



INSIGHTSIAS

SIMPLIFYING IAS EXAM PREPARATION

CHHATRAPATI SHIVAJI MAHARAJ

350th anniversary of Chhatrapati
Shivaji Maharaj's coronation is
being celebrated



CHHATRAPATI SHIVAJI JAYANTI

19 FEB - 24 FEB 2024

WEEKLY CURRENT AFFAIRS

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GENERAL STUDIES - 1

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

1. DEMAND FOR PAID MENSTRUAL LEAVE AND GENDER EQUALITY

Context:

The demand for paid menstrual leave, **while aiming to address period-related challenges**, could inadvertently **hinder gender equality efforts**.

What is Menstrual Leave?

Menstrual leave is a **workplace policy that allows employees** to take **paid time off** during their menstrual cycle to manage period-related symptoms or discomfort.

Arguments Supporting Paid Menstrual Leave

Argument	Description
Will raise awareness against Period Poverty	A survey conducted by the NGO Child Rights and You (CRY) revealed that access to sanitary pads was limited to many girls, with 44% of girls admitting to using home-made absorbents or cloth
Will act against Stigma and Shame	The social stigma surrounding menstruation, results in discrimination, embarrassment, and limited access to resources and information.
	The CRY report has suggested that over 61% of girls have accepted that a sense of embarrassment existed in society with regard to periods
Improves Workplace Productivity:	By allowing individuals to take time off to manage menstrual symptoms, paid leave can contribute to improved workplace productivity and overall job satisfaction .
Reduces Absenteeism	Providing paid leave for menstruation can help reduce absenteeism by allowing individuals to take time off when necessary without fear of losing income or facing disciplinary action.
Fosters Inclusivity and Diversity	It creates a more inclusive and diverse workplace culture by accommodating the needs of menstruating individuals , regardless of gender identity.
Promotes Gender Equality	Paid menstrual leave helps to address gender disparities by recognizing and accommodating the unique needs of menstruating individuals in the workforce.
Will support 'Right of Women to Menstrual Leave and Free Access to Menstrual Health Products Bill 2022'	The bill specified three days of paid leave for women and transwomen during their periods and additional benefits for students. However, only two states, Kerala and Bihar, currently have menstrual leave policies for women

Examples from India:

- Zomato in 2020**, announced a 10-day paid period of leave per year, and Swiggy and Byjus have also followed suit.

Global Examples:

- Spain became the first European country** to grant paid menstrual leave to workers, among a host of other sexual health rights.
- Indonesia introduced a policy in 1948**, amended in 2003, saying that workers experiencing menstrual pain are not obliged to work on the first two days of their cycle.
- In the Philippines**, workers are permitted two days of menstrual leave a month.
- Taiwan has an Act of Gender Equality in Employment in place**. Under Article 14 of the Act, employees have the right to request a day off as period leave every month, at half their regular wage.
- South Korea takes a slightly different route**, allowing for monthly physiologic leave under Article 73 of their

labour law, allowing all female workers to get a day off every month.

7. **Among the African nations, Zambia** introduced one day of leave a month without needing a reason or a medical certificate, calling it Mother’s Day.
8. Companies across nations, such as **Nike and Coexist**, have introduced menstrual leave as an internal policy.

Concerns regarding Paid Menstrual leave:

Concerns	Description
Dissuades Companies From Hiring Women	The gender wage gap and low female participation rates in the labour force are already significant issues, and mandatory paid menstrual leave could further discourage companies from hiring women.
Validates Social Stigma Around Menstruation	Ratifying special status for menstruating women could perpetuate the social stigma surrounding menstruation, reinforcing period shaming and the belief that menstruation is impure, hindering efforts towards gender equality.
Concerns Surrounding Implementation	Implementing paid menstrual leave poses challenges such as determining legitimate use, preventing misuse, and defining acceptable enforcement methods.
Normal Physiological Phenomenon	Menstruation is a natural process, and while some individuals may experience severe symptoms, most cases are manageable.

Case Study of Japan:

In Japan, **despite the provision of unpaid menstrual leave for painful menstruation**, only about 1% of women in the workforce avail of this benefit. Many women are reluctant to use it **due to fear of sexual harassment when disclosing their period status**. This situation persists despite the policy being in place for over seven decades. **Japan’s gender equality ranking has declined**, with women less likely to be employed and often paid less than men, reflecting ongoing disparities in **workforce participation and gender pay equity**.

Effective Menstrual Leave Policies should include:

1. Promote **menstrual health literacy**
2. Provide adequate **rest breaks and facilities**
3. Ensure access to **effective treatment**
4. Offer **flexible working conditions**
5. **Avoid gender-specific policies**
6. **Address gender wage gaps** and job opportunities
7. **Improve overall labour standards** and working conditions, especially for women

Other Measures needed to improve menstrual health:

- **Hygienic and accessible toilets:**
 - Providing accessible, safe, and hygienic toilets to all including residents of **low-income slums, pavement dwellers**, and in **educational institutions and workplaces**.
 - **‘She Toilets’ in Telangana and Tamil Nadu** and **‘Pink Toilets’ in Delhi** provide safe, private, clean facilities with essential amenities to manage periods.
 - Providing **dustbins and incinerators in female toilets**, which promote **waste segregation at source** through initiatives like the **‘Red Dot Campaign’** and innovations like **‘PadCare Labs.’**
- **Attention to urban areas:**
 - The **focus** of menstrual hygiene campaigns **has often been on India’s rural population**, and for good reasons.
 - However, India’s large, rapidly growing **urban population also calls for attention** as certain groups of **urban dwellers face a whole range of limitations** that affect their menstrual health.
- **Other measures:**
 - **Awareness** about periods must be continued, along with efforts to **address harmful social and gender norms and eradicate the social stigma**.
 - **Menstrual products**, both reusable and disposable, must be **more available through various access channels** (retail outlets, social enterprises, government schemes and NGOs) **without any stigma attached**.

Government Schemes:

1. **Menstrual hygiene scheme** launched by the Ministry of Health and Family Welfare
2. [Rashtriya Kishore Swasthya Karyakram](#)
3. **SABLA** programme of the Ministry of Women and Child Development
4. National Rural Livelihood Mission of the Ministry of Rural Development
5. Swachh Bharat Mission and Swachh Bharat: **Swachh Vidyalaya (SB:SV)**
6. Guidelines for **Gender Issues in Sanitation, 2017**
7. The National Guidelines on **Menstrual Hygiene Management**
8. **Scheme for Promotion of Menstrual Hygiene** among adolescent girls in the age group of 10-19 years (supported by the National Health Mission)

Conclusion

In all, menstrual health is integral to **improving global population health, achieving the Sustainable Development Goals, and realising gender equality and human rights**. Implementation of menstrual leave policies should **guard against misuse, ensuring privacy and dignity**. Persistent disparities underscore the need for nuanced, inclusive approaches to address menstrual challenges and promote gender equality.

Mains Links:

Q. What are the continued challenges for women in India against time and space? (UPSC 2019)

Q. Male membership needs to be encouraged in order to make women’s organisations free from gender bias. Comment. (UPSC 2013)

[Topics: Women and women related issues.](#)

2. SC DECISION ON GENDER DISCRIMINATION

Context:

The Supreme Court of India **declared (in Selina John’s case) rules penalizing women employees** for getting married as **unconstitutional, citing gender discrimination and inequality**.

Background of the case:

The case involved **former lieutenant Selina John**, who was discharged from the Military Nursing Service for getting married. The court directed the **Union Government to pay her ₹60 lakh in compensation**. The ruling highlights the ongoing battle for **gender parity in the Army and underscores the need for action** to break down barriers in education, employment, and opportunities for women.

Women have been fighting a battle for gender parity in the Army for long. They were granted permanent commission after judgments in 2020 and 2021.

Challenges Faced by Women in the Workplace:

Challenges	Description
Patriarchal Social Norms	Entrenched patriarchal norms and traditional gender roles restrict women’s opportunities for education and employment.
	Societal expectations prioritize women as caregivers and homemakers , dissuading their active engagement in the workforce.
	Women often encounter uncomfortable personal inquiries during job interviews regarding their plans for marriage and motherhood.
Gender Wage Gap	The World Inequality Report of 2022 reveals that men in India command 82% of labour income, leaving women with only 18%.
Unpaid Care Work	The responsibility of unpaid care and domestic tasks disproportionately falls on women , limiting their time and energy for paid employment.
	Married women in India spend over 7 hours daily on unpaid care and domestic work, impacting their ability to engage in paid work.

Social and Cultural Stigma	Certain communities may stigmatize or resist women working outside the home , leading to lower rates of labour force participation.
Female Labor Force Participation Rate (LFPR)	India's Female LFPR has decreased from 30% to 24% in the past two decades, despite an increase in girls' enrollment in Class 10.
Lack of Economic Empowerment	Globally, women's labour force participation is 51% , compared to 80% for men, and in India, it stands at 23%.
Access to Productive Capital	Women struggle to access funds and capital for starting a business, or other development work.
Glass Ceiling Effect	In corporate settings, women earn on average only 79% of what men earn, hold only 5% of Fortune 500 CEO positions , and represent 17% of global Board positions.
Safety Issues	Concerns about safety and harassment at work sites , both explicit and implicit, inhibit women's participation in the workforce.

Consequences of a declining women's workforce:

1. Consequences for Women

- 1.1. **Reduced Economic Independence:** Lower participation in the workforce leads to **reduced financial independence** for women. E.g: **Women relying solely on their spouses or families** for financial support may face **limitations in personal decision-making**.
- 1.2. **Limited Career Opportunities** : E.g.: **Long career breaks make re-entry into professional roles challenging**, often leading to **underemployment**.
- 1.3. **Social Isolation** : E.g: **Women confined to domestic roles** often miss out on **social interactions** and networks available through employment.

2. Consequences for the Economy

- 2.1. **Reduced Economic Growth:** Lower female LFPR **limits the potential labor pool**, directly impacting economic growth. E.g: **According to IMF estimates, equal participation of women** in the workforce could **boost India's GDP by up to 27%**.
- 2.2. **Underutilization of Human Capital** : The economy fails to leverage the full potential of its educated female population. E.g: **Despite high educational attainments, many women remain outside the labor market**, representing a significant untapped resource.
- 2.3. **Impact on Consumer Markets** : Women's earnings influence consumption patterns, and their **reduced income can affect market dynamics**. E.g: Lower female earnings can lead to **decreased spending on health, education, and consumer goods**, affecting diverse industries.
- 2.4. **Decreased Tax Revenues** : Reduced female participation in **high-earning roles impacts tax contributions**, limiting

funds for public welfare initiatives.

- 2.5. **Inequality and Social Development** : Persistent gender gaps in employment exacerbate social inequalities, **hindering progress towards gender-balanced development goals**.

Government steps:

- 1. [Beti Bachao Beti Padhao Scheme](#)
- 2. [One Stop Centre Scheme](#)
- 3. [SWADHAR Greh](#)
- 4. [NARI SHAKTI PURASKAR](#)
- 5. Mahila police Volunteers
- 6. Mahila Shakti Kendras (MSK)
- 7. [NIRBHAYA Fund](#)

Steps by the National Commission for Women (NCW) (statutory body established under the National Commission for Women Act, 1990)

- 1. **Advancing Women's Rights and Awareness:** Raising awareness through campaigns and workshops. Providing support through helplines, counselling, and legal aid.
- 2. **Addressing Gender-Based Violence:** Intervening in cases of domestic violence, workplace harassment, and dowry-related crimes. Conducting investigations and recommending action, including workplace harassment.
- 3. **Advocating for Gender Equality:** Fighting against gender-based discrimination in education, workplaces, and social customs.

Way forward:

- 1. **Address barriers in education, employment, and opportunities** to increase female labour participation.
- 2. **Concrete actions must accompany** efforts to increase female representation in the Indian Army.
- 3. **Fostering an Inclusive Environment:** Organizations should heed the Court's stance against

penalizing women for marriage and domestic responsibilities to create supportive workplaces.

4. **Comprehensive Approach to Gender Equality:** Gender equality efforts should acknowledge and value all forms of women’s work, formal and informal.
5. Policy solutions should **empower women within their cultural context, emphasizing autonomy and flexible work options.**
6. **Importance of Women’s Labor Force Participation:** Increasing women’s labour force participation is essential for societal progress, economic growth, poverty reduction, and the creation of inclusive communities.

Insta links:

Mains Links:

Q. “Empowering women is the key to control the population growth.” Discuss. (UPSC 2019)

Prelims Links:

Q. Which of the following gives the ‘Global Gender Gap Index’ ranking to the countries of the world? (UPSC 2017)

- (a) World Economic Forum
- (b) UN Human Rights Council
- (c) UN Women
- (d) World Health Organization

Ans: A

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.

3. TRIPLE DIP LA-NINA AND AIR QUALITY IN INDIA

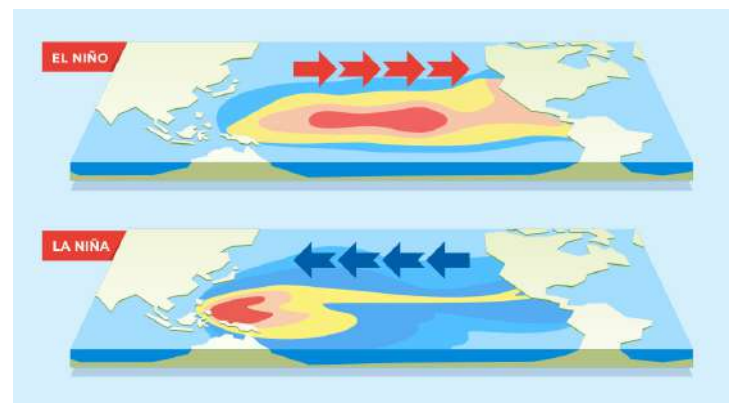
Context:

Research has **identified climate change as a primary cause of poor air quality** in Mumbai during the winter of 2022. The study, titled “**Triple dip La-Nina, unorthodox circulation and unusual spin in air quality of India,**” links the city’s high pollution levels to delayed wind reversals and less frequent calm winds triggered by La Nina and Climate Change.

What is Triple Dip La Nina?

