



INSIGHTSIAS

SIMPLIFYING IAS EXAM PREPARATION

AYODHYA'S RAM TEMPLE

The Nagara style of temple architecture, observed in Ayodhya's Ram temple construction, emerged in the fifth century CE during the late Gupta period in northern India.

22 JAN - 27 JAN 2024

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GENERAL STUDIES – 1

Topics: Indian culture will cover the salient aspects of Art Forms, Literature and Architecture from ancient to modern times.

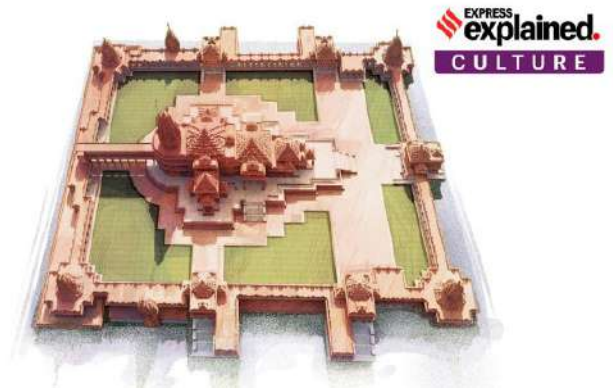
1. AYODHYA'S RAM TEMPLE: NAGARA STYLE OF TEMPLE ARCHITECTURE

Context:

The Nagara style of temple architecture, observed in Ayodhya's Ram temple construction, emerged in the **fifth century CE during the late Gupta period** in northern India.

Key features of the Ram Janmabhoomi Mandir in Ayodhya:

1. Constructed in the **traditional Nagara style** with a length of 380 feet, width of 250 feet, and height of 161 feet.
2. Houses the **childhood form of Bhagwan Shri Ram (Shri Ram Lalla)** in the main sanctum sanctorum and a Shri Ram Darbar on the first floor.
3. Includes **five mandaps (halls)**: Nitya Mandap, Rang Mandap, Sabha Mandap, Prathana Mandap, and Kirtan Mandap.
4. **The compound has four Mandirs dedicated** to Surya Dev, Devi Bhagwati, Ganesh Bhagwan, and Bhagwan Shiv, along with Mandirs for Maa Annapurna and Hanuman ji.
5. **Surrounded by a Parkota** (Rectangular compound wall) with a length of 732 meters and a width of 14 feet.
6. **Features a historic Well (Sita koop)** and a restored ancient Mandir of Bhagwan Shiv at Kuber Tila.
7. Utilizes traditional construction materials, **avoiding the use of steel or iron.**
8. **The main temple structure was built with Bansi Paharpur Pink Sandstone**, granite stones in the plinths, **and white Makrana marble** and coloured marble for inlay work.
9. Incorporates **special bricks known as "Ram Shilas"** with the inscription "Shri Ram" for symbolic significance.
10. Constructed entirely using **traditional and indigenous technology**, emphasizing **environmental conservation with 70% of the area left green.**



EXPRESS
explained.
CULTURE

Nagara and Dravida styles are considered **"the two great classical languages of Indian temple architecture"** rather than mere 'styles'.

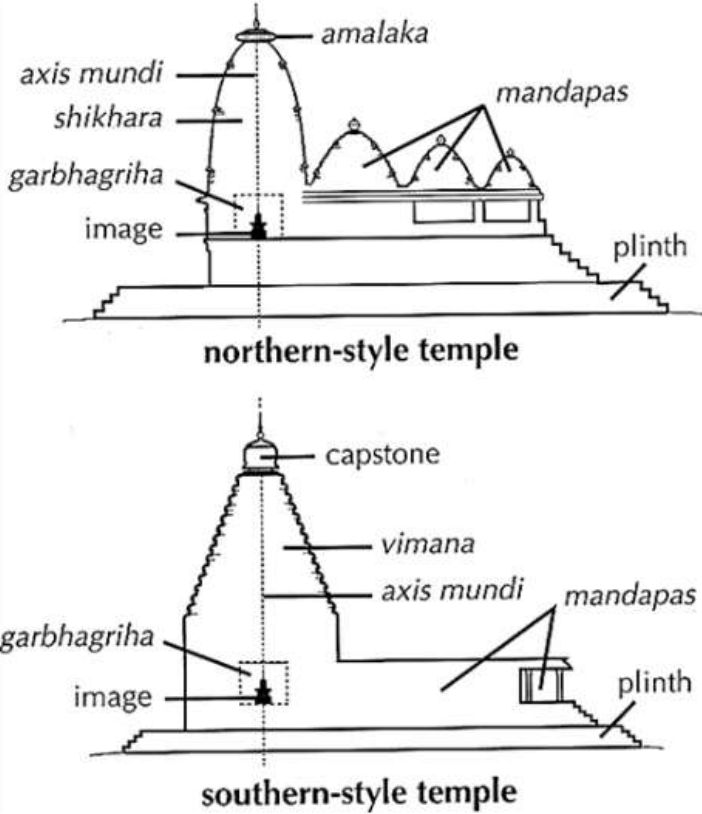
Nagara temples, distinguished by **towering shikhara (mountain peaks)**, have a raised plinth with the garbha griha (sanctum sanctorum) as the most sacred part. The shikhara represents the **natural and cosmological order in Hindu tradition**. Nagara architecture has five modes: **Valabhi, Phamsana, Latina, Shekhari, and Bhumija**. The Ayodhya Ram temple exhibits a **'hybrid' feature, lacking an elaborate gopuram but featuring a boundary wall.**

While the **Nagara and the Dravidian styles** of temple architecture belong to the **Northern and Southern regions of India respectively** and exhibit uniqueness, **they also share some common features in their design and appearance.**

Common Features of both the style:

- **Dravidian or Chola style of temple architecture:**
 - The Dravidian style of temple architecture of **South India** flourished roughly from the **8th to about 13th-14th century A.D.**
 - It developed under the patronage of the **Chola rulers**, but was a continuation of the previous **Pallava architecture**, with some variations.
 - E.g., **Brihadeeswara Temple, Gangaikondacholapuram Temple.**
- **Nagara temple architecture:**
 - The Nagara temple architecture developed as a distinct style in the **Northern part of India** from the **5th century AD onwards.**
 - E.g., **Sun Temple** at Konark, **Kandariya Mahadev Temple** at Khajuraho.
- **Common features:**
 - **Temple plan:**
 - The **panchayatana style** with a principal temple and four subsidiary shrines is a common feature.
 - **Decorative features:**
 - Decoration of the **walls and vimanas through sculptures and engravings** is an important feature of both styles.

