest Rates?

Interest rates represent the cost of borrowing money or the return earned on savings or investments.

AI boom **increases demand for investment in technology**. Companies will be willing to pay higher interest rates to banks, for increased capital investment. This raises interest rates for everyone.

The boom in AI could increase the Real (inflation-adjusted) interest rates due to several factors:

1. **Increased demand for capital expenditure** (capex) to develop high-quality semiconductor chips for AI.
2. **Higher productivity of capital** resulting from AI leads to higher real interest rates.
3. **Expansion of energy infrastructure** to meet the growing demand for computation, driven by AI.
4. **Adoption of cost-effective technologies** like water desalination, leads to increased investment in infrastructure and energy consumption.
5. **Investment in AI-driven warfare** and drone combat technologies.
6. **Job losses from AI lead to investments in worker assistance programs**, putting pressure on real interest rates.

3. ENERGY INEFFICIENCY IN RESIDENTIAL BUILDINGS

Context:

Addressing energy inefficiency in residential buildings is crucial, with initiatives like **Eco-Niwas Samhita (ENS)** introducing the **Residential Envelope Transmittance Value (RETV)** to measure heat transfer.

Need for Energy Efficiency?

1. **India's housing construction sector is booming**, erecting over 3,00,000 housing units annually.
2. The housing sector is a significant energy consumer, responsible for over 33% of India's electricity usage

3. **India Cooling Action Plan** foresees an eight-fold surge in cooling demand from 2017 to 2037.

What is RETV?

The Residential Envelope Transmittance Value (RETV) is a metric used to measure **heat transfer through a building's envelope**. It indicates the **thermal efficiency** of a building, with **lower RETV values corresponding to cooler indoor environments** and decreased energy usage.

Optimal construction materials for energy efficiency include:

Construction Material	Characteristics
Autoclaved Aerated Concrete (AAC) blocks	AAC blocks consistently exhibit the lowest RETV , indicating their potential for thermal efficiency
Red bricks	Red bricks require the longest construction time but contribute to resource depletion and emissions
Fly ash	The use of fly ash in residential housing construction can enhance thermal efficiency by improving insulation, reducing heat transfer, and increasing thermal mass
Monolithic concrete (Mivan)	Monolithic concrete , while quick to construct, has significantly higher embodied energy compared to AAC, posing sustainability challenges

Related News:

UNEP Global Status Report for Buildings and Construction (Buildings-GSR) 2024

Aspect	Details
Publisher	United Nations Environment Programme (UNEP) and Global Alliance for Buildings and Construction (GlobalABC)
Key Findings	<p>The building and Construction Sector (BCS) contributes to 21% of global Greenhouse Gas (GHG) Emissions</p> <p>In 2022, buildings accounted for 34% of global energy demand and 37% of energy and process-related carbon dioxide (CO₂) emissions</p> <p>India attributes 40% of its CO₂ emissions to the building sector</p>
Decarbonization Goals	Limit global warming to 1.5°C (Paris Agreement) and achieve net zero by 2050 by reducing embodied carbon in building materials

Global Initiatives	Declaration de Chaillot: Aims to foster international cooperation to address climate challenges within the building sector
	Energy Performance of Buildings Directive (EU): Zero emission standards for new buildings by 2030
	Buildings Breakthrough Initiative (France and Morocco at COP 28): Near-zero emission and resilient buildings by 2030
	Clean Heat Forum (UK initiative)
India Initiatives	The first city-specific Zero Carbon Buildings Action Plan (ZCBAP) launched in Nagpur
	Energy Conservation (Amendment) Act, 2022: Provides for Energy Conservation and Sustainability Building Code
GlobalABC Overview	Founded at COP21 , GlobalABC is a leading global platform for all built environment stakeholders committed to a zero-emission, efficient, and resilient buildings and construction sector

4. BUTTERFLY CICADA

Context:

A **new species of cicada**, informally named the **“Butterfly Cicada,”** has been discovered in **Meghalaya**, marking the **first-ever record of the genus Becquartina in India.**

- The genus **Becquartina is represented by six species found distributed in China, Thailand, and Vietnam, often referred to as “Butterfly cicadas” due to their colourful wings.**

Cicadas are **insects** that are part of the superfamily Cicadoidea and the order Hemiptera.

They are **stout, green or brown in colour with black markings**, and have **four clear wings that resemble a fly.**

Cicadas can be found in urban and rural areas with hardwood trees. They are **harmless to people, plants, and property.**



5. THE ARMED FORCES (SPECIAL POWERS) ACT (AFSPA)

Context:

The **Union Ministry of Home Affairs (MHA)** has **extended the Armed Forces (Special Powers) Act (AFSPA)** in parts of **Nagaland and Arunachal Pradesh for another six months**

The **Armed Forces (Special Powers) Act (AFSPA)** is an act of the **Indian Parliament** that gives the **military special powers to maintain public order in “disturbed areas”.**

The act **came into effect in 1958** and applies to the **states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura.**

The AFSPA gives the **military, para-military, and other security forces** the power to:

- Use force, including lethal force, against people who violate the law or are suspected of doing so
- Arrest people without a warrant
- Enter or search premises without a warrant
- Shoot to kill
- Search houses
- Destroy any property that is “likely” to be used by insurgents

6. GENETIC PROFILING OF CAPTIVE ELEPHANTS

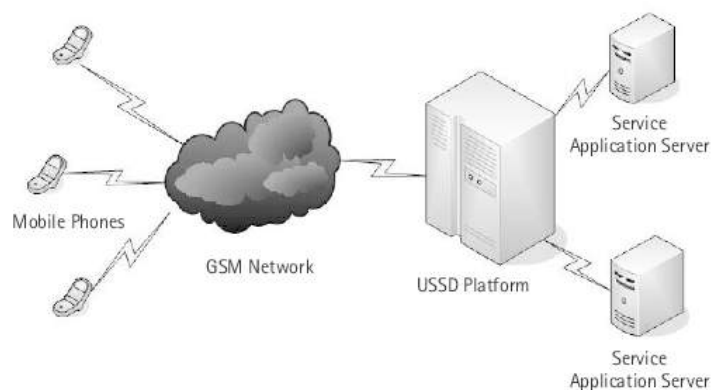
Context:

Genetic profiling of **captive elephants in Kerala** is set to begin soon.

Details of the Initiative:

About	Description
What is Genetic Profiling?	Genetic profiling is the analysis of an organism’s DNA to determine specific genetic characteristics or variations . It involves examining the unique genetic makeup of an individual or group, providing insights into traits, ancestry, and potential health risks.
The objective of the initiative	Create a comprehensive database incorporating photographs, physical details, and genetic features of over 400 captive elephants in Kerala.
Implementation	By Wildlife Institute of India (WII) ; Assistant conservators (social forestry) will collect blood and dung samples, supported by forensic kits from WII.

Current Status	Captive elephants are elephants that are held in captivity by humans , typically for purposes such as work, tourism, or religious ceremonies . Kerala has 407 captive elephants , with about 25 elephant deaths annually.
National Perspective	Genetic profiling was completed in several states; data was accessible via the “Gaja Suchana” app for monitoring elephant transfers and welfare.
Regulatory Framework	Aligns with the Ministry’s efforts to regulate elephant transfers, following the Captive Elephant (Transfer or Transport) Rules, 2024 .
Previous Efforts	Kerala Forest Department conducted DNA profiling of elephants in 2019, with support from the Rajiv Gandhi Centre for Biotechnology.
Implications	<p>For Conservation: Enhances welfare and combats illegal transfers of captive elephants, offering systematic monitoring and management.</p> <p>For Research and Policy: Provides insights into genetic diversity and health, informing future conservation strategies and policies.</p>



What is USSD Call forwarding?

USSD call forwarding is a **feature that allows mobile subscribers to redirect incoming calls to another phone number**. It is typically initiated by **dialling a specific USSD code** on the phone, followed by the **destination number**. This service is commonly used for various purposes such as **call diversion** during busy periods or **when unreachable**.

Issues with USSD call forwarding include misuse for unwarranted activities, such as fraud and online crimes, leading to regulatory intervention

About GSM (Global System for Mobile Communications) network is a standard for mobile communication used by **cellular devices worldwide**. It allows users to make calls, send text messages, and access data services. GSM networks operate on specific frequency bands and use SIM cards to identify and authenticate users.

7. USSD-BASED CALL FORWARDING

Context:

The Department of Telecom (DoT) has directed **telecom operators to halt USSD-based call forwarding** from April 15 due to misuse, requiring subscribers to activate it through alternative methods.

What is Unstructured Supplementary Service Data (USSD)?

USSD is a **protocol used in GSM networks** for sending **short text messages**. It facilitates instant messaging without storing messages on the operator or subscriber’s device. USSD comes in two types: **Pull (user-initiated) and Push (operator-initiated)**, using * and # characters and numeric codes. Messages typically start with * or # and end with #, with a maximum length of 182 characters. It’s commonly used for **balance deduction notifications** and **checking IMEI numbers** on mobile phones.

- E.g., Checking prepaid mobile balance: *141#; Checking IMEI number: *#06#

8. H5N1 BIRD FLU

Context:

H5N1 bird flu, highly pathogenic since 2020, threatens **birds and mammals globally**. It’s **infected birds in 80+ countries**, leading to mass culling in poultry farms.

About H5N1 Bird Flu:

About	Description
Description	H5N1 is a highly infectious subtype of the influenza A virus , causing severe respiratory disease in birds (avian influenza or “bird flu”).
Classification	H5N1 is classified based on its surface proteins, hemagglutinin (H) and neuraminidase (N) . There are 18 H subtypes and 11 N subtypes, e.g., A(H1N1) and A(H3N2).

Human Cases	Human cases of H5N1 <u>occur sporadically</u> , with difficulty in human-to-human transmission. The mortality rate is about 60% in infected individuals.
Origin and Circulation	Descended from a <u>1996 outbreak in China</u> , the current strain emerged in Europe in 2020, spreading globally by late 2021 and reaching Antarctica in 2024.
Spread Factors	Scientists suggest <u>climate change plays a role, in altering bird behaviour and facilitating virus spread.</u>
Spread to People	Human infection typically results from <u>close contact with infected birds or contaminated environments.</u> Human-to-human transmission is <u>rare.</u>
Cause for Concern	While H5N1 poses a <u>high mortality risk in humans</u> , its limited human-to-human transmission reduces its pandemic potential. However, if the virus were to mutate for easy human transmission while remaining virulent, it could pose a serious public health threat.
Impact	<u>Millions of poultry and wild birds</u> have died, with the virus also infecting various mammalian species. Endangered bird species like <u>California condors</u> have been hit hard, and reports of <u>infections in mammals</u> raise concerns about viral spread and increased virulence. <u>Marine mammals</u> , including <u>sea lions and dolphins</u> , have suffered substantial mortality.

The Konda Reddi tribe, also known as the **Konda Reddiyar or Konda Kapus**, is an indigenous community primarily found in the **hilly regions of southern India, particularly in the states of Andhra Pradesh and Telangana.**

10. CARDAMOM

Context:

Large-scale damage to cardamom plantations has been reported in various regions of Kerala due to the drought.

- Farmers are facing significant losses, with many fearing the destruction of their crops if the drought persists.
- The Indian Council of Agricultural Research and Kri-shi Vigyan Kendra (KVK) Idukki recommend mea-sures such as foliar application of Pigmented Facu-ltative Methylo-trophic Bacteria (PPFM) and treating plants to decrease disease incidence to mitigate the impact of the drought on cardamom production.

PPFMs are aerobic, Gram-negative bacteria that use one-carbon compounds like formate, formaldehyde, and methanol as their sole carbon and energy source. They are phylogenetically diverse and belong to the genus Methylo-bacterium.

PPFMs have been well studied in agricultural systems. They can be applied to seeds and crops as a foliar spray.

Cardamom is a spice made from the seeds of the Elettaria cardamomum plant, also known as green cardamom or true cardamom.

The plant is native to southern India and is part of the gin-ger family.

Cardamom has a strong, warm flavour that is both spicy and sweet.

Soil and climate

- Soil: It is grown in forest loamy soils, which are usually acidic in nature with a pH range of 5.0–6.5
- This crop can be grown at an elevation from 600 to 1500 m.
- Temperature: 10 to 35 degree C
- Rainfall: 1500 to 4000 mm
- The growth of cardamom is enhanced when planted in humus rich soils with low to medium available phos-phorous and medium to high available potassium.

11. TISSUE CULTURE

Context:

The forest and wildlife department of Delhi is establishing a tissue culture laboratory at the Asola Bhatti Wildlife Sanc-tuary to generate saplings of threatened or rare native trees in the city.

- The aim is to grow endangered native trees in a controlled environment and regenerate saplings for species facing regeneration challenges.

Tissue culture is a research tool that involves growing cells or tissues in an artificial environment. It's also called micro-propagation.

9. INDIGENOUS KNOWLEDGE - KONDA REDDI TRIBE

Context:

The indigenous knowledge of the Konda Reddi tribe regard-ing the Indian laurel tree's water-storing ability has been confirmed by forest officials in the Papikonda National Park.

- Forest authorities conducted an experiment by cut-ting the bark of the Indian laurel tree, revealing water splashing out, particularly in the summer, as claimed by the tribe.
- Indian Laurel Tree known as Indian Silver Oak and valued for its timber commercially.

It highlights several ethical values:

- Respect for Indigenous Knowledge.
- Collaboration and Partnership between forest officials and tribes.
- Environmental Conservation
- Sustainability

Animal tissue culture

This technique involves **maintaining and growing isolated cells, tissues, or organs in an artificial environment.** It's used in **biomedical research to study the causes of disease.**

Plant tissue culture

This technique **involves growing plant cells, tissues, or organs in a sterile environment.** It's used to **produce clones of a plant.** Under the right conditions, a **single cell can be used to regenerate an entire plant.**

12. OZONE ON CALLISTO

Context:

An international team, including researchers from India's PRL Ahmedabad, has discovered **evidence of ozone on Jupiter's moon Callisto,** indicating **complex chemical processes on icy celestial bodies.**

- The study, reveals the **chemical evolution of sulphur dioxide ice under ultraviolet irradiation,** leading to **ozone formation.**
- The presence of ozone suggests **stable atmospheric conditions on Callisto,** potentially **conducive to hosting life.**

This discovery raises questions about **Callisto's habitability and provides insights into the chemical processes of icy moons in the Solar System.**

Reports in News

Topic	Details
Report on GIFT IFSC (Indian Financial System Code)	Expert Committee on developing GIFT IFSC as ' Global Finance and Accounting Hub ' submits report to IFSCA
	Background: The committee was formed following the Ministry of Finance notification; The notification classified book-keeping, accounting, taxation, and financial crime compliance as ' financial services ' under the IFSC Act, 2019
	GIFT IFSC: Established as SEZ in 2015 in Gujarat; caters to customers outside the domestic economy; deals with flows of finance, financial products, and services across borders
	Opportunities: Strong technology-driven outsourcing capabilities; large talent pool of skilled manpower in accounting, etc.; " Accounting and finance services " recognized as one of 12 Champion sectors in services for exports
	Recommendations: Proposes new regulation for comprehensive definition of Bookkeeping, Accounting, Taxation, and Financial Crime Compliance Services; allows only registered companies or Limited Liability Partnerships to offer services
	About IFSC Authority: Statutory body under IFSC Act, 2019; unified regulator for development and regulation of financial products, services, and institutions in IFSCs in India

IOM Report: A Decade of Documenting Migrant Deaths	International Organization for Migration (IOM) releases report “A Decade of Documenting Migrant Deaths” to mark ten years of IOM’s Missing Migrants Project (MMP)
	MMP was launched in 2014 to document deaths and disappearances of people in the migration process towards an international destination
	Key Findings: More than one in three migrants from conflict-affected countries; over two-thirds of documented deaths are unidentified; major causes of migrant deaths include drowning, vehicle accidents, suffocation, inadequate shelter, healthcare, etc
	What is Migration? Migration refers to the movement of persons away from their place of usual residence, either across an international border or within the State
	Consequences of Migration: Intermixing of cultures, urban overcrowding and slum development, changes in resource-population ratio, brain drain from poorer to developed countries for better economic opportunities
	Initiatives: Global Compact for Safe, Orderly and Regular Migration (GCM) under UN; India’s measures like Pravasi Bharatiya Bima Yojana , pre-departure orientation training for migrants
	About IOM: Intergovernmental organization under the UN; provides services and advice on migration to governments and migrants; established in 1951 as Intergovernmental Committee for European Migration (ICEM) to resettle people displaced by World War II; It has 175 member states including India . It is headquartered in Geneva, Switzerland

Study	Details
Lancet Study on Global Life Expectancy	A recent Lancet study spanning from 1990 to 2021 revealed a global increase in life expectancy by 6.2 years , attributed to reduced deaths from enteric infections (food and waterborne illnesses caused by bacteria, parasites, and viruses), lower respiratory infections, ischemic heart disease, and strokes. Enteric diseases, notably typhoid and diarrhoea, led to the highest reduction in deaths . Lower respiratory infections and measles also played significant roles.
	However, COVID-19 emerged as the second leading cause of age-standardized deaths in 2021 , with varying impacts across regions, emphasizing the need for effective disease mitigation programs.
	About The Lancet: It was established in England in 1823, and is a prestigious weekly peer-reviewed medical journal known for its high impact. Owned by Elsevier since 1991 , it publishes original research articles, reviews, editorials, and more.
Measuring the Emissions and Energy Footprint of the ICT Sector Report	Jointly released by the International Telecommunication Union (ITU) and the World Bank
	Key Highlights: Rapid digitalization expansion increases energy consumption and greenhouse gas emissions. The ICT sector accounts for 1.7% of global emissions . 60% of renewable power purchases in 2021 were from the ICT sector. France is the only country compiling telecommunications sector emissions.
	Key Recommendations: Data-driven approach is needed for informed policy decisions and emission reduction targets. Technology transitions in the ICT sector can reduce emissions with careful planning for inclusivity. Regulatory modifications, incentives, and collaboration between ICT and energy sectors can promote sustainable energy access.
	About ITU: The International Telecommunication Union (ITU) (HQ: Geneva, Switzerland) is the oldest UN agency, founded in 1865 as the International Telegraph Union. It promotes the global use of radio spectrum, assigns satellite orbits, sets technical standards, and improves telecom infrastructure. ITU has 193 member countries (including India) and numerous businesses, academic institutions, and organizations.

<p>“Economic and Social Survey of Asia and the Pacific 2024” was released by UNESCAP</p>	<p>Key findings from the 2024 survey highlight the challenges facing developing countries in balancing debt servicing with investments in critical sectors like education and health. Despite steady economic performance in Asia-Pacific, issues like weaker purchasing power, limited job opportunities, and income inequality persist</p>
	<p>Key recommendations Include:</p> <ol style="list-style-type: none"> Prioritize macroeconomic stability and fiscal discipline to keep government borrowing costs low. Implement policy measures to improve revenue collection and boost domestic savings. Shift international development cooperation towards affordable, long-term financing. Enhance the roles of multilateral development banks and credit rating agencies. Address fiscal implications of global megatrends like demographic shifts and climate change.
	<p>About UNESCAP: The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) (est. 1947; HQ: Bangkok) serves as a pivotal forum for governments across the region to convene and deliberate on matters pertaining to economic and social development. Currently, it comprises 53 member countries and 9 associate members, with India being one of its prominent members.</p>

Report Title	Description
<p>Towards Specific Commitments and Action in Response to AMR</p>	<p>Report Released by Global Leaders Group (GLG) on Antimicrobial Resistance (AMR)</p>
	<p>The report aims to inform the 2024 United Nations General Assembly High-level Meeting on AMR</p>
	<p>Recommendations: It includes convening an independent panel on AMR action by 2025, expanding financing instruments, updating the 2015 Global Action Plan by Quadripartite organizations (FAO, UNEP, WHO, WOA), and ensuring quality-assured surveillance data through global surveillance systems (GLASS, ANIMUSE and InFARM).</p> <p>Target: Targets for 2030 include reducing bacterial AMR deaths by 10% and decreasing antimicrobial use in agri-food systems</p>
<p>Space: The \$1.8 Trillion Opportunity for Global Economic Growth</p>	<p>The report has been released by the World Economic Forum (WEF)</p>
	<p>Key findings reveal the space economy’s projected growth to \$1.8 trillion by 2035 from \$630 billion in 2023. Five industries will drive over 60% of this growth, including supply chain, food and beverage, defence, retail, and digital communications. Decreasing launch costs (fell by over 10-fold over the last 20 years), commercial innovation and diversified investments are driving space prevalence.</p>
	<p>Recommendations include partnering with tech innovators, exploring a “space for non-space” approach, and enacting policies to foster collaboration across state-sponsored agencies.</p>
	<p>India’s space economy is currently valued at approximately \$8.4 billion, comprising 2-3% of the global space economy. The target is to reach \$44 billion by 2033, with 100% FDI allowed.</p>
	<p>Recent initiatives include Indian Space Policy 2023, Indian National Space Promotion and Authorization Centre (IN-SPACe); creation of New Space India Limited to facilitate private sector participation.</p>
<p>Global Unicorn Index 2024</p>	<p>Report released by Hurun Research Institute</p>
	<p>Findings: In 2023, India had 67 unicorn startups (68 in 2022), ranking third globally behind the USA and China. Indian founders have produced more offshore unicorns than any other country. India lacks unicorns in the Aerospace or SpaceTech sector. Factors behind the decline include a slowdown in India’s startup ecosystem due to insufficient investment.</p>
	<p>Unicorns are privately held, venture-capital-backed startups valued at \$1 billion or more. The term was coined by venture capitalist Aileen Lee in 2013</p>

<p>EIA's report titled 'More Chilling Than Ever'</p>	<p>The Environmental Investigation Agency (EIA) found that illegal trade in HFCs in Europe is driven by high profits and ongoing demand.</p> <p>HFCs, or Hydrofluorocarbons, are colourless and odourless gases composed of carbon, fluorine, and hydrogen. They are entirely human-made and primarily used in refrigeration, air-conditioning, insulating foams, and aerosol propellants. HFCs were developed as alternatives to ozone-depleting substances like chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs). While they do not deplete the ozone layer, HFCs contribute to global greenhouse gas emissions and exacerbate climate change.</p>
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Reports	Description
<p>Land Conflict Watch database on FRA</p>	<p>A recent analysis by Land Conflict Watch (LCW) highlights a strong connection between land conflicts and the enforcement of the Forest Rights Act (FRA) in India</p> <p>Key findings:</p> <p>Conflict Causes: About 44% of conflicts in FRA constituencies stem from conservation and forestry projects, while over 88% result from non-implementation or violation of FRA provisions, including evictions and lack of prior consent for land use.</p> <p>States Most Affected: Maharashtra, Odisha, and Madhya Pradesh have the highest number of core FRA constituencies. Odisha, Chhattisgarh, and Jammu and Kashmir face significant forest rights issues.</p> <p>Conflict Nature: Reserved constituencies witness disputes over common land, while unreserved ones experience conflicts over private land. Infrastructure projects, particularly in the mining and power sectors, often trigger conflicts.</p> <p>Economic Activities Involved: Infrastructure development, including mining and power projects, is a major cause of conflict. Additionally, disputes arise from issues related to the collection of minor forest produce.</p> <p>About FRA: The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition Of Forest Rights) Act, commonly known as FRA, was enacted in 2006, placing the responsibility of implementation on state governments and UT administrations. As per the Ministry of Tribal Affairs, around 23.43 lakh land titles have been distributed across states, encompassing individual and community rights.</p>
<p>Trade and Development Report Update (April 2024)</p>	<p>Published by the United Nations Conference on Trade and Development (UNCTAD)</p> <p>Key Findings:</p> <p>Global merchandise trade decline: In 2023, global merchandise trade decreased by approximately 1% in real terms due to trade tensions among major economies, subdued global demand, and disruptions in key shipping routes.</p> <p>Impact of developed economies' monetary policy on developing countries: Rapid and simultaneous tightening of monetary policy by major developed economies has led to higher debt servicing costs and challenges in securing new financing options for developing countries. Additionally, increased interest rates in developed countries have depreciated currencies in developing nations, and double-digit interest rates set by central banks in many developing countries have negatively affected domestic demand, employment, and household incomes.</p> <p>Global debt crisis: Developing countries' governments are struggling with increasing debt payment obligations. This year marked the first instance of a net negative resource transfer from developing to developed countries since 2008. By 2023, nine low-income countries had fallen into debt distress, with an additional 25 on the brink.</p>
	<p>UNCTAD (founded 1964; HQ: Geneva) is an intergovernmental organization within the United Nations Secretariat that promotes the interests of developing countries in world trade.</p>

Bias Watch India study on Women in STEM	Key findings: Gender Gap in Indian STEM Faculties: A study by BiasWatchIndia revealed that only 13.5% of faculty members across 98 universities and institutes in India are women. This underrepresentation extends to prestigious institutions like IITs, IISc, and TIFR , and is more pronounced compared to countries like the US and UK.
	The factors responsible are: Social biases within certain STEM fields discourage women from pursuing higher education and research , while the challenges of balancing family planning with career aspirations during the postdoc to faculty transition limit their progression. Additionally, toxic work environments , characterized by disrespect and limited advancement opportunities, often prompt senior women to leave STEM academia. Moreover, the absence of a centralized database tracking women faculty in STEM hampers efforts to address the gender gap, alongside the lack of dedicated resources and leadership commitment needed to achieve gender equity.
	India has the highest percentage of women STEM graduates globally, at about 40%. However, their representation in STEM jobs within the country is low, standing at only 14%. The gradual dropout of women from the STEM workforce is termed the 'Leaky Pipeline Syndrome' .
Strengthening the Bretton Woods Institutions (BWIs) to Meet 21st-Century Global Challenges Report	By Bretton Woods Committee (BWC) (it was created in 1983 , and is a non-profit organization). This is the first report from BWC's Multilateral Reform Working Group (MRWG)
	Multilateralism spearheaded by International Financial Institutions has propelled significant growth and globalization, benefiting the global populace. However, the report underscores two challenges to this progress: crises in the global commons and slow progress in addressing them.
	The Bretton Woods Institutions (BWIs) were established in 1944 by 43 countries to aid in post-war economic reconstruction and foster international economic cooperation. They comprise the World Bank and the International Monetary Fund (IMF)

Report	Description
Survival International Report	Survival International accuses UNESCO of complicity in illegal eviction and abuse of Indigenous people in a report on World Heritage Day 2024 (18 th April). The six sites are:
	Ngorongoro Conservation Area (Tanzania): A UNESCO World Heritage Site known for its stunning landscape and wildlife, including the Ngorongoro Crater, where diverse species thrive within an ancient volcanic caldera.
	Kahuzi-Biega National Park (Democratic Republic of the Congo): Home to the endangered eastern lowland gorillas, this park faces conservation challenges amid conflict and human encroachment.
	Odzala-Kokoua National Park (Republic of Congo): A biodiverse wilderness area with dense forests, savannas, and rivers, providing habitat for numerous species, including forest elephants and gorillas.
	Kaeng Krachan Forest Complex (Thailand): One of the largest protected areas in Thailand, known for its rich biodiversity, including rare and endangered species of flora and fauna.
	Kaziranga National Park (India): Famous for its population of Indian one-horned rhinoceroses, this park is a UNESCO World Heritage Site and a significant conservation area for various wildlife species.
	Chitwan National Park (Nepal): A renowned UNESCO World Heritage Site in Nepal, recognized for its diverse ecosystems and conservation efforts, including the protection of Bengal tigers and one-horned rhinoceroses
Survival International is a human rights organisation formed in 1969, a London-based charity that campaigns for the rights of Indigenous and/or tribal peoples and uncontacted peoples.	