It refers to an **unusual and prolonged La Nina phenomenon** lasting three consecutive years, which significantly impacts global weather patterns. La Nina typically involves **cooler-than-average sea surface temperatures in the central and eastern Pacific Ocean**, leading to various climatic effects worldwide, such as altered rainfall patterns, increased tropical cyclone activity, and shifts in temperature gradients.

- WMO had stated in August 2022 that for the **first time this century, La Nina would span three consecutive northern hemisphere** winters to become a ‘triple dip’ La Nina.

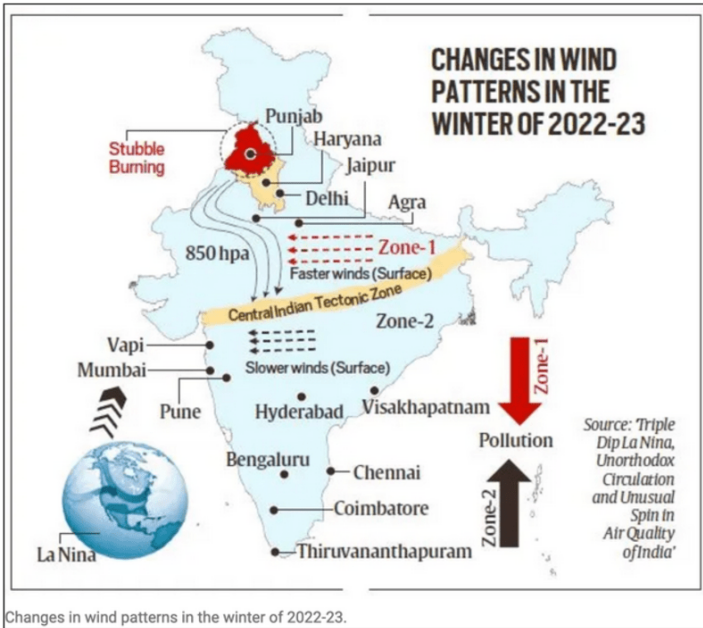


What does the study indicate?

During the winter of 2022–23, an unusual trend reversal in **pollution levels**, particularly **PM2.5**, was observed in India. **South-Western regions experienced unusually poor air quality**, while **North India showed relatively cleaner air**, contrary to typical patterns.

Factors responsible for this included:

1. **Triple-dip La Niña event:** The winter coincided with the **last phase of an unusual triple-dip La Niña event**, affecting atmospheric conditions.
2. **Change in wind direction:** Normally, winds blow from Punjab towards the Gangetic plains, carrying pollutants from stubble burning towards Delhi. However, during the winter of 2022, wind circulation changed to a north-south direction.
 - a. This led to **air pollutants from Punjab and Haryana bypassing Delhi**, resulting in lesser pollution in the capital and surrounding areas.
3. Instead, **pollutants flew over western and southern regions**, contributing to the poor air quality observed in South-Western India.



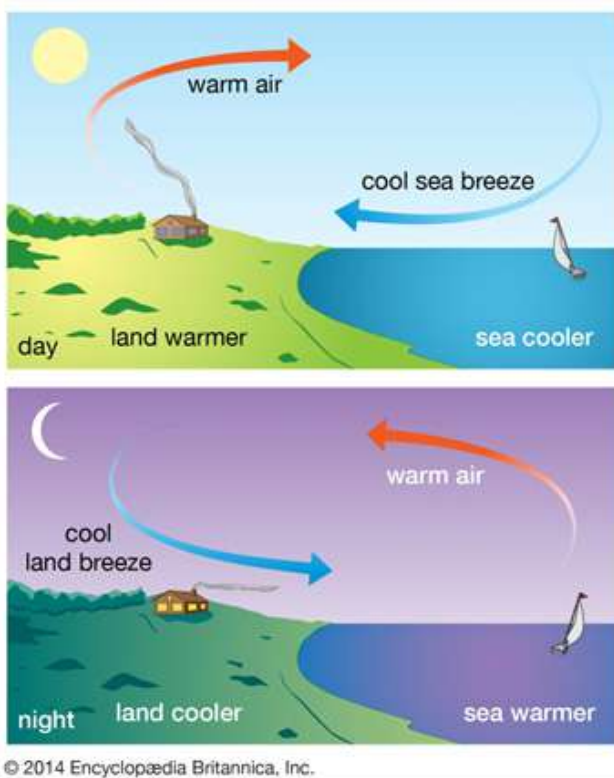
Changes in wind patterns in the winter of 2022-23.

Mumbai’s Air Pollution:

- Air quality in Mumbai deteriorated significantly**, with **66 out of 92 days** between November 2022 and January 2023 categorized as “poor” or “very poor.”
- In comparison, **Delhi experienced 79 days of “Poor” and “Very Poor”** AQI during the same period. (Data from SAFAR – Ministry of Earth Sciences).

Reasons:

Mumbai benefits from its coastal location, which aids in naturally cleansing its air. Strong surface winds and sea breezes help rapidly disperse pollutants, maintaining better air quality.

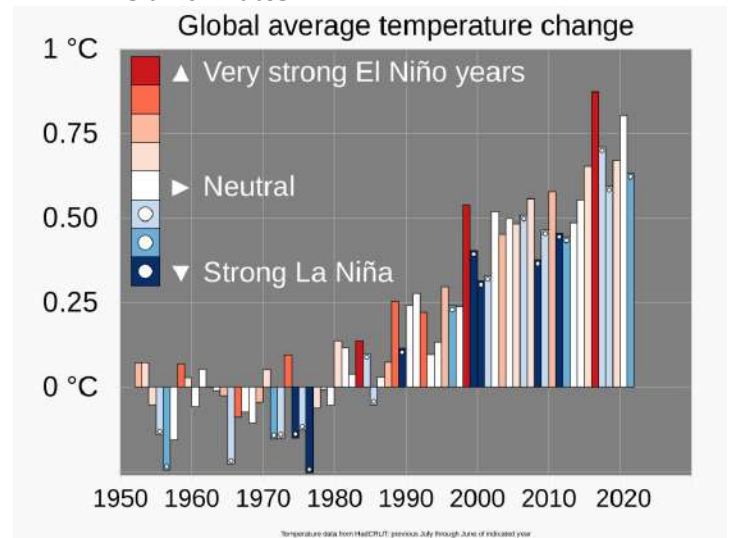


However, last winter, Mumbai experienced a **rare “triple**

dip” in La Niña, associated with climate change. This prolonged La Niña phase **led to infrequent wind reversals from the sea, trapping pollutants in the lower atmosphere** for longer durations and deteriorating air quality despite Mumbai’s usual cleansing mechanisms.

Increasing variability of the El Nino-La Nina system:

- Variability:** as seen from the chart below, the ENSO system has been becoming more unpredictable as sudden changes to strong El Nino or La Niña are seen.
- Climate change:** Warmer ocean temperatures, driven by climate change, can **intensify El Niño events**, leading to more frequent and intense occurrences. Similarly, **La Niña events can also be influenced by climate change**, affecting their frequency and severity.
- Tropical weather:** Extremities in the impact of this variability are also strong. Tropical cyclones and precipitation have been observed to increase with this ENSO variability.
- Regional variation:** On the other hand, the ENSO variability has also induced chaos in regional weather systems as impacts of rainfall and droughts have finer variability within African or Asian climates.



Its impact on India:

- Triple dip:** The continuance of La Niña into 2023 is not bad news from the Indian standpoint, but it is not the same for all its constituent regions.
 - El Niño tends to **weaken the Indian monsoon, leading to droughts**, while La Niña strengthens it, **causing floods**. Climate change-induced extremes in ENSO events could result in **more erratic and intense monsoon seasons**, impacting agriculture, water resources, and livelihoods.
 - Observationally, the extremities of monsoon in intensity and regional spread have increased. **Parts of the same state like in Maharashtra have seen floods and droughts.**
- Variation:** The variability makes the Indian monsoon model used by IMD less relevant as there is

mathematical chaos in input variables.

- **Cyclones:** The variability has also drastically affected Indian Ocean cyclogenesis. Empirically, the Arabian Sea branch has observed increased cyclogenesis compared to historical averages.
- **Science:** The robustness of Indian weather science is impacted which makes early warning systems (EWS) on floods, droughts, cyclones etc less reliable.

Conclusion:

Thus, there is a great need to conduct scientific research and study on the variability of ENSO as even highlighted by the 2021 Nobel Prize in physics in this field of study. Indian Earth Science ministry and other bodies must also work for the protection of its citizens from these extremities.

Insta Links:

- [El Nino](#)

Prelims Links:

Q. With reference to the 'Indian Ocean Dipole (IOD)' sometimes mentioned in the news while forecasting the Indian monsoon, which of the following statements is/are correct? (UPSC 2016)

1. The IOD phenomenon is characterised by a difference in sea surface temperature between the tropical Western Indian Ocean and the tropical Eastern Pacific Ocean.
2. An IOD phenomenon can influence El Nino's impact on the monsoon.

Select the correct answer using the code given below:

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

Ans: B

Q. In the cities of our country, which among the following atmospheric gases are normally considered in calculating the value of the Air Quality Index? (UPSC 2016)

1. Carbon dioxide
2. Carbon monoxide
3. Nitrogen dioxide
4. Sulfur dioxide
5. Methane

Select the correct answer using the code given below.

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

Ans: B

GENERAL STUDIES – 2

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

1. PRADHAN MANTRI AWAS YOJANA: ADDRESSING SUSTAINABILITY CONCERNS

Context:

The Interim Budget 2024 announced the **construction of two crore additional houses under PMAY-G** and a **new housing scheme for the middle class**, advancing the 'Housing for All' initiative. While commendable, there's a pressing need to address environmental concerns amidst the rapid housing expansion.

About PM Awas Yojana

It is a housing scheme launched by the government of India to provide **affordable housing for all by 2024**. Earlier, the aim was to provide houses by March 2022. The scheme has two variants, **PMAY-Gramin** and **PMAY-Urban**

Aspect	PMAY-G	PMAY-U
Launch Date	April 1, 2016	June 25, 2015
Ministry Involved	Ministry of Rural Development	Ministry of Housing and Urban Affairs
Aim	Provide pucca houses with basic amenities to rural families	Provide housing for all in urban areas by 2024
Beneficiaries	SCs/STs, freed bonded labourers, widows, disabled persons, minorities	Urban poor, including slum dwellers
Selection of Beneficiaries	Through Socio-Economic Caste Census 2011, Gram Sabha, and geo-tagging (subject to 13-point exclusion criteria, followed by Gram Sabha verification)	Based on eligibility criteria set by the Ministry
Cost Sharing	Central and State Governments share costs (60:40 in plain areas, 90:10 in North Eastern and hilly states)	Central assistance and state contributions
Features	Assistance for construction of dwelling units and upgradation of kutchha houses	Addresses urban housing shortage among the urban poor
	Full grant assistance for eligible beneficiaries	Promotes women empowerment by providing ownership to females
Divided into Four Verticals	N/A	In-situ rehabilitation of existing slum dwellers
		-Credit Linked Subsidy
		Affordable Housing in Partnership
		Beneficiary-led individual house construction/enhancement

Sustainability Concerns with the housing:

Concerns	Details
Construction Technologies	Extensive use of cement and steel without proper insulation causes thermal distress.
	Inadequate insulation leads to increased use of cooling appliances, elevating greenhouse gas emissions .
Locational Factors	Master plans are required for affordable housing, but many census towns lack them , leading to poor location choices and transport deficits.
	E.g., Newly created housing in Delhi by DDA faces low demand due to location and lack of public transport.
Policies issues	Under PMAY-U, states and cities offer increased floor area ratio (FAR), floor space index (FSI), or transferable development rights (TDR) for slum and low-cost housing, promoting dense, high-rise developments .
	Taller buildings increase emissions per unit area , despite improving land use efficiency.
	Policies lack provisions for rainwater harvesting and decentralised waste management , impacting sustainability.
Inefficient Beneficiary-Led Construction	Self-constructed projects lack adherence to building norms and safety codes, hindering sustainability efforts.

Government Initiatives:

- Light House Projects (LHPs):** Under PMAY, LHPs are part of the Global Housing Technology Challenge (GHTC), aimed at **reducing construction time and building resilient**, affordable houses.
- Global Housing Technology Challenge-India (GHTC-India):** Introduced by the Ministry of Housing and Urban Affairs to mainstream sustainable, eco-friendly, and disaster-resilient housing technologies.
- Mivan Construction Technology:** Utilizes advanced aluminium formwork for casting building elements, reducing construction time, and environmental impact.

4. **Insulating Concrete Formwork (ICF) Technique:** Uses double-walled polystyrene panels filled with concrete for strong, durable, and well-insulated structures, offering thermal and sound insulation.
5. **Hybrid Concrete Construction:** Combines cast-in-place concrete with precast materials like steel or concrete units, accelerating construction, reducing costs, and maintaining quality.

Way forward:

1. **Reinforcing Building Codes:** Mandate adoption of passive design aspects in building codes and guidelines.
2. Implement initiatives **like Eco Niwas Samhita** for indoor thermal comfort.
3. **Promoting Green Buildings:** Increase adoption of 'Green Buildings' to reduce energy consumption and emissions.
4. **Decentralised Location-Tailored Projects:** Conduct socio-economic surveys to understand housing needs.
5. **Promote mixed-income housing** in suitable locations with basic amenities nearby.
6. **Design building envelopes and shading devices** to minimize heat gain or loss.

Other limitations of PM Awas Yojana:

- **Covid pandemic:** the pandemic has slowed down the timely construction of houses and therefore the government was forced to extend the deadline from **2022 to March 2024**. In rural areas, Pradhan Mantri Awas Yojana has a completion rate of just around **67%**
- **Poor implementation by state:** Six States account for 70% of the target units — West Bengal, Madhya Pradesh, Bihar, Odisha, Uttar Pradesh and Chhattisgarh. **Bihar** has one of the lowest completion rates at less than 60%
- **Lack of clear land titles and documents:** In both rural and urban areas, issues such as a lack of clear titles and other land documents tend to crop up. This further slowed down the pace of the construction of houses.
- **Withholding of funds by the Centre:** Recently, the Centre withheld funds for the scheme in two Opposition-ruled States — **West Bengal** and **Chhattisgarh**. Many times states like Chhattisgarh have defaulted on payment because of a lack of funds.
- **Credit linked limit:** According to the PMAY Credit Linked guidelines the interest subsidy of **6.5%** will be given to the people who fall under backward classes or economically weaker groups. However, the subsidy is not for all the people living under these groups.