- **Halls:**
 - There are **assembly halls or mandaps** in front of the principal shrine for cultural and spiritual events in both styles of temples.
- Also, the other aspects such as the **Sanctum Sanctorum, Vimana and Shikara** are present in both styles.



Water features	The presence of a water tank inside the temple enclosure is a unique feature here.	Generally, there are no water tanks or reservoirs present on the temple premises.
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Conclusion

The Nagara and Dravidian styles of temple architecture **largely resemble the common structures** such as the plan, towers, spires, etc. However, they also differ in their approach to the minute **features of expression** that these structures carry, thereby **preserving their uniqueness**.

A **hybrid of these two is the Vesara style** found mostly in the Deccan regions. E.g., the Virupaksha temple in Pattadakal, and the Durga temple in Aihole.

Other styles of Temple architectures:

Topic	Key Points
Temple Architecture (Summary)	Distinct architectural styles: Nagara (North), Dravida (South), and Vesara (mix of Nagara and Dravida). Basic features: Sanctum, entrance, freestanding spire, vahan, and mithun sculptures.
Nagara or North Indian Style	Built on the stone platform, multiple towers (shikharas), Latina, phamsana, valabhi sub-types. Mainly found in North India, e.g., Uttar Pradesh, Madhya Pradesh, Rajasthan.
Central India Temples	Sandstone construction, Gupta Period temples, panchayatana style (e.g., Deogarh temple).
Western Indian Temples	Gujarat, Rajasthan, Western Madhya Pradesh. Varied stone types, exuberant sculptures.
Eastern Indian Temples	Terracotta construction in Bengal. Pala style sculptures, distinctive Vanga style.
Odisha Temples	Rekhapida, pidhadeul, khakra architectural orders. Square ground plan, lavishly carved exteriors.
Hill Temples	Kashmir, Kumaon, Garhwal. Wooden architecture, pagoda shapes, Karkota period significance.
Dravida or South Indian Style	Enclosed within a compound wall, gopuram entrance, stepped pyramid vimana. Main temple towns: Kanchipuram, Thanjavur, Madurai, Kumbakonam.

Distinctive features of the Dravidian and the Nagara Styles:

FEATURES	DRAVIDIAN STYLE	NAGARA STYLE
Boundary walls and gateways	Temples are surrounded by high boundary walls . The front wall has a high entrance gateway known as a gopuram .	It did not have elaborate boundary walls or gateways.
Crowning element	Shaped in the form of an octagon and is known as the shikhara	Shaped in spherical form is known as the Kalash
Spire/Vimanas	Present in the form of a stepped pyramid that rises up linearly .	The vimana rises in a curved form .
Number of Vimanas	There is only one vimana and that is on top of the main temple . The subsidiary shrines do not have vimanas.	Besides the main temple, the subsidiary shrines also have vimanas .

Deccan Architecture	Ellora’s grand rock-cut structures. Rashtrakutas’ Kailashnath temple, vesara architecture in Karnataka.
Buddhist Architectural Developments	Mahabodhi Temple in Bodhgaya, Nalanda’s mahavihara, Nagapattinam’s Buddhist centre.
Jain Architectural Developments	Jain pilgrimage sites in Bihar, Ellora, Aihole, Mount Abu, Shravana-belagola, Palitana.

Mains Links:

Q. How will you explain that medieval Indian temple sculptures represent the social life of those days? (UPSC 2022)

Prelims Links:

Q. The Prime Minister recently inaugurated the new Circuit House near Somnath Temple Veraval. Which of the following statements are correct regarding Somnath Temple? (UPSC 2022)

- Somnath Temple is one of the Jyotirlinga shrines.
- A description of Somnath Temple was given by Al-Biruni.
- Pran Pratishtha of Somnath Temple (installation of the present-day temple) was done by President S. Radhakrishnan.

Select the correct answer using the code given below:

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

Answer: A

Q. With reference to Chausath Yogini Temple situated near Morena, consider the following statements: (UPSC 2021)

- It is a circular temple built during the reign of the Kachchhapaghata Dynasty.
- It is the only circular temple built in India.
- It was meant to promote the Vaishnava cult in the region.
- Its design has given rise to a popular belief that it was the inspiration behind the Indian Parliament building.

Which of the statements given above are correct?

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

Answer: C

[Topics: The Freedom Struggle – its various stages and important contributors /contributions from different parts of the country.](#)

2. ROLE OF THE INDIAN NATIONAL ARMY (INA) IN INDIA’S FREEDOM

Context:

Subhas Chandra Bose’s Indian National Army (INA) emerged as a pivotal force in India’s quest for independence during **World War II**.

What was INA?

The INA (a military organization) was established to encourage the **growth of armed Indian nationalism**. It was also conceived to undermine the British Indian Army and finally work to secure the Independence of India.

Initially founded by Mohan Singh and later led by **Subhas Chandra Bose**, the INA aimed to secure Indian independence from British rule and fought under the command of the Japanese military in Southeast Asia. The first INA, formed in 1942, collapsed due to disagreements with the Japanese military and was later revived under **Bose’s leadership in 1943**. Through a strategic public relations campaign, Bose garnered widespread support, **expanding the INA’s strength to over 40,000 personnel**.