State of World Population 2024 report	Released by the United Nations Population Fund’s (UNFPA)
	The report, titled “ Interwoven Lives, Threads of Hope: Ending Inequalities in Sexual and Reproductive Health (SRH) and Rights ,” highlights women’s sexual and reproductive health and rights (SRHR), encompassing freedom from torture, right to health, privacy, education, life, and discrimination prohibition.
	Key findings include: India’s leading global population of 1.44 billion , is projected to double in 77 years , with 68% aged 15-64 and 26% aged 10-24. India’s Total Fertility Rate is 2.0 , with life expectancy at birth estimated at 71 and 74 years for men and women , respectively. Child marriage rates averaged 23% from 2006-2023 . Women with disabilities face up to 10 times more gender-based violence.
	UNFPA , headquartered in New York, USA, was established in 1969 as the United Nations sexual and reproductive health agency. Its mandate, established by the United Nations Economic and Social Council (ECOSOC), includes supporting access to various sexual and reproductive health services, such as voluntary family planning, maternal health care, and comprehensive sexuality education.
Arctic’s Plastic Crisis Report	Released by Alaska Community Action on Toxics (ACAT) and the International Pollutants Elimination Network (IPEN) (a global network aiming to build a global movement for a toxics-free future)
	Key findings: Petrochemical industries are polluting the Arctic with environmental violations like oil spills and hazardous substance releases . Plastic and toxic chemicals from around the world are also accumulating in the Arctic. These substances, transported by atmospheric and oceanic currents, endanger indigenous communities like Aleut, Yupik, and Inuit , affecting their food security due to rapid Arctic warming.
Global Forest Watch (GFW) Report	Key Findings: India has lost 2.33 million hectares (Mha) of tree cover since 2000, marking a 6% decrease during 2001-2023 . Notably, five states— Assam, Mizoram, Arunachal Pradesh, Nagaland, and Manipur —contributed to 60% of all tree cover loss between 2001-2023. Deforestation and climate change , leading to extreme heat and wildfires, are major drivers of tree cover loss, with Odisha and Arunachal Pradesh experiencing the highest tree cover loss due to fires according to GFW.
	The World Resources Institute (WRI) established Global Forest Watch (GFW) in 1997 as an online platform offering data and tools to monitor forests . GFW provides access to near real-time information on global forest changes, enabling users to track and analyze forest dynamics worldwide.

Name	Description
Trends in World Military Expenditure, 2023 Report	It was released by the Stockholm International Peace Research Institute (SIPRI)
	Key findings reveal that in 2023, India ranked as the fourth-largest military spender globally, following the United States, China, and Russia.
	NATO member states collectively spent \$1341 billion (55% of global military expenditure)
	Overall, world military spending surged to a record high of \$2443 billion, propelled by events like Russia’s invasion of Ukraine and escalating geopolitical tensions.
	Stockholm International Peace Research Institute is an international institute based in Stockholm. It was founded in 1966 and provides data, analysis and recommendations for armed conflict, military expenditure and arms trade as well as disarmament and arms control

<p>'Ensuring safety and health at work in a changing climate' Report</p>	Released by the International Labour Organization (ILO)
	The report highlights climate change's impact on Occupational Safety and Health (OSH): Excessive heat annually contributes to over 2 million disability-adjusted life years , posing risks to outdoor workers, especially in hot climates.
	Existing international labor standards address climate-related OSH hazards.
	Vulnerable sections, like women workers in agriculture and those with disabilities, face increased risks.
	India-related findings show factors like water shortages contributing to farmer suicides
Recommendations include coordinating OSH policies, implementing targeted national policies, and adopting effective workplace preventive measures.	

Reports	Description
<p>Global Report on Food Crises (GRFC)</p>	The latest Global Report on Food Crises (GRFC) reveals that in 2023, nearly 282 million people across 59 countries and territories faced high levels of acute hunger
	Key findings include acute malnutrition among children and women , and worsening situations for those displaced by conflict and disasters. E.g., Sudan faced the largest deterioration due to conflict , with 8.6 million more people facing high levels of acute food insecurity as compared with 2022
	Drivers: Conflict, extreme weather events, and economic shocks were identified as key drivers of the crisis.
	The GRFC is produced annually by the Food Security Information Network (FSIN) and launched by the Global Network Against Food Crises (GNAFC)
	GNAFC was established in 2016 by the European Union , the UN's Food and Agriculture Organization (FAO), and the World Food Programme (WFP). GNAFC aims to enhance coordination among existing initiatives and organizations to tackle the underlying causes of food crises.
<p>UNESCO releases 2024 gender report of the Global Education Monitoring Report, titled "Technology on her Terms"</p>	The report examines the impact of technology on girls' education and the role of education in shaping future technological development. It highlights how ICT can help overcome barriers to education access, but also emphasizes the digital gender gap, negative effects of social media, and underrepresentation of women in STEM fields
	UNESCO (est. 1945; HQ: Paris, France) the United Nations Educational, Scientific and Cultural Organization, is a specialized agency of the United Nations. Parent organization: United Nations Economic and Social Council. Objective: To build peace through international cooperation in Education, the Sciences, and Culture. India has been a member of the UNESCO since its inception
<p>WHO-led study on Global Immunization</p>	Global immunizations have saved at least 154 million lives over the past 50 years
	The study analyzed the WHO's Expanded Programme on Immunization (EPI) , launched in 1974 to provide life-saving vaccines to all children globally.
	Measles vaccination had the most significant impact on reducing infant mortality
	The Global Alliance for Vaccines and Immunization (GAVI) , launched in 2000, aims to expand vaccine coverage, with India becoming the first implementing country to donate to GAVI in 2014.
	The World Health Organization (WHO) is a UN agency established in 1948 to promote global public health. Headquartered in Geneva, Switzerland , with six regional offices and 150 field offices worldwide, it sets health standards, provides technical assistance, and collects global health data.

<p>PwC India released a report titled 'Navigating India's Transition to Sustainability'</p>	<p>The report analyzes how companies are adjusting to SEBI's Business Responsibility and Sustainability Reporting (BRSR) requirements, which mandate disclosures on environmental, social, and governance (ESG) aspects for the top 1000 listed companies.</p> <p>BRSR aims to enhance compliance, consistency, and communication regarding non-financial disclosures, with SEBI introducing BRSR Core in 2023 to bolster the reliability of ESG disclosures.</p>
<p>IUCN released a report titled "Towards a Regenerative Blue Economy – Mapping the Blue Economy"</p>	<p>The report outlines the concept of a Regenerative Blue Economy (RBE), which prioritizes the effective regeneration and protection of ocean ecosystems while supporting sustainable economic activities and fair prosperity</p> <p>Global initiatives like IUCN's Nature 2030, Great Blue Wall Initiative, Clean Seas Campaign, Moroni Declaration and Cape Town Manifesto are examples of efforts promoting RBE</p> <p>India's Initiatives include Maritime India Vision 2030, Deep Ocean Mission, Pradhan Mantri Matsya Sampada Yojana, etc.</p> <p>The International Union for Conservation of Nature (IUCN), headquartered in Gland, Switzerland, is a global organization founded in 1948. It focuses on nature conservation and sustainable use of natural resources, serving as a leading authority on global environmental issues.</p>
<p>'Re-aligning Agri-food Policies for Protecting Soil, Water, Air & Biodiversity (SWAB)</p>	<p>Released by ICRIER</p> <p>The report sheds light on the influence of agri-food policies on India's agricultural production and emphasizes on synergy of SWAB for sustainable food systems.</p> <p>Recommendations include offering premium MSP for low-carbon crops and exploring carbon markets for carbon farming credits.</p> <p>ICRIER, established in 1981, is a non-profit economic think tank providing research and policy advice on economic matters to the Indian government and other entities. It aims to enhance policy-making by offering analytical research and objective policy recommendations.</p>

13. MRI SCAN: IMAGE OF HUMAN BRAIN

Context:

The **world's most powerful MRI scanner, located in France**, has produced its first images of the human brain, offering unprecedented precision.

Key feature of MRI Scanner:

- Unprecedented Resolution:** In just four minutes, the machine captures highly detailed anatomical images with a resolution of **0.2 mm in plane and 1 mm** slice thickness, equivalent to a few thousand neurons.
- Medical Impact:** The detailed imaging capabilities can aid in research on neurodegenerative diseases **like Alzheimer's and Parkinson's**.
- Advanced Detection:** The machine facilitates the detection of chemical species like **lithium and molecules involved in brain metabolism**, enhancing diagnostics and treatment efficacy.

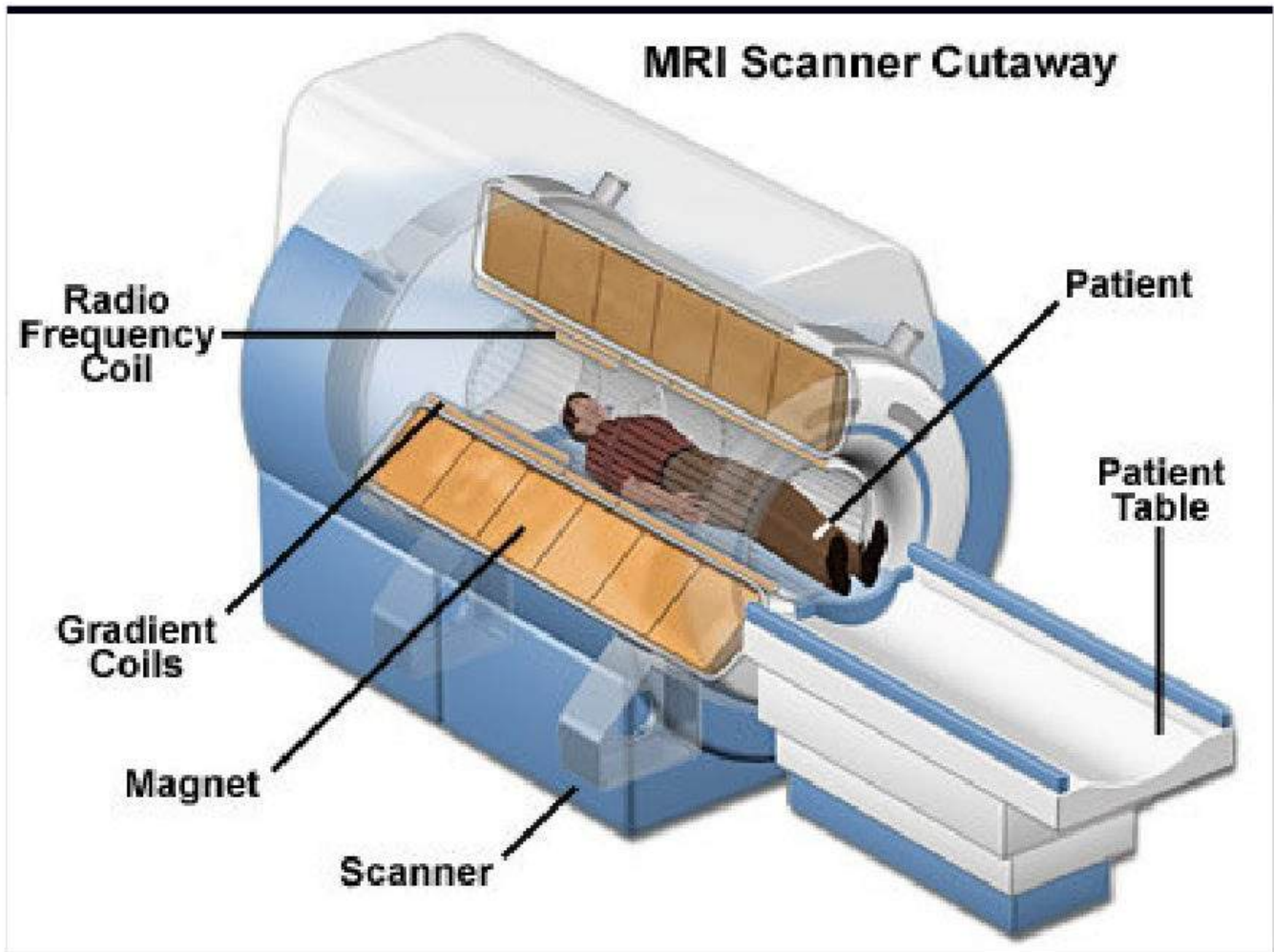
What is an MRI Scanner?

An MRI (Magnetic Resonance Imaging) scanner is a medical device that **uses a strong magnetic field and radio waves to generate detailed images of the inside of the body**, particularly the soft tissues like the brain, muscles, and organs.

How does it work?

When a patient **enters the MRI machine**, their **body's hydrogen atoms align with the magnetic field**. Radio waves are then **used to temporarily disrupt this alignment**. When the radio waves are turned off, the **hydrogen atoms return to their aligned state**, emitting energy that is detected by the scanner.

Different tissues emit different signals based on their hydrogen atom density and molecular environment, allowing the scanner to create detailed images that physicians can use to diagnose various medical conditions.

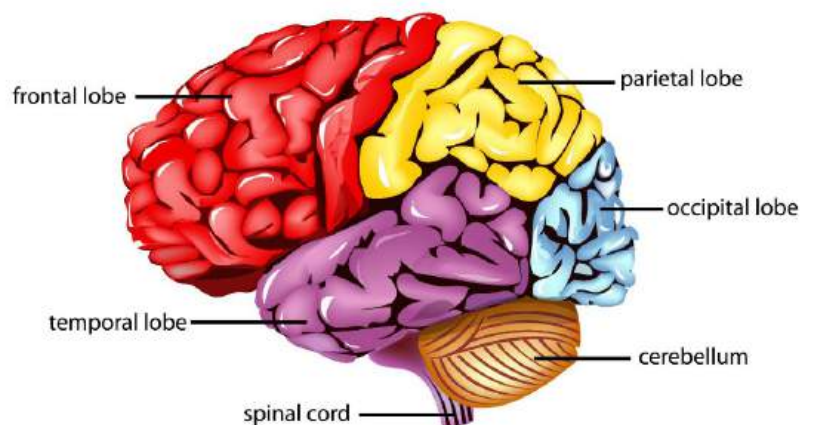


About Human Brain:

The human brain is the **control centre of the body**, responsible for processing information, controlling movement, regulating emotions, and enabling consciousness. It consists of **billions of neurons**, which transmit signals through electrical and chemical processes. The brain is divided into regions that specialize in different functions

1. **Frontal lobe:** It is involved in higher-level cognitive functions such as decision-making, problem-solving, planning, and social behaviour.
2. **The parietal lobe** plays a key role in processing sensory information from the body, including touch, temperature, and pain.
3. **The occipital lobe** is primarily responsible for **processing visual information** received from the eyes.
4. **The temporal lobe** is involved in various functions, including auditory processing (hearing), memory formation, language comprehension, and emotion regulation.
5. **The cerebellum** is essential for coordinating movement, balance, and posture
6. **Cerebral cortex** for higher cognitive functions
7. **The brainstem** for basic life functions like breathing and heartbeat

Parts of the Human Brain



14. ZIRCON HYPERSONIC MISSILE

Context:

Russian President confirmed that the **3M22 Zircon hypersonic missile** had **been used in combat**, presenting a **new challenge to Ukrainian air defense systems in the ongoing conflict between Russia and Ukraine**.

- The Zircon missile, **capable of reaching eight times the speed of sound with a range of about 400 kilometers**, could potentially **evade advanced air defense systems like the US Patriot**.
- Powered by a scramjet engine, the Zircon is designed **for low-altitude flying and manoeuvrability, making it difficult for detection and interception**.

15. RBI@90

Context:

The Prime Minister addressed the **opening ceremony of RBI@90 in Mumbai**, marking **90 years of the Reserve Bank of India (RBI)**.

Brief History of RBI:

- **Royal Commission on Indian Currency, 1926 (Hilton Young Commission)** recommended the **establishment of the RBI**, a suggestion reiterated by the **Indian Central Banking Enquiry Committee in 1931**.
- **The RBI was founded in 1935** under the **Reserve Bank of India Act, 1934**, with Sir **Osborne Smith** serving as its inaugural Governor.
- In 1949, the **RBI was nationalized**, marking a pivotal moment in its institutional history.

The Reserve Bank of India (RBI) has evolved significantly in recent years:

- Inflation-targeting central bank
- Foreign exchange reserves
- Macroeconomic stability
- Reduction in NPAs
- Technology in payments
- Central bank digital currency

However, the RBI faces several challenges:

- Banking Regulation and Supervision
- Transparency with Regulated Entities
- Regulating New-Age Fintech Firms
- Limited Powers over Public-Sector Banks
- Potential Fiscal Dominance of Monetary Policy

16. INDIA'S COAL AND LIGNITE PRODUCTION

Context:

India's coal and lignite production reached an unprecedented milestone, **surpassing 1 billion tonnes in the fiscal year 2023-24**, compared to 937 million tonnes in the previous fiscal.

- **India aims to eliminate coal imports by 2025-26**, with coal imports for blending purposes notably decreasing in FY24 compared to the previous fiscal.

The **current status of the coal sector in India** is as follows:
Geological reserves: India possesses **the 5th largest geological reserves of coal globally** and ranks as the **2nd largest consumer of coal in the world**.

Production: **Coal India Limited (CIL)** stands as the **largest producer**, contributing to **over 70% of coal production in India**.

Import: In **the fiscal year 2023-24** (until January 2024), **India imported 217.75 million tonnes of coal**. Non-coking coal dominates the imports, **accounting for approximately 77% of the total imported coal**.

17. ANTI-DUMPING INVESTIGATION

Context:

India has launched an **anti-dumping investigation** (initiated by the Directorate General of Trade Remedies (DGTR)), **into the import of a chemical used in the rubber industry** from China and Japan.

What is dumping?

When the goods are exported by a country to a foreign country at a price lower than the price it charges in its own home market is called dumping.

What is Anti-Dumping?

Anti-dumping duties are **taxes imposed on imported goods** in order to compensate for the **difference between their export price and their normal value**, if dumping causes injury to producers of competing products in the importing country. This practice can **harm domestic industries** by undercutting their prices and creating unfair competition. Anti-dumping measures are **part of WTO regulations** aimed at creating a **level playing field for domestic producers against foreign competitors**

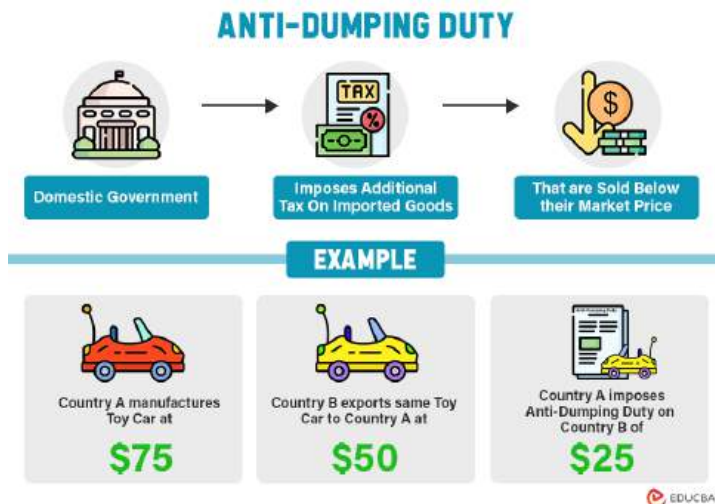
Why anti-dumping investigation?

An anti-dumping probe is **underway for imports of 'insoluble sulphur' from China and Japan**. **Insoluble sulphur, an amorphous form of sulphur**, doesn't dissolve in carbon disulphide and is crucial in the rubber industry. It serves as a **vital additive agent** in rubber products like tyres and shoes, enhancing their quality and wearability. Additionally, it acts as a **vulcanization accelerator** in the rubber manufacturing process, facilitating the hardening of rubber through cross-linking of molecules with other substances.

What is anti-dumping?

Anti-dumping is a protective tariff imposed by a government on foreign imports sold at a price lower than the home

market price. It aims to counter distortions in trade caused by dumping. **Anti-dumping is permitted by the WTO.**



18. SHALLOW FAKES

Context:

The **prevalence and impact of shallow fakes** during elections have been a concern.

- Shallow Fakes are **manipulated images, videos, and voice clips created without AI technology.**
- Unlike **deepfakes**, shallow fakes rely on **traditional editing tools to deceive viewers.**
- They are **increasingly used in political contexts, particularly during elections, to spread misinformation.**
- The blurring line between shallow fakes and deep-fakes, coupled **with the accessibility of editing tools, has amplified their prevalence.**

19. ARTIFICIAL SUN

Context:

Scientists in South Korea have achieved a **new world record in nuclear fusion**, sustaining temperatures of **100 million degrees Celsius, seven times hotter than the sun's core.**

- This feat, conducted using the **Korea Superconducting Tokamak Advanced Research device (KSTAR)**, aims to **replicate the fusion reaction powering stars to unlock clean, limitless energy.**
- The experiment involved **fusing atoms to release massive energy without carbon emissions**, crucial for addressing climate change.
- KSTAR sustained these high temperatures for **48 seconds, breaking the previous record of 30 seconds.** To achieve this, scientists used **tungsten instead of carbon in the reactor's "diverters" to extract impurities and heat.**
- Their goal is to sustain **these temperatures for at least 300 seconds by 2026**, critical for **scaling up fusion operations.**

This research will contribute to the **International Thermonuclear Experimental Reactor (ITER) in France**, aiding in **advancing fusion energy commercialization.**

20. CLEAN ENERGY TRANSITIONS PROGRAMME 2023

Context:

The **Clean Energy Transitions Programme (CETP)** is the **International Energy Agency's (IEA)** primary initiative aimed at accelerating **global progress towards a net-zero energy system.**

- The **CETP Annual Report 2023** outlines the program's achievements in the past year, emphasizing its **focus on emerging markets and developing economies.**

Highlights include:

- The **introduction of new fuel standards for trucks in Indonesia, the Energy Transition Plan in Uganda, and regulations for the spot electricity market in China, all aligned with IEA recommendations.**
- The report also mentions **significant publications such as the Latin America Energy Outlook and a World Energy Outlook Special Report** on universal access to clean cooking in Africa.
- Additionally, the **CETP supported the IEA's work on energy efficiency**, critical minerals, energy employment, clean energy investment, and capacity building for policymakers.
- The program played a **crucial role in global energy dialogues and engagements, including G20, G7, and ASEAN Ministerial meetings**, as well as COP28 in Dubai, supporting the IEA's ambitious **action plan towards 1.5°C-aligned energy transitions.**

21. PAIRA CROPPING SYSTEM

Context:

Odisha is promoting **climate-resilient agriculture** through its **rice fallow initiative, capitalizing on residual moisture after rice harvest to cultivate short-duration pulses and oilseed crops.**

- This initiative aims to **boost land productivity, increase farmers' income, and ensure food security.**
- The scheme, **focuses on optimal resource utilization, increasing cropping intensity, and restoring soil health.**
- Eight crops are being cultivated under the scheme, **including green gram, black gram, Bengal gram, and mustard.**

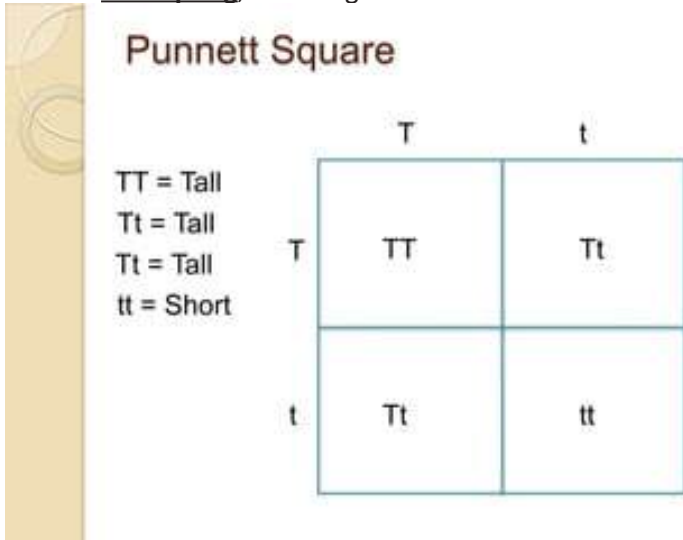
Eco-friendly inputs such as **bio-fertilizers, bio-pesticides, and integrated pest management techniques** are being incorporated to **promote natural pest control and reduce reliance on chemical pesticides.**

22. PUNNETT SQUARE

Context:

The **Punnett square**, named after British geneticist **Reginald Punnett**, is a grid used to **predict the possible genetic outcomes of offspring** when two individuals with known genotypes are crossed.

- It consists of a simple grid with **squares representing possible combinations of traits inherited from each parent.**
- This tool helps **visualize the probabilities of different traits** appearing in **offspring** and is commonly used in **biology** to understand **inheritance patterns, such as dominant and recessive genes.**
- Researchers utilize **Punnett squares alongside Mendelian inheritance** principles to study **genetic traits in offspring**, including those of animals and humans.



23. 'GRAVITY HOLE' IN THE INDIAN OCEAN

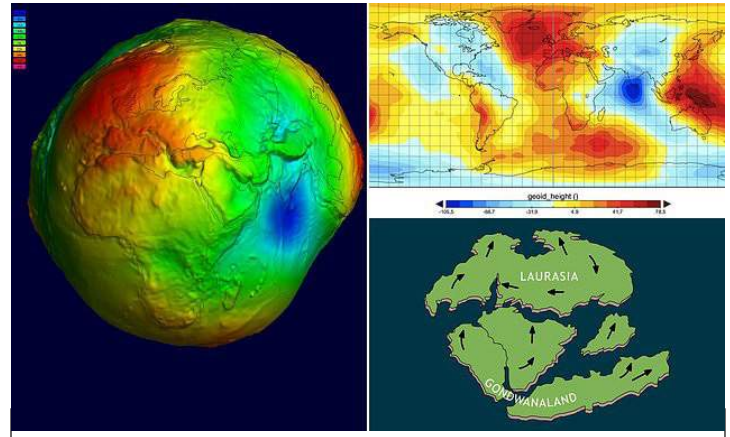
Context:

Scientists from **the Indian Institute of Science in Bengaluru, India**, have proposed a **credible explanation for the "gravity hole" in the Indian Ocean.**

- **Gravity Hole** is where Earth's gravitational pull is weaker, leading to a **sea level dip of over 328 feet (100 meters).**
- Using computer simulations dating back 140 million years, the researchers suggest that **plumes of magma from deep within the planet, similar to those that create volcanoes, are responsible for the anomaly.**
- These plumes, originating from the **disappearance of an ancient ocean between the Indian plate and Asia**, are believed to have **brought low-density material** closer to Earth's surface, **shaping the "gravity hole."**

The "gravity hole" is a **circular depression in the Indian Ocean** that has a **weaker gravitational pull** than the rest of the planet.