- **Tenure limit:** As the yojana says the applicant will get a **tenure of 15 years to repay the loan**. But the time will be granted only if the loan amount is 6 lakhs or less. If the loan amount is more than **6 lakhs** then the tenure will be less than 15 years.

Conclusion

The government has done a commendable job by **converging the Pradhan Mantri Awas Yojana** with other schemes that provide **electricity, toilets and LPG gas connections**. The implementation of PMAY has remained largely transparent and the progress has been satisfactory. However, the government should also take care of the environmental sustainability aspect of construction and align its policies to reduce heat/Cold stress on the beneficiaries

Insta Links:

[Pradhan Mantri Awas Yojana- Gramin \(PMAY-G\)](#)

GENERAL STUDIES – 3

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.

2. INDIA'S HORTICULTURE SECTOR

Context:

India is poised to **become a leading global source of fruits and vegetables (F&V)**, driven by a shift towards **nutrition-secure diets and increasing per capita consumption**.

What is Horticulture?

Horticulture is **a branch of agriculture focused on growing plants for human use, encompassing food, medicinal, and aesthetic purposes**. It involves the cultivation and sale of vegetables, fruits, flowers, herbs, and ornamental plants. Key figures in horticulture include **L.H. Bailey**, known as the Father of American Horticulture, and **M.H. Marigowda**, regarded as the **Father of Indian Horticulture**. It is classified into several areas:

1. **Pomology:** Focuses on fruit and nut crops.
2. **Olericulture:** Concerned with vegetable production.
3. **Arboriculture:** The care of individual trees and shrubs.
4. **Ornamental Horticulture:** Divided into floriculture (flowers) and landscape horticulture (beautification of outdoor spaces).

Significance of the Horticulture Sector in India:

- **Horticulture’s Economic Impact:** Horticulture contributes around **30% to the Gross Domestic Product (GDP)** while using only **13% of the gross cropped area**, making it a significant player in India’s agricultural growth.
- **Surpassing Food Grain Production:** In recent years, the total horticulture production in India has **even exceeded the total production of food grains**, highlighting the potential of the sector.
- **Remarkable Productivity Growth:** The productivity of horticulture has increased significantly from **8.8 tonnes per hectare (TPH) in 2001-02 to 12.1 TPH in 2020-21**, leading to a sharp rebound in production and acreage, far outpacing food grains production since 2012-13.
 - **With low water usage and the ability to cultivate on smaller plots**, horticulture allows for reduced crop failure risk. Si-

multaneous cultivation of multiple **crops maximizes yield and fertilizer utilization**.

- **Multi-faceted Contributions:** Horticulture not only contributes to the **nutritional needs** of the country but also creates additional **job opportunities in rural areas**, expands the range of agricultural activities, and generates **higher incomes for farmers**.
 - Additionally, **it promotes dietary diversity and balanced nutrition**, contributing to a healthier lifestyle.
- **Export Potential and Success:** With its vast production base in horticulture, there is ample opportunity for export, with fresh fruits and vegetables being a major contributor.
 - **India ranks second in fruit and vegetable production** in the world after China.

Challenges faced by Horticulture Sector in India:

Challenges	Details
Historical Focus on Grains	Traditionally, India’s agricultural policies and practices have been centred around staple food crops like rice and wheat due to their significance in addressing food security issues. As a result, horticultural crops like fruits, vegetables, and spices have been relatively neglected.
Fragmented Landholdings	A significant portion of Indian agricultural land is divided into small and fragmented holdings . This makes it challenging for farmers to adopt horticultural practices that often require higher investment, knowledge, and technical expertise. The lack of economies of scale hampers the adoption of modern horticultural techniques.
Perception of Risk and Returns	Horticulture is often perceived as riskier than traditional crops due to factors such as fluctuating market prices, perishability of produce, susceptibility to pests and diseases , and the need for specific cultivation practices.
Infrastructure and Post-Harvest Losses	A lack of proper storage, transportation, and processing facilities contributes to significant post-harvest losses in horticultural produce. The absence of efficient supply chains increases wastage and reduces the overall profitability of horticultural cultivation.
Impact of Irrigation and Soil Management	Insufficient access to water for irrigation, coupled with poor soil management practices such as over-tilling, over-fertilizing, and monocropping , can reduce soil fertility, leading to lower yields and lower-quality produce.
Market Dynamics and Demand	The demand for horticultural products in India has been increasing due to changing dietary habits, urbanization, and a growing middle class . However, the market for these products is often characterized by fluctuations in prices, inadequate marketing infrastructure, and limited market linkages for small-scale farmers.
Technical Knowledge and Extension Services	Successful horticultural practices require specialized knowledge and skills . The availability of timely and accurate extension services to disseminate this knowledge to farmers has been limited. This knowledge gap can hinder the adoption of best practices and modern cultivation techniques.
Climate Vulnerability	Unpredictable weather patterns, including droughts, floods, and temperature fluctuations , can negatively impact yields and make cultivation more challenging.

Policy and Financial Support	While there have been efforts to promote horticulture through various government schemes, the overall level of policy and financial support has not always matched the potential of the sector.
Limited Global Trade Presence	Despite the growth of India's horticulture sector, the country's share in global trade remains insignificant, accounting for only 1% of the global trade in vegetables and fruits.
Impediments to Export Growth	Export growth is being undermined by production challenges, marketing challenges, inadequate transport infrastructure, fragmented supply chains, and insufficient storage facilities. These factors result in delays and wastage and discourage farmers from improving the quality of their produce.

Government Initiative:

1. **Mission for Integrated Development of Horticulture (MIDH):**
 - a. **Centrally Sponsored Scheme** for holistic growth of the horticulture sector.
 - b. The government of India contributes 60% of the total outlay (90% in North Eastern and Himalayan states); State governments contribute 40%.
 - c. **Comprises five major schemes:**
 - i. [National Horticulture Mission \(NHM\)](#)
 - ii. [Horticulture Mission for North East and Himalayan States \(HMNEH\)](#)
 - iii. [National Horticulture Board \(NHB\)](#)
 - iv. [Coconut Development Board \(CDB\)](#)
 - v. [Central Institute of Horticulture \(CIH\), Nagaland](#)
2. **Horticulture Area Production Information System (HAPIS):** Web-enabled information system for reporting data from states/districts promptly.
 - a. Aim to minimize time lag and maximize coverage area.
3. **Coordinated Programme on Horticulture Assessment and Management using Geoinformatics (CHAMAN): Objective:** Develop a scientific methodology for estimation of area & production under horticulture crops.
 - a. **Utilizes Remote Sensing** and Sample Survey Techniques.

5. **1.0 Hectare Integrated Farming Model:** Cluster-based approach with diverse interventions for resilience.
6. Tailored approaches for varied **agro-climatic zones.**
7. **Strengthening multi-stakeholder partnerships** for demand-driven production and market linkages.

Insta links:

- [Horticulture](#)

Mains Links:

Q. Assess the role of the National Horticulture Mission (NHM) in boosting the production, productivity, and income of horticulture farms. How far has it succeeded in increasing the income of farmers? (UPSC 2018)

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

3. CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS (CMS COP 14)

Context:

The **Fourteenth Meeting of the Conference of the Parties to the Convention on the Conservation of Migratory Species of Wild Animals (CMS COP 14)** concluded on February 17, 2024 (in Samarkand, Uzbekistan) with parties agreeing to adopt listing proposals for 14 migratory species and several other resolutions for global wild-life conservation.

What is CMS?

The Convention on Migratory Species (CMS) (enforced since 1983; HQ: Bonn (Germany)), also known as the Bonn Convention, is an environmental treaty of the United Nations (UNEP provides support) that provides a global platform for the conservation and sustainable use of terrestrial, aquatic and avian migratory animals and their habitats. It has **133 members including India.**

Conclusion and Way Forward

To fully realize the potential of horticulture in India's agricultural landscape, there needs to be a **comprehensive approach** that addresses these challenges.

1. Emphasis on **export-oriented businesses.**
2. **Integrated value chain** from sourcing to processing.
3. **Supplying key agricultural inputs** to enhance yield.
4. **Seed innovation** for better quality produce and wider cultivation.

It consists of two appendices:

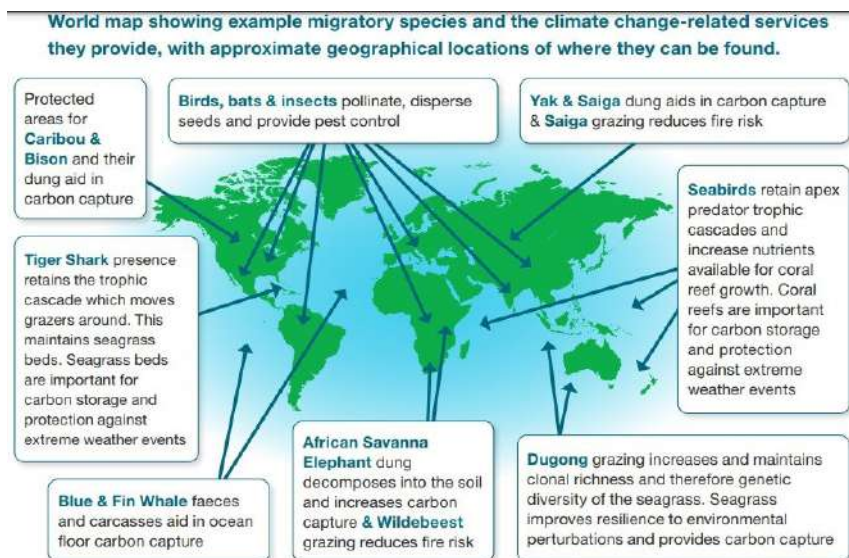
1. **Appendix I** (migratory species that are in danger of extinction)
2. **Appendix II** (Migratory species that will benefit from conservation)

Major outcomes of COP 14 of CMS:

Outcomes	Details
Adoption of Plan	Adoption of the Samarkand Strategic Plan for Migratory Species for 2024-2032.
On Light Pollution	Introduction of new Global Guidelines addressing the impacts of Light Pollution on migratory species.
Action for Species	Addition of 14 species to CMS Appendices including Eurasian Lynx, Pallas’s Cat, and Sand Tiger Shark.
	Implementation of new Concerted Actions for six species , including Chimpanzee, Straw-colored Fruit Bat, and Blue Shark.
	Development of three new Action Plans for aquatic species: the Atlantic Humpback Dolphin, the Hawksbill Turtle , and the Angelshark.
Migratory Birds	Agreement on the Central Asian Flyway (CAF) spanning 30 Range States of migratory birds, with the establishment of a coordinating unit in India.
Scientific Reports	Publication of the first-ever State of the World’s Migratory Species report.
New Global Initiative	Launch of the Global Partnership on Ecological Connectivity (GPEC) aiming to maintain, enhance, and restore ecological connectivity for migratory species. Parties supporting GPEC include Belgium, France, Monaco, and Uzbekistan.
Amendment proposal for CMS	Discussion and recommendation of proposals for amendment of CMS Appendices I and II by the Committee of the Whole (COW) or countries for adoption.
	Committee of the Whole (COW): The main decision-making body of CMS, reviewing the work of the secretariat.
	Slogan: “Nature Knows No Borders”
India and CMS	India was one of the recipients of the Migratory Species Champion Programme for its contribution to the conservation of migratory birds in CAF
	Previously, India had signed non-legally binding Memorandums of Understanding (MoUs) with CMS for the conservation and management of Siberian Cranes (1998), Marine Turtles (2007), Dugongs (2008), and Raptors (2016).
	Despite covering only 2.4% of the world’s land area , India hosts approximately 8% of global biodiversity.
	India serves as a temporary shelter for various migratory species such as Amur Falcons, Bar-headed Geese, Black-necked Cranes, Marine Turtles, Dugongs, and Humpback Whales.

Significance of Migratory Species:

Migratory species play a crucial role in ecosystems, offering essential services that mitigate climate change impacts and **enhance resilience to climatic hazards**. Examples include **whales aiding nutrient transfer and storing carbon**, and antelopes reducing wild-fire risks through grazing. Climate change **poses severe threats to migratory species**, impacting their habitats, migration patterns, and reproductive success



Initiatives taken by India:

1. **National Action Plan for the Conservation of Migratory Birds (2018-2023):** India launched this plan to address challenges faced by migratory birds, including habitat loss, hunting, pollution, and climate change.
 - a. **Goals include stopping bird decline by 2027,** promoting transboundary cooperation, and improving the database on migratory birds.
2. **Conservation of marine turtles:** India launched the **Marine Turtle Policy and Marine Stranding Management Policy in 2020** to protect marine turtles and reduce pollution from micro-plastic and single-use plastic.
3. **Transboundary protected areas:** India established protected areas for species like Tigers, Asian elephants, Snow Leopard, the Asiatic Lion, the one-horned rhinoceros, and the Great Indian Bustard.
4. **Project Snow Leopard (PSL):** Launched in 2009, PSL promotes an inclusive approach to conserving snow leopards and their habitat.
5. **Dugong Conservation Reserve:** India established its first Dugong conservation reserve in Tamil Nadu.
6. **Wildlife Protection Act, 1972:** The act provides stringent punishments for violating wildlife protection laws and includes migratory birds in Schedule I for the highest protection.
7. **Other initiatives:** India imposed a **ban on the veterinary use of diclofenac** to conserve vultures, established Vulture breeding centres, and set up the Wildlife Crime Control Bureau to control illegal wildlife trade.

Definitions:

Migratory Species: Wild animals that cyclically and predictably cross national boundaries. This includes any part of the population.

Central Asian Flyway (CAF): A major migratory route covering 30 countries from the Arctic to the Indian Ocean, hosting over 400 species of migratory birds.

Flyways: Areas used by birds during their annual cycle, including breeding, stopover, and wintering areas. There are nine major flyways globally identified by the CMS Secretariat.