INA activities:

- The INA in a **few months’ time had three fighting brigades** named after Gandhi, Azad and Nehru. Soon other brigades were raised, namely the **Subhash Brigade and the Rani Jhansi Brigade** (an exclusive women’s force).
- The most important operation the INA was a part of, was undoubtedly its operations in the **Indian theatre in the Second World War**. The Japanese were initially reluctant to take INA troops with them but Bose convinced them to take a small INA force which was used, much to the frustration of Bose, for secondary operations by the Japanese.
- Creation of the provisional government** - On October 21, 1943, Subhash Bose formed the **Provisional Government for Free India in Singapore with H.C. Chatterjee (Finance portfolio)**, M.A. Aiyar (Broadcasting), Lakshmi Swaminathan (Women Department), etc.
 - This provisional government declared **war on Britain and the United States** and was recognised by the Axis powers.
 - Recruits were trained and funds were collected for the INA.
 - The famous slogan—**“Give me blood, I will give you freedom”** was given in **Malaya**.
- Battle of Kohima** - The Azad Hind Fauz crossed the Burma border and stood on Indian soil on March 18, 1944. The INA units subsequently advanced up to Kohima and Imphal
 - The tricolour was hosted on Indian soil
 - However, the INA failed to capture Imphal

due to two reasons:

- i. The Japanese failed to supply the necessary material and air cover to the INA.
 - ii. The Monsoon prevented their advance.
5. **INA trials - The Indian National Army trials** (also known as the INA trials and the Red Fort trials) was the **British Indian trial by court-martial** of a number of officers of the Indian National Army (INA) between November 1945 and May 1946, on various charges of treason, torture, murder and abetment to murder, during the Second World War.
- a. In November 1945, a British move to put the I.N.A. men on trial immediately sparked massive demonstrations all over the country.

Significance of INA:

The INA had failed to achieve its goal, but it made a significant impact on the freedom struggle in the following ways

1. **Awakening sense of nationalism** - INA also generated patriotic feelings in the hearts of many national leaders and the masses and caused uprisings in Bombay and Calcutta. The **Red Fort trials of INA members** managed to unite masses of Indians against British rule.
2. **Demonstration of communal unity** - The **struggles of the INA** demonstrated that those who waged an armed struggle against the British were **not at all affected by communal division. As, there were Hindus, Muslims and Sikhs in the INA** who had fought as Indians
3. **Empowerment of women** - The actions of the **Rani Jhansi Brigade**, an exclusive women's force, demonstrated the capabilities of Indian Women waging armed struggle against the British.
4. **Fighting against injustice** - It became clear to the British that, they could no longer depend on the loyalty of Indian Soldiers and treat them as mercenaries.
5. **Igniting unity among various political groups** – All the political groups came together to protect the prisoners of INA which showed the united political unity against British Rule.

Conclusion

Gandhiji addressing the INA officers said **“Your objective, as I have been told, was only to free India, never to help the Japanese.** You failed in your direct objective, i.e. to defeat the British. But you have the satisfaction that the whole Country has been roused into a new political consciousness and have begun to think in terms of Independence”. Thus Activities of INA did hasten the process of the British leaving India.

About Subhas Chandra Bose:

Aspect	Details
Full Name	Subhas Chandra Bose
Nicknames	Netaji
Birthdate and Place	January 23, 1897, Cuttack, Odisha, India
Education	Studied at the University of Calcutta and later at the University of Cambridge
Political Career	Joined Indian National Congress - Elected to Congress Working Committee in 1923 - Appointed Secretary of Bengal Provincial Congress Committee in 1924 - Resigned from Congress in 1939 due to differences - Advocated more militant action for independence - Organised the All India Forward Bloc a faction within the Congress in Bengal.
Inspiration	He was highly influenced by Vivekananda's teachings and considered him as his spiritual Guru. His political mentor was Chittaranjan Das
Formation of INA	Indian National Army (INA) was founded by Mohan Singh in 1942 - Later handed over to Subhas Chandra Bose - Renamed Azad Hind Fauj by Bose
Role in INA	Led the INA against the British in South-east Asia during World War II - Goal: Secure India's independence from British rule - Named brigades/regiments after Mahatma Gandhi, Jawaharlal Nehru, Maulana Azad, and himself
Contributions	Rallying Indians to the cause of independence - Gaining international support for the INA - Significant impact on the independence movement despite INA's military setbacks
Famous Quotes	“Tum Mujhe Khoon Do, Main Tumhe Azadi Doonga” (Give me blood, and I will give you freedom!) - “Freedom is not given - it is taken.” - “Soldiers who always remain faithful to their nation, who are always prepared to sacrifice their lives, are invincible.”
Death	August 18, 1945 - Died in a plane crash under mysterious circumstances

Legacy and Recognition	Posthumously awarded the Bharat Ratna, India's highest civilian award - Remembered as a hero of the Indian independence movement - Inspires those fighting for freedom and justice
	His Jayanti is celebrated as ' Parakram Diwas ' on 23rd January
	The Subhas Chandra Bose Aapda Prabandhan Puraskar is an annual award established to acknowledge and honour outstanding contributions to disaster management by individuals and organizations in India. Announced on January 23 each year, the award includes a cash prize of Rs. 51 lakh with a certificate for institutions and Rs. 5 lakh with a certificate for individuals.

Insta Links:

- [Azad Hind Fauj](#)

GENERAL STUDIES – 2

Topics: [Statutory, regulatory and various quasi-judicial bodies.](#)

3. NATIONAL HUMAN RIGHTS COMMISSION (NHRC) AND IDATE COMMISSION REPORT

Context:

The National Human Rights Commission (NHRC) emphasized the need to **implement the Idate Commission report**, which recommends establishing a permanent commission for **Nomadic, Semi-Nomadic, and De-Notified Tribes (NTs, SNTs, and DNTs)** in India.

The NHRC called for **repealing the Habitual Offenders Act, 1952**, and suggested appointing a representative of the De-notified Tribe community as per the Act's stipulations. Additionally, it proposed the non-inclusion of DNTs/NTs/SNTs under SC/ST/OBC categories, formulation of specific policies for them, and addressing challenges in obtaining basic facilities and rights, especially for women and children among these communities. The discussion highlighted the importance of changing colonial mindsets and ensuring human rights for these tribes.

What are Nomadic Tribes (NTs), Semi-Nomadic Tribes (SNTs), and De-Notified Tribes (DNTs)?

1. **Nomadic Tribes (NTs):** These are communities that migrate from one place to another in search of livelihood. They often do not have a permanent settle-

ment. Examples include the Banjara tribe and the Gujjar tribe.