It's officially called the **Indian Ocean geoid low** and is the **world's largest gravity anomaly.**



24. "MOTHER OF DRAGONS" COMET

Context:

The **"Mother of Dragons" comet**, officially named **Comet 12P/Pons-Brooks**, is making a rare **appearance in the Northern Hemisphere skies.**

- This unique **"Halley-type" comet**, which **completes its orbit around the sun every 71 years**, is visible after dusk, **marking its first appearance since 1954.**
- Named by the European Space Agency due to its association with **the "kappa-Draconids" meteor shower**, the comet exhibits a **bright green colour due to the emission of emerald-coloured light from diatomic carbon molecules.**
- Notable for its cryovolcanic nature, the **comet regularly erupts, creating stunning displays of brightness.**

25. S.A.R.A.H. - SMART AI RESOURCE ASSISTANT FOR HEALTH

Context:

The **World Health Organization (WHO)** has introduced **S.A.R.A.H. (Smart AI Resource Assistant for Health)**, a digital health **promoter prototype** powered by **generative artificial intelligence (AI)**, ahead of **World Health Day.**

- **S.A.R.A.H. engages users in 8 languages** on various health topics, providing information on **healthy habits, mental health, and major health issues like cancer and heart disease.**
- S.A.R.A.H. utilizes **generative AI for accurate real-time responses and empathetic interactions**, supported by **Soul Machines Biological AI.**

Previous versions of S.A.R.A.H., known as Florence, were used during the COVID-19 pandemic to disseminate critical health messages.

26. PRATUSH

Context: Astronomers are keen on deploying telescopes on and around the moon to overcome **challenges faced by in-**

struments on Earth, such as atmospheric interference and radio noise.

- India's contribution, **PRATUSH (Probing ReionizATIOn of the Universe using Signal from Hydrogen)**, is being developed by the **Raman Research Institute (RRI) in collaboration with the Indian Space Research Organisation (ISRO)**.

PRATUSH, or Probing ReionizATIOn of the Universe using Signal from Hydrogen, is a future **radiometer planned for lunar orbit**.

It aims to uncover the **Cosmic Dawn of the Universe**, answering questions about the formation of the **first stars, their nature, and the light they emitted**.

The project focuses on studying the **Cosmic Dawn and Epoch of Reionization (EoR)** using radiation from **neutral hydrogen gas, which emits a signal at a 21-cm wavelength**.

This signal can provide insights into the **early Universe's transition from neutral to ionized states**.

PRATUSH will carry instruments designed to detect this weak signal, operating over a frequency band of **30-250 MHz**.

Its observations will **be free from ground-based interference, enabling more accurate measurements**.

27. COORDINATED LUNAR TIME

Context:

The **White House has directed NASA** to establish a **unified time standard for the moon and other celestial bodies**, aiming to set **international norms in space amidst a competitive lunar race**.

- The directive, outlined by the head of the White House Office of **Science and Technology Policy (OSTP)**, calls for the development of a **Coordinated Lunar Time (LTC) by the end of 2026**.
- LTC will provide a **time-keeping benchmark for lunar missions**, accounting for the **differing gravitational forces and other factors** affecting time perception on the moon.
- The initiative seeks to ensure **precision in lunar missions, facilitate data transfers between spacecraft, and coordinate operations as commercial activities expand to the moon**.

The establishment of **LTC will require international agreements and coordination among spacefaring nations**.

28. TRADEMARK

Context:

The Delhi High Court declared the **"Haldiram" mark as a well-known trademark** for food items, restaurants, and eateries globally. This ruling followed a suit filed by Haldiram India seeking protection of its mark.

The court acknowledged the brand's extensive presence and influence, dating back to the 1960s, and granted a decree declaring "Haldiram" as a well-known mark. Additionally, the court imposed **finest on an imitator for trademark infringement**, highlighting the importance of protecting established brands.

What is a Trademark?

A trademark is a **distinctive sign or indicator used by a business to distinguish its products or services from those of others**. It serves as a badge of origin, identifying a particular business as the source of goods or services.

Intellectual Property Rights (IPRs) covered in India:

Types	Legal Provision	Description
Patent	Patent Act, 1970	Exclusive rights granted for a new and inventive product or process for a certain period, typically 20 years
Trademark	Trademark Act 1999	A symbol, word, or phrase (e.g. Brand name, logo) used to identify and distinguish goods or services of one seller from those of others. Term of Protection: 10 years; Renewable 10
Designs	Designs Act 2000	Protection is granted to the unique appearance of a product (New or original designs) resulting from its features such as lines, contours, colours, shape, texture, materials, or ornamentation. Term of Protection: 10 + 5 years

Copyrights	Copyrights Act 1957	It is a legal protection granted to creators of original works , such as literature, music, art, or software, giving them exclusive rights to reproduce, distribute, and display their work for a limited period. Term of Protection: Authors: Lifetime + 60 years; Producers: 60 years; Performers: 50 years
Geographical Indications (GI)	GI Act, 1999	Sign used on goods that have a specific geographical origin and possess qualities, reputation, or characteristics that are essentially attributable to that origin. Term of Protection: 10 years; Renewable 10
Trade Secrets	Protected under Common Law	Confidential information that provides a competitive advantage to a business and is protected under common law. Term of Protection: Till confidentiality is safeguarded

29. EXCHANGE TRADED CURRENCY DERIVATIVES

Context:

The **Reserve Bank of India (RBI)** has postponed the implementation of its new norms for the **exchange-traded currency derivatives (ETCD)** market.

- This decision follows **concerns raised by market participants regarding participation in the ETCD market, which led to increased volatility in the forex market.**
- The new norms, **aimed to allow users to take positions in the foreign exchange derivatives market without needing to establish the existence of underlying exposure**, up to a single limit of \$100 million equivalent across all currency pairs involving the rupee.
- However, the RBI emphasized that the **regulatory framework for ETCDs remains consistent**, guided by the **Foreign Exchange Management Act (FEMA), 1999.**
- Users are required to **ensure compliance with the requirement of having underlying exposure**, and **the limit for taking positions** was subsequently amended to a single limit of **\$100 million** combined across all exchanges.

While the postponement may not have immediate implications, it **could lead to increased trading volumes on such platforms, stabilizing pressure on options premiums.**

30. AGRICULTURE IN NEWS

Technique	Description	Benefits	Challenges
Mulching	Farmers in the Ladakhi village of Phey are defying the odds by successfully growing organic watermelons (a crop typically unsuited for the cold desert region) using Mulching	Prevents soil erosion; Increases organic matter in the soil	Lack of technical knowledge; Higher initial setup cost; Need for constant human intervention
	Mulching involves covering topsoil with plant materials like leaves or straw . It helps create a soil structure that allows rainwater to infiltrate easily, reducing runoff.		
Hydroponics	Hydroponics is a soil-less farming method where plants grow in a water-based nutrient solution, often with an aggregate substrate like vermiculite or coconut coir.	Resource efficiency; Higher yields; Reduced labour costs; and increased plant yields.	Lack of technical knowledge; High initial setup costs; Need for constant human intervention; Infrastructure limitations hindering widespread adoption

31. PLANKTON CRASH

Context: A panel formed by the **National Green Tribunal (NGT)** investigated the red colouration of the sea in Puducherry and attributed it **to a plankton crash.**

- A specific **species of phytoplankton, Noctiluca scintillans**, was found to be ruptured, releasing red pigment into the sea.

- The panel **ruled out algal bloom and contamination** from a nearby paper manufacturing unit, stating that the **unit's operations did not coincide with the discolouration incidents.**
- Instead, the panel identified **high iron concentration as a potential factor favouring plankton bloom.**
- Environmental parameters such as **sea surface temperature, salinity, pH, and dissolved oxygen were found conducive to the proliferation of this species.**

A plankton crash is when a **dramatic bloom of plankton in a pond is replaced by very few viable plankton.** This can be caused by a **lack of nutrients or CO2**

Dead plankton can create large amounts of stable foam on the surface of the pond.

32. VOICE ENGINE

Context:

OpenAI has unveiled its **Voice Engine**, a groundbreaking **text-to-audio tool** capable of **replicating any voice in any language.**

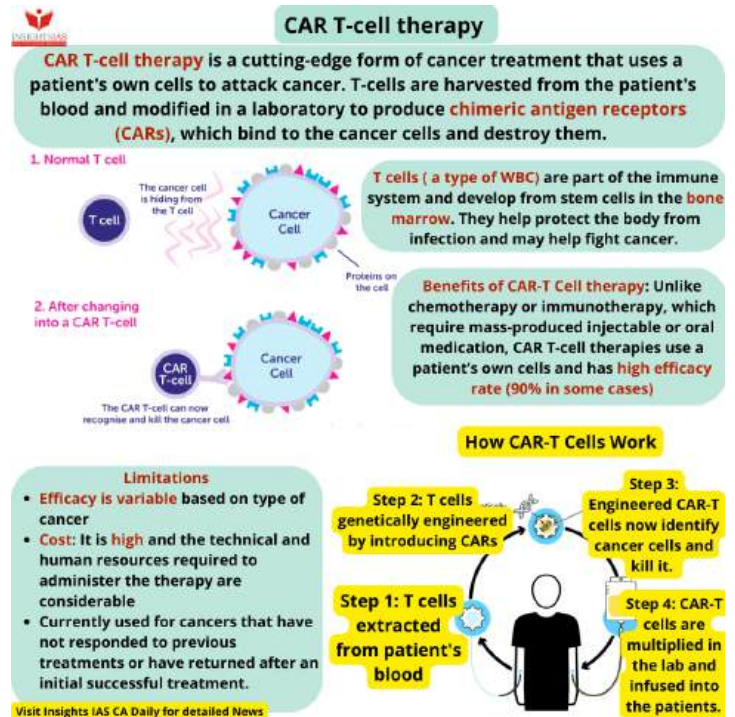
- Users can upload a **15-second audio sample**, and the **engine generates audio in the same voice based on a written prompt.**
- OpenAI highlights the positive applications of Voice Engine, **such as aiding non-readers, translating content, and assisting non-verbal individuals, concerns over its potential misuse have arisen.**
- **Deepfake technologies, including voice cloning,** have been exploited to deceive people, especially during elections.

33. NEXCAR19

Context:

The President of India, launched **India's first indigenous CAR-T cell therapy** for cancer at the **Indian Institute of Technology, Bombay.**

Named **NexCAR19**, it is the **world's most affordable CAR-T therapy**, marking a significant milestone in **India's advancement in cell and gene therapy.**



34. AGNI-PRIME BALLISTIC MISSILE

Context:

India successfully conducted a **night trial of the new-generation Agni-Prime ballistic missile**, from the **Abdul Kalam Island off the coast of Odisha.**

- The test, conducted by the **Strategic Forces Command (SFC) and DRDO**, met all objectives, **confirming its reliable performance.**
- The **Agni-Prime incorporates new propulsion systems, advanced navigation, and a canister-launch system, enhancing strategic deterrence capabilities**

Agni-Prime is a **two-stage canisterised solid propellant ballistic missile** with a dual redundant **navigation and guidance system, according to DRDO.**

It has a range of **1,000-2,000km** and was tested for the **first time in June 2021.**

It is **lighter than all the earlier Agni series of missiles.**

35. INDIA HAS ELIMINATED KALA-AZAR

Context:

India has successfully achieved its target to **eliminate visceral leishmaniasis**, commonly known as kala-azar, according to data from the **National Centre for Vector Borne Diseases Control (NCVBDC)**

About Kala-azar:

It is a disease caused by the protozoan parasite Leishmania (transmitted by sandfly bites). It progresses slowly and primarily affects organs like the **spleen, liver, and bone marrow**. In India, it's caused by **Leishmania donovani**, with the

term “kala-azar” meaning “black disease” due to skin discoloration. **Post-Kala-azar Dermal Leishmaniasis (PKDL)** occurs when the parasite affects skin cells, resulting in dermal lesions.

Despite persistent challenges, India met its **elimination goal, initially set for 2010 but extended until 2023**. Kala-azar has long been a health concern in states like Bihar, Jharkhand, West Bengal, and Uttar Pradesh. In 2023, India reported only 520 cases of kala-azar, meeting the elimination criteria defined by the World Health Organization (WHO).

The National Vector Borne Disease Control Programme (NVBDCP) started in 2003-04 to prevent and control diseases like **Japanese Encephalitis (JE), Dengue, Kala-azar, Lymphatic Filariasis, Malaria, and Chikungunya**

36. CRIOLLO

Context:

A recent research **on Criollo cattle, a breed developed in the New World from Iberian ancestors** suggested that **Criollo cattle possess various climate-adaptive traits**, making them **well-suited to survive and thrive in a warming world**.

- These traits include a **short, slick-hair coat for improved thermotolerance**, as well as genes **associated with reproduction, fertility, and disease immunity**.
- Criollo cattle’s ability to withstand **hot weather leads to improved body weight, more efficient food production, and better animal welfare**.

37. VENOMOUS JELLYFISH BLOOMS

Context:

An unusual occurrence of **venomous jellyfish blooms**, particularly **Pelagia noctiluca**, was reported along the **Visakhapatnam coast in Andhra Pradesh recently**.

- Pelagia noctiluca, **rarely seen on the East coast of India**, is known for **causing various illnesses including diarrhoea, vomiting, extreme pain, and anaphylactic shock**.
- The blooms are attributed to **rising ocean temperatures, posing risks to both fishing industries and tourism**.

Pelagia noctiluca, also known as the **mauve stinger**, is a jellyfish that **can glow in the dark**. Its name in German means **“night light”, referring to its reddish colouring and bioluminescence**. The jellyfish is also known as the **“mauve jelly” and the “oceanic jelly”**



38. ARTIFICIAL REEFS

Context:

In a pioneering initiative in **Maharashtra, Mumbai** is preparing for the **installation of 210 artificial reefs near Worli Koliwada**.

- The artificial reefs, **composed of recycled cement and steel**, will **increase the sea surface area by 50-60 square feet per module**.
- They are expected to **attract small and large native species, acting as a habitat and breeding ground**.

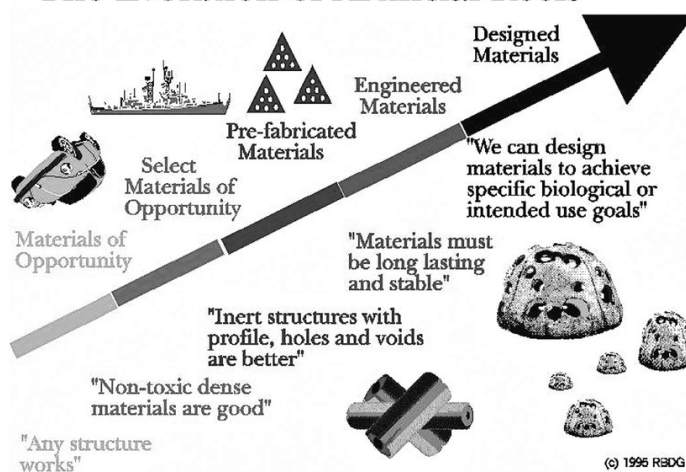
An **artificial reef** is a **human-made structure** designed to **replicate some characteristics of natural reefs**. These structures include **submerged shipwrecks, oil and gas platforms, bridges, and other offshore installations**.

Materials used in their **construction range from rocks and cinder blocks to limestone, steel, and concrete**.

Artificial reefs **enhance habitat for reef organisms like corals, fishes, and invertebrates**.

They attract **marine life, making them popular destinations for fishing, diving, and snorkelling, thus offering economic benefits to local communities**.

The Evolution of Artificial Reefs



39. 'AKASHTER COMMAND AND CONTROL SYSTEMS'

Context:

The 'Akashter Command and Control Systems' is a **new initiative by the Indian Army, developed by Bharat Electronics Limited (BEL)** as part of the 'Atmanirbhar Bharat' initiative.

About the project:

Project Akashter, **developed by Bharat Electronics Limited (BEL)**, is a state-of-the-art initiative enabling the monitoring of **low-level airspace in Indian Army battle areas, and automation of India's air defence system**. It effectively controls Ground-Based Air Defence Weapon Systems, empowering integrated operations for Air Defence units.

Significance: It will significantly bolster India's air defence capabilities by **improving efficiency, situational awareness, and automation**, thus ensuring a safer and more secure future for the country.

To keep pace with the new era of modernization, the **Army has declared the year 2024 as the 'Year of Technological Absorption'**. The Indian Army is accelerating the induction of specific technologies and systems.

40. FOREVER CHEMICALS

Context:

A recent study by **IIT Madras** has uncovered the presence of **'forever chemicals' known as pre- and polyfluoroalkyl substances (PFAS)** in Chennai's **Buckingham Canal, Adyar River, and Chembarambakkam Lake**.

- PFAS are **synthetic chemicals** found in everyday products and are known to **persist in the environment**, posing health risks including **liver damage, hormonal imbalance, fertility issues, and cancer**.
- PFAS are called "forever chemicals" because **they do not easily break down in the environment and can persist for long periods of time**.

41. SPOTTED DEER

Context:

The introduction of **chital, or spotted deer**, to the **Andaman and Nicobar Islands** in the early **1900s for game hunting by the British** has resulted in a **population explosion that now poses a significant problem for authorities**.

- But now the **chital population exceeding the carrying capacity of Netaji Subhash Chandra Bose Island**.

Spotted deer, also known as chital or axis deer, are a spe-

cies of deer native to the Indian subcontinent.

They are characterized by **their reddish-brown coat with white spots**, which gives them their name.

Spotted deer are **medium-sized herbivores, typically weighing between 50 to 100 kilograms**.

They inhabit a variety of **forested habitats, including deciduous forests, grasslands, and scrublands**.

42. ESZ AROUND SUKHNA WILDLIFE SANCTUARY

Context:

The Union Ministry of Environment, Forest and Climate Change (MoEFCC) has issued a **draft notification demarcating an eco-sensitive zone (ESZ)** around the Sukhna Wildlife Sanctuary on the Haryana side.

Rejecting Haryana's proposal **for only a 1,000-meter ESZ**, the draft delineates an area of 1 km up to **2.035 km** around Haryana's side of the sanctuary. The sanctuary is ecologically sensitive and home to several endangered species. The draft seeks objections from stakeholders within 60 days.

About ESZ:

Ecologically Sensitive Zones (ESZ) are vital areas surrounding protected regions, designated by the central government under the Environment (Protection) Act, 1986. These zones categorize activities into prohibited (e.g., commercial mining), regulated (e.g., felling of trees), and permitted (e.g., local agriculture) to safeguard the fragile ecosystem.

About the Sukhna Wildlife Sanctuary:

It is situated in the Chandigarh Union Territory and encompasses the Shivalik Hills' Sukhna Lake catchment area. It hosts diverse fauna including Sambar deer, Barking deer, and wild boar, alongside various bird, reptile, and amphibian species. The sanctuary features a blend of forests, grasslands, and wetlands, **with Sukhna Lake playing a vital role in its ecosystem**.

43. CREDIT-DEPOSIT RATIO

Context:

Banks in India are facing challenges in **attracting deposits during the financial year 2023-24**.

- According to data from the RBI, the **credit-deposit ratio, indicating the proportion of a bank's deposit base used for loans, has reached its highest level in at least 20 years** due to **increased loan uptake, particularly in categories like home loans and other consumption loans**.
- Currently **standing at 80%, the credit-deposit ratio is at its highest since 2015**.

- Customers are opting for **high-return, equity-linked products, reducing the funds available for deposits in banks.**

In FY24, while deposits **grew by 13.5% to ₹204.8 trillion, non-food credit grew by 20.2% to ₹164.1 trillion,** outpacing deposit growth.

This contrasts with FY23, **where deposits grew by 9.6% and credit by 15.4%.**

About Credit- deposit ratio:

The **credit-deposit ratio** is a **financial metric** used to assess the **relationship between a bank's lending activities (credit) and its deposit base.**

It is calculated by **dividing the total loans extended by the bank by its total deposits.** The ratio indicates how much of a **bank's deposits are being used to provide loans.**

A higher credit-deposit ratio suggests that a **larger portion of the deposits is being lent out as credit,** while a **lower ratio indicates that more deposits are being held in reserve or invested in other assets.**

It is an important measure of a **bank's liquidity and lending capacity.**

44. AIR-BREATHING MAGNESIUM-COPPER / CUPRIC OXIDE FUEL CELL

Context:

Researchers at the **University of Kerala** have developed an **eco-friendly fuel cell that primarily utilizes air and seawater to generate power.**

- The **'Air-breathing Magnesium - Copper / Cupric Oxide Fuel Cell'** is highlighted in the **'Journal of Engineering and Applied Science.'**
- The technology is anticipated to **outperform lithium-ion batteries in power output.**
- Unlike traditional fuel cells that use hydrogen, **this cell relies on magnesium and sodium chloride from seawater.**
- By employing **cupric oxide over copper substrate,** the cell becomes **cost-effective compared to platinum-based alternatives**

The **Magnesium-Copper / Cupric Oxide Fuel Cell** is an eco-friendly technology developed to **generate power primarily using air and seawater.**

This innovative fuel cell produces **electricity and heat during operation while emitting water, making it environmentally clean.**

It employs **cupric oxide grown over a copper substrate in a magnesium-sodium chloride-based system.**

Compared to traditional fuel cells, it offers **cost-effectiveness by utilizing semiconductor material instead of platinum for air cathode systems.**

45. PETER HIGGS (HIGGS THEORY)

Context:

Peter Higgs, the physicist credited with theorizing the **Higgs boson** particle, has passed away at 94.

His contributions:

Contribution	Description
Higgs Mechanism	In the 1960s, Higgs proposed the Higgs mechanism, along with other physicists, to explain why elementary particles have mass. This theory predicts the existence of a new particle, the Higgs boson, which was later discovered at CERN's Large Hadron Collider in 2012. The Higgs mechanism is a crucial component of the Standard Model of particle physics, providing an explanation for the origin of mass for particles like the W and Z bosons.
Development of Higgs Field Theory	Developed the concept of the Higgs field, which permeates space and gives mass to elementary subatomic particles that interact with it. This field theory proposed by Higgs helps explain how particles acquire mass shortly after the universe began.
Higgs Boson	Authored papers on the Higgs boson. His papers contributed to the eventual discovery and understanding of the Higgs boson. The Higgs boson is a subatomic particle that gives other particles mass. The strength of a particle's interaction with the Higgs boson determines its mass.
Nobel Prize in Physics	Awarded the Nobel Prize in Physics in 2013, shared with François Englert, for their theoretical discovery of a mechanism that contributes to our understanding of the origin of mass of subatomic particles, which was confirmed by the discovery of the Higgs boson.
Significant Awards and Honors	Received numerous awards for his groundbreaking work, including the Hughes Medal, Rutherford Medal, Dirac Medal and Prize, Wolf Prize in Physics, J. J. Sakurai Prize for Theoretical Particle Physics, and the Copley Medal. Honoured with a unique Higgs Medal from the Royal Society of Edinburgh.

Values:

Higgs demonstrated **humility, integrity, and dedication throughout his** life, embodying ethical values such as **honesty, modesty, and a commitment to scientific advancement**. Despite his fame, he remained modest, focusing on science rather than personal recognition. His legacy profoundly **impacted our understanding of the universe**.

46. C-DOME DEFENCE SYSTEM

Context:

The **C-Dome** is the naval version of **Israel's Iron Dome** missile defence system.

- It was deployed for the **first time as a response to a "hostile aircraft" entering Israeli airspace near Eilat**.
- Similar to the Iron Dome, which intercepts rockets fired from Gaza, **the C-Dome uses radar to detect incoming threats and destroys them with its own missiles**.
- Unlike the Iron Dome, the **C-Dome is mounted on ships and integrated into the ship's radar system**. It **provides full-circular protection against maritime and coastal threats**.
- The system was **tested on Sa'ar 6-class corvettes, German-made warships used by the Israeli Navy, and was declared operational in November 2022**.
- The C-Dome employs TAMIR interceptors, **a modular Vertical-Launch Unit (VLU), and a Command & Control (C2) component** to detect and track threats at sea.

47. DARK ENERGY SPECTROSCOPIC INSTRUMENT (DESI)

Context:

DESI's groundbreaking **project harnesses 5,000 robots to peer 11 billion years into the past**, revealing unprecedented insights into **our expanding universe**.

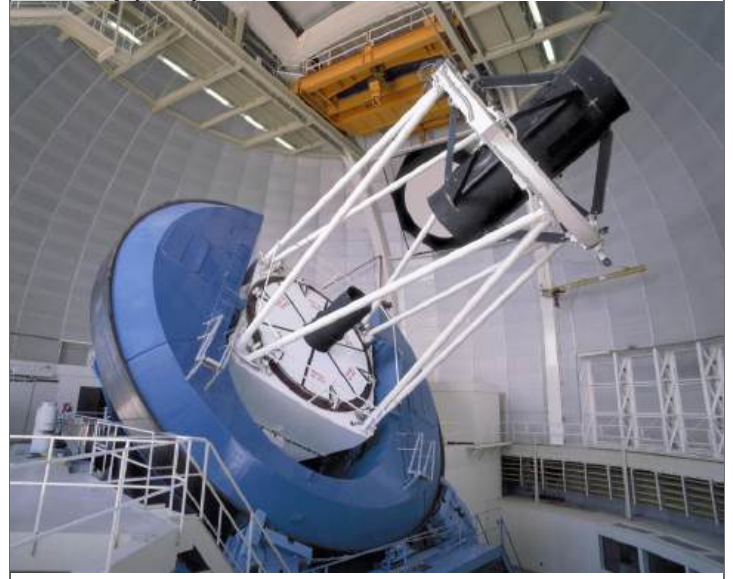
It found the most precise measurement of the universe expansion rate at a rate of **68.5 (±0.6)** kilometres per second per megaparsec (a million parsec; 1 parsec equals **3.2616** light years).

DESI made a huge 3D map to study dark energy's impact over 11 billion years. In the Lambda CDM model, matter and dark energy affect the universe's expansion differently: matter slows it, while dark energy speeds it up. Both **dark energy and dark matter** dominate the universe, comprising about 95% of it.

What is DESI?

DESI is a project aimed at **mapping the universe to study dark energy's effects** over billions of years. It is the prod-

uct of an international collaboration that brings together **researchers from more than 70 institutions (including from India)**. It is a **ground-based dark energy experiment**, located on **the Mayall 4-meter telescope at Kitt Peak National Observatory (USA)**



48. TSAT-1A

Context:

Tata Advanced Systems Limited (TASL) announced the successful deployment of its **sub-metre optical satellite, TSAT-1A, into space**.

- The satellite, **assembled and tested in India**, was launched aboard **SpaceX's Falcon 9 rocket from the Kennedy Space Center in Florida**.
- **TSAT-1A will provide high-resolution optical satellite images** with enhanced collection capacity and dynamic range through its **multispectral and hyperspectral capabilities**.

49. GUJCOST

Context:

The **Gujarat Council on Science and Technology (GUJCOST)** has been appointed as the **Nodal Centre for the Indian Space Research Organisation's (ISRO) 'Space Science and Technology Awareness Training (START)' programme**.

- This initiative, conceived by ISRO, **aims to provide introductory-level online training** in various areas of space **science research, such as planetary exploration, astronomy, and atmospheric science**.

The **Space Science and Technology Awareness Training (START)** is a **free, introductory online training program for undergraduate and postgraduate students** in India interested in space science and technology.

50. CDP-SURAKSHA

Context:

The **CDP-SURAKSHA** is a digital platform was launched recently to disburse subsidies to **horticulture farmers under the Cluster Development Programme (CDP)**.