Insta Links:

[Climate change and migratory species](#)

Prelims Links:

Q. Consider the following pairs: (UPSC 2020)

	International agreement/set-up	Subject
1.	Alma-Ata Declaration	Healthcare of the people
2.	Hague Convention	Biological and chemical weapons
3.	Talanoa Dialogue	Global climate change
4.	Under2 Coalition	Child rights

Which of the pairs given above is/are correctly matched?

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

Ans: (c)

GENERAL STUDIES - 4

1. EXAMPLES OF ETHICS

Example 1: Nainital District Magistrate Vandana Singh
 She is in the news **for her role in diffusing communal violence in Haldwani, Uttarakhand, following the demolition of an illegally constructed madrasa.** Despite criticism, Singh has been praised for her efforts in restoring peace. She is a 2012-batch IAS officer known for her notable career in Uttarakhand.

Nainital District Magistrate Vandana Singh demonstrated ethical values such as:

1. **Integrity:** Upholding the law by taking action against illegal structures despite facing criticism.
2. **Courage:** Displaying bravery in diffusing communal tensions and maintaining peace.
3. **Accountability:** Accepting responsibility for her decisions and actions in the face of public scrutiny.
4. **Empathy:** Considering the impact of her decisions on the community and striving for a peaceful resolution.
5. **Fairness:** Ensuring that the law is applied equitably, regardless of public opinion or pressure.

Example 2: District Magistrate Divya Mittal

Last year, District Magistrate **Divya Mittal of Mirzapur district in Uttar Pradesh** garnered attention for her efforts in **bringing piped water to Lahuria Dah village,** where residents previously relied on tankers and wells. Despite achieving this milestone, she was transferred to

Basti district shortly after the water supply inauguration, since the local MLA, MP, and others were not invited for the event.

Mittal, who has an **MBA from IIM Bangalore and did her B.Tech from IIT Delhi**, had quit her job as an exotic derivatives trader in London to join the civil services.

Mittal's **proactive approach and dedication to improving living conditions** in rural areas reflected ethical values such as **empathy, responsibility, and commitment to public service**. Despite the setback of her transfer, Mittal's work left a **lasting impact on the community**, showcasing her leadership and determination.

What does Divya Mittal's transfer mean?

Her transfer suggests a **potential clash between bureaucratic protocol and political expectations**. The incident highlights the **complexities of governance, where adherence to administrative procedures may conflict with political sensitivities**.

The potential solution involves:

1. **Improved communication and collaboration** between officials and politicians.
2. Transparency through **clear channels of communication**.
3. **Engagement of local politicians** in project planning.
4. Consultation with politicians and community leaders.
5. Conflict resolution **through constructive dialogue**.
6. **Accountability** for all parties involved.

CONTENT FOR MAINS ENRICHMENT

1. ECONOMIC NATIONALISM

Context:

The president has called for 'economic nationalism' for India's growth, urging the import of only essential goods **to safeguard foreign exchange and jobs**. The government champions **'Vocal for Local' as integral to self-reliance**, echoing the Swadeshi movement.

Renowned economic thinkers hold diverse views on economic nationalism:

- **Adam Smith:** Supported free trade and specialization for overall economic welfare.
- **Friedrich List:** Advocated protective tariffs and government intervention to foster domestic in-

dustries and national strength.

- **John Maynard Keynes:** Favored international cooperation and trade for global economic stability.
- **Dadabhai Naoroji:** Emphasized self-reliance and economic empowerment for India's development, supporting domestic industries.
- **M. Visvesvaraya:** Advocated for industrialization and economic self-sufficiency to strengthen India's economy.

Issues with economic nationalism include:

1. **Trade Barriers:** Tariffs and trade barriers can trigger trade wars, reducing global trade and harming businesses.
2. **Inefficiency:** Shielding domestic industries can lead to inefficiencies and lower-quality products.
3. **Resource Misallocation:** Prioritizing domestic industries can lead to misallocation of resources, hindering growth.
4. **Geopolitical Tensions:** Economic nationalism can strain international relations and cooperation.
5. **Global Economic Instability:** Restrictions on trade and investment can disrupt global markets, leading to instability.

Usage: The example can be used in Indian Economy/ Essay

2. AI'S IMPACT ON MERITOCRACY

What is Meritocracy?

Meritocracy is a system where **individuals progress based on abilities and hard work, not social status**. It values **fairness, equal opportunity, and personal merit**. However, critics argue it can **perpetuate inequality and elitism**.

Different Views on Meritocracy:

Views	Summary
Michael Young	Predicted a dystopian future where social class and mobility were solely determined by intelligence and effort . Criticized the emerging trend towards a merit-based system, fearing it would lead to new forms of social stratification .
Michael Sandel	Argued that meritocracy fosters entitlement among the successful and resentment among those left behind, eroding social cohesion . Criticized meritocracy for masking deeper power dynamics and perpetuating social hierarchies.

Post-Structuralists	Challenge the notion of merit, highlighting its socially constructed nature and subjective measurement. Emphasize how <u>meritocratic systems can reinforce existing inequalities.</u>
Adrian Wooldridge	Emphasized the <u>practical evolution of meritocracy and its potential for reform.</u> Acknowledged how meritocracy has inadvertently <u>fostered new inequalities but believes in its intuitive fairness.</u> Proposes reforms including improving access for underprivileged students and advocating better technical education.

Artificial Intelligence (AI)'s Impact on Meritocracy:

- 1. Enhancing Human Abilities:** AI's capabilities challenge human merit by surpassing traditional tasks, questioning the relevance of conventional merit metrics. Access to AI tools grants advantages, potentially **shifting the definition of individual merit.**
- 2. Exacerbating Inequalities:** AI-trained systems can perpetuate biases present in historical data, leading to **discriminatory outcomes in various sectors.** Advanced AI capabilities **may displace jobs and polarize the workforce,** worsening socioeconomic disparities.
- 3. Opaque Decision-Making:** The opaque nature of AI algorithms can obscure the criteria for evaluating merit, challenging the transparency and accountability of meritocratic ideals.
- 4. Data Hegemony:** Tech giants' access to **vast data gives them an advantage in setting standards for merit in the digital age,** potentially sidelining smaller players with innovative ideas but limited access to data.

Solution:

A balanced solution to the debate on AI and meritocracy involves **leveraging technology responsibly while upholding the principles of fairness and equality.** This includes:

- 1. Ethical AI Development:** Implementing stringent ethical guidelines for AI development to minimize biases and ensure transparent decision-making processes.
- 2. Accessible Education:** Prioritizing accessible education and training programs to equip individuals with the skills needed to thrive in an AI-driven society, thereby democratizing opportunities.
- 3. Continuous Adaptation:** Continuously adapting meritocratic systems to accommodate technological advancements and evolving societal needs, ensuring that everyone has a fair chance to succeed.
- 4. Regulation and Oversight:** Implementing robust regulations and oversight mechanisms to prevent

the concentration of power and data monopolies, promoting competition and innovation.

- 5. Social Safety Nets:** Establishing comprehensive social safety nets to support individuals adversely affected by AI-driven changes, mitigating socioeconomic disparities and ensuring inclusivity.

Usage: The debate can be used in Essay/Sociology/PSIR/Ethics of AI/ Indian Polity etc.

3. SCHOOL WHERE TEACHERS NEVER SHOUT AT CHILDREN

Context:

At Uphall Primary School in Ilford, East London (United Kingdom), a different approach to discipline is taken. **Headteacher Dr Kulvarn Atwal** believes in not shouting at pupils or resorting to detentions or suspensions. Instead, **misbehaving children are given learning opportunities through discussions about their actions, emotions, and alternative behaviours.**

The school's approach is **part of Unicef's 'rights respecting' scheme,** promoting children's rights and involvement in school life. It encourages **schools to adopt similar approaches to reduce absenteeism and suspensions,** aiming to create safer environments for children.

Other benefits:

This approach **fosters a positive and supportive environment,** encourages open communication, and promotes empathy and understanding. It helps children learn from their **mistakes, develop emotional intelligence, and build healthier relationships** with peers and adults.

4. CAPITALISM AND ITS TYPES

Context:

Capitalism exhibits diverse variations both between and within countries, with the classic division between **liberal market economies (LMEs) and coordinated market economies (CMEs).**

What is Capitalism?

Capitalism is an economic system **characterized by private ownership of the means of production and the pursuit of profit.** In capitalist economies, goods and services are **produced and distributed based on market demand and supply,** with minimal government intervention. For example, the **United States, the United Kingdom, and Germany** are often cited as examples of countries with capitalist economies

Type of Capitalism:

Type of Capitalism	Characteristics
Liberal Market Economies (LMEs)	Examples: US, UK, Canada; Emphasis on free market principles; Minimal state intervention; Firms interact mainly through market mechanisms
Coordinated Market Economies (CMEs)	Examples: Germany, Japan; Firms rely on non-market relationships for coordination; Strong labour unions; Close collaboration between government and industry
Intermediate Models Between LMEs and CMEs	Mediterranean Capitalism: Found in Spain and Italy, combines elements from LMEs and CMEs, notable presence of family businesses and state intervention.
	East Asian Capitalism: Seen in South Korea and Singapore, mixes state-guided policies with market operations, often focusing on export-driven growth.
	Social Capitalism: Characteristic of Sweden, a blend of market mechanisms and strong social welfare systems.
Types of Capitalism Varieties within a Country	State-Guided Capitalism: E.g., China. The state plays a crucial role in controlling and guiding the economy, often through ownership of key sectors.
	Informal Sector: Small, labour-intensive businesses operating in competitive markets with less than 20 employees.
	Formal Competitive Sector: Medium-sized enterprises, operating in competitive markets as price-takers without significant market power
	Formal Oligopolistic Sector: A small number of large firms with significant market share, further divided into non-politically connected firms and politically connected oligopolistic sectors.

production) and the **proletariat** (workers). He advocated for the **overthrow of capitalism in favour of socialism.**

3. **John Maynard Keynes:** Introduced Keynesian economics, advocating for **government intervention in the economy to manage demand and stabilize fluctuations.** He emphasized the role of aggregate demand and the importance of fiscal policy in achieving full employment and economic stability.

Indian Style of Capitalism:

The Indian style of capitalism **combines state intervention with market forces**, aiming for **inclusive growth**. It leverages a **diverse and youthful population** and fosters entrepreneurship. While facing challenges like bureaucratic hurdles, it adapts to **India's unique developmental needs**. It provides a framework for **balancing social welfare with economic growth.**

Usage: It can be used in Economy Optional/GS3 paper/Essay

FACTS FOR PRELIMS

GS-1

1. PARUVETA UTSAVAM

Context:

Efforts are underway to **secure UNESCO recognition for the annual 'Paruveta' (mock hunting festival)** held at **the Sri Narasimha Swamy temple in Ahobilam** as an **'intangible cultural heritage'.**

- Legend has it that Lord Vishnu, in **his incarnation as Narasimha**, married **a tribal girl named Chenchulakshmi**, and the festival commemorates this union.
- Participants observe **'Narasimha Deeksha'** by wearing yellow robes and **'Tulasi Mala'** and practicing celibacy.
- The festival highlights the **absence of caste discrimination**, with temple staff residing in tribal hamlets throughout the event.
- The ceremony **involves tribals shooting arrows at the deity's palanquin as a sign of reverence and protection.**

The Ahobila Mutt has historically promoted the festival to spread Srivaishnavism among tribal communities, further affirming the tribal link to Lord Vishnu. Top of Form

Major Ideas of Thinkers about Capitalism:

1. **Adam Smith:** Championed the concept of the **"invisible hand" in "The Wealth of Nations,"** arguing that individual pursuit of self-interest in free markets leads to overall societal benefit.
2. **Karl Marx:** Critiqued capitalism as inherently exploitative, with a focus on the class struggle between the **bourgeoisie** (owners of the means of

2. JNANPITH AWARD

Context:

Renowned poet and lyricist **Gulzar**, along with **Sanskrit scholar Swami Rambhadracharya**, has been honoured with the prestigious **Jnanpith Award**.

- The award recognizes their **exceptional contributions to literature**.
- Gulzar is celebrated for his **impactful poetry and timeless lyrics in Bollywood**, while Swami Rambhadracharya is acknowledged for his **scholarly works in Sanskrit**.

The **Jnanpith Award** is a prestigious accolade in the **field of literature**, highlighting the remarkable achievements of **individuals who have enriched the literary landscape with their talent and dedication**.

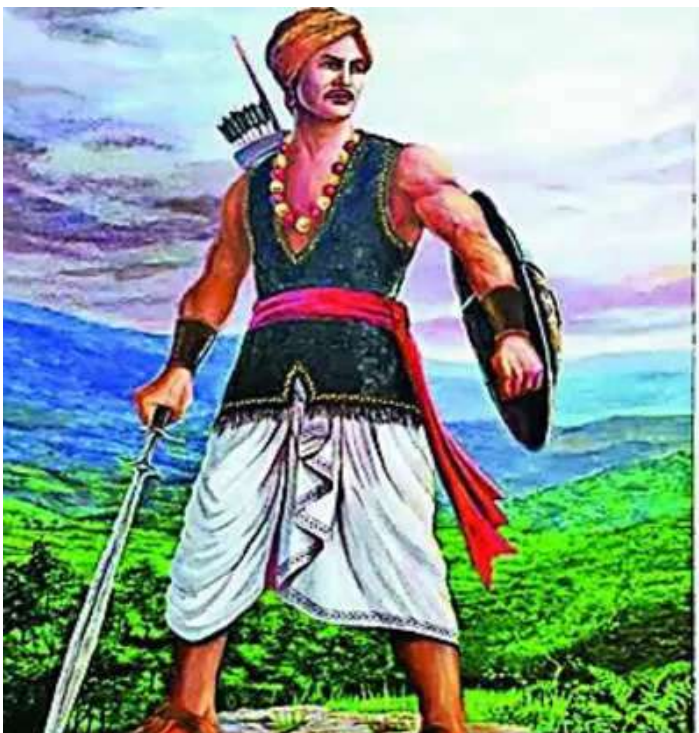
3. U TIROT SING

Context:

A statue of **U Tirot Sing**, a **Khasi freedom fighter** who **rebelled against British colonialism** around 200 years ago, was **unveiled at the Indira Gandhi Cultural Centre in Dhaka**.