2. **Semi-Nomadic Tribes (SNTs):** Similar to Nomadic Tribes, SNTs partially practice a nomadic lifestyle. They may have some settled areas but also engage in a nomadic way of life. The Van Gujjars in Northern India are an example.
3. **De-Notified Tribes (DNTs):** These tribes were originally labelled as "criminal tribes" during the British colonial period under the Criminal Tribes Act, 1872. After independence, this label was officially removed, but the stigma persists. The term "De-Notified" refers to the removal of this classification. The Kanjar and Nat communities are examples of De-Notified Tribes.

About the Idate Commission (officially known as the National Commission for Denotified, Nomadic, and Semi-Nomadic Tribes):

It was formed in 2014 with **Bhiku Ramji Idate** as its head. Its primary objectives included creating a comprehensive state-wide catalogue of Denotified, Nomadic, and Semi-Nomadic Tribes (DNTs), identifying those not listed under SCs/STs or OBC categories, and proposing welfare measures for their benefit.

Major recommendations of the Idate Commission:

1. **Establish a permanent commission for the DNTs, SNTs, and NTs** with statutory status.
2. **Establish a separate department** for their welfare in states with their sizable populations.
3. **Conduct a detailed survey of the families of DNTs** to work out their estimated population and their concentration.
4. **Enable legal and constitutional protection** by including a third schedule in the Prevention of Atrocities Act, 1989.
5. **DNTs not included in the SCs/STs/OBCs** list should be listed as OBCs.

About the challenges faced by Denotified, Nomadic, and Semi-Nomadic Tribes (DNTs):

They encounter various challenges as **they lack a centralized list and recognition as a distinct group under the Constitution**, similar to Scheduled Castes (SC) or Scheduled Tribes (ST). These communities often fall outside the scope of government welfare initiatives, facing issues such as limited education and inadequate access to essential infrastructure like drinking water, shelter, and healthcare.

Steps taken by the government

1. **Development and Welfare Board for DNTs** Established in 2019 (based on the recommendations of the Idate Commission) for a period of 3 years (extendable to 5 years)
2. **Scheme for Economic Empowerment of DNTs**

(SEED) for educational empowerment, health insurance, livelihoods and housing.

3. **A committee has also been set up by the NITI Aayog** to complete the process of identification of the De-Notified, Nomadic and Semi-Nomadic Communities (DNCs)

About NHRC:

The National Human Rights Commission (NHRC) is a **statutory body** established in India to safeguard and promote human rights in the country. It was established under the **Protection of Human Rights Act, 1993**, with a mandate to address human rights violations, provide remedies to victims, and create awareness about human rights principles among the public.

The mandate of the National Human Rights Commission (NHRC):

Mandate of NHRC	Description
Investigate Human Rights Violations	The NHRC is responsible for investigating and inquiring into complaints of human rights violations , covering civil, political, economic, social, and cultural rights.
Recommend Remedial Measures	After investigation, the NHRC has the authority to recommend remedial measures to the concerned authorities for the protection and promotion of human rights . This includes suggestions for compensation, rehabilitation, and legal action against the perpetrators.
Spread Awareness and Education	The NHRC is tasked with spreading awareness about human rights, promoting human rights education , and conducting research on various issues related to human rights in India.
Monitor State and Central Government Actions	The NHRC monitors the actions of both state and central government authorities to ensure compliance with human rights standards and principles.
Provide Assistance and Advice	The NHRC provides assistance and advice to individuals, groups, and organizations on human rights issues , offering guidance and support in addressing violations or concerns.
Promote Human Rights Culture	The NHRC aims to promote a culture of human rights by organizing seminars, workshops, and campaigns on various human rights issues. It collaborates with civil society organizations, academia, and other stakeholders to create awareness and advocacy for human rights.

Cooperation with International Bodies	The NHRC collaborates with international organizations, including the United Nations and its agencies , to exchange information, expertise, and best practices in the field of human rights. This fosters cooperation on a global scale to address and advance human rights concerns.
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Evaluation of its success in achieving its objectives:

Positives:

- **Investigation of Human Rights Violations:** The NHRC has been successful in investigating numerous cases of human rights violations in India.
 - As of September 2021, the **NHRC had registered over 17,000 cases** and completed inquiries in more than 13,000 cases.
- **Recommendations for Remedial Measures:** The NHRC’s recommendations have led to positive changes and accountability in some cases.
 - One notable example is the **NHRC’s intervention in the encounter killings in Manipur**, where it recommended the registration of FIRs, compensation to the victims’ families, and disciplinary action against the involved security personnel. From 1993 to 2021, the NHRC awarded monetary relief amounting to over Rs. 200 crores in cases of custodial deaths.
- **Awareness and Education:** The NHRC has played a crucial role in spreading awareness about human rights through its campaigns, workshops, and publications.
 - As of 2020, the NHRC had organized **more than 5,000 human rights awareness** programs across the country.
- **Monitoring of Prisons and Jails:** The NHRC has the authority to visit and inspect prisons, jails, and detention centres to ensure the protection of the human rights of inmates.
 - **It conducts regular inspections and takes appropriate** actions to address issues such as overcrowding, torture, and other forms of ill-treatment.
- **International Engagement:** The NHRC actively participates in international human rights forums and collaborates with international organizations. It engages in dialogue with various countries and shares best practices in the promotion and protection of human rights.

Negatives:

- **Implementation and Enforcement:** Despite its recommendations, the implementation of NHRC’s directives by the concerned authorities has been a challenge. In some cases, the authorities have **failed to take adequate action, leading to a lack of accountability and justice.**
- **Limited Jurisdiction:** It does not have jurisdiction over human rights violations by non-state actors, such as private companies. NHRC is also limited by

GENERAL STUDIES – 3

temporal jurisdiction of **cases violation limited to the past 1 year.**

- **Delayed Justice:** For instance, the NHRC's recommendations in cases of extrajudicial killings and custodial deaths have not always led to prompt action and redress for the victims and their families.
- **Limited Resources and Staffing:** The NHRC has often faced resource constraints, including limited budgetary allocations and understaffing. This hampers its ability to effectively handle a large number of complaints and conduct comprehensive investigations in a timely manner.

Conclusion:

The National Human Rights Commission (NHRC) plays a **crucial role in promoting and protecting human rights** in India. The Supreme Court has emphasized the need to provide the NHRC with greater autonomy, independence, and financial resources to enhance its effectiveness in addressing human rights issues.