- It aims to **promote the growth of India's horticulture sector** by facilitating instant **subsidy disbursal to farmers' bank accounts using e-RUPI vouchers**.
- The platform integrates various features such as **database integration, cloud-based server space, UID-AI validation, and e-RUPI integration**.
- Farmers can access the platform to order **planting material, contribute their share of the cost, and receive government subsidies upfront**.
- The system ensures **transparency and accountability** by requiring farmers to verify the delivery of **planting material through geo-tagged photos and videos**.
- Unlike the old system, where farmers had to purchase materials themselves and then seek subsidy release, **CDP-SURAKSHA provides subsidies upfront at the time of purchase**.

The Cluster Development Program (CDP) aims to **develop horticulture clusters and attract private investment, covering 55 clusters and an estimated 10 lakh farmers across India**.

51. MICROBIAL FORMULATIONS TO IMPROVE AGRICULTURAL PRODUCTIVITY

Context:

The **Indian Institute of Spices Research (IISR) in Kozhikode** has developed **three new microbial formulations aimed at enhancing agricultural productivity for farmers**.

- These formulations, named **Bactolime, Bactogypsum, and Trichogypsum**, utilize **granular lime and gypsum** and have been developed using **IISR's patented technology**.

How it works?

- Bactolime **combines beneficial bacteria with liming material** to **address soil pH issues and deliver microorganisms essential for plant growth**.
- **Bactogypsum and Trichogypsum**, the other two formulations, **work to buffer soil pH to a neutral level, facilitating the establishment of beneficial microbes**, thereby improving soil quality and nutrient availability.

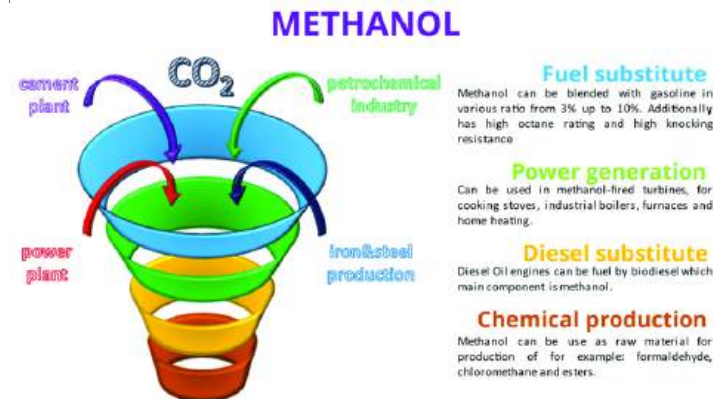
52. METHANOL IN HAND SANITIZERS

Context:

Health officials in the United States have recalled several lots of **hand sanitizers and aloe gels due to the risk of methanol exposure**.

- Methanol exposure can lead to **various severe health issues such as nausea, vomiting, headache, blurred vision, coma, seizures, permanent blindness, permanent damage to the central nervous system, or even death**.

Methanol, also known as **methyl alcohol** and wood alcohol, is a colorless, flammable, and poisonous liquid with a strong odor. It has a chemical formula of CH_3OH .



53. PIEZOELECTRIC BONE CONDUCTION HEARING IMPLANTS

Context:

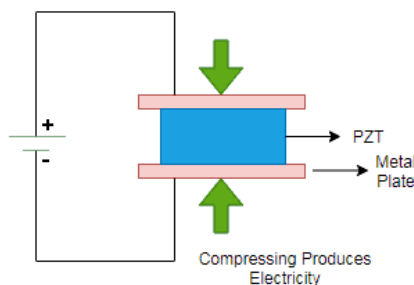
The **ENT department** at Command Hospital in Pune successfully **conducted two piezoelectric Bone Conduction Hearing Implants (BCI)**, making it the **first government hospital in India to achieve this milestone**.

- The piezoelectric BCI system is an **implantable device for hearing-impaired patients with conductive loss, mixed hearing loss, and single-sided deafness**.
- This achievement is significant as it **addresses the needs of patients who are not candidates for cochlear implants or do not benefit from hearing aids or middle-ear surgery**.

Piezoelectricity is the **electric charge that builds up in certain materials when mechanical stress is applied to them**.

Piezoelectric materials can be **found in nature and in synthetic materials**.

Quartz is a well-known natural piezoelectric material, while ferroelectric ceramics are the most widely used synthetic piezoelectric materials.



54. PARIVARTAN CHINTAN

Context:

The **Tri-service Conference**, named '**Parivartan Chintan**,' took place recently, aimed at **fostering Jointness and Integration in the Armed Forces**.

- It emphasises the importance of developing a **Joint Culture for the Armed Forces, blending the strengths of each service while maintaining their uniqueness.**
- It helps in **enhancing efficiency, warfighting ability, and interoperability.**

Jointness implies that the **three services are integrated at different levels and placed under one commander for the execution of operational plans.**

The capability of the **joint force is understood to be synergistic, with the sum greater than its parts (the capability of individual components).**

55. INTERNATIONAL NARCOTICS CONTROL BOARD

Context:

India's nominee, **Jagjit Pavadia**, has been re-elected for a **third term to the International Narcotics Control Board (INCB)** after securing the highest number of votes.

- Additionally, India was elected to **several key bodies at the United Nations**, including the **Commission on the Status of Women, the Executive Board of the United Nations Children's Fund, and the Executive Board of the United Nations Development Programme.**

The **INCB, established in 1968**, monitors the **implementation of international drug control conventions** and aims to **ensure adequate drug supplies for medical and scientific uses while preventing diversion to illicit channels.**

56. WEB3

Context:

India's share of **Web3** developers globally has **surged from 3% in 2018 to 12% in 2023**, leading among emerging markets, states a report by Hashed Emergent.

The ecosystem is young, with over 50% of developers joining in the past two years, and **female participation has risen from 3% to 14% in five years.** The country has a thriving **Web3** sector with 1,000 startups and received \$250 million in investment in 2023, mainly in finance, entertainment, and infrastructure subsectors.

Web 3.0

Web 3.0: It is **decentralised, privacy-oriented, blockchain-driven and crypto-asset friendly.** It is also known as the "**Semantic Web**". It allows for more intelligent, context-aware, and personalized interactions between humans and computers. It advocates **decentralized data storage systems.**



Semantic web allows combining information from various websites to create new and authentic knowledge resources.

Comparison of Web 1.0, Web 2.0, and Web 3.0:

	Web 1.0	Web 2.0	Web 3.0
Period	1989-2005	1999-2012	2006-ongoing
Focus	Content Publishing	User Interaction and Participation	Intelligent Web
User Role	Passive Consumer	Active Participant and Co-Creator	Co-Creator and User of Intelligent Content
Data Access	Read-Only	Read and Write Access	Read, Write and personalized
Technology	HTML	Ajax, RSS, and JavaScript Frameworks	Artificial Intelligence, Machine Learning, NLP, Ontology
Design	Basic, Static Pages	Interactive, Dynamic Pages	Customizable, User-Centric Pages
Examples	Early websites	Social Media, Blogs, Wikis, Online Collaboration	Virtual Reality, Personalized Search, Intelligent Agents

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57. BRIGHTEST-EVER COSMIC EXPLOSION

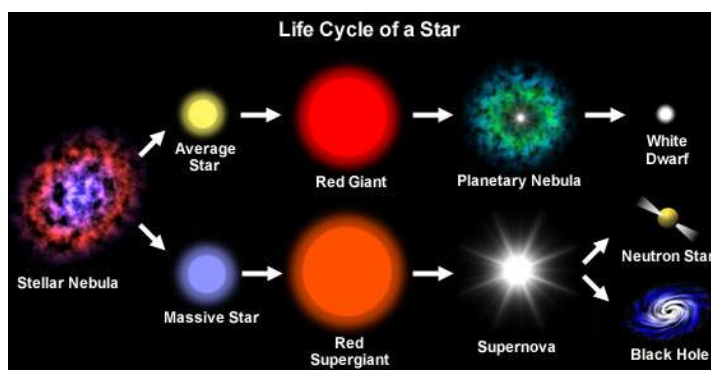
Context:

A significant **astronomical discovery regarding the brightest burst of light** ever recorded, **occurred in 2022.**

Researchers found that the **burst originated from an exploding star**, known as a **supernova**, located in a distant galaxy. However, the intensity of the burst surpassed expectations, leading to questions about its cause and implications. The burst's extraordinary brightness, labelled as the **"Brightest Of All Time" (B.O.A.T.)**, puzzled astronomers.

What are Supernovas?

They are **massive stellar explosions** that occur at the end of a **star's life cycle**. They produce and eject vast amounts of energy and material into space. These explosions are responsible for creating and dispersing heavy elements such as **gold, platinum, lead, and uranium** into the universe.



While supernovas are known to produce heavy elements like gold, the researchers found no evidence of such elements in this particular explosion. This discovery challenges existing theories about the origin of heavy elements in the universe and raises doubts about the role of supernovas in their production.

58. MERCENARY SPYWARE

Context:

Apple issued threat notifications to iPhone users in India and 91 other countries, warning of potential attacks by mercenary spyware, including Israel's Pegasus spyware.

- The notifications, sent via email, highlighted the possibility of specific targeting due to the user's identity or activities.
- While Apple didn't attribute the attack to any entity, it emphasized the seriousness of the warning and the rarity and sophistication of mercenary spyware attacks.

About Mercenary Spyware:

Mercenary spyware refers to sophisticated surveillance software developed and sold by private companies to governments and other entities.

Unlike traditional cybercriminal activities, mercenary spyware is often used for targeted surveillance, intelligence gathering, and espionage purposes.

This type of spyware can infiltrate devices such as smartphones and computers, allowing the attacker to monitor communications, track location, access files, and gather sensitive information remotely.

Mercenary spyware attacks are typically highly advanced and difficult to detect, posing significant threats to individual privacy, security, and human rights.

Examples of mercenary spyware include Pegasus, developed by the NSO Group in Israel, which has been implicated in various surveillance scandals targeting journalists, activists, politicians, and other high-profile individuals worldwide.

59. EURASIAN OTTER

Context:

The first Eurasian otter in India was radio-tagged in the Satpura Tiger Reserve (STR) in Madhya Pradesh.

- The Eurasian otter was first photographed in the STR in 2016, expanding its known range to central India.

Previous News about Eurasian Otters (17th March 2023):



Eurasian otters



Context: Scientists from the University of Jammu's Institute of Mountain Environment have camera-trapped three Eurasian otters in the Neeru stream of the Chenab catchment in Jammu and Kashmir

About: Eurasian Otter (Lutra lutra)

- It is an elusive, solitary otter species that is found in parts of three continents: Europe, Asia and Africa.
- Range in India: Northern, northeast and southern India (mostly in cold hills and mountain streams)
- IUCN: Near Threatened
- CITES: Appendix I
- Indian Wildlife Protection Act, 1972: Schedule II



Neeru is a tributary of the Chenab River that originates in the Kailash Lake

Threats: The species is persecuted in some countries, and its populations in Europe and Asia have declined in recent years due to hunting, habitat loss, pollution, and climate change.

Significance of spotting Eurasian Otters: Eurasian otters are regarded as a flagship species and indicator of high-quality aquatic habitats. Its presence is encouraging for the health (pollution free) of the Neeru stream.

To know more Visit Insights IAS Daily Current Affairs

60. BAOBAB TREES

Context:

The Global Society for the Preservation of Baobabs and Mangroves (GSPBM) has launched a pioneering initiative to revive Madagascar's iconic baobab trees.

Previous News about Baobab Trees:

Baobab trees



Context: The Madhya Pradesh government has decided that the forest department cannot grant permission for the translocation of Baobab trees in Dhar, after the protest from Bhil tribes.



Under the Biodiversity Act, any commercial use of the trees will require permission from the state biodiversity board

Baobab Trees	
Baobab trees are deciduous trees found in mainland Africa, Madagascar, and Australia. They have barrel-like trunks (5 to 20m in height), can live up to 2,000 years, and are known for their extraordinary longevity.	
Tree of Life	Baobabs are succulent trees that store water in their trunk, allowing them to produce nutrient-dense fruit in dry seasons; it has pendulous flowers pollinated by bats and bush babies
Uses	Provide food, livestock fodder, medicinal compounds, and raw materials.
Threat	Since 2005, 9 of the 13 oldest African baobab specimens and 5 of the 6 largest trees have died or suffered a collapse, possibly due to climate change.
IUCN Status	Endangered
GI Tag	Madhya Pradesh government has applied for a GI tag for Baobabs.
About Bhil Tribe	Bhil are one of the largest tribal groups, living in Chhattisgarh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Andhra Pradesh and Rajasthan. The name is derived from the word 'billu', which means bow. They are skilled in archery and has deep knowledge of their local geography. Traditionally experts in guerrilla warfare, they are now primarily farmers and sculptors.



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61. HYDROGEL

Context:

Researchers at the Indian Institute of Science (IISc) have developed a sustainable hydrogel to address the issue of microplastic pollution in water.

- Microplastics, posing significant threats to human health and the environment, can enter our bodies through water consumption.
- The three-layer polymer hydrogel, consisting of chitosan, polyvinyl alcohol, and polyaniline, forms an interpenetrating polymer network (IPN) architecture.
- Infused with nanoclusters of copper substitute polyoxometalate (Cu-POM), the hydrogel can bind and degrade microplastics under UV light irradiation.
- The team ensured efficient microplastic removal and degradation by tracking their adsorption and degradation using fluorescent dye.
- The hydrogel exhibited high efficiency, removing about 95% and 93% of two different microplastic types at near-neutral pH levels.

Hydrogels are three-dimensional networks composed of hydrophobic polymers synthesized by crosslinking water-soluble polymers.

Hydrogels can retain a large quantity of water within their network without disturbing their original structure.

This imparts flexibility and swelling properties to the hydrogel structures.

62. GRAVITATIONAL WAVES

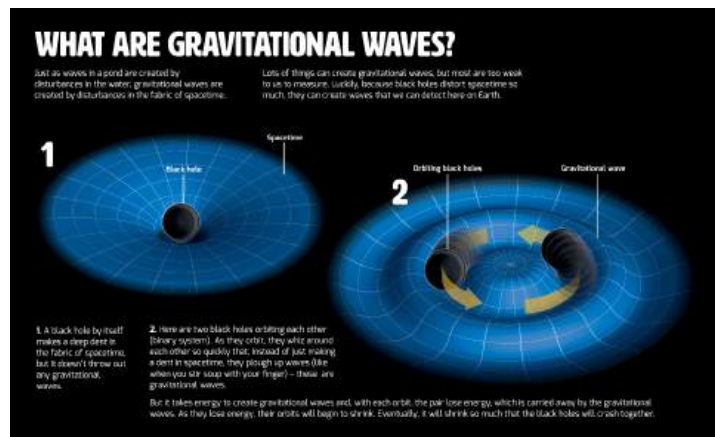
Context:

An international team of astrophysicists, has made a ground-breaking discovery using gravitational waves.

- They detected a merger between a neutron star and a mysterious object located in the “mass gap,” which is the range between the heaviest neutron stars and the lightest black holes.
- Named GW230529, this merger occurred about 650 million light-years away from Earth.
- While the lighter object is likely a neutron star, the more massive one could be a black hole within the mass gap, possibly the lightest ever discovered.

Gravitational waves are ripples in space-time caused by the acceleration of massive objects, such as black holes or neutron stars.

They are so faint that Albert Einstein, who first predicted their existence in 1916, believed they would never be detected.



63. PLANKTON, AEROSOL, CLOUD, OCEAN ECOSYSTEM (PACE) SATELLITE

Context:

NASA's PACE satellite is now providing publicly available data, offering unprecedented insights into ocean health, air quality, and climate change effects.

- Equipped with advanced instruments, including the Ocean Color Instrument (OCI) and two multi-angle polarimeters, PACE can detect various wavelengths of light to study microscopic life in the ocean and atmospheric particles.

64. DOXXING

Context:

Doxxing, the act of publicly revealing a person's private information online, poses significant risks to victims, including physical, digital, and emotional harm.

- Perpetrators often share personal data such as addresses, phone numbers, and financial information obtained through illegal means like hacking.
- Victims may face harassment, threats, and even job loss as a result.

Platforms like Meta and Google offer tools for reporting and removing doxxing content, and victims can also seek legal recourse through cybercrime reporting portals.

65. HEALTH DRINKS

Context:

The Indian government, has instructed e-commerce platforms to stop categorizing certain beverages, including Bournvita, as “health drinks” on their sites.

- This directive follows clarification from the Food Safety and Standards Authority of India (FSSAI) that there are no defined standards for the term “health drink.”
- The government aims to prevent misleading information and ensure transparency for consumers,

prompting e-commerce platforms to remove such beverages from the health drinks category.

The **Food Safety and Standards Authority of India (FSSAI)** is a **statutory body** that regulates the manufacture, storage, distribution, sale, and import of food, and establishes standards to ensure food safety.

It is administered by the **Ministry of Health and Family Welfare**.

66. SHRINKFLATION

Context:

Shrinkflation, the reduction in product sizes while maintaining prices, is resurfacing in the **fast-moving consumer goods (FMCG) industry** due to rising input costs.

- Brands like Clear, Frooti, and Smooth are **introducing smaller packaging at the same or slightly reduced prices to cope with inflation.**
- The trend is attributed to various factors, **including rising prices of commodities like crude oil, palm oil, coffee, cocoa, and sugar, alongside global supply chain disruptions and geopolitical tensions.**

Shrinkflation refers to the **practice employed by manufacturers** wherein the **size or quantity of a product is reduced while keeping its price the same or slightly adjusted.**

This strategy **allows companies to maintain profit margins amid rising production costs.**

Shrinkflation often **goes unnoticed** by consumers initially but can **lead to dissatisfaction as they realize they are receiving less for the same amount of money.**

67. SPECIAL RUPEE VOSTRO ACCOUNT (SRVA)

Context:

The Indian government has simplified the payment mechanism for traders **importing pulses from Myanmar by implementing the Rupee/Kyat direct payment system** through the **Special Rupee Vostro Account (SRVA)** via Punjab National Bank.

What is SRVA?

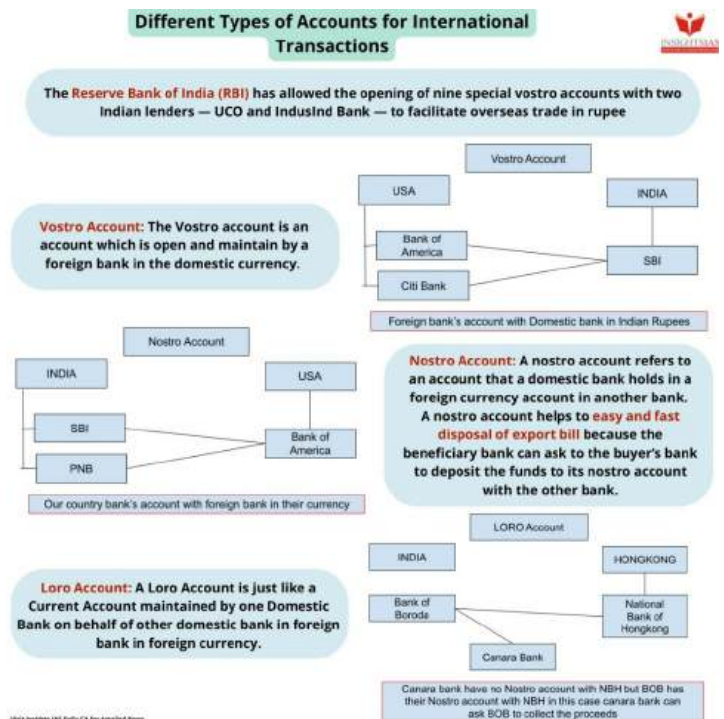
SRVA is an account that **domestic banks hold for foreign banks in the former's domestic currency, the rupee**, which **allows domestic banks to provide international banking services** to their clients who have global banking needs without having to be physically present abroad.

The SRVA is an additional arrangement to the existing system that uses freely convertible currencies and works as a complimentary system.

It has three important components:

1. All exports and imports must be denominated and **invoiced in domestic currency** (e.g. Rupee)
2. The **exchange rate** between the currencies of the trading partner countries would be **market-determined**
3. **The final settlement** also takes place in **domestic currency** (e.g. Rupee)

This mechanism aims **to streamline trade transactions and reduce costs** associated with currency conversions.



68. GOPI THOTAKURA (1ST INDIAN SPACE TOURIST)

Context:

Gopi Thotakura, an entrepreneur and pilot, is set to be the **first Indian space tourist** on the NS-25 mission by **Blue Origin** (an American Space startup, founded in 2000 by **Jeff Bezos, the founder of Amazon**).

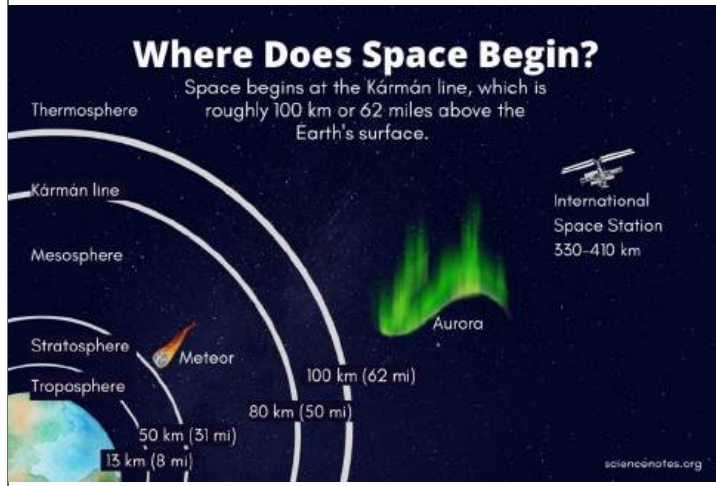
Space tourism is a burgeoning sector **allowing individuals to experience space travel for recreational or business purposes.** It encompasses:

1. **Suborbital space flights** (altitude of 100 km referred to as Karman Line)
2. **Orbital Space Flights** (altitudes over 400 kilometres)
3. **Lunar space tourism** (trips to the moon).

Challenges facing space tourism include its **high cost, environmental concerns regarding rocket emissions, and safety issues.** Despite these challenges, the space tourism market is growing rapidly, with increasing interest from both tourists and industry players.

About Kármán Line

It is the boundary between Earth's atmosphere and outer space, located approximately 100 kilometres (62 miles) above sea level. It is named after Hungarian-American engineer and physicist Theodore von Kármán, who first calculated the altitude where the atmosphere becomes too thin to support conventional aircraft flight.



69. RADIATION THERAPY

Context:

Lady Hardinge Medical College in Delhi has inaugurated its **Radiation Therapy facility**, providing treatment to cancer patients using Brachytherapy equipment.

About Radiation therapy (Radiotherapy):

It is a cancer treatment that kills cancer cells by exposing them to ionizing radiations like **X-rays, gamma rays, high-energy electrons, or heavy particles**. There are two main types: **External (Teletherapy)**, which uses a linear accelerator to send radiation from a distance to target cells, and **Internal (Brachytherapy)**, where the radiation source is placed inside the body.

This treatment is highly effective **for various cancers, including brain, breast, head, neck, and cervical cancers**, while minimizing damage to healthy tissues. However, it can lead to side effects like **fatigue, nausea, hair loss, and loss of appetite**.

70. SATELLITE CALLS

Context:

Chinese scientists have developed the **world's first satellite that enables smartphones to make direct calls through it, bypassing mobile towers**.

- This innovation **aims to address communication challenges during emergencies**, such as **natural disasters**.
- The **satellite, part of the Tiantong Project**, symbolizes China's commitment to enhancing communication resilience.

tion resilience.

- The **Tiantong-1 series, involving three satellites**, orbits synchronously **at 36,000 kilometres altitude**, potentially **revolutionizing communication across the Asia-Pacific region**.
- **Huawei introduced the first satellite-compatible smartphone**, followed by other Chinese manufacturers.

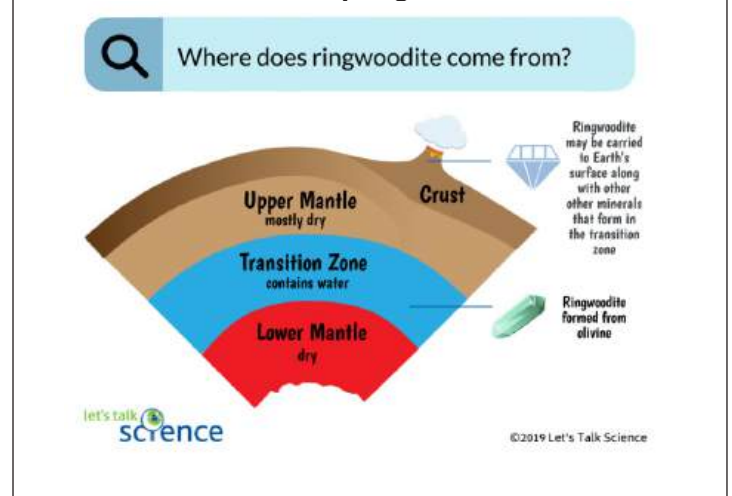
71. RINGWOODITE

Context:

Scientists have made a **ground-breaking discovery** of a **gigantic ocean lying 700 kilometres** beneath the Earth's surface, **hidden within a rock called ringwoodite**.

- This **subterranean reservoir**, three times the volume of all the planet's surface oceans combined, was **revealed through studies of seismic activity**.
- Ringwoodite's **unique properties allow it to trap water like a sponge**.
- This discovery suggests a **whole-Earth water cycle and sheds light on the abundance of liquid water on the planet's surface**.

Ringwoodite is a mineral that forms in **the Earth's mantle at high temperatures and pressures**. It's a **water-rich mineral that can contain iron and hydrogen**.



72. ASHWAGANDHA

Context:

Ashwagandha, a 3000-year-old Indian herb, is gaining global attention and popularity for its **numerous health benefits**.

- Scientific research highlights its **potential in stress management, cognitive function, physical performance, and more**.

About Ashwagandha:

It is an **evergreen shrub found in parts of India, Africa, and the Middle East**.

Used as a **medicinal plant**, especially in traditional Ayurvedic medicine.

Its supplements are often promoted for **stress and anxiety, sleep, male infertility, athletic performance, etc**.

73. SOIL ACIDIFICATION

Context:

The study highlights the **potential loss of soil inorganic carbon (SIC) in Indian soils due to acidification, impacting soil health, crop growth, and carbon sequestration.**

- Soil acidification, **driven by industrial activities and intense farming**, could lead to the **depletion of 3.3 billion tonnes of SIC from the top 0.3 meters of soil over the next 30 years.**
- Acidic soils **affect approximately 30% of cultivable land in India**, with the northeastern region being particularly affected.

Soil acidification is a **natural process that occurs when the concentration of hydrogen ions in the soil increases.**

This **reduces the soil's pH.**

Soil acidification can be **accelerated by some agricultural practices**, such as:

Removing plant and animal products, Leaching excess nitrate, Adding some nitrogen-based fertilizers, Building up mostly plant-based organic matter, and Using ammonium-based fertilizers.

74. ORGAN DONATION TO FOREIGNERS IN INDIA

Context:

The Ministry of Health and Family Welfare has **initiated an investigation into organ transplants** involving **foreign nationals** following concerns about potential commercial dealings.

National Organ & Tissue Transplant Organization (NOTTO) data shows a significant rise in **foreign nationals receiving organ transplants** from private hospitals, with reports suggesting unauthorized **“commercial dealings.”**

What is Organ transplantation?