About Tirot Sing:

- **Tirot Sing**, also known as **'the Hero of the Khasi Hills'**, led an **attack against British forces in 1829, resisting their attempts to control the Khasi Hills**.
- Captured after the **Anglo-Khasi War**, he **died as a political prisoner in Dhaka in 1835**.



4. RIP CURRENTS

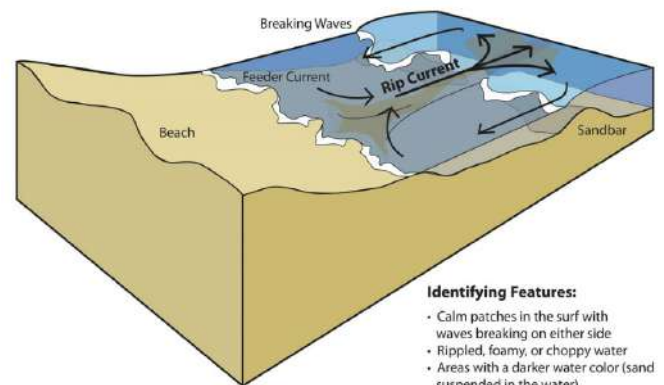
Context:

The **Indian National Centre for Ocean Information Services (INCOIS)** and the **Indian Space Research Organisation (ISRO)** are collaborating on a **project to monitor rip currents** more effectively to enhance beach safety.

About Rip Currents:

- A rip current is a **strong, narrow flow of water moving directly away from the shore**, cutting **through the lines of breaking waves**.
- They pose a **significant risk to beachgoers who might inadvertently enter one and attempt to swim directly back to shore**, a response that can lead to exhaustion and, in the worst cases, drowning.
- It's crucial to **distinguish rip currents from rip tides**, with the latter relating to tidal movements through narrow coastal features and not the shore-directed flow of rip currents.

Rip Current



The **Indian National Centre for Ocean Information Services (INCOIS)** is an **autonomous organization that provides ocean information services**. It was established in 1999 as a division of the **Earth System Science Organization (ESSO)** in New Delhi.

5. MORODHARO

Context:

Residents of Lodrani, **unearthed a Harappan-era fortified settlement**.

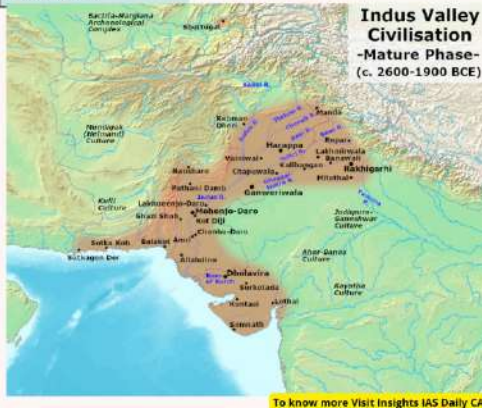
- The site, named **Morodharo**, yielded a large quantity of **Harappan pottery** similar to that found in **Dholavira**.
- The settlement, **dating back 4,500 years**, shows **architectural similarities to Dholavira and depended on the sea**, suggesting that the desert was once navigable water.

TIMELESS TREASURES

- This is a fortified settlement dating back to the Harappan era
- The fortification measures 102 m east to the west and 58 m north to the south
- The thickness of the wall is an average of 3.3 m
- It has a 10x10 m platform on the south-west side and a well on the north-east side
- Burial cairns, which are mounds of stones to demarcate a boundary, found
- Perforated jar sherds
- Harappan pottery with perforated jar sherds, reserved slipware, and terracotta cakes unearthed
- All these items found have a striking resemblance to those found in Dholavira



MORODHARO - NEW HARAPPAN SITE



- His leadership was marked by his **dedication to the welfare of his subjects**, regardless of their caste or religion, earning him the title "**Rayatecha Raja**" (King of the People).

Shivneri Fort is an ancient military fortification in the **Pune district of Maharashtra, India**.

The **17th-century fort is known as the birthplace of Chhatrapati Shivaji Maharaj**, the founder of the Maratha Empire. It was an important citadel during Maratha rule.

7. RANI CHENNAMMA

Context:

Commemorating the **200th anniversary of Rani Chennamma's rebellion**, social groups across India are organizing a national campaign called "**Naanoo Rani Chennamma**" (I am Rani Chennamma too).

- This campaign aims to empower women to **fight against patriarchal, anti-democratic, and casteist forces in the country**, drawing inspiration from Rani Chennamma's legacy of courage and resistance.

About Rani Chennamma:

Rani Chennamma, the **Queen of Kittur, led the Kittur revolt of 1824**, one of the earliest woman-led **anti-colonial struggles against British rule in India**. Born in 1778 in present-day Karnataka, she married **Raja Mallasarja of Kittur and played a crucial role in defending her kingdom after his death**.

When the British refused to recognize her adopted son as the **successor under the 'doctrine of lapse'**, she led a **rebellion against them**.

Despite initial success, the **British eventually captured Kittur Fort in December 1824**, leading to Rani Chennamma's **imprisonment and subsequent death in 1829**. Her bravery and leadership in resisting **colonial oppression have made her a symbol of Karnataka's political imagination and a significant figure in Indian history**.



6. CHHATRAPATI SHIVAJI MAHARAJ

Context:

Pune city commemorated the **birth anniversary of Chhatrapati Shivaji Maharaj**.

- Maharashtra Chief Minister paid tribute **to Shivaji Maharaj at Shivneri Fort**.



Shivaji Maharaj

Context: 350th anniversary of Chhatrapati Shivaji Maharaj's coronation is being celebrated

	Description
	Shivaji Maharaj was a Maratha warrior king who lived from 1630 to 1680 . He was the founder of the Maratha Empire in western India and is known for his military strategies, administrative skills, and promotion of Hindu self-rule.
Birth	Born on 19th February 1630 at Shivneri Fort in District Pune to Parents: Shahaji Bhonsle and Jijabai
Early Life	Showed military zeal by gaining control of Torna Fort and Kondana Fort from Adil Shah of Bijapur (in 1645 when he was still a teenager)
Important Battles	Battle of Pratapgad, 1659; Sacking of Surat, 1664; Battle of Purandar, 1665 (Fought between the Mughal Empire and Maratha Empire); Battle of Kalyan, 1682-83 (Bahadur Khan of the Mughal Empire defeated the Maratha army and took over Kalyan); Battle of Sangamner, 1679 (Fought between the Mughal Empire and Maratha Empire. This was the last battle in which the Maratha King Shivaji fought)
Conflict with Mughals	In the late 1650s and early 1660s, Shivaji Maharaj raided Mughal territories near Ahmednagar and Junnar. In 1664, Shivaji sacked the wealthy Mughal trading port of Surat. In June 1665, the Treaty of Purandar was signed between Shivaji and Raja Jai Singh I, representing Aurangzeb. The treaty involved relinquishing many forts to the Mughals and an agreement for Shivaji to meet Aurangzeb in Agra, along with sending his son Sambhaji .
Arrest of Shivaji	When Shivaji went to meet the Mughal emperor at Agra in 1666 , he felt insulted by Aurangzeb and left the court. He was arrested and imprisoned , but he cleverly escaped with his son in disguise.
Granted Title	Crowned as king of the Marathas in 1674, at Raigad; Took on titles of Chhatrapati (Monarch), Shakakarta, Kshatriya Kulavantas, and Haindava Dharmodhhaarak
Death	Died on 3rd April 1680

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About Chhatrapati Shivaji Maharaj:

- Chhatrapati Shivaji Maharaj, **born in 1630 in Shivneri** in what is now Maharashtra, India, was a revered **warrior king and the founder of the Maratha Empire**.

GS-2

1. REGISTRATION OF NRI, OCI MARRIAGES

Context:

The Law Commission's 287th report proposes **mandatory registration of marriages** involving **Non-Resident Indians (NRI) and Overseas Citizens of India (OCI)** to address the challenges **faced by Indian women deserted by their NRI or OCI spouses.**

Key Recommendations:

- The report suggests revisions to the pending **Registration of Marriage of Non-Resident Indians Bill, 2019, to include OCIs and enforce new provisions.**
- These provisions cover penalties **for failure to register divorce, maintenance, child support, and non-compliance with legal procedures.**
- The recommendation aims to **combat fraudulent marriages and provide legal recourse for women vulnerable to abandonment or exploitation.**

Additionally, the report suggests **amending the Passport Act, 1967, to require marital status declaration in passports** and establishing a separate division within the Ministry of Home Affairs or External Affairs to maintain a registry for NRI and OCI marriages.

2. MISSION BASUNDHARA 4.0

Context:

Assam Chief Minister announced the initiation of a **survey of land within char (riverine) areas** under **Mission Basundhara 4.0**, aimed at settling land in these regions.

- **Mission Basundhara is a program in Assam, India that aims to make land revenue services more accessible to citizens. The program includes land-related services** like:
 - Land mutation
 - Updating land records
 - Delivery of services to people at their homes through online mode

Mission Basundhara 1.0 was launched on October 2, 2021, and Mission Basundhara 2.0 was launched on November 14, 2022. **Mission Basundhara 3.0 will aim to ease the process of buying and selling land and end conflicts between families** arising out of land boundaries.

The **riverine areas (island) of the river Brahmaputra**, locally known as "**Char/ Chapori**"
The chars follow a **peculiar pattern of migration.**

They are **subjected to erosion on their upstream and deposition on the downstream**, due to which they migrate downstream.

3. SC: TN GODAVARMAN RULING

Context:

The Supreme Court of India has temporarily suspended the implementation of the **Van (Sanrakshan Evam Samvardhan) Adhiniyam, 2023**, which activists and experts claimed diluted **environmental protections for forests.**

- The court's interim order mandates that the **identification of forests should adhere to the "dictionary definition" of forests**, in line with a **precedent set by a 1996 ruling (the TN Godavarman ruling)**, which expanded the **definition of forests beyond those officially recorded or notified.**
- The establishment of **"zoos or safaris"** by any government or authority **should not be consented to without the final approval of the apex court.**

T.N. Godavarman Thirumulpad vs Union of India Case (1996), concerned authorities used to apply the provisions of the Act only to the forests notified under the Indian Forest Act of 1927.

As per Judgement "forest" covered include: All areas recorded as **"forest" in any government (Union and State) record.**

All areas that **conformed to the "dictionary" meaning of forest.** Areas identified as "forests" by an expert committee of SC.

4. PM-USHA SCHEME

Context:

Six universities in Uttar Pradesh have each been awarded ₹100 crore in funding under the **Pradhan Mantri Uchchatar Shiksha Abhiyan (PM-USHA) scheme**, aimed at developing these institutions as **multi-disciplinary education and research universities (MERUs).**

- The funding aims to **upgrade laboratories, modernize classrooms, foster innovation hubs, and promote interdisciplinary research**, thereby improving the **quality of higher education and making it more inclusive for women, minorities, SC/ST/OBCs, and special-abled persons.**
- The initiative reflects a **significant investment in India's educational infrastructure**, aiming to **elevate the nation's knowledge landscape and ensure higher education opportunities for socially disadvantaged communities.**

The Pradhan Mantri Uchchatar Shiksha Abhiyan (PM-USHA) scheme **is a National Education Policy RUSA scheme** that aims to **strengthen higher education institutions in India.** The scheme has two phases, with the first launched in 2013 and the second in 2018.

5. GOVERNMENT PROPOSES HIKE IN MINISTRIES' FINANCIAL REPORTING LIMITS

Context:

Parliament's Public Accounts Committee (PAC) has approved the Finance Ministry's proposal to **raise reporting limits for new policy-related expenditures** by ministries/departments.

What does the new reporting limit mean?

The new reporting limit **dictates the amount of spending** that requires prior approval or oversight from Parliament or other relevant authorities.

The new limits are **set above Rs 50 crore but not exceeding Rs 100 crore**, with mandatory **prior approval of Parliament for spending over Rs 100 crore**. The move comes after **nearly 18 years** and is in line with GDP growth and budget size expansion. The revision also covers **New Service (NS) and New Instrument of Service (NIS) expenditure**, aiming to encourage better budget estimation by ministries.

Aim: This revision aims to **reduce delays in project execution** caused by frequent supplementary demands for grants. The proposed changes are expected to **streamline the spending process and improve decision-making** while ensuring parliamentary oversight.

About NS and NIS:

Category	New Service (NS)	New Instrument of Service (NIS)
Definition	Expenditure arising from a new policy decision not previously brought to Parliament.	Relatively large expenditure for expanding an existing policy.
Purpose	Includes new activities or investments.	Involves significant expansion of an existing policy .
Amendments' Objective	Encourage ministries to better estimate budgetary needs.	Address a surge in supplementary proposals , reducing delays in project execution.

About PAC:

	Public Accounts Committee (PAC)
Establishment	Introduced in 1921 under the Government of India Act, 1919 (Montford Reforms), existing in the Indian Constitution since then.
Purpose	Exercise's oversight of public expenditure scrutinizes the value for money of government projects, programs, and service delivery, and holds government officials accountable for public spending.
Responsibilities	Examines annual audit reports of CAG, including appropriation accounts, finance accounts, and public undertakings.
Composition	Comprises 22 members from the Indian Parliament , with 15 elected from Lok Sabha (Lower House) and 7 from Rajya Sabha (Upper House).
Accountability	Holds government and civil servants accountable for economy, efficiency, and effectiveness of public spending .

6. AUTHORISED CAPITAL OF FOOD COOPERATION OF INDIA (FCI)

Context: The government has **raised the authorised capital of FCI from ₹10,000 crore to ₹21,000 crore** to bolster its operational capabilities and fulfil its mandate effectively.

What is Authorised Capital?

Authorized capital, also known as **nominal or registered capital**, refers to the **maximum amount of share capital** a company is permitted to issue as outlined in its Memorandum of Association (MoA). The company **cannot issue**

shares beyond this specified amount. For the Food Corporation of India (FCI), an enhanced authorized capital would facilitate initiatives such as:

1. Modernizing storage facilities
2. Improving transportation networks
3. Adopting advanced technologies
4. Alleviate the interest burden of FCI

About Food Corporation of India (FCI):

It is a **Public Sector Undertaking** under the Department of Food & Public Distribution, Ministry of Consumer Affairs, Food, and Public Distribution. Established in **1965 under the Food Corporations Act 1964**, FCI was created to address **significant grain shortages, particularly in wheat**. It operates alongside the **Commission for Agricultural Costs and Prices (CACAP)**, which recommends **fair prices to farmers**. FCI's main responsibilities include **purchasing, storing, transporting, distributing, and selling food grains** and other essential food items.