Insta Links:

- [National Human Rights Commission](#)

Prelims Links:

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

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

Select the correct answer using the code given below:

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

Ans: D

Q. Consider the following: (UPSC 2011)

1. Right to education
2. Right to equal access to public service
3. Right to food.

Which of the above is/are Human Right/Human Rights under "Universal Declaration of Human Rights"?

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

Ans: D

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.

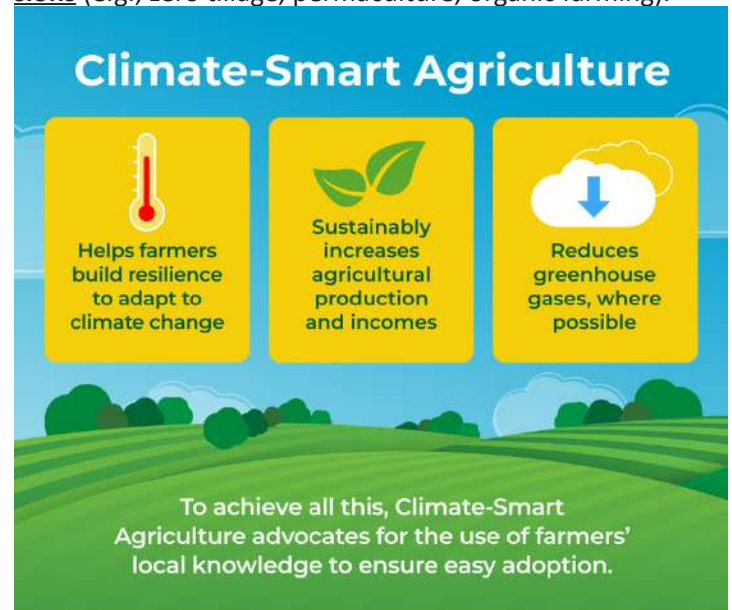
1. ADOPTION OF CLIMATE-SMART AGRICULTURE (CSA)

Context:

The adoption of **climate-smart agriculture (CSA)** faces challenges in South Asia, as sustainable practices and technologies struggle to gain widespread acceptance.

What is CSA?

CSA, or Climate-Smart Agriculture, is an **approach that incorporates a set of agricultural practices and technologies.** Its goals are to **boost productivity** (e.g., precision farming, smart crops), **enhance resilience** (e.g., zero budget natural farming, agroforestry), and **reduce greenhouse gas emissions** (e.g., zero tillage, permaculture, organic farming).



Examples of Climate-Smart Agriculture Practices:

1. **Cultivating Climate-Resilient Crop Varieties:** Growing crops resistant to temperature changes, pests, and diseases. Example: Drought-tolerant maize in sub-Saharan Africa benefits smallholder farmers.
2. **Conservation Agriculture:** No-till and reduced-tillage cultivation for soil coverage,
3. **Agroforestry:** Integrating trees and shrubs with crops and livestock.
4. **Precision Irrigation:** E.g., Drip and sprinkler irrigation maximize water use efficiency.

Challenges faced in CSA:

Challenges in CSA	Details
Weak Organizational Capacities	Difficulty reaching farmers due to a large rural population with limited integration with CSA-promoting markets.
	Limited government resources impact the number of field schools, demonstration plots, and training programs in rural areas.
	Inadequately staffed and poorly trained government agricultural extension departments for CSA information dissemination.
Inadequate Targeted Incentives	Chemical fertilizers, pesticides, and electricity- and diesel-based irrigation are largely subsidized, while CSA practices lack adequate incentives.
	Conflicting subsidies , such as those for zero tillage as well as for conventional tillage machinery, hinder the adoption of CSA technologies.
	Zero tillage is considered a CSA practice that involves minimal disturbance of the soil , promoting conservation and sustainability. On the other hand, conventional tillage involves more intensive soil disturbance
Limited Post-Adoption Follow-up	Emphasis on adoption initiation with less attention to post-adoption follow-up.
	Monitoring and evaluating CSA adoption over time is crucial for identifying challenges faced by farmers.
Inequities in Information Dissemination	Inequitable dissemination of CSA information , prioritizing wealthier farmers with greater social networks.
	Gender inequality persists , with little involvement of women in CSA dissemination processes, despite increasing female participation in farming.

Benefits of Climate-Smart Agriculture (CSA):

Benefits	Details
1. Increased Agricultural Productivity	Addresses resource-efficient farming for climate variability.
	Counters climate-induced crop yield decline in India, contributing to adaptation, mitigation, and food security.
	Various climate-smart techniques enhance production, sustainability, and reliability, while reducing GHG emissions.
	Site-specific no-tillage in the Indo-Gangetic Plain boosts wheat production, nutrient efficiency, and profitability, and lowers GHG emissions.

2. GHG Emission Reduction	Crucial for lowering the agricultural sector's 17% share in GHG emissions (2018)
	Enhances farmland carbon storage.
3. Support for Small and Marginal Farmers	Significant role in increasing profits for the majority of Indian small and marginal farmers.
4. Biodiversity Conservation	Ecosystem-based approach and diverse crop varieties promote the coexistence of cropland and wild animals
	Safeguards native plant species , stabilizes pollinator populations and mitigates habitat degradation effects.
5. Reduced Impact of Climate Change	Promotes crop diversification , and water efficiency, and integrates drought-resistant crop types.
	It Lessens the disruptive effects of climate change and increases resilience to longer-term stressors.

Promoting CSA:

- Capacity Building:** Raise awareness and provide training for officials, extension workers, and farmers.
- Incentives to Farmers:** Support eco-friendly practices (e.g., mulching, crop rotation) and sustainable indigenous technologies.
- Collaborative Approach:** Form international/regional partnerships, such as the Youth for Green and Climate-Resilient Agriculture Programme (YCRA) by the Food and Agriculture Organization.
- Other Measures:** Encourage private capital investment, implement micro-level policies, and explore additional avenues for CSA promotion.