Organ transplantation is the surgical procedure of **removing an organ from one person and implanting it into another person's body.**

Laws regarding Organ Transplantation in India:

The primary law governing organ transplants in India is the **Transplantation of Human Organs Act (THOA), 1994.** India ranks **third globally in the number of transplants conducted.** Overall, organ transplants, including both deceased and living donors, increased from **4,990 in 2013 to 15,561 in 2022.**

Eligibility:

1. Organ donation eligibility is primarily based on the **donor's physical condition** (and not age), with **both living (above 18 years) and deceased individuals** being eligible.

2. **Consent from the family is required** for deceased organ donation.
3. According to the latest guidelines, **individuals above 65 years can receive organs** for transplantation from deceased donors, and the **requirement of state domicile for patient registration was removed.**

Measures to be taken:

1. **Compliance with THOTA:** Authorities should ensure compliance with the **Transplantation of Human Organs & Tissues Act (THOTA), 1994**, investigating any breaches and taking appropriate action.
2. **Unique ID:** Health authorities must ensure the generation of a unique NOTTO-ID for both **organ donors and recipients** in all transplant cases to enhance transparency and traceability.
3. **Data Sharing:** Ensure regular collection and sharing of transplant data, including cases involving foreigners, with NOTTO to enhance transparency and accountability.

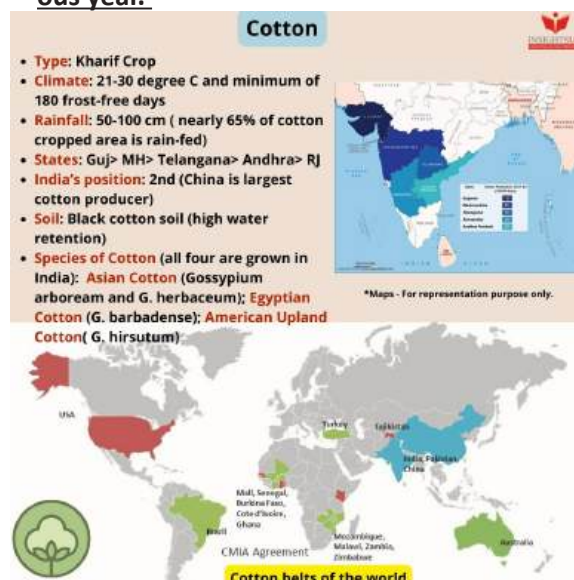
NOTTO (National Organ & Tissue Transplant Organization) is a national-level organization under the **Ministry of Health and Family Welfare.** It coordinates and networks for organ and tissue procurement and distribution nationwide. Additionally, it maintains a registry of organ and tissue donation and transplantation activities.

75. PINK BOLLWORM

Context:

Cotton farmers in North India are **considering shifting to crops like paddy, maize, and guar for the upcoming 2024-25 kharif season** due to various challenges.

- These challenges include **weak prices for cotton, severe infestation of pink bollworm (PBW) during the previous season, and increasing labour costs.**
- In Punjab, the **cotton area for the 2023-24 kharif season decreased by 32% compared to the previous year.**



About Pink Bollworm:

The pink bollworm (PBW), or *Pectinophora gossypiella*, is a moth that is a major pest to cotton in many regions of the world.

It is known as “Pinky” because the larvae develop pink bands as they mature.

The larvae are small white caterpillars with eight pairs of legs and pink bands along their backs.

The PBW lays eggs on cotton bolls, which hatch into larvae that burrow into the bolls and squares, destroying the seeds and staining the lint. The larvae take on pinkish bands as they mature.

Space weather refers to the environmental conditions in space, primarily influenced by the Sun’s activity, that can have various effects on technological systems and infrastructures both in space and on Earth.

These conditions include solar flares, coronal mass ejections (CMEs), geomagnetic storms, and solar wind.

Space weather phenomena can interfere with satellite operations, disrupt radio communications, impact power grids, and even pose risks to astronauts.

76. INTER-AGENCY SPACE DEBRIS COORDINATION COMMITTEE (IADC)

Context:

India, through ISRO, aims to achieve debris-free space missions by 2030, as declared at the 42nd Inter-Agency Space Debris Coordination Committee (IADC) annual meet.

- This initiative seeks the participation of all Indian space actors, governmental and non-governmental, to ensure long-term sustainability in outer space.
- ISRO has a comprehensive plan for space exploration and utilization, with a focus on disposing of non-functional spacecraft and preventing the creation of debris.

The Inter-Agency Space Debris Coordination Committee (IADC) is an international intergovernmental forum that coordinates activities related to man-made and natural debris in space.

The IADC was founded on October 25, 1993, to coordinate efforts to deal with debris in orbit around the Earth.

The IADC is recognized as the internationally recognized technical authority on space debris.

77. SPACE WEATHER

Context:

A study has found that the loss of 38 out of 49 Starlink satellites launched by SpaceX was influenced by multiple factors, including poor space weather conditions.

- The study reveals that moderate geomagnetic storms, which persisted for several days before and during the launch, caused persistent currents in the near-Earth atmosphere.
- These currents heated the upper atmosphere, leading to higher atmospheric density at Low Earth Orbit (LEO), resulting in increased atmospheric drag and subsequent de-orbiting of the newly launched satellites.

78. NITROPLAST

Context:

Scientists have discovered a new organelle, termed a nitroplast, within algae that can convert nitrogen gas into a form usable for cell growth.

- This ground-breaking finding challenges the conventional belief that only bacteria and archaea can perform nitrogen fixation.
- The nitroplast, found in the algae *Braarudosphaera bigelowii*, is considered the first nitrogen-fixing organelle in eukaryotes.
- It evolved from a symbiotic relationship between the algae and a bacterium called UCYN-A around 100 million years ago.

The study, published in Science, demonstrates that the nitroplast meets the criteria for an organelle, as it is inherited through generations and relies on host-provided proteins for its function.

79. GRAY SLENDER LORIS

Context:

A Gray Slender Loris was rescued by forest officials in North Goa.

About Gray Slender Loris:

The gray slender loris (*Loris lydekkerianus*) is a small primate native to India and Sri Lanka that lives in subtropical and tropical forests.

Gray slender lorises are nocturnal hunters and foragers that use their large, forward-facing eyes to detect prey.

They are insectivores that eat mostly ants and termites, but also eat beetles, spiders, mollusks, and other small vertebrates.

The Gray Slender Loris is listed on the Red List of the International Union for Conservation of Nature (IUCN) and is protected under the Wildlife Protection Act of 1972.



80. BUMBLEBEES

Context:

According to a new study, bumblebees demonstrate resilience to common pesticides.

- Researchers exposed bumblebee colonies to individual and combined insecticides and fungicides, finding no negative effects on learning ability or flight activity.

About Bumblebees:

Bumblebees are social insects known for their important role as pollinators in ecosystems.

They belong to the genus Bombus and are characterized by their robust bodies, dense fur, and distinctive black and yellow colouration.

Bumblebees are vital for the pollination of a wide variety of flowering plants, including many crops such as tomatoes, peppers, and berries.

Unlike honeybees, which have perennial colonies, bumblebee colonies are annual, with a single queen establishing a nest each year.



81. THREE NEW FISH SPECIES WERE SPOTTED USING TOOLS

Context:

Three fish species in the Laccadive Sea have been observed using tools, a rare occurrence in aquatic animals.

- The Jansen's wrasse, checkerboard wrasse, and moon wrasse were seen using live or dead coral structures as anvils to crack open sea urchin shells

for food.

This discovery challenges the perception that fish are less intelligent and highlights the need for further exploration of tool-use behaviours in marine species.

The Laccadive Sea, also known as the Lakshadweep Sea, is a body of water that borders India, the Maldives, and Sri Lanka.



82. FDI IN THE SPACE SECTOR

Context:

The Ministry of Finance has notified Foreign Direct Investment (FDI) regulations in the space sector under the Foreign Exchange Management Rules, allowing Indian space startups to access global capital.

- 74% FDI for satellite manufacturing, up to 49% for launch vehicles, and up to 100% for component and system manufacturing.
- Investment beyond 49% for spaceports requires government approval.

A foreign direct investment is a substantial, lasting investment made by a company or government into a foreign concern.

FDI investors typically take controlling positions in domestic firms or joint ventures and are actively involved in their management.

83. SUGAR IN BABY FOOD

Context:

Nestlé's baby food products in Asia, Africa, and Latin America were found to contain added sugars, while those sold in Europe did not.

- Added sugars in baby food pose health risks, including obesity and non-communicable diseases like diabetes.
- Excessive sugar intake can lead to unhealthy diets and increase the risk of diseases later in life.

WHO advises against introducing added sugars before the

age of 2, emphasizing the importance of a diverse diet for babies.

84. GPS SPOOFING

Context:

Israel **reportedly used GPS jamming** to confuse Iran's missile targeting teams ahead of **Iran's direct attack on Israel**.

- This technique, similar to **what the US allegedly did during India's Kargil war** in 1999, **can hinder military operations by degrading GPS signals**.
- The US initially employed "**selective availability**" to **degrade GPS accuracy** for India during the Kargil war, **prompting India to develop its own navigation system called NavIC**.
- In the recent incident, **Israeli locals found their GPS showing them in Cairo or Beirut, causing confusion about throwing off Iran's missiles**.

About GPS Spoofing:

GPS spoofing, also known as **GPS simulation**, involves **manipulating or tricking a GPS receiver by broadcasting false GPS signals**.

This leads the receiver to believe it is located somewhere it is not, **resulting in inaccurate location data**.

This **cyberattack undermines the reliability of GPS data, critical for navigation, time synchronization, and more**.

While initially a **theoretical threat**, GPS spoofing has become a **practical concern due to affordable software and hardware capable of transmitting fake signals**.

This evolution poses risks and security challenges for **industries, governments, and individuals**.

85. 'SLEEPING GIANT' BLACK HOLE

Context:

Astronomers have discovered the **most massive known stellar black hole** nicknamed "**Sleeping Giant**" in the **Milky Way galaxy, named Gaia BH3**, located **1,926 light-years away in the Aquila constellation**.

- Its mass is **nearly 33 times that of the sun**, making it the **second-closest black hole on Earth**.
- This discovery was made through observations from the Gaia space telescope, **detecting a wobble in space caused by the gravitational influence of Gaia BH3 on its companion star**.
- The study offers insights into the **formation of such massive black holes and their connection to metal-poor stars**.

86. NIGERIA INTRODUCED MEN5CV VACCINE

Context: Nigeria has introduced the world's first vaccine **against all strains of meningitis (Men5CV vaccine)**, aiming

to alleviate the disease burden in Africa's meningitis belt.

The Men5CV vaccine, **approved by the WHO**, safeguards against five strains of meningococcus bacteria in one shot, surpassing earlier vaccines. Its introduction coincides with WHO's aim to **eradicate meningitis by 2030**, vital amid rising cases in the region.

What is Meningitis?

It is a **severe infection affecting the brain and spinal cord's protective membranes**. While various pathogens like bacteria, fungi, or viruses can cause it, bacterial meningitis poses the greatest global threat. Common bacteria responsible include *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Neisseria meningitidis*.

87. SUBMERSIBLE PLATFORM FOR ACOUSTIC CHARACTERISATION AND EVALUATION (SPACE)

Context:

DRDO inaugurated a **Submersible Platform for Acoustic Characterisation and Evaluation (SPACE)** at the **Underwater Acoustic Research Facility in Kerala**.

- Designed by the Naval Physical & Oceanographic Laboratory, **SPACE is a premier testing and evaluation hub for sonar systems for the Indian Navy**.
- It consists of **two platforms - one floating on the water surface and the other submersible up to 100 meters** using winch systems.
- SPACE facilitates the **evaluation of complete sonar systems and scientific packages**, supporting survey, sampling, and data collection of various parameters.

Equipped with modern instrumentation, it **enhances Anti-Submarine Warfare research capabilities for the Indian Navy**.

88. VASUKI INDICUS

Context:

A **fossil vertebrae discovered in Gujarat** has been confirmed as **belonging to the largest snake to have ever lived, named 'Vasuki Indicus'**.

- Unearthed in 2005 by scientists from IIT-Roorkee, **the snake is estimated to have been 11-15 meters (about 50 feet) in length and weighed around 1 tonne**.
- Vasuki likely lived as an **ambush predator in marshy swamps during a time of higher global temperatures**.

The **fossil's size rivals that of Titanoboa**, a snake from **Colombia measuring about 43 feet long and weighing over one tonne**.

89. GROSS FIXED CAPITAL FORMATION (GFCF)

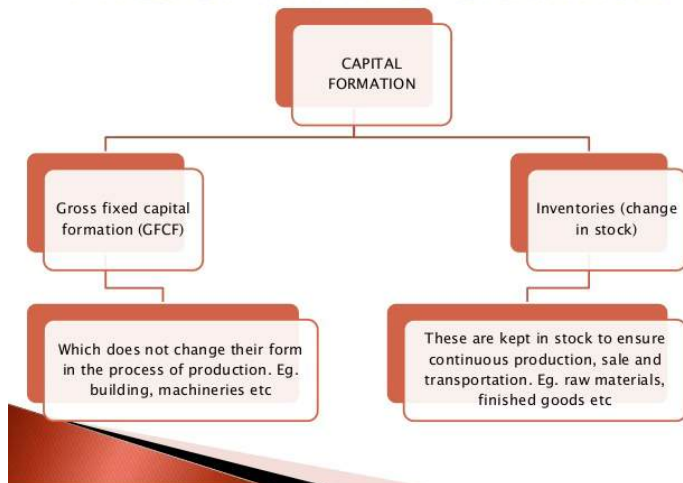
Context:

Private investment in India, measured by **Gross Fixed Capital Formation (GFCF) as a percentage of GDP**, has seen a decline since 2011-12. Despite government efforts **like corporate tax cuts, private investment hasn't picked up**.

What is GFCF?

Gross Fixed Capital Formation, measures the growth in fixed capital in an economy, including assets like **buildings and machinery**. It serves as an **indicator of private sector** investment willingness and includes government investment. GFCF is important because **fixed capital boosts economic growth** by increasing **productivity and living standards**. Developed economies tend to have more fixed capital per capita compared to developing ones.

TYPES OF CAPITAL FORMATION



Historically, **private investment surged after the 1990s** economic reforms but dropped post-2008 financial crisis. It **peaked at 27% of the economy** in 2007-08 but declined after 2011-12, **reaching a low of 19.6% in 2020-21**.

Reasons for Decline:

Private investment decline is attributed to low consumer spending, poor government policies and uncertainty.

90. TACHYONS

Context: A new paper suggests that the universe may be **dominated by particles called tachyons, which move faster than light**.

About Tachyons:

They are **hypothetical subatomic particles** that **move faster than the speed of light**. Coined by **physicist Gerald Feinberg in 1967**, they're **distinct from bradyons**, which travel slower than light. While bradyons include **familiar particles like protons and electrons**, tachyons have never been observed.

Tachyons violate known **principles like causality** and are proposed as a **potential explanation for dark matter**.

According to special relativity, **particles with mass can't exceed light speed in a vacuum** due to infinite energy. Tachyons, however, are believed to have **imaginary mass, allowing faster-than-light travel without violating known physics laws**. They would slow down with energy gain and accelerate with energy loss.

Experiments using **cerenkov detectors** have attempted to detect tachyons by measuring particles' speeds in mediums, where they could exceed light speed, causing **cerenkov radiation**, akin to a sonic boom or ship bow shock wave.

91. ARTEMIS ACCORDS

Context:

Sweden joined the Artemis Accords, becoming the 38th country to do so. These non-binding arrangements aim to establish norms for outer space activities.

About the Artemis Accords:

The Artemis Accords are **non-binding principles** based on the **Outer Space Treaty (OST)** of 1967, aiming to guide civil space exploration in the 21st century.

1. They are a **US-led international partnership** (introduced in 2020 by NASA) – signed by 38 countries till now, including **India (signed in 2023)**, Japan, Australia, the UK, France, and Canada – on planetary exploration and research.
2. **They are a set of 13 principles**, closely linked to the 2018 US Artemis Program, which **aims to return astronauts to the lunar surface**, build a space camp there, and carry out deep space exploration.

Other Such treaties on Outer Space:

1. **Outer Space Treaty (1967):** Provides the basic framework for international space law. India has signed and ratified it
2. **Rescue Agreement (1968):** Aimed at rescuing and assisting astronauts in distress. India has signed and ratified it
3. **Liability Convention (1972):** States that the launching State is absolutely liable to pay compensation for damage caused by its space objects. India has signed and ratified it
4. **Registration Convention (1976):** Requires registration of objects launched into outer space. India has signed and ratified it
5. **Moon Agreement (1979):** Establishes the Moon and its resources as the common heritage of humankind. **India has signed but NOT ratified it**

92. INDIGENOUS TECHNOLOGY CRUISE MISSILE (ITCM)

Context:

DRDO conducts a successful test of an **indigenous long-range subsonic cruise missile (Indigenous Technology Cruise Missile (ITCM))** from Chandipur, Odisha. The missile, similar to **Nirbhay**, showcased low-altitude sea-skimming flight with all subsystems performing as expected.

About ITCM:

It has been developed by DRDO's Aeronautical Development Establishment (ADE) and is a **long-range subsonic cruise missile** featuring an indigenous propulsion system from the **Gas Turbine Research Establishment**. Cruise missiles are unmanned and fly within the atmosphere, capable of flying just meters above ground.

93. EXOSKELETON

Context:

DRDO organized the first international workshop on 'Emerging Technologies & Challenges for Exoskeleton' in Bengaluru.

What is Exoskeleton?

An exoskeleton is a **mobile machine resembling an insect's exoskeleton**, worn by a person. It's powered by motors, hydraulics, or pneumatics to aid limb movement. Applications include **aiding people with disabilities, assisting soldiers in carrying heavy loads**, and use in factories and assembly lines.



94. INITIATIVES OF WHO

Initiative	Description
WHO's First ever Patient Safety Rights Charter	<p>The World Health Organization (WHO) launched the Patient Safety Rights Charter at the Global Ministerial Summit on Patient Safety, developed under the theme "Engaging patients for patient safety" on World Patient Safety Day 2023. It aims to build patient-centered health-care systems, improve patient safety, and reduce the risk of harm, supporting the implementation of the Global Patient Safety (GPS) Action Plan 2021–2030. India has signed the GPS Action Plan 2021-2030.</p> <p>The Charter covers 10 Patient Safety Rights, including the right to timely, effective, and appropriate care, safe health-care processes and practices, qualified health workers, safe medical products, dignity, respect, and more.</p>
WHO prequalified the Euvichol-S vaccine for Cholera	<p>The WHO prequalified the Euvichol-S vaccine for Cholera, a simplified and cost-effective formulation of the oral cholera vaccine Euvichol-Plus.</p> <p>Meaning of Prequalification: "Prequalified" means that the vaccine has undergone a rigorous assessment by the WHO and has been deemed to meet international standards of quality, safety, and efficacy. The vaccine is suitable for procurement by United Nations agencies and other international organizations</p> <p>Cholera, caused by Vibrio cholerae bacteria, is transmitted through contaminated food or water, with the highest number of cases reported in the Middle East and Africa. India reported 132 cases in 2023 (till July).</p>

95. SUMMIT OF THE FUTURE 2024

Context:

UN Secretary-General Guterres highlights Multilateral Development Banks (MDB) reform as a key theme at the upcoming **Summit of the Future during UNGA**, praising the Indian G20 presidency's efforts.

About the Summit:

The Summit of the Future 2024 is a flagship event organized during the annual high-level UN General Assembly meeting in September. It focuses on key global issues, with a particular emphasis on **reforming multilateral development banks**

(MDBs) to address contemporary challenges like poverty and climate crisis.

Originating from the Our Common Agenda report, it emphasizes renewing trust and solidarity across nations and generations. Member States aim to create a Pact for the Future, reaffirming the UN Charter, reinvigorating multilateralism, and agreeing on solutions to current and future challenges.

What are MDBs?

MDBs are international financial institutions (e.g., World Bank Group and the Asian Development Bank) aiding developing countries with financial and technical assistance to foster economic development and reduce poverty.

Recommendations by the independent expert group on MDB's Reform (during India's G20 presidency) include tripling annual lending levels by 2030, adopting a triple mandate for MDBs to eliminate extreme poverty, and modernizing funding models.

96. THE GLOBAL ALLIANCE FOR INCINERATOR ALTERNATIVES (GAIA) ASIA PACIFIC

Context:

The **Global Alliance for Incinerator Alternatives (GAIA) Asia Pacific**, along with other environmental groups, has urged the **Association of Southeast Asian Nations (ASEAN)** to take **strong action against plastic pollution** ahead of **the Inter-governmental Negotiating Committee (INC-4) session**.

- Over **100 civil society organizations (CSOs)** emphasized the **urgent need for ASEAN to lead in negotiations for a global treaty on plastic pollution**, given the region's challenges with overflowing landfills, polluted waterways, and marine ecosystem destruction.
- The CSOs called for **legally binding measures to reduce plastic production and consumption**, focusing on the entire plastic lifecycle, **including phasing out single-use plastics**.

The **Global Alliance for Incinerator Alternatives (GAIA) Asia Pacific** focuses on **supporting innovative and zero waste solutions in the region**.

GAIA is a global network of **non-governmental organizations, grassroots organizations, and individuals who work towards a world without incineration and waste**.

They believe that the **planet's finite resources, health, and fragile biosphere** are endangered by inefficient and polluting production practices.

97. DRAGONFLY MISSION

Context: NASA has confirmed its **Dragonfly rotorcraft mission to Titan, Saturn's largest moon** will be scheduled for

2028.

- **Dragonfly, a "dual-quadcopter,"** will explore **Titan's organic compound-rich surface**, covering tens of kilometres in under an hour due to **Titan's dense atmosphere and low gravity**.
- Despite **primarily operating on the surface**, it will utilize **flight for transportation and science measurements**.
- Powered by a **radioisotope power system**, Dragonfly will conduct **operations during the day and recharge during the night**. Top of Form

98. FORESTS AS A NATIONAL ASSET

Context:

The Supreme Court of India emphasized in a recent judgment that **forests are a crucial national asset and a significant contributor to the country's financial wealth**.

- This ruling came amidst **criticism of the Forest Conservation (Amendment) Act of 2023**, which is accused of **facilitating encroachments in protected forests and promoting commercial exploitation**.
- The court **condemned the act of granting forest land to private individuals** and ordered an investigation against forest officials for **providing contradictory information about the land**.
- It also **imposed fines on both the state government and the private parties involved**.

99. GENOMIC ACCORDION

Context:

Mpox, a DNA virus, exhibits a **unique evolutionary strategy** known as the **genomic accordion**, involving **expansions and contractions of its genome**.

- Researchers identified **6.4-kilobase sections of the genome**, previously deemed unimportant, as **critical for human-to-human transmissibility and evolutionary adaptability**.
- Variations in certain genes influence the **virus's evolution, with different clades exhibiting varying levels of virulence**.
- Genomic surveillance plays a **crucial role in understanding and combating viral outbreaks**, allowing for **targeted interventions to mitigate health risks and prevent global spread**.

100. ETHYLENE OXIDE IN INDIAN SPICES

Context:

Following red flags raised by **food regulators in Hong Kong and Singapore** regarding the presence of **a cancer-causing ingredient in certain Indian spice products** from some brands, the Indian government **has ordered food commissioners to collect samples of spices from all manufacturing units in the country**.

- The harmful substance, **ethylene oxide**, has been classified as a **‘Group 1 carcinogen’ by the International Agency for Research on Cancer.**
- Ethylene oxide is **banned for use in food items in India.**

Ethylene oxide, primarily used as a **sterilizing agent and insecticide**, poses health risks including **irritation of the eyes, skin, nose, throat, and lungs**, as well as potential long-term effects on the **central nervous system and carcinogenic properties.**

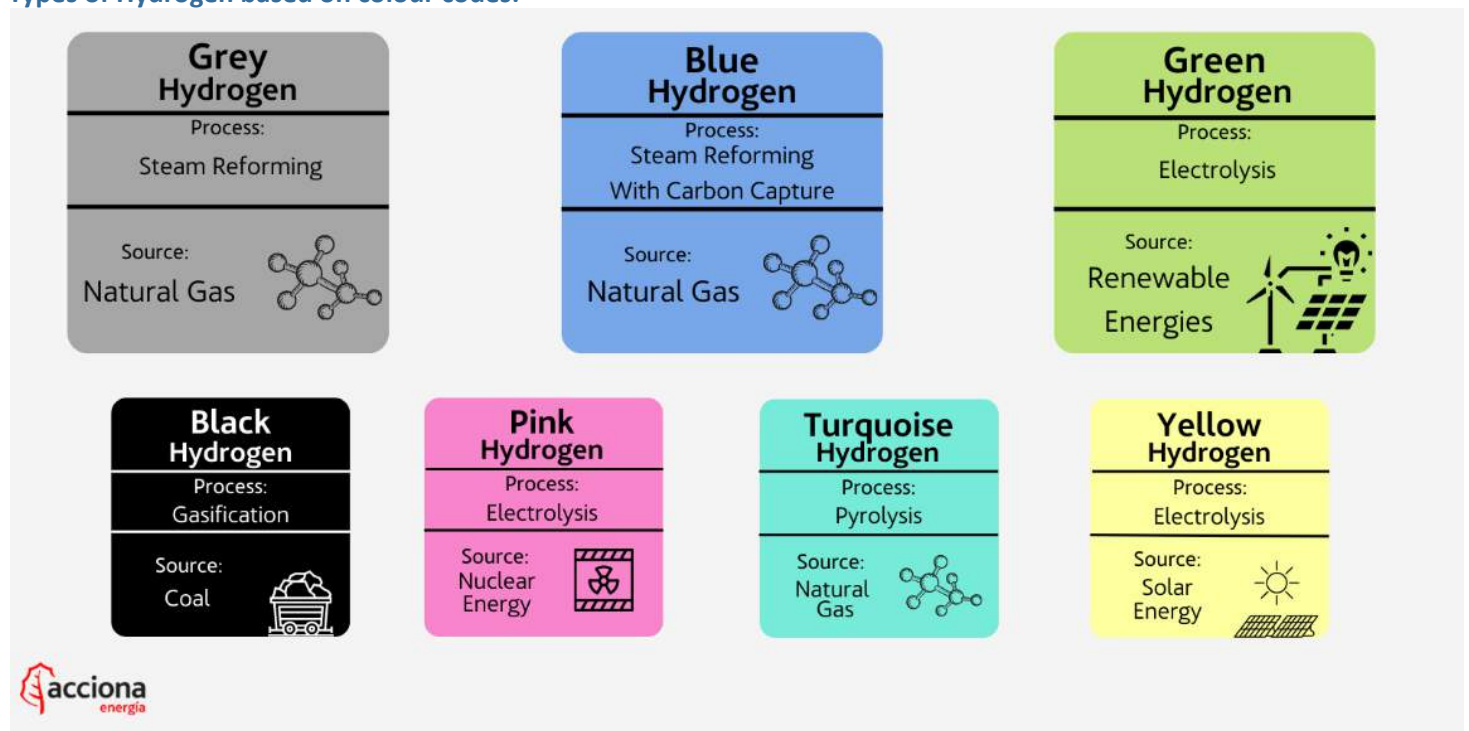
101. ‘PINK’ HYDROGEN

Context:

India is considering amending the **Atomic Energy Act, 1962**, to allow **private investments in the nuclear sector**, aiming to **boost nuclear capacity and promote clean energy** initiatives, **particularly hydrogen.**

- Currently, **the Act restricts private ownership of nuclear plants**, but proposed amendments would **enable private companies to participate in certain activities**, such as financing, project development, and equipment supply.
- The production of **‘pink’ hydrogen**, which is generated through **electrolysis powered by nuclear energy.**

Types of Hydrogen based on colour codes:



102. LLAMA 3

Context:

Meta has unveiled its most **advanced Large Language Model (LLM) yet**, the **Meta Llama 3**, which boasts **significant improvements in performance and capabilities over its predecessors.**

- Available in two sizes, **8B and 70B parameters**, **Llama 3 is integrated into Meta’s proprietary virtual assistant, Meta AI.**
- The model **surpasses previous benchmarks**, outperforming competitors like **Google’s Gemma 7B and Mistral’s Mistral 7B** in various evaluations, including language understanding and question-answering tasks.
- Meta emphasizes the responsible development of Llama 3, **providing trust and safety tools like Llama Guard 2 and Code Shield.**
- **Llama 3 is integrated into Meta AI** and **accessible for developers through platforms like Hugging Face** and cloud providers such as **Azure ML and Vertex AI.**

Large language models (LLMs) are **artificial intelligence (AI) programs** that use deep learning to **process large amounts of text data**. LLMs can perform a **variety of tasks**, including:

Translation, Summarization, Object recognition, Content generation, Classification, and Predicting.