Related news:

Exports by APEDA

Context: In the fiscal year 2022-23, APEDA accounted for nearly half (USD **26 billion**) of the **total agricultural exports** (which stood at nearly USD 53 billion).

About APEDA:

Established under **the Agricultural and Processed Food Products Export Development Authority Act, 1985**, APEDA is mandated with promoting and developing exports of scheduled products including **fruits, vegetables, poultry, dairy, and confectionery products**. APEDA also, serves as the **Secretariat to the National Accreditation Board**, accrediting certification bodies under the **National Programme for Organic Production**.

7. ARTICLE 142

Context:

The Supreme Court **utilized its authority under Article 142 of the Constitution** to **nullify the outcome of the January 30 Chandigarh mayoral election** due to deliberate invalidation of eight ballots by the presiding officer.

- It emphasized the need to **uphold the sanctity of electoral democracy** and **cited potential harm to democratic principles** if irregularities were allowed.

Article 142 gives the Supreme Court the discretion to **pass decrees or make orders that are necessary for complete justice in any case or matter pending before it**. This power can be used when the **law or statute does not provide a remedy**. In these situations, the court can

extend itself to resolve a dispute in a way that fits the facts of the case

8. FACT-CHECK UNIT

Context:

The **Bombay High Court** delivered a split verdict on petitions challenging the constitutionality of the **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2023 (IT Rules)** that permit a **"Fact Check Unit" (FCU) of the Union Government to identify "fake or false or misleading" online content "related to the business of the Central Government"** and demand its removal.

The **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2023 (IT Rules)** are intended to regulate **online gaming and misinformation**. The rules include new provisions, such as:

Fact-check unit

The union government is **now able to create a fact-checking unit (FCU) to fact-check online information related to the government**. The FCU can review online comments, news reports, and opinions about government officials and ministries and tell online intermediaries to censor them.

Online gaming

Intermediaries are prohibited from **hosting, publishing, or sharing any online game** that can cause the user harm or that has not been verified as a permissible online game by an SRB.

Online games and advertisements

No platform can **allow harmful unapproved online games and their advertisements**.

False information

Platforms should **not share false information about the Indian government**, as confirmed by a fact-checking unit.

9. IBSA FUND

Context:

India has **contributed \$1 million** to the **Poverty and Hunger Alleviation Fund**, which is part of the **India, Brazil, and South Africa (IBSA) initiative**.

- This contribution reflects India's commitment to **promoting cooperation and development among nations of the Global South**.

The IBSA Fund, **established in 2004** and operational since 2006, aims to implement projects in developing countries to alleviate poverty and hunger, aligning with internationally agreed development goals.

IBSA may refer to the **India-Brazil-South Africa Dialogue Forum**, which is a **tripartite grouping that promotes international cooperation between India, Brazil, and South Africa**. IBSA was established in June 2003 to contribute to the **construction of a new international architecture**.

10. GLOBAL INITIATIVE ON DIGITAL HEALTH (GIDH)

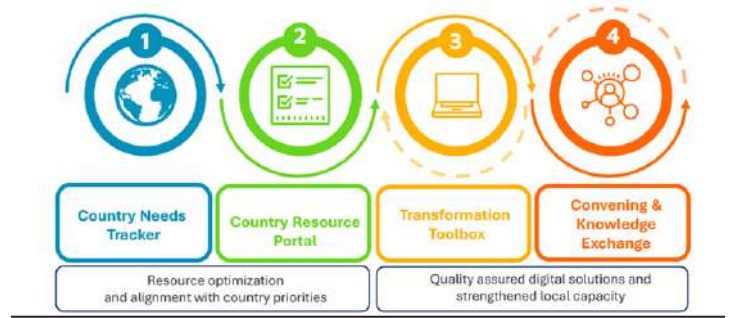
Context:

The **World Health Organization (WHO)** launched the **Global Initiative on Digital Health (GIDH) virtually**, in line with one of the priority areas agreed upon during **India's G20 presidency in 2023**.

- The initiative aims to **facilitate the sharing of knowledge and digital health products among countries**.
- GIDH will prioritize assessing **Member States' needs, evaluating digital health resources, supporting the achievement of strategic objectives, and building capacity for digital health technologies**.
- It will address variability in **digital solutions by promoting best practices and standards**.

It will function as a "**Network of Networks**," focusing on four foundational pillars:

- **Country Needs Tracker** - facilitating digital health investments to be informed by country priorities;
- **Country Resource Portal** - identifying traditional as well as innovative resource opportunities, and promoting transparency, while reducing the risk of duplication for enabling a standards-based prospective and retrospective analysis of resourcing gaps in digital health.
- **Transformation Toolbox** - advocating for **quality-assured tools and resources** that strengthen the country's capacity and autonomy to manage the national digital health transformation.
- **Convening and Knowledge Exchange** - promoting **strengthened collaboration and knowledge exchange** across global, regional, and national networks in digital health.



11. RIGHT TO ADOPT A CHILD

Context:

The Delhi High Court upheld alterations to **Adoption Rules under the Juvenile Justice (Care and Protection of Children) Act, 2015**, clarifying that the **right to adopt children is not a fundamental right**.

- The ruling came in response to a case concerning **regulations barring parents with two children from adopting a 'normal child'**.
- The court endorsed the decision to **prioritize children with special needs for adoption, even applying the new policy to pending adoption applications**.
- The court clarified that the **right to adopt does not constitute a fundamental right under Article 21 of the Constitution** and does not grant prospective adoptive parents the authority to demand their choice of adoptee.

12. SHOMPEN TRIBE

Context:

Experts warn that the **development of Great Nicobar** into a shipping hub and tourist destination could lead to the extinction of the **indigenous Shompen tribe**.

- The \$9 billion development plan could **introduce 650,000 people to the island, increasing the risk of contact and diseases that could devastate the Shompen**.

The Shompen are an **indigenous group of people who live on Great Nicobar Island** in the Andaman and Nicobar Islands. They are **hunter-gatherers who hunt wild game, forage for fruits and forest foods, and farm yams, roots, vegetables, and tobacco**.

The Shompen are one of the **most populated tribes in the Andaman and Nicobar Islands**, with around **200-300 people living mainly on Great Nicobar Island**. They were first contacted in the 1840s and are **designated as a Particularly Vulnerable Tribal Group (PVTG)**

There are six main tribes in the Andaman Islands: **the Great Andamanese, Onge, Jarawa, Sentinelese, Shompens, and Nicobarese**

13. RASHTRIYA UDYAMITA VIKAS PARIYOJANA

Context:

The Union Minister of Education and Skill Development & Entrepreneurship, inaugurated the Rashtriya Udyamita Vikas Pariyojana.

Features of the scheme:

- This initiative, tailored for PM SVANidhi scheme beneficiaries, aims to provide comprehensive entrepreneurship training over 22 weeks, combining theoretical knowledge with practical exposure.
- The training will be conducted offline, online, and in hybrid modes, with certificates awarded upon completion.
- The project will be implemented through 20 Centres of the National Institute of Entrepreneurship and Small Business Development (NIES-BUD) and 10 Centres of the Indian Institute of Entrepreneurship (IIE), initially focusing on selected districts with a 40% participation target for women.

The project reaffirms the government's commitment to harnessing skill potential and fostering a culture of entrepreneurship, aligning with the vision of a "Kushal Bharat Viksit Bharat."

GS-3

1. 'SAGAR AANKALAN' GUIDELINES

Context:

The Union Minister of Ports, Shipping & Waterways, introduced the 'Sagar Aankalan' guidelines during a stakeholders meet aimed at implementing MoUs from the Global Maritime India Summit 2023 (GMIS 2023).

- These guidelines aim to transform the performance assessment of Indian ports, focusing on benchmarking, efficiency, and sustainability.
- GMIS 2023 attracted significant investment commitments, demonstrating India's potential as a global maritime leader.

2. OPENAI: SORA

Context:

OpenAI has introduced Sora, a new generative artificial intelligence (GenAI) model capable of converting text prompts into videos up to a minute long with maintained visual quality and adherence to user instructions.

- Sora can create complex scenes with multiple characters, accurate details, and vibrant emotions, though it still faces challenges with more

complex prompts.

- While other companies have ventured into text-to-video technology, Sora is not yet available for general use as OpenAI is ensuring safety protocols and gathering feedback from visual artists and filmmakers.
- The model has weaknesses, such as struggling with complex physics simulations and precise temporal descriptions, but OpenAI is continuously working to improve it.

3. MUSHROOM GROWING ON A FROG

Context:

Scientists were astonished to find a mushroom growing out of the side of a frog in India, marking the first known instance of such a phenomenon.

- Discovered in the Western Ghats, the frog, identified as a Rao's Golden-backed frog, had a white-colored growth resembling a Bonnet mushroom.

The Rao's Intermediate Golden-backed frog (*Indosylvirana intermedia*) is a species of frog named after its discoverer, C. R. Narayan Rao, an Indian herpetologist who discovered it in 1937.

It is endemic to the Western Ghats of Karnataka and Kerala, specifically above the Palghat Gap

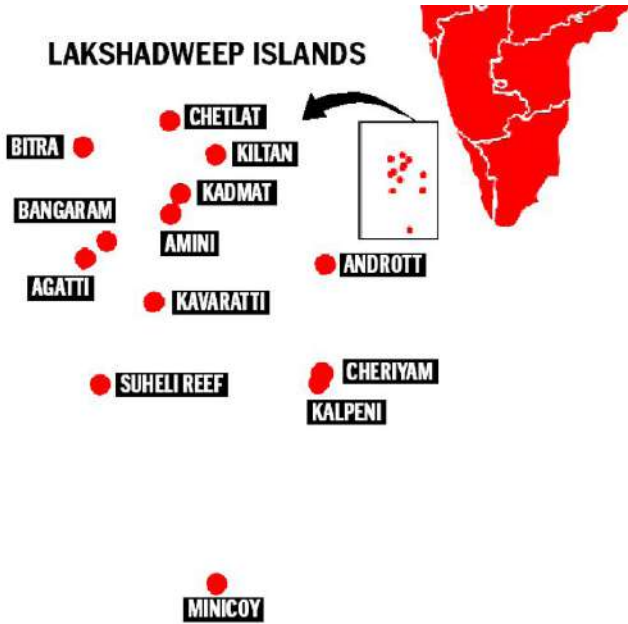


4. PANDARAM LANDS

Context:

Residents of Lakshadweep are upset as the administration continues to number trees on Pandaram lands, sparking a dispute over land ownership

Around 60% of land in Lakshadweep, which includes some parts of the Androth, Kalpeni, Kavaratti, Minicoy, and Agatti islands, along with six uninhabited islands, constitutes pandaram land



5. WATER ON THE SURFACE OF AN ASTEROID

Context:

For the first time ever, **scientists have detected water molecules on the surface of two asteroids, Iris and Massalia**, revealing new insights into the distribution of water in our solar system.

- This discovery was made using data collected by **NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA)**, specifically its **Faint Object InfraRed Camera (FORCAST)** instrument.

NASA's **Stratospheric Observatory for Infrared Astronomy (SOFIA)** is the world's largest airborne astronomical observatory. It's a **Boeing 747SP jetliner** modified to carry a **106-inch (2.7-meter) reflecting telescope**. SOFIA can fly for up to 10 hours, with flight paths chosen to keep ahead of sunrise and maximize darkness.

SOFIA's instruments include:

- FORCAST mid-infrared camera and spectrograph
- GREAT heterodyne spectrometer
- FIFI-LS far-infrared spectrometer
- EXES echelle spectrograph
- FPI+ focal plane imager

6. RHODAMINE-B

Context:

The **sale of cotton candy (panju mittai)** has been banned in Tamil Nadu due to the presence of **cancer-causing chemicals, specifically Rhodamine-B, found in samples collected from stalls in Chennai.**

- This chemical is considered **substandard and unsafe under the Food Safety and Standards Act 2006.**

- The **immediate and long-term health hazards** associated with Rhodamine-B consumption, include **stomach issues, breathing problems, organ damage, and an increased risk of cancer.**

7. RUBBER SECTOR

Context:

The **financial assistance for India's rubber sector has been increased by 23%** for the fiscal years **2024-25 and 2025-26** under the **'Sustainable & Inclusive Development of Natural Rubber Sector'** initiative.

- This enhancement aims to **support various facets of the rubber industry**, including the expansion of **rubber planting in traditional and non-traditional areas, improvement of rubber production quality, and empowerment of rubber growers** through the formation of 250 Rubber Producers Societies (RPS) over the next two years.

Rubber

Natural rubber is a polymer of isoprene, an organic compound and obtained from the latex of a number of tropical trees of which Para Rubber tree (*Hevea brasiliensis*) is the most important.

- Age:** around 32 years in plantations.
- Soil:** Well-drained and well-weathered soils e.g., Lateritic type, alluvial, sedimentary types
- Precipitation and Temperature:** An evenly distributed rainfall with at least 100 rainy days a year and a temperature range of about 20 to 34°C.
- Conditions:** A humidity of around 80%, 2000 hours of sunshine, and absence of strong winds
- Uses:** Natural rubber is preferred over synthetic rubber due to its high tensile strength and vibration dampening properties, along with tear resistance.

World (major producers): Thailand, Indonesia, Malaysia, India: Kerala (over 75%) > Tamil Nadu > Karnataka
India fifth largest producer and 2nd largest consumer of Natural Rubber (India currently meets 40% of its requirement through imports)

Rubber Board of India (est. 1955; HQ: Kottayam, Kerala): The Board (under Ministry of Commerce and Industry) is responsible for the development of the rubber industry in India.

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Rubber Research Institute (RRI) is under the Rubber Board.

Rubber Board of India (est. 1955; HQ: Kottayam, Kerala): The Board (under Ministry of Commerce and Industry) is responsible for the development of the rubber industry in India.