Climate-Smart Agriculture Initiatives:

- Government Initiatives in India:** National Adaptation Fund for Climate Change, National Innovation on Climate Resilient Agriculture, Soil Health Mission, Pradhan Mantri Krishi Sinchayee Yojana, Paramparagat Krishi Vikas Yojana, Biotech-KISAN, and Climate Smart Village.
- Public and Private Sector Involvement:** Farmer-producer organizations, NGOs, and various entities are actively contributing to CSA adoption.
- Research Programs:** The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) addresses challenges of food security, poverty, and climate change on a global scale, National Innovations in Climate Resilient Agriculture (NICRA)
- World Bank Group:** Provides financial support and technical assistance for CSA projects in developing countries.
- Global Alliance for Climate-Smart Agriculture (GAC-SA):** A voluntary platform fostering collaboration among governments, civil society, farmers, research

institutions, and the private sector to promote knowledge sharing, policy dialogue, and investment in CSA.

- **Climate-Smart Agriculture Youth Network (CSAYN):** Comprises young individuals from various countries dedicated to raising awareness and taking action on CSA among youth and other stakeholders.
- **National Mission for Sustainable Agriculture (NMSA)** One of the missions under the National Action Plan on Climate Change (NAPCC).

To learn about Climate Resilient Agriculture: [Click Here](#)

Insta Links:

- [Climate-smart agriculture](#)

Mains Links:

Q. Elaborate on the impact of the National Watershed Project in increasing agricultural production from water-stressed areas. (UPSC 2019)

Prelims Links:

Q1. With reference to the circumstances in Indian agriculture, the concept of “Conservation Agriculture” assumes significance. Which of the following fall under the Conservation Agriculture? (UPSC 2018)

1. Avoiding the monoculture practices
2. Adopting minimum tillage.
3. Avoiding the cultivation of plantation crops
4. Using crop residues to cover soil surface
5. Adopting spatial and temporal crop sequencing/crop rotations

Select the correct answer using the code given below:

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

Ans: (c)

Q2. With reference to the ‘Global Alliance for ClimateSmart Agriculture (GACSA)’, which of the following statements is/are correct? (UPSC 2018)

1. GACSA is an outcome of the Climate Summit held in Paris in 2015.
2. Membership of GACSA does not create any binding obligations.
3. India was instrumental in the creation of GACSA.

Select the correct answer using the code given below:

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

Ans: B

Q3. In the context of India’s preparation for Climate-Smart Agriculture, consider the following statements: (UPSC 2021)

1. The ‘Climate-Smart Village’ approach in India is a part of a project led by the Climate Change, Agriculture and Food Security (CCAFS), an international research programme.
2. The project of CCAFS is carried out under Consultative Group on International Agricultural Research (CGIAR) headquartered in France.
3. The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in India is one of the CGIAR’s research centres.

Which of the statements given above are correct?

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

Ans: D

[Topics: Security challenges and their management in border areas; linkages of organized crime with terrorism.](#)

2. BORDER SECURITY FORCE (BSF) AND ISSUES OF OPERATIONAL JURISDICTION

Context:

Punjab has filed a suit challenging the central government’s decision to **increase the BSF’s operational jurisdiction from 15 km to 50 km**, considering it a breach of federal principles and an **encroachment into state law and order powers. West Bengal** shares a similar view.

What is the Special Powers of BSF?

In all border states, **there is a power under the BSF Act,1968** to extend the jurisdiction of BSF so far as offences are considered. Different states have different jurisdiction limits. E.g., Gujarat had 80 km, but in some states, it was less (e.g., 15km in Punjab). Now (by the Central Government 2021 notification) it has been made **uniform 50 kms**.

BSF has concurrent power with state police/agencies with regard to some offences under the Criminal Procedure Code, 1973, Passport (Entry into India) Act, 1920 and Passport Act, 1967 etc.

The procedure:

The BSF **conducts search and seizure for violations** such as smuggling narcotics, prohibited items, illegal entry of foreigners, and offences under Central Acts. After detaining a suspect or seizing a consignment in the specified area, the **BSF can only perform “preliminary questioning” and must hand over the suspect to local police within 24 hours**. The

BSF lacks the authority to prosecute crime suspects.

What is the Issue?

In 2021, the Punjab government moved the **Supreme Court (under Article 131)** challenging the Centre’s decision that expanded the BSF’s jurisdiction from 15 to 50km.

It alleged a **breach of federal principles** and encroachment into the state’s law and order powers.

Note: Article 131 vests the Supreme Court with original jurisdiction over disputes occurring between states or between states and the Centre.

What has SC said?

The Supreme Court **clarified that the 2021 notification expanding BSF’s jurisdiction** in Punjab from 15 to 50 km grants **concurrent authority** for preventing specific offences but **does not diminish the investigative authority** of the state police.

What does the Constitution Say?

Under Article 355, the **Centre can deploy forces to protect a state from external aggression** or internal disturbance, even without the state’s request. If a state opposes deployment, the Centre can issue directives under Article 355. If the state doesn’t comply, the Centre can take further action under **Article 356 (President’s Rule)**.

Issues with the Centre’s extension of BSF’s jurisdiction:

Issues	Description
Public Order vs Security of State	The responsibility for public order and police rests with the State Government.
Weakening Spirit of Federalism	The notification without state government concurrence is seen as an encroachment on state powers. The Punjab Government views it as an encroachment under the guise of security or development
Affecting Functioning of BSF	Policing in the hinterland weakens BSF’s capacity to fulfil its primary duty of guarding the international border.
Issues Specific to Punjab	The extension covers major cities in a relatively small state like Punjab. In contrast, states like Gujarat and Rajasthan have specific geographical features (marshland and desert, respectively) that may justify the extension.

Arguments from the Central Government

- Enhanced Border Security:** The increase to 50 km is justified to improve border patrol effectiveness.
- Standardizing Operations:** The expansion aims to unify the operational area across different states for

consistency.

The way forward involves:

- Desirable State Consent:** The Union Government should consult the State Government before deploying armed forces, whenever possible.
- State Self-Reliance:** Each State Government, in consultation with the Union Government, should develop short-term and long-term plans to strengthen its Armed Police.
- Regional Arrangements:** Neighbouring States can establish a standing arrangement, agreed upon by consensus, for using **each other’s Armed Police in times of need.** **Zonal Councils** provide a suitable forum for States within a zone to reach such agreements.