103. ANDAMAN AND NICOBAR TO ESTABLISH WILDLIFE SANCTUARIES

Context:

The Andaman and Nicobar administration’s plan to establish wildlife sanctuaries on **islands traditionally managed and inhabited by the indigenous southern Nicobarese people** ignores their rights and disregards the ecological and social impacts.

Proposed Sanctuary	Description
Coral Sanctuary on Meroë Island	The government plans to establish a coral sanctuary
Megapode Sanctuary on Menchal Island	The proposed sanctuary aims to protect endemic Megapode birds
Leatherback Turtle Sanctuary on Little Nicobar Island	The administration seeks to create a sanctuary for leatherback turtles without consulting indigenous Nicobarese people, who traditionally use the island.

The Andaman Islands **consist of 572 islands**, with key ones including **North Andaman, South Andaman, Little Andaman, and Middle Andaman**. It boasts the **highest number of wildlife sanctuaries in India**, totalling 96, along with **9 national parks**.

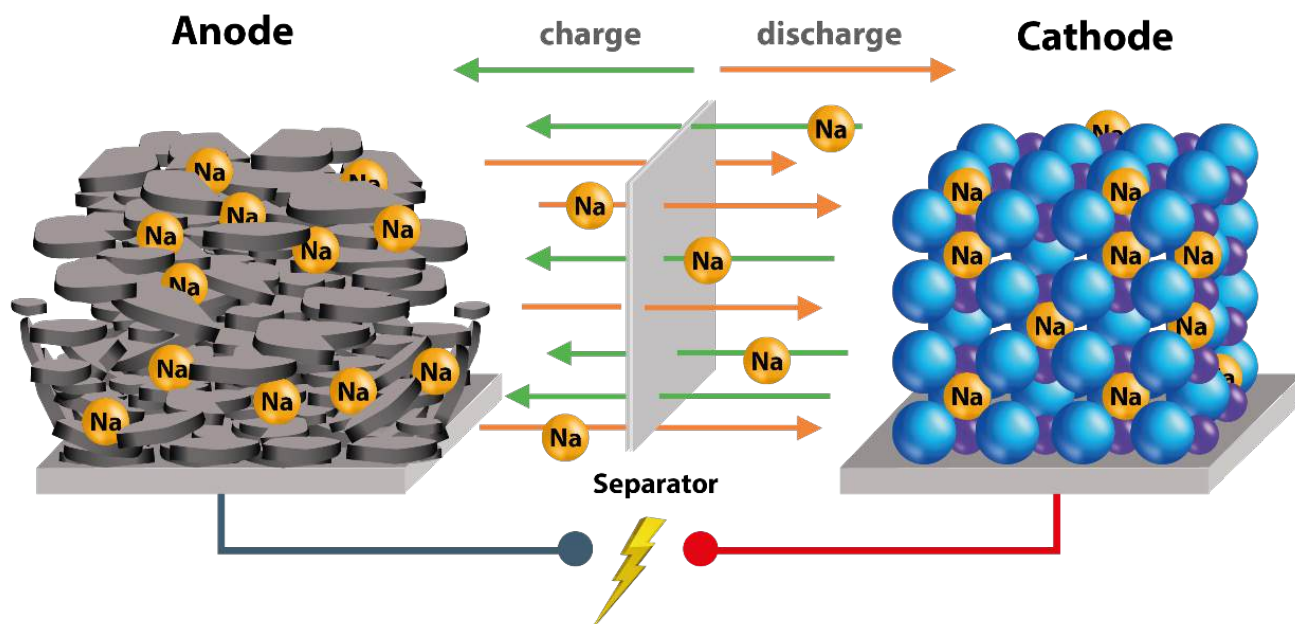
National Park/Sanctuary	Location	Features	Major Fauna
Campbell Bay & Galathea National Parks	Great Nicobar	Part of Great Nicobar Biosphere Reserve - Separated by a 12-km wide forest buffer zone . Galathea National Park is India’s southernmost	Giant robber crab, megapode, Nicobar pigeon, turtle species
Mahatma Gandhi Marine National Park	South Andaman	Protects mangroves, corals, and nesting sea turtles. Mostly fringing reefs	Mangroves, corals, nesting sea turtles
Mount Harriett National Park (Mount Manipur National Park)	South Andaman	The third-highest peak in the A&N archipelago. Renamed to honour Manipur’s freedom fighters	Andaman wild pigs, saltwater crocodiles, turtles, robber crabs
Rani Jhansi Marine National Park	Ritchie’s Archipelago, South Andaman	Located near Button Islands. Vegetation includes mangroves and evergreen forests	Spotted deer, water lizards, monitor lizards, fruit-eating bats, dugongs, dolphins, sea turtles, blue whales, corals
Saddle Peak National Park	Andaman and Nicobar Islands	The highest point of the A&N Islands. Features varied fauna and flora	Andaman wild pig, Andaman imperial pigeon, dolphins, whales, saltwater crocodile
Other National Park	North Button Island NP, Middle Button Island NP, South Button Island NP		

104. SODIUM-ION BATTERY

Context:

South Korean researchers have developed a **high-power hybrid sodium-ion battery** capable of **charging in seconds**, marking a **potential breakthrough in energy storage technology**.

- **Sodium, being nearly 1000 times more abundant than lithium**, offers a cheaper and more feasible energy source.
- This development suggests the **battery could be a viable alternative to lithium-ion batteries, meeting increasing demands for low-cost energy storage** devices with high energy density.



Feature	Sodium-ion Batteries	Lithium-ion Batteries
Cost	Generally lower cost due to the abundance of sodium (Sodium is 500-1000 times more abundant than lithium).	Higher cost due to the scarcity of lithium and its extraction process.
Energy Density	Lower energy density compared to lithium-ion batteries.	Higher energy density, providing more power in a smaller size.
Cycle Life	Generally lower cycle life compared to lithium-ion batteries.	Longer cycle life, retaining capacity over more charge-discharge cycles.
Safety	Generally safer due to the less reactive nature of sodium.	Generally safe but can be prone to thermal runaway under certain conditions.
Environmental Impact	Sodium is more abundant and less harmful to the environment .	Lithium extraction and disposal can have environmental consequences.
Application	Suitable for large-scale energy storage and grid applications.	Widely used in consumer electronics, electric vehicles, and portable devices.

105. NEPTIS PHILYRA

Context:

Butterfly enthusiasts made a remarkable discovery in **Tale Valley Wildlife Sanctuary, Lower Subansiri district**, India, spotting the **elusive Neptis philyra**, also known as the **long-streak sailor**, for the first time in the country.

- The butterfly, initially described in **Russia in 1859**, is native to East Asia but had not been recorded in India before.



106. GOLDEN TREVALLY

Context:

The **ICAR-Central Marine Fisheries Research Institute** achieved a significant breakthrough in mariculture by successfully developing **seed production technology for golden trevally, a high-value marine fish.**

- This accomplishment is **expected to create new opportunities for sustainable seafood production** and **enhance India's mariculture potential.**

Golden trevally is considered a **promising species for marine aquaculture** due to its **rapid growth, high-quality meat, and strong market demand** for consumption and ornamental purposes.



107. RAMPAGE MISSILES

Context:

Israel recently utilized **the Rampage missile** in an **attack on an Iranian military base.**

- The Rampage missile is an **air-to-surface weapon** developed by **Israel Aerospace Industries and Israeli Military Industries Systems.**

Features of Rampage:

- Designed for **precision strikes, it targets high-quality, well-protected sites** such as communication centres and air force bases.
- The missile boasts **supersonic speeds, making it challenging to intercept.**
- With a range exceeding 190 miles, it can be **deployed from aircraft or as a stand-alone system, utilizing GPS/INS guidance navigation and anti-jamming capabilities.**
- Additionally, it can **adjust its trajectory mid-flight and operate effectively in various weather conditions,** ensuring precise target hits.

108. MILITARY EXERCISES IN NEWS

Name	Description
Exercise Poorvi Lehar	Exercise Poorvi Lehar (XPOL) is a maritime exercise conducted by the Indian Navy along the East Coast. Its aim is to validate procedures for assessing the Navy's preparedness to tackle Maritime Security challenges in the region. The exercise involved participation from Ships, Submarines, Aircraft, and Special Forces.
Multi-nation Combined Task Force-150 under Combined Maritime Forces (CMF)	The Indian Navy seized drugs in the Arabian Sea as part of the multinational Combined Task Force-150 under CMF. This operation, known as Operation Crimson Barracuda , marks the first such initiative by the Indian Navy since joining CMF in 2022. CMF is a multinational maritime partnership focused on upholding the Rules-Based International Order by countering illicit nonstate actors on the high seas and promoting security, stability, and prosperity in international waters. With 42 member countries (including India), CMF's main focus areas include defeating terrorism, preventing piracy, encouraging regional cooperation, and promoting a safe maritime environment. Participation in CMF is voluntary , and it is commanded by a U.S. Navy Vice Admiral
Exercise Dustlik	The fifth edition of the annual Exercise DUSTLIK, a joint military exercise between India and Uzbekistan, is being held from April 15–28, 2024, in Termez, Uzbekistan. The exercise aims to bolster bilateral military cooperation , improve combined capabilities, and promote interoperability. It specifically concentrates on conducting joint operations in semi-urban and mountainous terrain.

109. COMPULSORY CONVERTIBLE DEBENTURES

Context:

The **Competition Commission of India (CCI)** has **approved the International Finance Corporation’s (IFC) subscription to Compulsory Convertible Debentures (CCDs)** of Napino Auto and Electronics Limited (Napino).

- **IFC, established in 1956**, aims to **promote economic growth in developing countries** by fostering private sector development.

Compulsory convertible debentures (CCDs) are **debt instruments that are automatically and mandatorily converted into equity** after a specific time period or when certain events occur.

CCDs are hybrid instruments that are debt when issued but are **guaranteed to be converted into equity at a later date**.

CCDs help companies **repay debt without spending cash and benefit investors by offering fixed interest and later ownership of company shares**.

110. ALTERNATE WETTING AND DRYING (AWD) METHODS

Context:

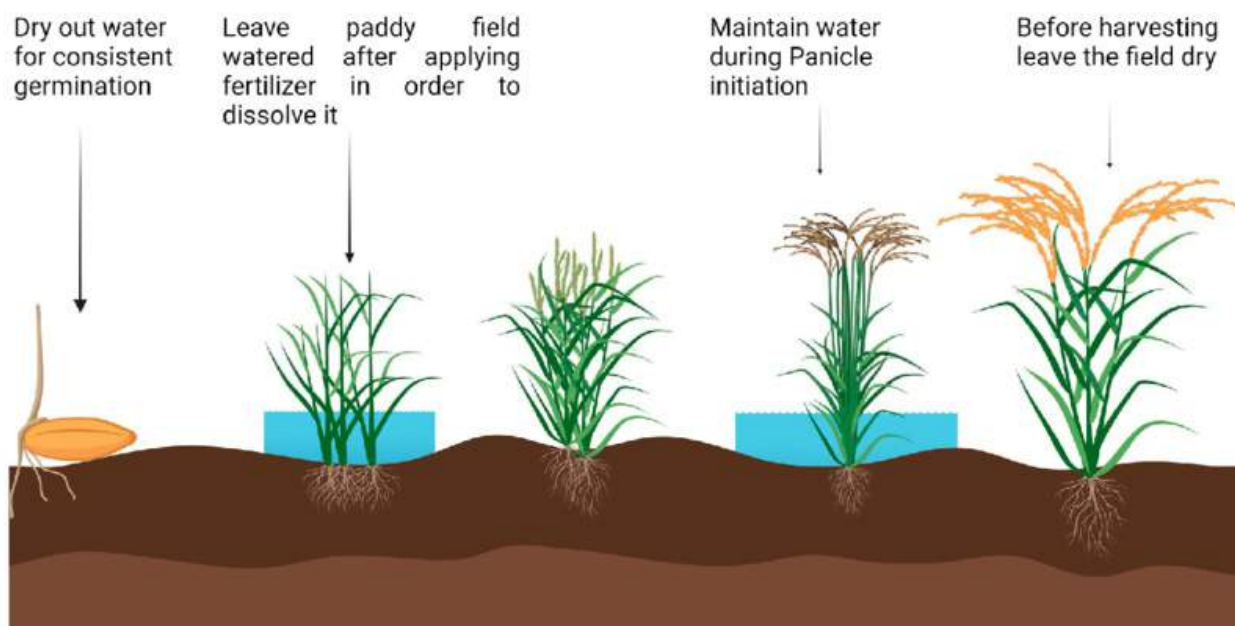
In Vietnam, where rice cultivation contributes **significantly to greenhouse gas emissions**, some farmers are embracing innovative techniques to mitigate methane production.

Traditionally, rice paddies emit substantial amounts of methane **due to the anaerobic conditions** created by flooding. However, farmers are adopting alternate wetting and drying (AWD) methods, which reduce water usage and methane emissions.

What is AWD?

It stands for Alternate Wetting and Drying, a water-saving technique used in rice cultivation. Instead of **continuously flooding rice fields**, AWD involves alternating periods of flooding and drying, allowing the **soil to partially dry out between irrigation cycles**. This method helps to reduce water usage in rice paddies while also decreasing methane emissions, as the intermittent drying reduces the anaerobic conditions that promote methane production.

The alternate wetting and drying (AWD) technique



111. SATELLITE TECHNOLOGY DAY

Context:

The U R Rao Satellite Centre (URSC) celebrated Satellite Technology Day (STD) - 2024, marking the 50th anniversary of the successful launch of India's first satellite, Aryabhata, on April 19, 1975.

About Aryabhata:

- Aryabhata was India's first satellite, launched on April 19, 1975 from Kapustin Yar, a Soviet rocket launch and development site.
- The satellite was built by the Indian Space Research Organisation (ISRO) and launched by the Soviet Union as part of the Soviet Interkosmos program.
- It was named after the 5th-century Indian astronomer and mathematician Aryabhata.
- The satellite was instrumented to explore conditions in Earth's ionosphere, measure neutrons and gamma rays from the Sun, and perform investigations in X-ray astronomy.
- It carried out three experiments, one each in X-ray astronomy, Solar Physics and Aeronomy.

112. WHO GLOBAL SODIUM BENCHMARKS

Context:

The World Health Organization (WHO) has issued the second edition of its global sodium benchmarks, providing updated reference values for sodium content to combat chronic conditions linked to high blood pressure and obesity.

- The first edition of the WHO global sodium benchmarks, published in May 2021, contained 10 pre-determined benchmarks for different food categories.
- Developed collaboratively with governments, organizations, and private sector partners, these benchmarks aim to inform policy-making and support efforts to reduce sodium consumption globally.
- Part of a broader initiative, they emphasize improving nutrition systems, enhancing food accessibility, and raising public awareness about the risks of chronic conditions and the importance of healthy lifestyles.

113. PULICAT BIRD SANCTUARY

Context:

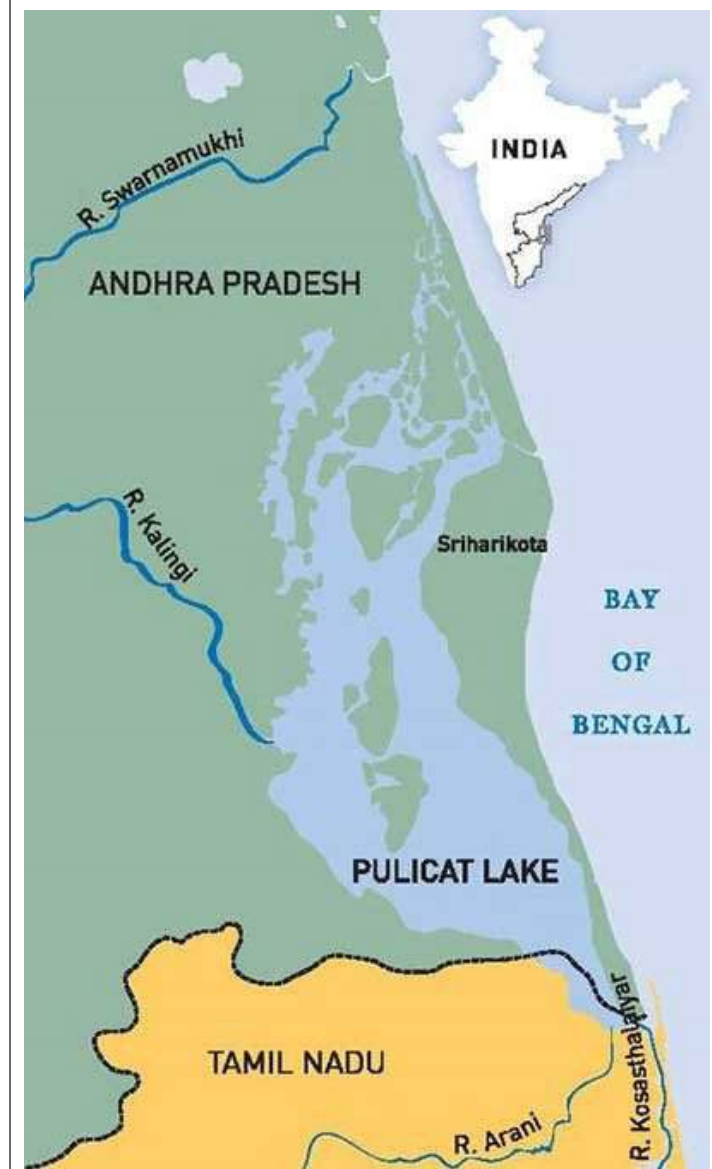
The Tamil Nadu government is considering denotifying a significant portion of the Pulicat bird sanctuary, potentially excluding Patta land in 13 revenue villages from the sanctuary area.

- This move follows a process under the Wildlife (Protection) Act of 1972, where people were invited to submit written claims for the land within a two-month period.
- The denotification process involves settling claims of affected individuals before issuing a final notification under the Wildlife (Protection) Act.

About Pulicat Bird Sanctuary:

Pulicat Lake Bird Sanctuary is a wildlife refuge in the Tirupati district of Andhra Pradesh and the Thiruvallur District of Tamil Nadu, India.

It's a popular birding spot in South India and is known for its greater flamingos, White Ibis, Grey Pelicans, Grey Herons, Open Billed Storks, Egrets, Spot Billed Ducks, Reef Herons, Painted Storks, Spoon Bills, and Cormorants.



114. PAYMENTS AGGREGATOR

Context:

PayU, a digital financial services provider, has received in-principle authorization from the Reserve Bank of India (RBI) to operate as a Payments Aggregator (PA) under the Payment Settlements Act, 2007.

- With this approval, PayU can onboard new merchants on its platform.

A payment aggregator is a third-party service that allows

the data used to make the change, raising concerns about the safety of consuming these products.

The Food Safety and Standards Authority of India (FSSAI) is a statutory body under **the Ministry of Health & Family Welfare, Government of India.**

It was established under the **Food Safety and Standards Act, 2006**, to ensure **food safety and hygiene in India.**

FSSAI is responsible for **laying down science-based standards for food products, and regulating their manufacturing, storage, distribution, sale, and import to ensure the availability of safe and wholesome food for human consumption.**

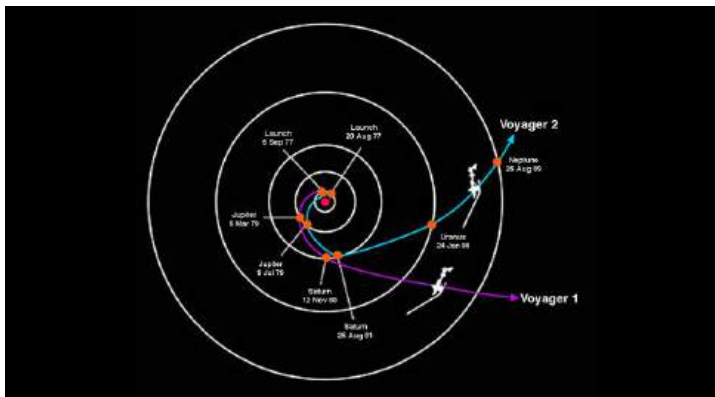
It also **promotes public awareness and provides guidance on food safety and nutrition.**

119. VOYAGER 1

Context:

Voyager 1, Earth's farthest spacecraft, is back online after engineers remotely fixed its 46-year-old systems.

The Voyager mission, conducted by NASA, launched **Voyager 1 on September 5, 1977, followed by Voyager 2 on August 20, 1977.** Its objective was to explore the outer planets of the solar system: Jupiter, Saturn, Uranus, and Neptune. Key features include flybys of Jupiter and Saturn, with Voyager 2 continuing to Uranus and Neptune, becoming the only craft to visit these planets. Both Voyagers **entered interstellar space** after their primary missions. Their discoveries include **detailed images of planets, moons, and atmospheric data.** Voyager 1 made groundbreaking discoveries such as **active volcanoes on Io and Saturn's ring structure.**



120. PARO STATEMENT

Context:

The **Sustainable Finance for Tiger Landscapes Conference**, held in Paro, Bhutan, concluded with the **Paro Statement**, committing to mobilize an **additional \$1 billion over the next decade to conserve tigers and their landscapes.**

- **Tiger Range Countries present included Bangladesh, Bhutan, Cambodia, China, India, Kazakhstan, Malaysia, Nepal, Thailand, and Vietnam.**

The Tiger Count

Tiger numbers in India:

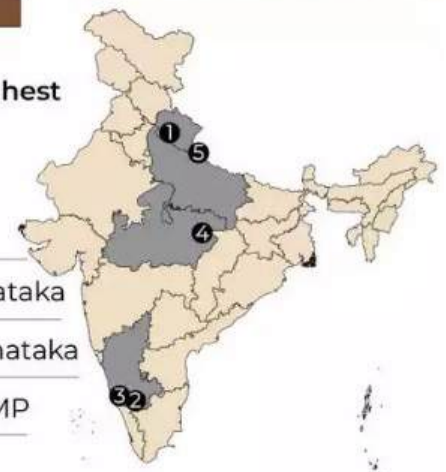


States with highest tiger numbers



Reserves with highest tiger population

- 1 Jim Corbett, Uttarakhand
- 2 Bandipur, Karnataka
- 3 Nagarhole, Karnataka
- 4 Bandhavgarh, MP
- 5 Dudhwa, UP



TOI FOR MORE INFOGRAPHICS, DOWNLOAD THE TIMES OF INDIA APP

About the Tiger Conservation Coalition

The **Tiger Conservation Coalition** brings together leading biologists and experts in wildlife crime, human-wildlife coexistence, policy, finance, development and communications, with unprecedented alignment on achieving tiger conservation at scale.

Its member organisations include **the International Union for Conservation of Nature (IUCN), the Environmental Investigation Agency; Fauna & Flora; Natural State; Panthera; TRAFFIC; the United Nations Development Programme (UNDP); the Wildlife Conservation Society; Worldwide Fund for Nature (WWF) and the Zoological Society of London (ZSL).**

121. ROCKS OR CRYSTAL MAZE 2

Context:

The Indian Air Force (IAF) achieved a milestone with the successful test firing of **an air-launched ballistic missile, known as ROCKS or Crystal Maze 2**, capable of hitting targets over 250 kilometres away.

About Crystal Maze 2 (also known as ROCKS)

It is a **medium-range ballistic missile** developed by Israel. It has a strike range of **over 250 km** and is classified as an **air-to-surface missile**. Designed to operate in GPS-denied environments, it aims to **strike high-value stationary** and relocatable targets, including long-range radar and air defence systems.

122. WEAPON-FREE OUTER SPACE

Context:

Russia blocks a US and Japan-sponsored draft resolution urging against space-based **nuclear weapons** after its amendment **extending the ban to all weapons failed to pass**.

- The resolution called for all states, **particularly those with significant space capabilities**, to contribute to the **peaceful use of outer space and prevent an arms race there**.

However, the **Security Council rejected the resolution** with 13 members in favour, **one against (Russia), and one abstention (China)**.

123. CORPORATE SUSTAINABILITY DUE DILIGENCE LAW

Context:

The European Parliament gave its approval for the **Corporate Sustainability Due Diligence Directive (CSDDD)**, a significant step toward its formal adoption by the **European Union**.

- The CSDDD introduces a **legal liability for companies regarding environmental and human rights violations within their supply chains**.
- It applies not only to a company's direct actions but also **to its subsidiaries and supply chain**.
- The CSDDD will be **phased in over five years, affecting larger companies first**.

Despite being diluted from its original proposal, the directive establishes a **standard of corporate due diligence on sustainability issues, focusing on environmental concerns, climate change, and human rights**.

124. MARRAKESH AGREEMENT

Context: The **World Trade Organization (WTO)** commemorates the **30th anniversary of the Marrakesh Agreement, a milestone in global trade cooperation**

About Marrakesh Agreement:

The **Marrakesh Agreement**, also known as the **Agreement Establishing the World Trade Organization (WTO)**, was signed on April 15, 1994, in Marrakesh, Morocco by 123 nations.

The agreement defines the WTO's structure, functions, and scope, and incorporates agreements negotiated under the **General Agreement on Tariffs and Trade (GATT)** and agreements concluded during the **Uruguay Round**.

The **WTO officially came into existence on January 1, 1995**.

125. NETWORK AS A SERVICE (NAAS)

Context:

In India's rapidly advancing internet economy, **embracing Network as a Service (NaaS) holds promise** for enhancing user experiences.

What is Network as a Service (NaaS)?

Network as a Service (NaaS) is a cloud-like networking model where network resources are provided to customers on demand. It offers networking functionality without the need for customers to invest in hardware or manage infrastructure directly.

With over 850 million active internet users and a digital economy projected to contribute 20% to GDP by 2026, **NaaS offers a cloud-like networking model**, providing on-demand network resources without the need for direct infrastructure management.

Other such terminologies:

Concept	Explanation	Example
SaaS	Software as a Service (SaaS) delivers software applications over the internet.	Google Workspace (formerly G Suite), Microsoft Office 365, Salesforce, Dropbox
PaaS	Platform as a Service (PaaS) provides a platform allowing customers to develop, run, and manage applications without dealing with infrastructure.	Heroku, Microsoft Azure App Service, Google App Engine
IaaS	Infrastructure as a Service (IaaS) delivers virtualized computing resources over the Internet, allowing users to rent servers, storage, and networking resources.	Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP), DigitalOcean

126. CLIMATE TECHNOLOGY CENTRE AND NETWORK (CTCN)

Context:

The Climate Technology Centre and Network (CTCN) celebrates its 10-year anniversary as a key player in advancing climate technology and innovation.