8. FERMILAB'S PROTON IMPROVEMENT PLAN-II (PIP-II) PROJECT

Context:

India moves **from research and development to the construction phase** for its contributions to **Fermilab's Proton Improvement Plan II (PIP-II) project**, a significant particle accelerator endeavour.

What is Fermilab's Proton Improvement Plan?

Fermilab's Proton Improvement Plan (PIP) is a project aimed at **enhancing the capabilities of Fermilab's particle accelerators**, particularly the proton beamlines. PIP

seeks to improve the **intensity, quality, and reliability of the proton beams** produced at Fermilab, enabling a wide range of scientific experiments and research, including **studies on neutrinos and other fundamental particles**.

What is PIP-II?

The Proton Improvement Plan II (PIP-II) marks the **first particle accelerator in the U.S. constructed with substantial contributions** from global partners. Collaborating institutions from **India** (through the Department of Atomic Energy (DAE)), **France, Italy, Poland, and the UK** are involved. India’s contribution amounts to \$140 million worth of components. PIP-II’s primary purpose is to build a **superconducting linear accelerator** at Fermilab and **generate the world’s most high-energy neutrino beam for the Deep Underground Neutrino Experiment (DUNE)** at the Long-Baseline Neutrino Facility (LBNF).

Definition of the terms:

Term	Definition
Photons	Photons are elementary particles that represent light . They are massless particles that carry electromagnetic radiation , including visible light, radio waves, ultraviolet light, X-rays, and gamma rays. Photons exhibit both wave-like and particle-like properties .
Particle Accelerator	A particle accelerator is a device that uses electromagnetic fields to propel charged particles to high speeds and energies . These accelerators are essential tools in particle physics, allowing scientists to study the fundamental constituents of matter by colliding particles at high speeds .
Neutrino	Neutrinos are subatomic particles that belong to the family of leptons . They are neutral, nearly massless particles that rarely interact with matter, making them challenging to detect. Neutrinos come in three types: electron neutrinos, muon neutrinos, and tau neutrinos .

9. GSLV-F14/INSAT-3DS SATELLITE

Context:

Recently, ISRO successfully launched the **MoES-funded GSLV-F14/INSAT-3DS satellite** from Srihari Kota, **enhancing India’s meteorological services**.

About GSLV-F14/INSAT-3DS satellite:

Feature	Details
Launch Vehicle Stages	3-stage launch vehicle: GS1 with solid propellant motor and four earth-storable propellant stages (EPS); GS2 with earth-storable propellant; GS3 cryogenic stage with LOX and LH2
Flight Number	16th flight of GSLV, 10th with indigenous cryo stage
INSAT-3DS Payloads	Imager, Sounder, Data Relay Transponder (DRT), Satellite aided Search and Rescue (SA&SR) Transponder
	Imager Payload: Multi-spectral Imager generating Earth images in six wavelength bands
	Sounder Payload: 19-channel Sounder for atmospheric vertical profiles data
	Data Relay Transponder (DRT): Receives and relays meteorological, hydrological, and oceanographic data
	Satellite Aided Search and Rescue (SA&SR) Transponder: Relays distress signals for global search and rescue in the UHF band
Objective	Enhance meteorological observations, weather forecasting, and disaster warning capabilities
Funding	Ministry of Earth Sciences (MoES)
Satellite Role	Monitor land and ocean surfaces, augment services of INSAT-3D (2013) and INSAT-3DR (2016)
Benefits	Improved weather forecasts, better disaster management , enhanced data collection and dissemination, satellite-aided search and rescue services

ISRO’s Launch Vehicles:

Feature	SSLV (Small Satellite Launch Vehicle)	PSLV (Polar Satellite Launch Vehicle)	GSLV (Geosynchronous Satellite Launch Vehicle)	GSLV MK-III (Geosynchronous Satellite Launch Vehicle Mark III)
Purpose	Launch small satellites into low Earth orbit (LEO)	Launch satellites into polar orbits and geosynchronous transfer orbits	Launch heavier payloads than PSLV into geosynchronous transfer orbit	India's heaviest and most powerful launch vehicle for larger payloads into GTO and beyond
Payload Capacity to LEO	Up to 500 kg	Up to 1,750 kg	Up to 2,500 kg	Up to 10,000 kg to LEO
Payload Capacity to GTO	Not designed for GTO missions	Up to 1,425 kg	Up to 2,000 kg	Up to 4,000 kg
Stages	3 solid stages	4 stages (alternating solid and liquid)	3 stages (solid, liquid, and cryogenic)	3 stages (2 solid strap-ons, 1 liquid, and 1 cryogenic)
Launch History	Introduced for cost-effective access to space for small payloads	PSLV has a long and successful launch history with numerous missions	GSLV has been crucial for launching the INSAT class of satellites but has seen many unsuccessful launches.	GSLV MK-III is designed for future manned missions and heavier satellite requirements. All launches to date have been successful.
Notable Features	Quick turnaround and lower costs	Versatile and reliable, with a high success rate	Intermediate lifting capacity with indigenous cryogenic upper-stage	Capable of carrying the Chandrayaan-2 orbiter, lander, and rover to the Moon
Development Status	Recently introduced, fewer flights	Fully operational with a robust track record	Operational, with ongoing improvements	Operational, designated for high-profile missions like Chandrayaan-2 and Gaganyaan

10. QUASAR

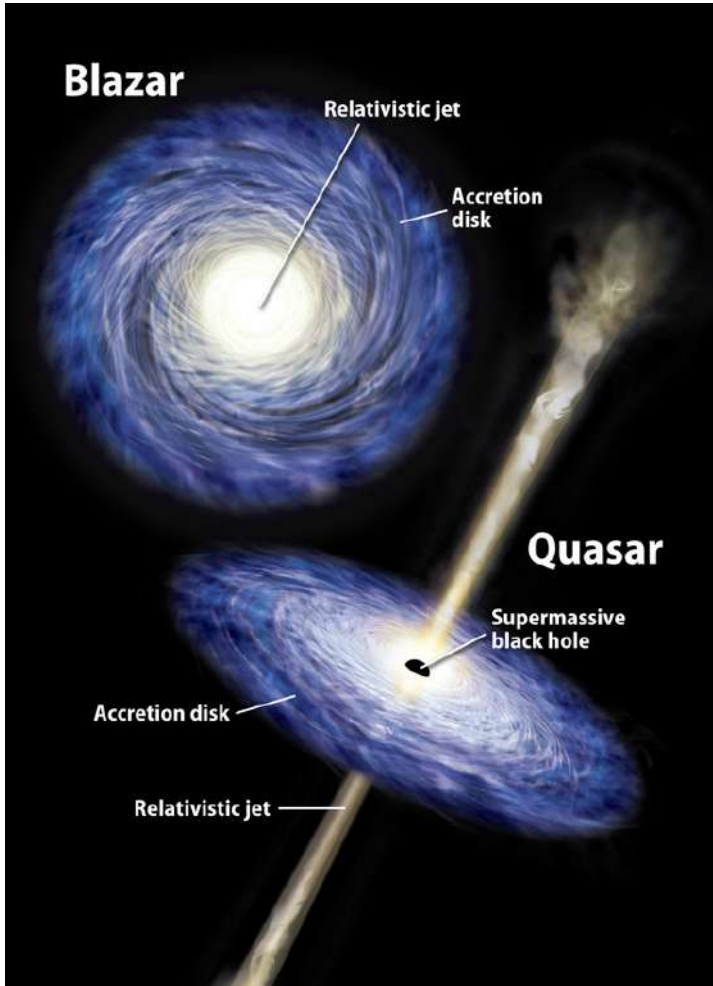
Context:

Astronomers have discovered the **brightest object in the universe**, a **quasar powered by the fastest-growing black hole on record**.

- Initially mistaken for a star, the quasar, **named J0529-4351, was found using the European Southern Observatory's Very Large Telescope.**
- It is located over **12 billion light-years away and its black hole devours the equivalent of one sun per day**, with a mass 17 billion times that of our sun.

Difference between Blazars and Quasars:

Characteristic	Blazars	Quasars
Orientation	Jet observed almost end-on	Jet observed at larger angles
Spectral Features	Faster-than-light movements	Broad optical lines, thermal spectra
	Smooth energy distributions	X-ray emission features
	Luminosity varies on short timescales	Luminosity varies over longer periods
	Relativistic jet pointing towards Earth	Angled view of the accretion disk



A quasar is a **bright core of a distant galaxy that is powered by a supermassive black hole**. Quasars are a subclass of **active galactic nuclei (AGNs)**, which are extremely **luminous galactic cores where gas and dust fall into a supermassive black hole**. Quasars are also known as quasi-stellar objects, abbreviated QSO.

11. POTASSIUM

Context:

Soils worldwide are **experiencing a depletion of potassium**, a crucial nutrient essential for **plant growth, jeopardizing global food security**.

- A recent study proposes six **actions to safeguard potassium supplies and food production**.

These include reviewing **current potassium stocks, improving forecasting of price fluctuations, defining optimal potassium levels for different regions, evaluating environmental impacts, promoting a circular potassium economy, and enhancing international cooperation**.

Potassium is an **essential nutrient required for various physiological functions in plants, animals, and humans**. In plants, it plays a crucial role in **photosynthesis, water regulation, enzyme activation, and overall**

growth and development. Potassium deficiency in soil can lead to **stunted growth, reduced crop yields, and increased susceptibility to diseases and environmental stresses**.

For humans, potassium is vital for **maintaining fluid balance, nerve function, muscle contraction (including the heart), and blood pressure regulation**. Adequate potassium intake is associated with a **lower risk of hypertension, stroke, and cardiovascular diseases**.

12. BLENDED FINANCE FACILITY FOR CLIMATE ACTION

Context:

The **Government of Goa and the Power Finance Corporation (PFC)** have signed a **Memorandum of Understanding (MoU)** to support **climate ambitions through a Blended Finance Facility, in partnership with the World Bank**.

- This initiative aims to **promote low-carbon, climate-resilient development**.

A blended finance facility (BFF) is a program that uses **development finance to attract commercial capital for projects that contribute to sustainable development**. Blended finance can also help to **raise capital for projects that are difficult to fund**.

13. GREEN ANACONDA

Context:

Researchers have discovered that **the green anaconda, previously thought to be a single species, actually consists of two genetically distinct species: the “southern green anaconda” (Eunectes murinus) and the newly identified “northern green anaconda” (Eunectes akayima)**.

- Green anacondas are **renowned as the world’s heaviest snakes and are found predominantly in rivers and wetlands in South America**.
- They are known for their ability to **asphyxiate large prey and swallow them whole**.
- Females are usually larger than males
- **IUCN: Least Concern**

The northern green anaconda is found in countries such as **Ecuador, Colombia, Venezuela, and Guyana**, while the southern green anaconda inhabits regions like **Peru, Bolivia, and Brazil**.



14. CE20 CRYOGENIC ENGINE

Context:

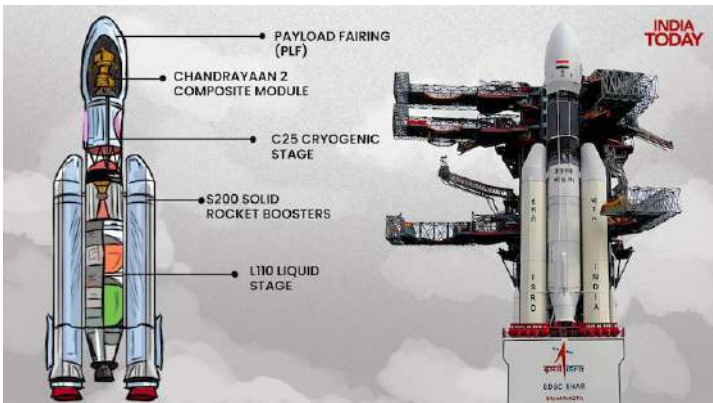
ISRO has achieved a significant milestone in its **Ga-ganyaan mission** by completing the **human rating of its CE20 cryogenic engine**, which powers the **cryogenic stage of the human-rated LVM3 launch vehicle**.

- Human-rating refers to rating a **system that is capable of safely transporting humans**
- This achievement comes after a series of **ground qualification tests, including vacuum ignition tests, to simulate flight conditions**.

The Gaganyaan mission aims to launch a **crew of three humans into a 400 km orbit for a three-day mission and safely return them to Earth**.

The CE-20 is a cryogenic rocket engine developed by the **Liquid Propulsion Systems Centre, a subsidiary of the Indian Space Research Organisation (ISRO)**. It is the first **Indian cryogenic engine to have a gas-generator cycle**.

The CE-20 uses a combination of **LOX and LH2 propellants in a gas generator cycle**.



15. 100% FDI IN THE SPACE SECTOR

Context:

The Union Cabinet, **approved amendments to the Foreign Direct Investment (FDI) policy** in the space sector, allowing **100% FDI to attract investors to Indian companies in space**.

- Under the amended policy, up to **74% FDI is permitted under the automatic route for satellite-related activities, and up to 49% for launch vehicles and associated systems**.
- Beyond these limits, government approval is required.
- Additionally, up to **100% FDI is allowed under the automatic route for manufacturing components and systems for satellites**.

The decision aims to **increase private sector participation**, generate employment, and integrate Indian companies into global value chains.

16. FLOOD MANAGEMENT AND BORDER AREAS PROGRAMME (FMBAP)

Context:

The Union Cabinet, approved the continuation of the centrally sponsored Scheme, the **Flood Management and Border Areas Programme (FMBAP)**, with a total outlay of Rs. 4,100 crore for a period of 5 years from 2021-22 to 2025-26.

The scheme comprises two components:

Flood Management Programme (FMP):

- Central assistance will be provided to State Governments for critical works related **to flood control, anti-erosion, drainage development, and anti-sea erosion**.
- The funding pattern is set at **90% (Centre): 10% (State) for Special Category States and 60% (Centre): 40% (State) for General/Non-Special Category States**.

River Management and Border Areas (RMBA)

- This component focuses on **flood control and anti-erosion works** on common border rivers with neighbouring countries, including **hydrological observations, flood forecasting, and pre-construction activities of joint water resources projects**.
- It receives **100% central assistance**.