About Border Security Force (BSF):

The Border Security Force (BSF), **established in 1965** following the India-Pakistan war, is a significant component of India’s security apparatus. Operating under the administrative control of the **Ministry of Home Affairs**, it is one of the seven Central Armed Police Forces. With a force strength of over 2 lakhs, it is primarily deployed **along the Pakistan and Bangladesh borders**, managing security on the Indo-Pakistan International Border, Indo-Bangladesh International Border, and Line of Control (LoC) in coordination with the Indian Army

Role of the Border Security Force (BSF) in dealing with illegal migration and cross-border crimes.

- Defending the porous borders:** BSF has been defending **Sir Creek in the Arabian Sea** and **Sundarbans Delta** in the Bay of Bengal with its state-of-the-art fleet of Water Crafts.
- Cooperating with local police:** most of the raids and arrests that are conducted are in close coordination and cooperation with the local police.
 - Police do act against any smuggler or criminal if the BSF provides irrefutable evidence.
- The First Line of Defence:** It has been termed the First Line of Defence of Indian Territories because of the role played by it in dealing with illegal migration from the eastern border and tackling cross-border crimes.
- Comprehensive Integrated Border Management System:** has vastly improved the capability of the Border Security Force (BSF) in detecting and controlling cross-border crimes like illegal infiltration, smuggling of contraband goods, human trafficking and cross-border terrorism, etc.
- BSF and internal security duties:** While border protection has been the primary duty of BSF, it has also been deployed for counter-terrorism and counter-insurgency operations in troubled areas of the country like **J&K, NE states and Naxal-hit areas.**
- Trans-border crimes:** BSF was given powers way back in **1969 under the Indian Passport Act, Cus-**

toms Act Arms Act, NPSD Act, and CrPC to arrest, search and seize a person, vessel or premises so it can effectively deal with trans-border crimes which have a bearing on national security in larger areas of the bordering states.

- For instance, the smuggling of narcotics, arms and ammunition, fake currency and other contraband items on the western and eastern borders of the country.
- **Gathering information:** The BSF does not have the responsibility only to apprehend the offenders while committing trans-border crimes at the zero line,
 - but also to gather information to **neutralize the network and accomplices operating** from their side of the area, independently as well as with the help of local police.

Challenges before BSF in dealing with illegal migration and cross-border crimes: -

- **Porous border—along the India-Bangladesh border**, from Sunderbans in the south to Malda in the north, and is the most porous stretch of India’s borders in the entire eastern theatre making it complex to manage.
- **Challenges on both our eastern and western borders** have grown many folds in the last four decades despite the increased presence of BSF units, the erection of a border fence and the use of modern technologies.
- **Trans-border crimes are no longer confined to petty smuggling** of few eatables or locally produced consumable items; pushing in of narcotics, arms and fake currency into India and large-scale illegal migration of Bangladeshi nationals and Rohingyas pose a serious threat to our security and economy.
- **Increased connectivity and communication:** As connectivity, communication and mobility have increased, trans-border criminals have the advantage of operating from deeper areas.
 - Most of the time BSF operates in close coordination with the local police, but this delays the operational functioning of BSF.
- **Wider outreach of criminals:** While BSF is responsible for preventing trans-border crimes, the sphere of action of these criminals expands to the hinterlands.
 - In places like **West Bengal**, the trans-border criminals were cleverly operating from areas beyond the jurisdiction of BSF.

Conclusion and opinion

Thus, BSF needs to overcome these challenges and further strengthen its border domination against the threats from underground tunnels or enhanced threats by the use of drones or other methods. The added responsibility will require better-coordinated efforts at every level.

Insta Links:

- [Illegal immigration in India’s northern and eastern borders](#)

Mains Links:

Q. Analyze the multidimensional challenges posed by external state and non-state actors, to the internal security of India. Also, discuss measures required to be taken to combat these threats. (UPSC 2021)

Prelims Links:

Q. Department of Border Management is a Department of which one of the following Union Ministries? (UPSC 2008)

- (a) Ministry of Defence
- (b) Ministry of Home Affairs
- (c) Ministry of Shipping, Road Transport and Highways
- (d) Ministry of Environment and Forests

Ans: B

3. VIJAY RAGHAVAN COMMITTEE AND DRDO FUNCTIONING

Context:

The Prime Minister has urged the **armed forces, military-civilian bureaucracy, and the Defence Research and Development Organization (DRDO)** to eliminate cost overruns and project delays in defence manufacturing to make “Atmanirbhar Bharat” (self-reliant India) successful.

Previously, a committee led by **Prof. K. Vijay Raghavan** was formed by the Ministry of Defence to **review and restructure the functioning** of the DRDO and the **defence R&D ecosystem** in the country.

What is DRDO?

DRDO (est. 1958; HQ: New Delhi) is the **R&D wing of the Ministry of Defence**, which aims to equip India with **advanced defence technologies**, fostering self-reliance. DRDO comprises **over 50 laboratories** focusing on diverse defence disciplines such as aeronautics, electronics, and engineering systems. Motto- **“Balasya Mulam Vigyanam”** – “The source of strength is science”

Important programmes of DRDO:

Programs	Description
Integrated Guided-Missile Development Programme (IG-MDP)	Initiated by Dr. APJ Abdul Kalam. Aimed at achieving self-sufficiency in missile technology. Developed missiles: <u>Prithvi</u> , <u>Agni</u> , <u>Trishul</u> , <u>Akash</u> , <u>Nag</u>

Mobile Autonomous Robot System (MARS)	Smart robot for handling landmines and IEDs . Assists Indian Armed Forces in disarming explosive devices from a safe distance. Can be equipped for ground digging and IED defused.
Highest Terrestrial Centre in Ladakh	Located at 17,600 feet near Pangong Lake . Functions as a natural cold storage unit for preserving natural and medicinal plants.
Recent projects	<p>Extreme Cold Weather Clothing System (ECWCS) (designed to protect military personnel in harsh cold environments); 'Pralay' missiles; Controlled Aerial Delivery System; Pinaka Extended Range (Pinaka-ER) Multiple Launch Rocket System; Supersonic Missile Assisted Torpedo System (SMART); Akash-NG and MPATGM projects (guided missile technology); Drone, Detect, Deter and Destroy (D4 System)</p> <p>2016: It successfully tested its first indigenously developed heavy-duty drone Rustom 2</p> <p>2018: DRDO co-developed INS Arihant, India's first nuclear ballistic missile submarine</p> <p>2019: DRDO developed India's first anti-satellite system (Mission Shakti)</p>