About Climate Technology Centre and Network (CTCN):

- Established as the implementation arm of the United Nations Framework Convention on Climate Change (UNFCCC) Technology Mechanism and hosted by the UN Environment Programme (UNEP), the CTCN facilitates the development and transfer of environmentally sound technologies for low-carbon and climate-resilient development.
- It operates through a global network of over 760 civil society, finance, private sector, and research institutions, providing technical assistance and capacity building to developing countries upon request.
- Over the past decade, the CTCN has funded over 300 technical assistance projects across 112 developing nations, supporting them in meeting their sustainable development commitments under the Paris Agreement.
- Through projects spanning various sectors such as green building standards, drought risk modelling, industrial energy efficiency, and policy development for e-mobility, the CTCN aims to catalyse climate resilience and innovation globally.

127. AUTHORISED ECONOMIC OPERATOR (AEO) STATUS

Context:

The Ministry of Finance has granted Authorised Economic Operator (AEO) status to the gem and jewellery sector, as part of efforts to promote ease of doing business.

- Asian Star, a leading diamond and diamond jewellery manufacturer, became the first in the industry to receive AEO status.

About the Authorised Economic Operator (AEO) program:

It operates under the World Customs Organization (WCO) SAFE Framework. Its goal is to boost international supply chain security and smooth the movement of lawful goods. Aligned with World Trade Organization trade facilitation agreements, it allows Indian Customs to strengthen cargo security through collaboration with key stakeholders in the international supply chain.

An entity with an AEO status is considered a 'secure' trader and a reliable trading partner. Benefits of AEO status include expedited clearance times, fewer examinations, and improved security and communication between supply chain partners.

In India, the AEO Programme (a voluntary initiative) was introduced by the Central Board of Indirect Taxes and Customs (CBIC) in India in 2011. It aims to simplify customs procedures and expedite clearances for businesses demonstrating high-security standards in the supply chain.

128. ANTIHISTAMINES

Context:

Antihistamines are over-the-counter drugs used to treat short-lived allergic reactions like sneezing or itching.

- They work by blocking histamine receptors in the body.

What is Histamine?

It is a key mediator of allergy and inflammation, with roles in autoimmune conditions, gastric acid secretion, and hematopoiesis. It can be released in response to various factors, including allergens and physical injury. Most histamine is stored in mast cells and basophils.

Histamine binds to different receptors (H1, H2, H3, and H4) in different locations, triggering allergic responses. Antihistamines target these receptors to alleviate allergy symptoms. Ongoing research focuses on specialized drugs targeting H3 and H4 receptors to treat neurological and immunological disorders.

129. NEPHROTIC SYNDROME

Context: The use of fairness creams has been linked to nephrotic syndrome, with high levels of mercury found in the blood and urine of affected individuals. The study, published in Kidney International, reports 15 cases of nephropathy traced to the use of fairness creams.

Nephrotic Syndrome is a kidney disorder characterized by excessive protein in the urine due to malfunctioning kidney filters called glomeruli. Cosmetic use, specifically the use of fairness creams containing high levels of mercury, has been linked to Nephrotic Syndrome. The mercury in these creams can be absorbed through the skin and lead to systemic toxicity, ultimately causing damage to the kidneys and resulting in Nephrotic Syndrome.

130. PROJECT ISHAN

Context:

India has kickstarted the process of unifying its four airspace regions under Project Indian Single Sky Harmonized Air Traffic Management at Nagpur (ISHAN).

- This initiative is expected to enhance air traffic management, benefiting airlines and passengers by making operations more efficient and safer.

- Challenges include **technological implementation, process changes, and retraining of staff.**

Currently, Indian airspace is **divided into 4 FIRs i.e. Mumbai, Kolkata, Delhi, Chennai**, and a sub-FIR in Guwahati, each managed separately.

131. INHERITANCE TAX

Context:

In India, the debate over **inheritance tax as a tool to address economic inequality** is ongoing.

What is Inheritance Tax?

It is a **tax levied on the assets inherited by individuals** from a deceased person. The tax rate depends on the value of the inherited property and the heir’s relationship to the decedent.

Unlike estate tax, which taxes the **total value of a deceased person’s estate**, inheritance tax is specifically **levied on inherited property**. While many countries impose inheritance taxes, including the United States (where inheritance tax is imposed on money or property inherited from a deceased person’s estate), India currently does not. **Estate duty**, imposed from 1953 with tax rates reaching up to 85%, was **abolished in 1985 due to unpopularity**.

Similarly, **gift tax and wealth tax**, introduced earlier, were abolished in 1998 and 2015 respectively, although gift tax was briefly reinstated in 2004.

Pros of inheritance tax include **potential revenue generation for the government and reducing wealth inequality**, promoting equality of opportunity. However, it also raises concerns about **tax evasion, discouraging hard work, and potential double taxation** of already taxed assets.

132. UN PANEL ON “CRITICAL ENERGY TRANSITION MINERALS”

Context:

The United Nations recently launched a new panel on **“Critical Energy Transition Minerals”** to address the challenges of the **“material-energy nexus”** and promote responsible and fair value chains.

With 23 countries (including India) and the African Union on board, along with **14 non-governmental groups**, the panel aims to foster dialogue and prevent **negative resource nationalism**, with both China and the United States as key members.

The Panel further aims to **establish global common princi-**

ples for critical energy transition minerals, addressing equity, transparency, sustainability, and human rights throughout the value chain.

Other initiatives for Critical Minerals:

- Global Mineral Security Partnership (MSP)** boosts critical mineral supply chains, with India involved
- Critical Minerals Mapping Initiative** is underway
- UN Framework on Just Transitions for Critical Energy Transition Minerals** launching by 2024 end
- India identifies 30 critical minerals** for self-reliance.
- India’s Partnerships with Australia and Argentina** for lithium and cobalt
- Khanij Bidesh India Limited (KABIL)** was formed for strategic mineral sourcing abroad.

133. SALMONELLA CONTAMINATION IN SPICES

Context:

Over the past six months, **US customs authorities** have rejected **31% of all spice-related shipments from Mahashian Di Hatti (MDH)** due to **salmonella contamination concerns**.

About Salmonella:

- Salmonella** is a genus of bacteria that **can cause food poisoning in humans**.
- It is one of the **most common causes of foodborne illness worldwide**.
- Salmonella bacteria typically **infect the intestinal tract** and can **cause symptoms such as diarrhoea, abdominal cramps, fever, and vomiting**.
- Contamination usually occurs through the **consumption of contaminated food or water, particularly raw or undercooked poultry, eggs, meat, and dairy products**.
- Proper food handling, cooking, and hygiene practices are essential for preventing salmonella infections.

134. BIOHACKING

Context:

Biohacking is **gaining traction in India**, with enthusiasts experimenting with various techniques like **cryotherapy and IV therapy**.

What is Biohacking?

Biohacking involves **using scientific knowledge and experimentation to optimize one’s body and mind**. It encompasses various practices aimed at improving physical and mental performance, longevity, and overall well-being.

Examples of biohacking include:

- Dietary Modifications:** Following specific diets like ketogenic diet or intermittent fasting to enhance energy levels and metabolic health.
- Supplementation:** Taking supplements such as vitamins, minerals, or nootropics to improve cognitive

- function, mood, or physical performance.
- Physical Training:** Engaging in tailored exercise routines, including high-intensity interval training (HIIT) or strength training, to build strength, endurance, and resilience.
 - Sleep Optimization:** Employing techniques like sleep tracking, creating ideal sleep environments, or using sleep aids to enhance sleep quality and duration.
 - Mindfulness Practices:** Practicing meditation, deep breathing exercises, or mindfulness techniques to reduce stress, improve focus, and promote mental well-being.
 - Biometric Monitoring:** Using wearable devices or apps to track metrics such as heart rate variability, sleep patterns, and activity levels to gain insights into overall health and performance.
 - Biofeedback Devices:** Utilizing devices like neuro-feedback or heart rate variability monitors to train the body's physiological responses and improve stress management and emotional regulation.

- These guidelines, part of the **anti-money laundering (AML) and counter-terrorism financing regime**, involve collaborations with regulatory bodies.

The New Indicators are:

Sector	New Alert Indicators
Capital Markets	Mis-utilization of client funds by stockbrokers
Depositories	Identification of suspicious off-market transfers
Insurance Sector	Alerts for fraud cases experienced by insurance firms analyzed from the AML/CFT perspective
Online Payment Gateways	Speed of transactions leading to AML/CFT risks
VDA or Cryptocurrency Service Providers	Directions to register with FIU to carry out "enhanced due diligence to implementation of travel rule." Travel Rule, extended to crypto companies in 2019 by FATF, requires businesses to collect and share the personal data of participants in a transaction.
Credit Rating Agencies	Timely reporting of STRs to FIU. "STR" stands for "Suspicious Transaction Report." Identification of serious corporate frauds with AML/CFT implications
Debenture Trustees	Periodic reports from issuers of debentures. Taking appropriate action in the interest of debenture holders upon noticing breaches of trust deed or law
Real Estate Agents (DNFBP)	Guidelines for STR reporting under PMLA

135. NILGIRI TAHR

Context:

The **Tamil Nadu government** is conducting a **three-day survey to estimate the population of the Nilgiri Tahr**, a species listed as endangered by the IUCN

Project Nilgiri Tahr



Project Nilgiri Tahr of Tamil Nadu Forest (India's first) aims to restore the fragmented habitat especially **Shola grasslands** where it thrives, reintroduce the **Tahr population** in its historic habitat and ensure proper rehabilitation facilities are provided



About Nilgiri Tahr

- Only mountain ungulate in Southern India among the **12 species present** in India.
- Population:** It's population has been estimated at 3,122 in the wild (WWF India 2015 estimates)
- It is **endemic** to Western Ghats and locally known as '**Varaaadu**'.
- Threats:** A large part of its population has been wiped out from its historical range of Western Ghats. The existing populations are under severe stress due to **habitat loss and hunting**
- State animal** of Tamil Nadu
- IUCN:** Endangered

Ungulates consists of large mammals with hooves.



The shola forest-grassland is the **tropical montane forest** found in the upper reaches of India's Western Ghats. This mosaic ecosystem is native only to the southern Western Ghats and found in the high altitude mountains of Kerala, Tamil Nadu and Karnataka.



136. NEW ALERT INDICATORS UNDER PMLA

Context: India's financial intelligence unit (FIU) issues **new alert indicators under PMLA for various sectors to combat money laundering** and terrorism financing.

About Financial Intelligence Unit (FIU) India:

FIU-IND, established in 2004, operates as an **independent body** reporting directly to the Economic Intelligence Council led by the Finance Minister. Its functions include receiving, **analyzing, and disseminating information** on suspicious financial transactions. It coordinates efforts with national and international agencies to combat money laundering and terror financing. Additionally, India employs specialized agencies like the **Enforcement Directorate and Central Bureau of Investigation** and participates in international cooperation through memberships in organizations like FATF and the Eurasian Group.

SPORTS CORNER

1. 2026 COMMONWEALTH GAMES

Context:

Singapore has decided **against hosting the 2026 Commonwealth Games**, following Malaysia's lead. The Commonwealth Games Federation has been searching for a **new host since Victoria, Australia withdrew** due to escalating costs. Despite a £100 million incentive, Malaysia declined the opportunity last month due to financial concerns.

About Commonwealth Games:

The Commonwealth Games is a **quadrennial (occurring every 4 years) international multi-sport event** involving athletes from the **Commonwealth of Nations**. It originated in **1930 as the British Empire Games** and evolved into its current format, embracing athletes with disabilities since 2002 and achieving gender equality in medal events in 2018. Hosted by various cities, Australia has held the Games the most times. The most recent Games were in **Birmingham in 2022**. India hosted the event in 2010 (in Delhi)

2. DOPING IN SPORTS

Context:

India maintains its **unfortunate status as one of the top countries for doping cases**, with **3.2%** of samples testing positive according to WADA's 2022 statistics.

India has the highest percentage of positive results for **both 2000-plus and 1000-plus samples**. Certain sports like wrestling, where India has Olympic success, contribute to this trend, with over 6% positive results from 285 samples.

What is Doping?

Doping refers to the use of **prohibited substances or methods to enhance athletic performance**.

Reasons for doping include seeking publicity, recovering from injury, technological advancements, and a win-at-all-costs mindset.

Doping undermines fair play, compromises the spirit of sport, and contradicts the pursuit of excellence. It goes against values like **perseverance and courage, hampers moral values in sports**, and rewards wrongdoers.

To learn about the Anti-Doping Bill: [Click Here](#)

National Anti-Doping Agency (NADA):

It was set up as a **registered society under the Societies Registration Act of 1860** on 24th November 2005 with a mandate for Dope-free sports in India. The primary objectives are to **implement anti-doping rules as per the WADA** (World Anti-Doping Agency) code, regulate dope control programmes, promote education and research and create awareness about doping and its ill effects.

World Anti-Doping Agency (WADA):

It was set up in **November 1999 and was set up under the International Olympic Committee**. WADA is recognised by the UNESCO International Convention against Doping in Sport (2005). WADA's primary role is to **develop, harmonize, and coordinate anti-doping regulations** across all sports and countries. It does so by ensuring proper **implementation of the World Anti-Doping Code (WADA Code)** and its standards, conducting investigations into doping incidents, conducting research on doping, and educating sportspersons and related personnel on anti-doping regulations.

MAPPING

INTERNATIONAL

1. AFRICA'S AFAR TRIANGLE

Context:

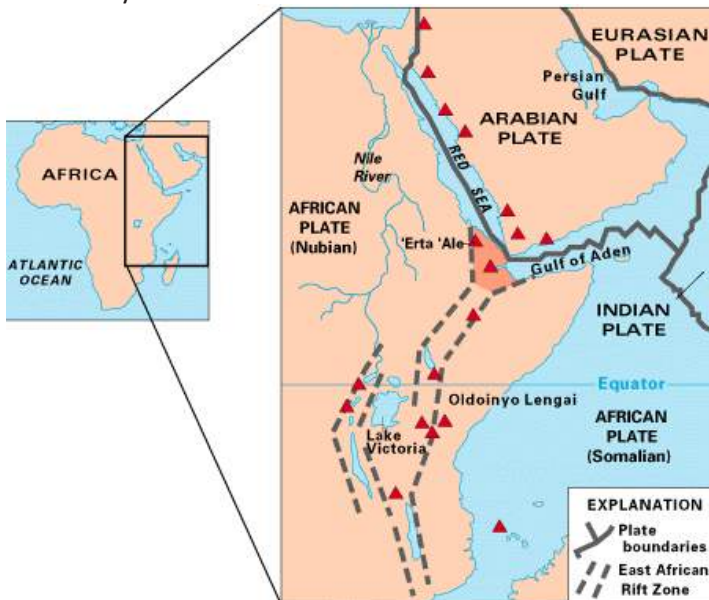
Geologists have discovered a **fault in Africa's Afar Triangle**, indicating a potential formation of the **world's sixth ocean**

Causes for the rift:

This geological phenomenon is driven by **tectonic plate movements**, particularly in the **East African Rift system**. The rift, caused by the separation of tectonic plates, could split the African continent in **5 to 10 million years**, leading to the creation of a new ocean basin.

About Afar Triangle:

It is part of the **Great Rift Valley in East Africa** and is a geological depression known for its significance in human evolution. It **overlaps Eritrea, Djibouti, and the Afar Region of Ethiopia and contains Lake Assal**, Africa's lowest point. The region experiences extreme heat and drought, with some of the **hottest temperatures on Earth**. It is bordered by the Ethiopian Plateau, the Danakil block, the Somali Plateau, and the Ali-Sabieh block. Fossil sites in the Afar region, such as **Hadar and Dikika**, have yielded important discoveries related to early hominins and human tool culture.



Five oceans on Earth (from largest to smallest):

1. Pacific Ocean
2. Atlantic Ocean
3. Indian Ocean
4. Southern Ocean
5. Arctic Ocean

2. CAMBODIA (CYBER-SLAVERY)

Context:

Hundreds of Indians were **rescued from cyber-scam factories in Cambodia** after being promised jobs but forced into **illegal online work (ranging from money laundering to love scams)**.

About Cyber-Slavery:

Cyber-slavery **exploits people in the digital world, luring victims with false job promises** and forcing them into online scams. This modern form of human trafficking is emerging as a severe and widespread organized crime.

About Cambodia:

Cambodia is a Southeast Asian nation whose **landscape spans low-lying plains, the Mekong Delta, mountains and the Gulf of Thailand coastline**. In the country's northwest are the ruins of Angkor Wat, a massive stone temple complex built during the **Khmer Empire**.



3. EARTHQUAKE IN TAIWAN

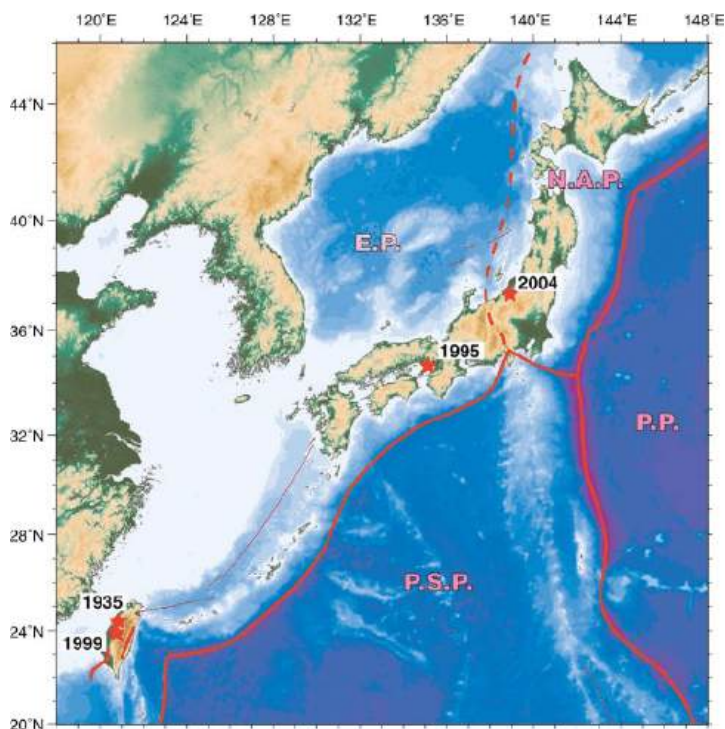
Context:

A powerful earthquake of **7.2 magnitude** struck Taiwan.

What makes Taiwan and Japan so prone to earthquakes?

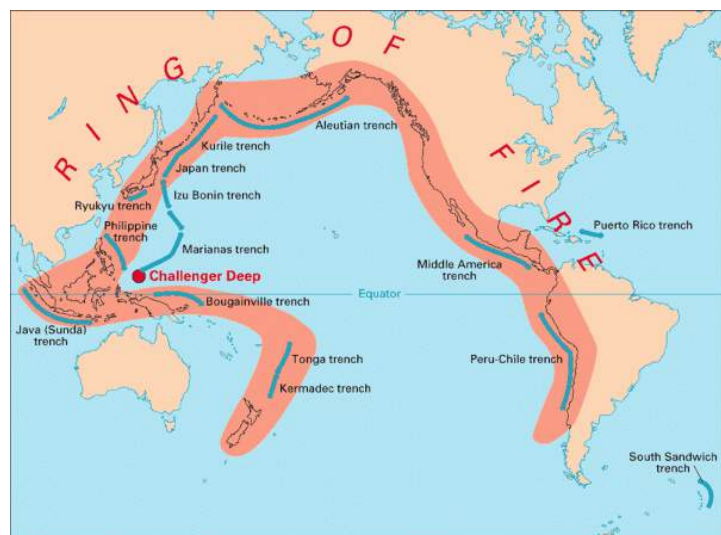
Taiwan and Japan are **highly prone to earthquakes due to their location along major tectonic plate boundaries**. Both countries sit on the **Pacific "Ring of Fire,"** where several tectonic plates converge. Taiwan is situated on the **boundary**

between the **Philippine Sea Plate (PSP)** and the **Eurasian Plate (EP)**, while Japan is located at the **junction of the Pacific Plate (PP), Philippine Sea Plate (PSP), and Eurasian Plate(EP)**. The intense geological activity along these plate boundaries results in frequent seismic events, including earthquakes and volcanic eruptions. Additionally, both Taiwan and Japan have **rugged terrain and mountainous regions**, further exacerbating the impact of earthquakes.



What is Ring of Fire?

The Ring of Fire is a **horseshoe-shaped region in the Pacific Ocean** characterized by frequent seismic and volcanic activity. The Ring of Fire marks the convergence of several tectonic plates, including the Pacific Plate, and is associated with approximately **90% of the world’s earthquakes**. The Ring of Fire hosts numerous volcanoes formed through subduction, where **one tectonic plate is forced beneath another**, leading to volcanic eruptions.



4. SITTWE PORT (MYANMAR)

Context:

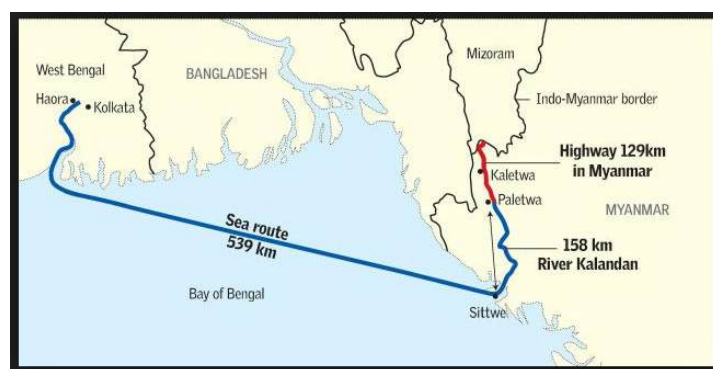
India has **secured the rights to operate the Sittwe port in Myanmar**, marking its **second overseas port** endeavour **after Chabahar**. The Ministry of External Affairs approved a proposal for **India Ports Global (IPGL)**, wholly owned by the Ministry of Ports, Shipping, and Waterways, to manage the port on the **Kaladan River**.

About Sittwe Port:

It is a **deepwater port situated at the Kaladan River’s estuary** in Myanmar’s Rakhine State. It is a crucial component of the **Kaladan Multi-Modal Transit Transport Project (KMTTP)**, funded through grants-in-aid assistance from the Government of India. The port holds significant importance as it will create new trade and transit **opportunities for India’s Northeast region**, as well as enhance trade and commerce between India and Myanmar.

Table 1: The Kaladan Multimodal Transit Transport Project

Stretch	Mode	Distance
Kolkata to Sittwe port in Myanmar	Shipping	539 km
Sittwe to Paletwa (River Kaladan)	Inland Water Transport (IWT)	158 km
Paletwa to Indo-Myanmar Border (in Myanmar)	Road	110 km
Border to NH.54 (Lawngtlai) (in India)	Road	100 km



5. ZAPORIZHZHIA NUCLEAR POWER PLANT (UKRAINE)

Context: A drone attack damaged the **Zaporizhzhia Nuclear Power Plant in Ukraine**, with three hits on the main reactor containment.

The International Atomic Energy Agency **confirmed the damage but stated that nuclear safety remains intact.**

Zaporizhzhia, the largest nuclear plant in Europe, is located in southeast Ukraine, on the banks of the **Dnipro or Dnieper River (which drains into the Black Sea).** It is currently under the **control of the Russian forces.**

The Zaporizhzhya Nuclear Power Plant in Ukraine faces several risks to its safety and operation. The **plant has VVER-1000 reactors** and incorporates safety enhancements implemented after the Chornobyl and Fukushima accidents.

Ukraine is a country in Eastern Europe. It is the **second-largest European country** after Russia. It is also bordered by Belarus to the north; Poland, Slovakia, and Hungary to the west; and by Romania and Moldova to the southwest; with a coastline along the Black Sea and the Sea of Azov to the south and southeast



6. BOTSWANA

Context:

Botswana's President recently **made headlines by threatening to export 20,000 elephants to Germany** in response to Germany's proposal for stricter limits on the import of hunting trophies.

Botswana boasts the world's largest elephant population due to its stable government, sparse human population, and strict conservation policies. Conflict-driven poaching in neighbouring countries redirected elephants to Botswana's safer territory. However, this abundance of elephants has led to rising **human-animal conflicts.**

Botswana has responded by **donating elephants to other countries, lifting the ban on trophy hunting,** and capitalizing on hunting revenue.

What is Trophy Hunting?

Trophy hunting involves killing wild animals for their trophies, such as heads, hides, or other body parts, which are then **kept as souvenirs or displays.**

In India, **trophy hunting is banned.** The **Wildlife Protection Act of 1972** prohibits the hunting of wild animals, including for trophies.

About Botswana:

It is a landlocked country in Southern Africa, predominantly inhabited by the **Tswana ethnic group.** It borders South Africa, Namibia, and Zimbabwe, and is connected to Zambia via the **Kazungula Bridge.** It is one of the **world's most sparsely populated countries.** Botswana is known for its diamond industry, high standard of living, and impressive Human Development Index

Its landscape is **defined by the Kalahari Desert and the Okavango Delta,** which becomes a lush animal habitat during the seasonal floods. The **massive Central Kalahari Game Reserve,** with its **fossilized river valleys** and undulating grasslands, is home to numerous animals including giraffes, cheetahs, hyenas and wild dogs.



7. BHARATI STATION (ANTARCTICA)

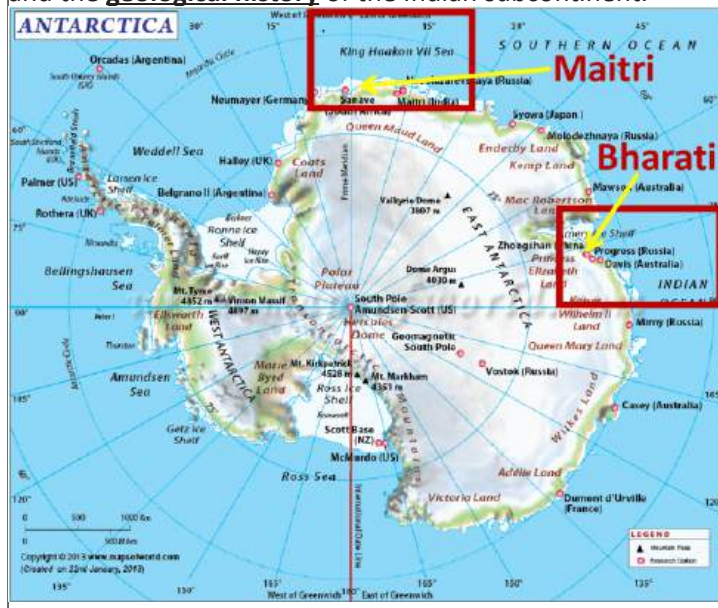
Context:

India Post recently **inaugurated a post office at its Bharati station in Antarctica,** coinciding with the **24th Foundation Day of the National Centre for Polar and Ocean Research (NCPOR), Goa.** This adds to the existing post offices at Dakshin Gangotri Station established in 1984 and Maitri Station set up in 1990.