17. VENTURE DEBT FINANCING

Context:

In 2023, Indian start-ups experienced a significant surge in venture debt financing, raising a total of over \$1 billion, marking a notable **50% increase from the previ-**

ous year.

What is Venture Debt Financing?

Venture debt is a **financing option commonly utilized by early-stage startups** that have yet to establish a consistent revenue stream. Unlike traditional debt financing, venture debt is offered by **specialized lenders who are willing to assume greater risk** in exchange for the possibility of higher returns. This type of financing allows startups to **access additional capital without diluting ownership**, providing them with the financial resources needed to fuel growth and development.

This shift towards venture debt financing in India contrasts **with a decline observed in the US**, showcasing **India's burgeoning confidence and strategic adoption of alternative funding mechanisms.**

Venture Debt	VS.	Venture Capital
Venture debt issuers tend not to take much equity in a company		VCs tend to take a sizable equity stake in a company in exchange for capital
The cost of debt is limited to pre-agreed interest rates		Equity can fluctuate in value over time – sometimes dramatically
Debt is paid back over time with interest		VCs make money from selling equity
A new company valuation is not required		Equity investments require a company valuation
Funding can be used for any general business purpose		Funding can be used for any general business purpose
There are not typically board seat requirements		Investors often receive a board seat
Typically, there are no financial covenants		Typically, there are no financial covenants
The due diligence process tends to be less comprehensive		There tends to be a strict due diligence process

CBINSIGHTS

18. POSITRONIUM

Context:

In a significant breakthrough, scientists at CERN have achieved **laser cooling of Positronium for the first time**, during Anti-hydrogen Experiment: Gravity, Interferometry, Spectroscopy (AEGIS)

What is Positronium?

Positronium is a **unique atomic system consisting of an electron and a positron**, the antimatter counterpart of an electron. It has a very short lifespan, typically **around 142 nanoseconds**, before it annihilates. Positronium holds the distinction of being a **pure leptonic** atom, with its **mass being twice that of an electron.**

Uses: Due to its properties, Positronium is a **valuable system for studying fundamental physics theories** and conducting experiments in areas such as quantum electrodynamics.

What is the AEGIS experiment?

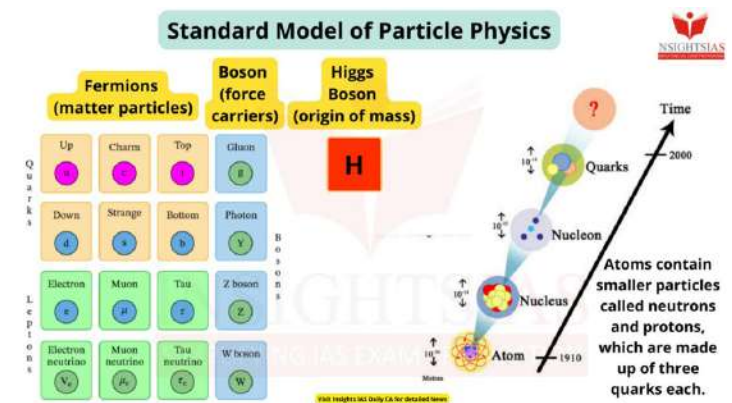
Antihydrogen Experiment: Gravity, Interferometry, and Spectroscopy, aims to **directly measure Earth's gravitational acceleration on antihydrogen.**

How was laser cooling done?

Laser cooling of Positronium was accomplished by lowering its temperature from ~380 Kelvin to ~170 Kelvin using a 70-nanosecond pulse of the **alexandrite-based laser system**, operating in either the deep ultraviolet or infrared frequency bands.

The significance of laser cooling of Positronium lies in several aspects:

- Measurement of Earth's gravitational acceleration**
- Gamma-ray laser:** Potential to produce a gamma-ray laser for atomic nucleus exploration and applications beyond physics.
- Quantum Electrodynamics (QED):** Facilitating spectroscopic comparisons for QED, studying light's interaction with charged matter. **Bose-Einstein condensate:** Enabling the production of a positronium Bose-Einstein condensate, offering a tool for both fundamental and applied research where all constituents occupy the same quantum state.



19. VENOM-NEUTRALISING ANTI-BODY

Context:

Scientists at the **Indian Institute of Science (IISc.) in Bengaluru** have developed a **synthetic human antibody** capable of **neutralizing a potent neurotoxin produced by highly toxic snakes from the Elapidae family, including cobras, king cobras, kraits, and black mambas.**

- This breakthrough marks the **first time a specific strategy has been applied to create antibodies for snakebite treatment.**

How it works?

- The antibody targets a conserved region in the **core of a major toxin known as the three-finger toxin (3FTx) found in elapid venom.**
- Through extensive screening, researchers identified an antibody **capable of binding strongly to various 3FTxs from different elapid snakes worldwide.**
- Importantly, the **synthetic antibody showed significant potency even when administered after a delay, unlike conventional antivenom treatments,** which lose effectiveness with delayed administration.

This development represents a significant **advancement in snakebite treatment,** potentially offering a **universal solution for broad protection against various snake venoms.**

20. PIGEONPEA

Context:

A new **fast-breeding protocol** has been developed by scientists at the **International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)** to accelerate the development of improved **varieties of pigeonpea,** an essential **legume crop for nutritional security in drylands.**

- Traditionally, developing a **new pigeonpea variety takes around 13 years,** but the new protocol can potentially reduce this **breeding cycle to just two to four years.**

About Pigeon Peas:

- Pigeon peas are widely cultivated in **tropical and semitropical regions around the world.** In **India, more than 80% of tur production comes from six states: MS, MP, Karnataka, UP, Gujarat, and Jharkhand.**
- Pigeon peas are commonly eaten in the form of the **split pulse as “dal”**

Speed breeding is a plant breeding technology that uses **protocols to accelerate flowering** in crop plants. It uses **optimal light quality, intensity, photoperiod, and temperatures** to improve biomass accumulation and **stim-**

ulate flowering and seed production. Speed breeding also uses immature seed harvesting to curtail the generation time.

21. CANTOR'S GIANT SOFTSHELL TURTLE

Context:

Conservationists, including those from the University of Portsmouth, have uncovered the first breeding population of the **critically endangered and elusive Cantor's giant softshell turtle** along the **Chandragiri River in Kerala.**

About Cantor's Giant Softshell Turtle:

It is also known as the **Asian giant softshell turtle and the frog-faced softshell turtle** is a **critically endangered species** known for its rarity and secretive nature. Found in eastern and southern India, Bangladesh, Burma, and other Southeast Asian countries, these turtles **primarily inhabit slow-moving freshwater rivers, lakes, and estuaries.** They are carnivores, mainly feeding on fish, crustaceans, and molluscs, employing a sit-and-wait strategy to capture prey. Classified as **critically endangered by the IUCN and listed in Appendix II of CITES and Schedule I of the Wildlife Protection Act, 1972,** urgent conservation efforts are necessary to protect this species from extinction.



About Chandragiri River

It is also known as the **Perumpuzha River,** is the **longest river in Kasaragod district,** Kerala, and holds historical significance in Chemnad. Named after the Mauryan emperor **Chandragupta Maurya,** it originates from the **Tal-akaveri Wildlife Sanctuary** in the Western Ghats of Kodagu district, Karnataka. Serving as a vital water source for domestic and agricultural needs in Sullia taluk, the river is **revered in Chemnad as the land of Chandragiri.**



MAPPING

1. BUXA TIGER RESERVE

Context:

The **Buxa Tiger Reserve** in West Bengal celebrated a **significant ecological milestone** as a ‘resident tiger’ was spotted after 40 years, marking a crucial development in wildlife conservation efforts.

A ‘resident tiger’ refers to a tiger that establishes its territory and habitat within a specific area for an extended period. This term is often used in **wildlife conservation** to denote a tiger that consistently resides and breeds within a particular region, indicating the presence of a **stable population within that ecosystem**.

About Buxa Tiger Reserve:

It spans **760 square kilometres in North Bengal’s Alipurduar district** and is a vital component of the larger tiger territory stretching into Bhutan. It boasts **corridor connectivity** with forests in Bhutan to the North, Kochugaon and **Manas Tiger Reserve** in Assam to the East, and **Jaldapara National Park** to the West, facilitating the migration and genetic diversity of Bengal tigers.

The Tiger Augmentation Project launched in 2018 aims to monitor and boost the tiger population. Other protected areas in West Bengal include Gorumara, Sundarbans, Neora Valley, Singalila, Jaldapara, Sundarban Tiger Reserve, Mayurjharna Elephant Reserve, and Eastern Dooars Elephant Reserve.

2. MUNICH (GERMANY)

Context:

At **the Sixtieth Munich Security Conference**, world leaders convened amid concerns over the ongoing conflict in Ukraine and NATO cohesion. The conference (held annually in Munich, Germany, since **1963**), often dubbed **the ‘Davos of Defence’**, serves as a crucial forum for discussing international security policy and fostering dialogue among global stakeholders. Notably, the conference publishes the **Munich Security Report**, offering insights into key security challenges.

EAM S Jaishankar remarked at the conference that **“India is non-west but not anti-west”**



3. RED SEA (MISSION ASPIDES)

Context:

The European Union launched a **naval mission named Mission Aspides** to protect shipping in the Red Sea from attacks by **Yemen's Houthi rebels**, who claim solidarity with Palestinians in Gaza.

The mission, involving at least four vessels, aims to ensure **freedom of navigation, responding to the Houthis' disruption** of vital shipping lanes since November.

Previously, the US had launched **Operation Prosperity Guardian** with a similar mission.

Vessels passing through the Red Sea are vulnerable to attacks due to its strategic importance as a **global shipping lane connecting the Mediterranean Sea through the Suez Canal to the Indian Ocean**. Its narrowness and proximity to conflict zones, particularly Yemen (where the Houthi rebels operate) and Somalia (for Piracy), make it susceptible to maritime threats.



4. VAITARNA RIVER

Context:

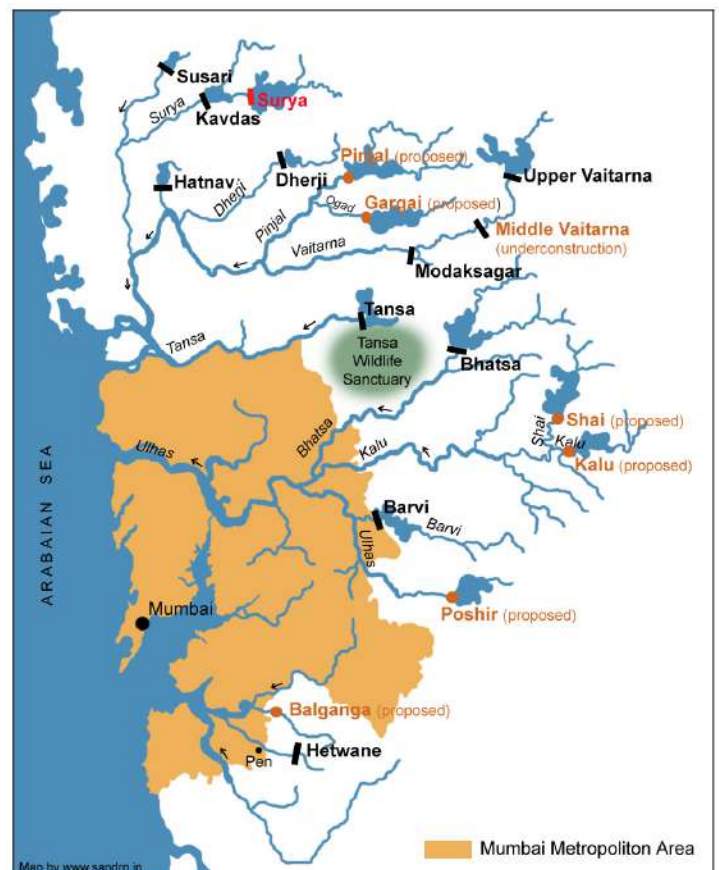
A rare sighting of a **bull shark attacking a fisherman in Maharashtra's Vaitarna River** marked the first occurrence of such an event 40km upstream near Manor. Sharks typically swim only **7-8km into creeks and rivers**. Experts attribute the shark's unusual presence to factors like **sand excavation creating breeding grounds for fishes** and favorable conditions during high tides.

Key facts about Bull Shark:

1. Known for their **aggressiveness towards humans**, considered one of the most dangerous shark species.
2. **Habitat:** Frequently found in **tropical coastal areas worldwide**, including shallow waters along coastlines.
3. **Unique ability to tolerate freshwater and salt-water habitats**, allowing them to venture into rivers and travel great distances upstream.
4. **Reproduces through viviparity**, with embryos developing within the mother's body and leading to live birth.
5. Conservation status: **IUCN lists them as Vulnerable**.

About Vaitarna River:

1. **West-flowing river** situated between **Mumbai and the Tapi River**.
2. Originates in the **Trimbakeshwar Hills of Nasik district, Maharashtra**.
3. Receives **most rainfall from the South West monsoon**, with 98% of annual rainfall occurring from June to October.
4. The main tributaries include **Pinjal, Ganjai, Surya, Daharji, and Tansa**.
5. The entire catchment area lies **within the Thane and Nasik districts of Maharashtra**.
6. Drains an area of 2019 sq. km before flowing into the **Gulf of Khambhat**.



5. T-50 (J&K)

Context:

India's longest rail tunnel T-50, part of the **Udhampur-Srinagar-Baramulla Rail Link (USBRL)**, was inaugurated in Jammu and Kashmir.

The tunnel, named T-50, spans 12.77 km and is considered one of the most challenging aspects of the project. Additionally, construction progress is being made on the **Silkyara-Barkot tunnel project in Uttarkashi**, with safety measures in place to mitigate risks and ensure worker safety.

Other major tunnels in J&K (see image below):



6. ALBANIA

Context:

Albania and India are bolstering diplomatic relations, with plans unveiled for the opening of **new embassies in each other's capitals**. Albania's representation in India is currently led by an Honorary Consul General.

About Albania

Albania is situated in **Southeast Europe on the Balkan Peninsula**. It shares borders with Montenegro, Kosovo, North Macedonia, and Greece, and is bordered by the **Adriatic and Ionian Seas**. Tirana serves as its capital.