Significance:

1. Now, with a new post office at the **Bharati research station, letters will have a new PIN code, MH-1718.** These post offices, **part of the Goa postal division,** serve a unique purpose, allowing letters to be sent and 'cancelled' from Antarctica.
2. It serves to **assert India's presence on the continent.**

Bharati (opened in 2012) is India's third Antarctic research station, alongside Maitri, commissioned by India. Located near Larsemann Hills, it focuses on **oceanographic studies** and the **geological history** of the Indian subcontinent.



8. ZIMBABWE'S LAKE KARIBA

Context:

The recent **El Nino drought** has drastically reduced water levels in Zimbabwe's Lake Kariba, prompting Zimbabwe to declare a **national disaster**.

Lake Kariba, situated between Zambia and Zimbabwe, has seen its water levels **plummet to just 13% of its capacity** due to an El Nino-induced drought. It was formed by damming the Zambezi River in 1955 (Kariba Dam). Lake Kariba serves as a crucial source of hydroelectric power for **both Zambia and Zimbabwe**. It is the **world's largest artificial lake** and reservoir by volume.

Zimbabwe is a landlocked country in Southern Africa, bordered by South Africa, Botswana, Zambia, and Mozambique.



9. NAGORNO-KARABAKH REGION

Context:

Russian peacekeepers have **commenced withdrawal from Nagorno-Karabakh following Azerbaijan's recapture** of the disputed territory last year.

The withdrawal comes after Azerbaijan's lightning one-day offensive last September, triggering a refugee crisis and altering the area's demographic landscape. The move also reflects **ruptured ties between traditional allies Russia and Armenia, with Armenia suspending its participation in the Moscow-led Collective Security Treaty Organisation (CSTO)** and joining the International Criminal Court (ICC).

The **Nagorno-Karabakh conflict is an ethnic and territorial dispute between Armenia and Azerbaijan**. It centres on the **Nagorno-Karabakh region, predominantly Armenian-populated but within Azerbaijan's borders**. A ceasefire mediated by Russia in 1994 left the region under Armenian control, though it's still recognized as part of Azerbaijan. The area is now governed by separatist Armenians and called the "Nagorno-Karabakh Autonomous Oblast."



10. ARAL SEA

Context:

The drying of the **Aral Sea in Central Asia** has led to the emergence of the **Aralkum Desert**, making the region much dustier.

Dust emissions from the desert have almost **doubled over the past 30 years**, impacting **air quality and climate**. The dust contains **residues of fertilizers and pesticides** from former agriculture, making it more hazardous.

About Aral Sea

It was once a **large saltwater lake (an endorheic lake: a closed basin lake that retains water and does not have an outflow) in Central Asia**, and now lies on the boundary between **Kazakhstan and Uzbekistan**. It has drastically **shrunk due to human activities** like excessive irrigation. It was once the **world's fourth-largest lake**. **UNESCO** has recognized the

environmental tragedy of the Aral Sea by adding historical documents to its Memory of the World Register.

Other important lakes that have also shrunk in the last few decades include **Lake Urmia** in northwestern Iran, situated in a large central depression, and **Lake Hamoun**, a freshwater lake on the Iran-Afghanistan border.



11. PHILIPPINES

Context:

India delivered the **first batch of BrahMos supersonic cruise missiles** to the Philippines, marking a significant step in their defense collaboration.

The delivery, part of a \$375-million deal signed in January 2022, **enhances the Philippines' maritime defense capabilities.**

India's export of military hardware extends to around 85 countries, with major items including missiles, artillery guns, rockets, and armored vehicles. In FY 2023-24, exports reached a record high of Rs. 21,083 crore. Recently, India **delivered two Dornier 228 aircraft** to Guyana, expanding export ties to Caribbean nations.

About BrahMos Missile (developed jointly with Russia):

It's a two-stage supersonic cruise missile known for its **high speed (2-3 Mach)**, propelled by jet engines. Key features include its **"Fire and Forget" principle**, long flight range of 290km, and low radar signature.

The Philippines is a Southeast Asian country made up of more than 7,000 islands and islets. The country is located in the western Pacific Ocean, about 500 miles (800 km) off the coast of Vietnam.

12. SECOND THOMAS SHOAL REEF

Context:

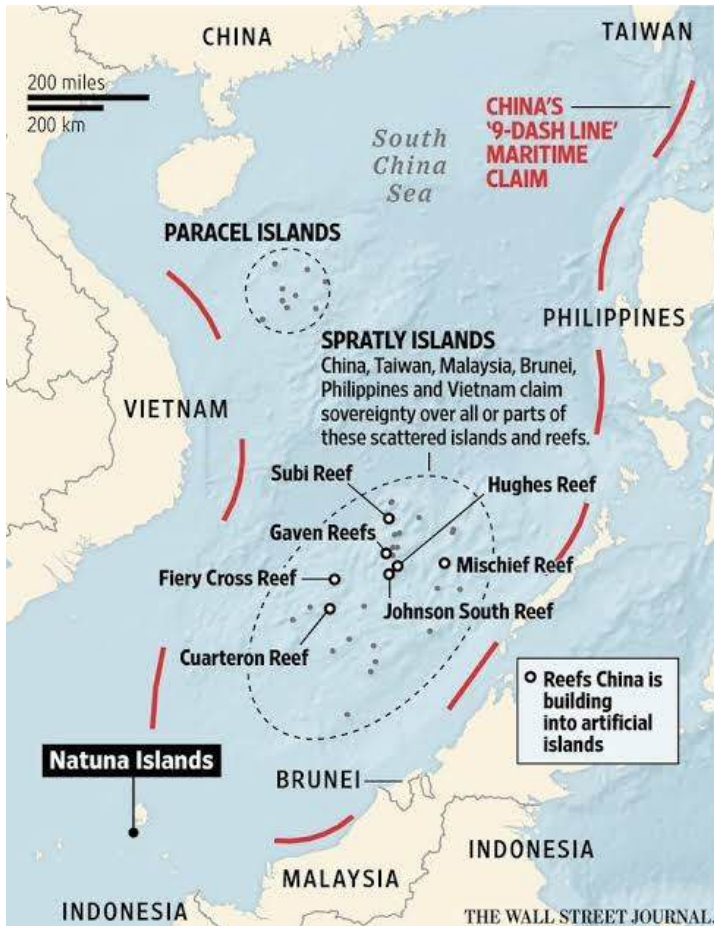
Tensions have escalated at the Second Thomas Shoal, with China blocking manoeuvres and disrupting supply missions. The Philippines has refuted China's claim of reaching an agreement over the South China Sea dispute, labelling it as propaganda.

Second Thomas Shoal (located near the Spratly Islands) is a **submerged reef in the South China Sea**. The shoal is **within the Philippines' exclusive economic zone (EEZ)** but is also claimed by China.

About the South China Sea:

It is a vast area of the western Pacific Ocean, stretching from Singapore and the Strait of Malacca in the southwest to the Strait of Taiwan in the northeast. It is a region of significant geopolitical tension due to various territorial disputes. One major dispute involves the **"nine-dash line" claimed by China**, which encompasses most of the South China Sea and overlaps with the exclusive economic zone claims of several other countries, including **Brunei, Indonesia, Malaysia, the Philippines, Taiwan, and Vietnam**. Key disputed features include:

1. **Paracel Islands** (controlled by China but also claimed by Taiwan and Vietnam)
2. **Spratly Islands** (claimed by multiple countries including China, Taiwan, Vietnam, the Philippines, and Malaysia)
3. **Scarborough Shoal** (claimed by China, Taiwan, and the Philippines)



13. EASTER ISLAND

Context:

Scientists recently **discovered 160 species, with at least 50 potentially new to science**, during an expedition across the **Salas y Gómez Ridge to Easter Island**. The findings include various **marine life like squid, fish, corals, molluscs, and sea stars**.

The ridge, home to **over 110 seamounts**, supports diverse ecosystems and is crucial for marine animal migration.

About Salas y Gómez:

It is an **underwater mountain chain in the southeastern Pacific Ocean**, oriented west-east from the **East Pacific Rise to the Nazca Ridge**. Isolated by geographic features like the **Atacama Trench and the Humboldt Current System**, its waters are mostly in areas beyond national jurisdiction.

About Easter Island

It is a **Chilean territory** in the **southeastern Pacific Ocean**. Famous for its monumental statues called **moai**, it became a **UNESCO World Heritage Site in 1995**. Chile annexed the island in 1888, granting citizenship to the Rapa Nui in 1966. It is one of the **world's most remote inhabited islands**, with the nearest land over 2,000 kilometres away.



14. MOUNT EREBUS

Context:

Mount Erebus, **located in Antarctica**, is raining gold on Earth, spewing out approximately **80 grams of gold worth \$6000 daily**, according to NASA's Earth Observatory. However, the **remote location** makes it impossible for anyone to claim this fortune, ruling out any possibility of a gold rush.

How is Gold Being formed in the Volcano?

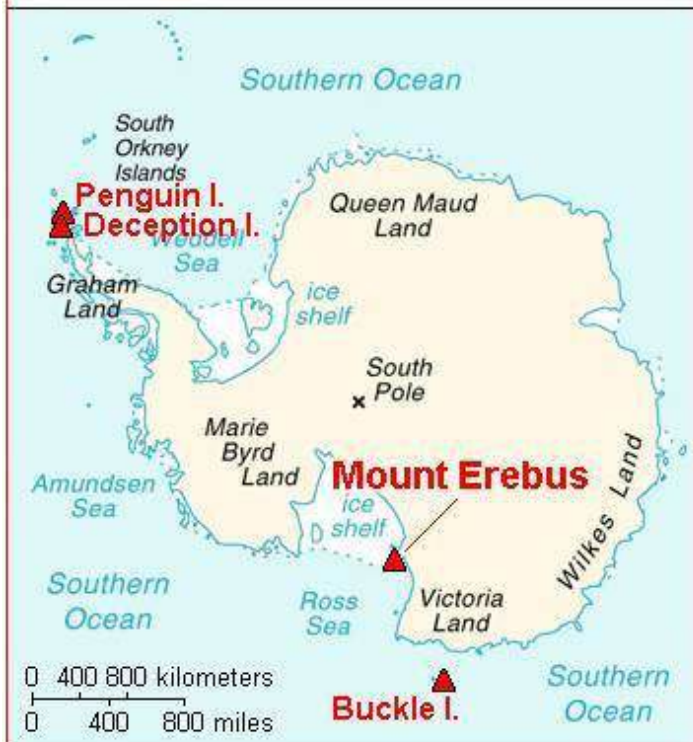
Gold is being **formed and ejected in Mount Erebus**, an Antarctic volcano, through a geological process involving **the release of gases from deep within the Earth**. These gases contain tiny particles of gold, which crystallize as they rise to the surface. When the volcano erupts, these gas pockets burst open, dispersing the **crystallized gold far and wide**, including in the surrounding area.

About Mount Erebus:

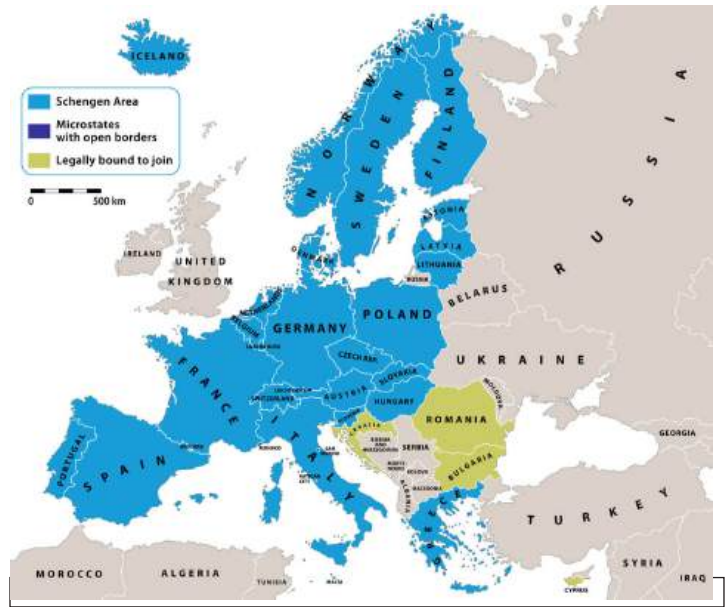
Mount Erebus, **located on Ross Island, Antarctica**, is the **southernmost active volcano** on Earth. As a stratovolcano, it features a conical shape with layers of hardened lava, tephra, and volcanic ash. Notably, Mount Erebus is renowned for its **persistent lava lake**, active since at least 1972, making it one of the few long-lived lava lakes globally.

It is the **tallest active volcano in Antarctica**. It stands out as the **most violent, with a tragic history**, including the infamous Mount Erebus disaster, where an **Air New Zealand plane crashed into it, killing 257 people** due to an optical illusion known as **'whiteout'**.

Major Volcanoes of Antarctica



USGS Topinka, USGS/CVO, 2001; using CIA basemap; volcanoes from: Simkin and Siebert, 1994



15. SCHENGEN AREAS

Context:

Indian nationals can now obtain **long-term multi-entry Schengen visas** with a validity of two years, provided they have lawfully used two visas within the previous three years.

This decision, announced by the European Union, **aims to facilitate travel for individuals with an established travel history, subject to passport validity.** The move comes as part of the **EU-India Common Agenda on Migration and Mobility**, aiming to enhance cooperation on migration policy. The Schengen visas allow **short stays of up to 90 days within a 180-day period** in the Schengen area, comprising 29 European countries, including 25 EU states and four non-EU states.

About the Schengen area:

It is the world's largest free travel area, encompassing 27 countries. This includes **23 of the 27 EU members** and all members of the **European Free Trade Association (Iceland, Liechtenstein, Norway, and Switzerland).** Originating in 1985 as an intergovernmental project among five EU countries - France, Germany, Belgium, the Netherlands, and Luxembourg - it facilitates seamless travel across participating nations.

16. BLUE WHALES MAKES A COMEBACK IN SEYCHELLES

Context: Blue whales, the largest mammal on Earth, have made a remarkable return near the **Seychelles after a 60-year absence.** Commercial whaling activities decimated their populations, **leading to an 89-97% decline.** However, recent expeditions conducted by researchers revealed sightings of **up to 10 blue whales in the region**, a surprising and encouraging discovery.

About the Blue Whales:

It is the largest and loudest animal on the planet and inhabits all oceans **except the Arctic.** With an **estimated lifespan of 80 to 90 years**, they typically swim alone or in pairs, occasionally forming small groups. Their diet consists **mainly of krill and marine crustaceans.** Threats to blue whales include vessel strikes and historical commercial whaling, leading to their **endangered status** according to the IUCN.

About the Republic of Seychelles

It is **Africa's smallest country** and is an **archipelago of 155 islands** situated in the Indian Ocean, southeast of mainland Africa. Seychelles boast beaches, coral reefs, nature reserves, and unique wildlife, including **giant Aldabra tortoises.** It is located in the northeast of **Madagascar**, with Kenya about 1,600 kilometres to the west.



17. NETHERLANDS

Context:

Self-bred corals from the **World Coral Conservatory project** have been added to Europe’s largest reef at Burgers’ Zoo in the Netherlands, offering hope amid declining coral populations worldwide.

- Also, recently the **26th World Energy Congress, co-hosted by the World Energy Council (WEC)**, concluded in Rotterdam, Netherlands.

About World Coral Conservatory Project:

It was **initiated in Monaco in 2019** and aims to safeguard a diverse collection of **coral** species by cultivating samples taken from the natural environment. Partnering with public and private aquariums, the project seeks to preserve living colonies of corals and share them for conservation efforts.

World Energy Council (WEC):

The WEC, established in 1923, is a **UN-accredited non-profit global energy** organization. It aims to facilitate access to clean, affordable, and reliable energy for improved lives and a sustainable planet. With over 3000 member organizations from around 90 countries, it **develops practical solutions and brings together a network of global energy transition** leaders and practitioners.

About the Netherlands (also known as Holland)

It is a country in northwestern Europe. It borders Germany to the east and Belgium to the south, with a North Sea coastline. Dutch is the official language, with West Frisian in Friesland. The name **“Netherlands”** refers to its low elevation, with 26% below sea level, reclaimed as polders since the 14th century.



INDIAN

18. KATCHATHEEVU ISLAND

Aspect	Description
Location	Katchatheevu island, located in the narrow Palk Strait between India and Sri Lanka , lies approximately 20 kilometres from the Rameswaram coast of Tamil Nadu, India.
1974 Agreement	<p>The island’s transfer to Sri Lanka occurred following an agreement signed between then PM Indira Gandhi of India and Sirima R.D. Bandaranaike of Sri Lanka in June 1974.</p> <p>The agreement also allowed Indian fishermen to fish around the island, dry their nets on it and permitted Indian pilgrims to visit the Catholic shrine located on the island</p>



1976 Agreement	The 1976 agreement defined maritime boundaries and exclusive economic zones for India and Sri Lanka . It also restricted fishing in each other's waters without explicit permission from either country
Fishing Rights	Despite the transfer, traditional fishing activities by both Indian and Sri Lankan fisherfolk continued around Katchatheevu, regulated by a 1976 agreement requiring permission
Historical Significance	Katchatheevu has been historically significant, hosting St. Anthony's Church , which conducts an annual festival attracting devotees from both India and Sri Lanka.
Legal Status	Despite calls for retrieval, the Indian government, through various statements, affirmed Katchatheevu's status as belonging to Sri Lanka based on the 1974 and 1976 agreements

19. PARADIP PORT

Context:

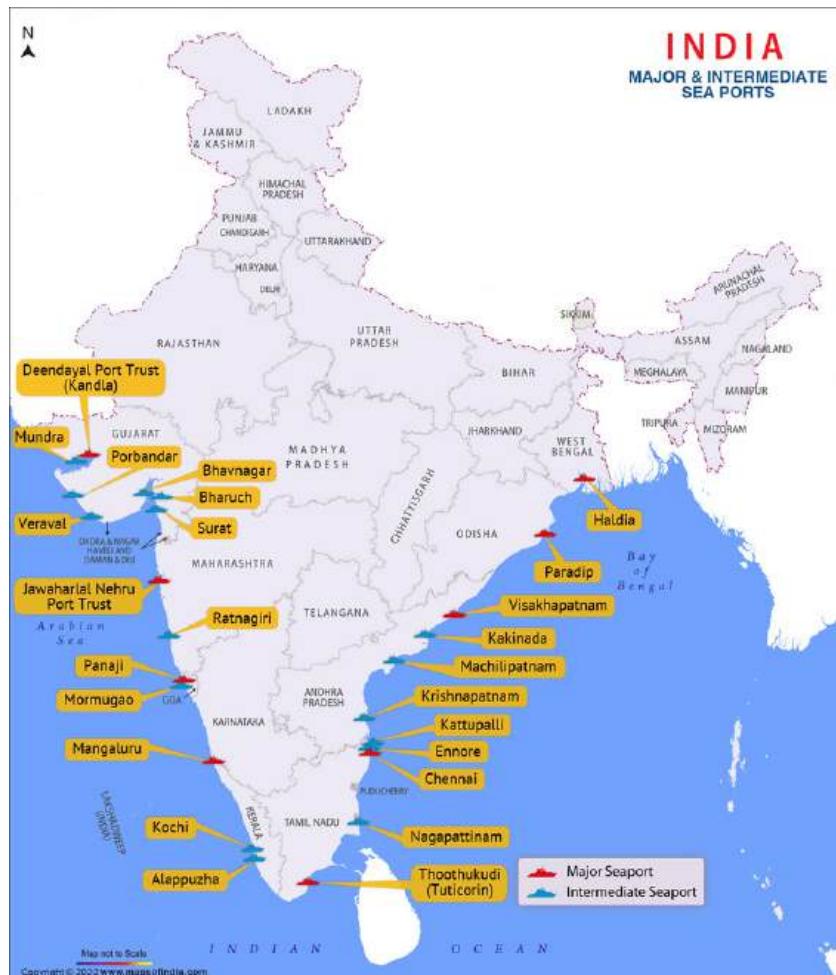
Paradip Port Authority (PPA) has achieved a significant milestone by **becoming the top cargo-handling major port in India**, surpassing Deendayal Port, Kandla.

About Paradip Port

It is located in Odisha and is a **vital deep-water port on the East Coast of India**, situated at the convergence of the **Mahana-di River and the Bay of Bengal**. Administered by the **Paradip Port Trust (PPT)**, it holds the distinction of being the **first major port on the East Coast** established after independence. In 2020, the Union Cabinet approved the development of its **inner harbour facilities** and the **construction of a Western Dock** to accommodate cape-size vessels.

Along with **Deendayal Port and V.O. Chidambaranar Port**, **Paradip Port** has been designated as a **Green Hydrogen hub** by the government. Unlike minor ports, major ports like Paradip are **managed by central government** authorities and handle international trade, contributing significantly to India's maritime commerce.

India has 205 minor and intermediate ports, along with 13 major seaports (12 government-owned and one private)



20. KUMITTIPATHI VILLAGE (COIMBATORE, TN)

Context:

The rock paintings at Kumittipathi village near Coimbatore are significant testimonies to the prehistoric Kongu region.

Believed to be around 3,000 years old, these cave paintings depict an elephant, a chariot, and scenes from the lives of early inhabitants. Despite their cultural and historical importance, the paintings are at risk due to damage caused by miscreants.

What are Rock Paintings?

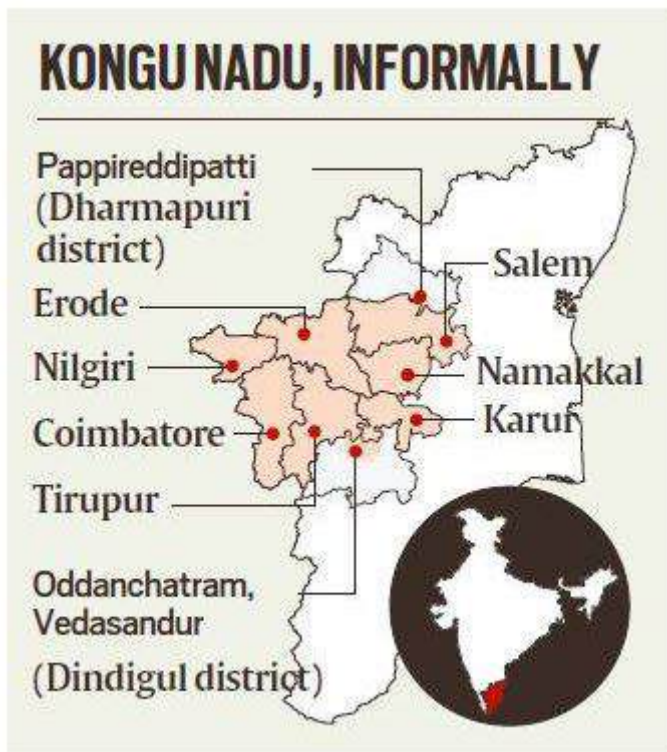
Rock paintings are ancient artworks created by early humans on natural rock surfaces using natural pigments like ochre, charcoal, and clay. These paintings provide insights into the lives, beliefs, and cultures of ancient societies.

Other such sites in India:

Rock Painting Site	Location	Description
Bhimbetka Rock Shelters	Madhya Pradesh	One of the oldest rock art sites globally, dating back to the <u>Paleolithic era</u> . Features over 700 rock shelters with paintings depicting hunting scenes, rituals, and daily life.
Edakkal Caves	Kerala	Situated in the <u>Wayanad district, features Neolithic rock engravings and paintings</u> dating back over 6,000 years. Depicts human and animal figures, symbols, and geometric patterns.
Rock Shelters of Padavayal	Kerala	Located in the <u>Wayanad district, contains prehistoric petroglyphs and paintings</u> from the Mesolithic and Neolithic periods. Artworks depict hunting scenes, human figures, and animals.
Rock Art Complex of Lakhudiyar	Uttarakhand	<u>Near Almora</u> , contains <u>petroglyphs and rock paintings</u> dating back to the Mesolithic and Neolithic periods. Features images of animals, humans, and geometric patterns.
Rock Art Sites of Chaturbhujnath Nala	Chhattisgarh	<u>Found in the Kanker district</u> , these rock shelters contain prehistoric paintings dating back thousands of years, including images of animals, humans, and abstract symbols.

About Kongu Region (or Kongu Nadu)

Kongu Nadu is a region in Tamil Nadu (and some parts of Karnataka, and Kerala). It boasts diverse geography, including the Western and Eastern Ghats and rivers like Kaveri. Coimbatore, Tiruppur, and Salem are key urban centres. Historically, it was the seat of the Cheras and was later ruled by the medieval Cholas, Vijayanagara Empire, and Madurai Nayaks.



21. KHAVDA SOLAR PARK (GUJARAT’S KUTCH)

Context:

Khavda Solar Park in Gujarat’s Kutch, is the world’s largest renewable energy park (5 times the size of Paris City). It **boasts of 2 GW of commissioned capacity** with plans to add 4 GW in the current fiscal year and 5 GW annually thereafter.

The **Khavda Solar Park** is near **Vighakot village in Gujarat’s Kutch district**. Situated near the Pakistan border, **it aims to generate 30 gigawatts of electricity** from solar panels and wind turbines across 72,600 hectares of land when fully operational.

Khavda was chosen for its ideal conditions for renewable energy generation, including **abundant sunlight and strong wind speeds**. Additionally, its remote location and barren land minimize land use conflicts and maximize the potential for large-scale energy production

22. MUDUMALAI TIGER RESERVE

Context:

In Mudumalai Tiger Reserve, Asiatic wild dogs are affected by mange disease, likely spread by feral dogs.

About Mange Disease

It is a skin disease caused by mite infestations, leading to inflammation, itching, and hair loss. It can be severe, caused by **Sarcoptes scabiei mites**, which also cause **human scabies**. It affects various domestic animals and spreads through direct contact or contaminated objects. Treatment is available in most forms.

About Asiatic wild dogs:

It is also called Indian wild dogs, and are found in forests across central, south, and southeast Asia. They’re known by various names like **red wolf or mountain wolf**. They’re clustered in India’s Western and Eastern Ghats, central Indian landscape, and North East India. They’re **endangered according to the IUCN Red List**, protected under the Wildlife Protection Act 1972, and listed under CITES Appendix II.

About Mudumalai Tiger Reserve

Mudumalai Tiger Reserve is located in the Nilgiris District of Tamil Nadu state at the tri-junction of three states, viz, Karnataka, Kerala and Tamil Nadu. It is a part of the **Nilgiri Biosphere Reserve (1st Biosphere Reserve in India)**. The Reserve has tall grasses, commonly referred to as **‘Elephant Grass’**



23. HARYANA'S KALESAR WILDLIFE SANCTUARY

Context:

The Supreme Court has **halted the construction of four dams inside Haryana's Kalesar Wildlife Sanctuary**, citing concerns about the negative impact on wildlife and the ecosystem.

About Kalesar Wildlife Sanctuary (Yamunanagar, Haryana):

It lies within the **Shivalik foothills of the Himalayas**. Its name derives from the **Kalesar forest and Kalesar Mahadev temple** situated within its bounds. Established as a national park on December 8, 2003, it holds historical significance, having served as **hunting grounds for Mughal and British rulers**. The sanctuary boasts the historic Kalesar Fort, possibly constructed during Aurangzeb's reign. Once a prime tiger habitat, the population dwindled in the late 19th century, leading to a hunting ban. Bounded by the Yamuna River to the east, it **shares borders with Rajaji National Park to the northeast**