Obsolete Equipment	Instead of focusing on cutting-edge technology, DRDO has been accused of tinkering with World War II-era equipment , leading to concerns about the relevance and effectiveness of its projects.
Long-Term Trials	The organization has faced criticism for prolonged testing phases without clear assurances of achieving the desired end state.
Comparison with ISRO	<p>DRDO is focused on too many technologies (defence, underwater, space, equipment, etc.) whereas ISRO's success is attributed to its sharp focus on space.</p> <p>While ISRO serves as the developer, launcher, and controller, ensuring cohesiveness and persistence, DRDO, being only the developer, faces challenges in maintaining a seamless transition from design to realization, necessitating a revamp.</p>

Key recommendations made by Vijay Raghavan's committee for DRDO:

Category	Key Recommendations
Structural Changes	Formation of the Defence Technology Council (DTC) headed by the Prime Minister, with the Defence Minister and National Security Advisor as Vice Presidents.
	DTC to determine the country's defence technology roadmap , decide on major projects and their execution
	Creation of a separate department under the Defence Ministry, i.e., Department of Defence Science, Technology, and Innovation (DDSTI) , to promote defence R&D in the academic and start-up ecosystem, serving as the secretariat for DTC.
Research Focus	Concentrate on Intelligence, Surveillance, and Reconnaissance technologies .
	Emphasize areas in life sciences.
Human Resources	Hire 100 graduates from campuses on a contract every year.
	Strengthen DRDO's lateral entry program .
	Reduce the median age of DRDO to 35 .
Laboratories	Restructure 41 DRDO labs into 10 national labs , distributed in Delhi, Bengaluru (2), Hyderabad (2), Pune, Dehradun, Chennai, Visakhapatnam, and Chandigarh.

Issues with DRDO:

Issues	Description
Inadequate Budgetary Support	The Standing Committee on Defence highlighted concerns about insufficient budgetary support for ongoing DRDO projects.
Inadequate Manpower	DRDO faces challenges due to inadequate manpower, particularly in critical areas, and a lack of proper synergy with the armed forces .
Cost Escalation and Delays	E.g., the Light Combat Aircraft (LCA) Tejas project, initiated in the 1980s with the aim of creating an indigenous supersonic fighter aircraft , faced significant delays and cost overruns.
Big on Promise, Small on Delivery	DRDO has been criticized for making significant promises but delivering less. Lack of accountability and repercussions for overruns have been pointed out by entities like the Comptroller and Auditor General (CAG).

Other suggestions for improving the functioning of DRDO:

DRDO’s restructuring, proposed by the **2007 committee led by P. Rama Rao**, advocates a leaner organization with a **commercial arm for profitability** and project completion efficiency. Former DRDO chief V.K. Saraswat suggests the establishment of a **Defence Technology Commission** and a more significant role for DRDO in selecting production partners. The organization’s 2021 HR policy focuses on **knowledge sharing, open-book management, and participative management**, marking a positive step forward.

Insta Links:

- [Defence Technology](#)

Mains Links:

Q. What is the significance of Indo-US defence deals over Indo-Russian defence deals? Discuss with reference to stability in the Indo-Pacific region. (UPSC 2020)

GENERAL STUDIES – 4

1. EXAMPLES OF ETHICS

Example 1: IAS Rajat Bansal (Development in Naxal Region)

In addressing the **challenge of Naxal violence in Chhattisgarh**, the district administration of Bastar launched **Think-B**, a start-up incubator, to encourage youth entrepreneurship. Led by **IAS Rajat Bansal**, the initiative aims to provide **employment opportunities and tackle extremism** through innovative, development-focused solutions.

Success: Think-B has mentored batches of entrepreneurs, resulting in successful startups like **Zillusion Studios and Mom’s Food Services**. The approach highlights the transformative power of good governance and development in addressing complex issues, even in remote naxal areas.

Example 2: IAS Divya Iyer (Crowd Management)

In 2021-22, **Sabarimala faced challenges during the Manda-la season** due to disruptions like protests and floods. Crowd management, crucial for safety, became a priority. **IAS Divya Iyer and the Pathanamthitta district administration** successfully conducted the yatra through strategic planning, including coordination with 52 departments, **a Safety Walk, landslide hazard mapping, and implementing the Sabarimala Virtual Queue System** with COVID protocols. In December 2023, **Sabarimala implemented the Tirupati model of a queuing system**.

Divya emphasizes the importance of disaster management, including prevention, mitigation, and education. She believes continuous learning is essential for civil servants facing

diverse challenges daily.

Usage of examples: For Essays, Governance, and Ethics section of Mains examination as case studies and example-fodder for answers. Candidates will find it useful for framing replies in interviews/ personality tests.

2. AI EFFECT ON LABOUR

Context:

As AI, **including generative AI like ChatGPT**, becomes commercially widespread, concerns arise regarding its **impact on the job market**.

Studies suggest **potential automation of 60-70% of employee tasks** by current AI, with projections of 50% automation by 2045.

Ethical Aspects of AI’s Impact on Labour:

Ethical Aspects	Implications on Labour
Job Displacement	Potential ethical concerns regarding the social and economic impact of job losses due to AI automation.
Wage Inequality	Ethical questions about fair compensation and addressing the widening gap in wages , particularly in easily automatable sectors.
Retraining Opportunities	Ethical imperative to provide accessible and effective retraining opportunities to facilitate workers’ transition to new roles.
Bias and Fairness	Ethical considerations to address biases in AI systems that may affect hiring and employment practices, ensuring fairness.
Transparency	Ethical concerns about the opacity of AI algorithms , emphasise the need for clear communication and understanding of decision-making processes.
Multidisciplinary Education	Ethical responsibility to provide education that encompasses technical skills along with societal, ethical, and humanistic aspects , preparing individuals for responsible AI use.
Governance and Regulation	Ethical imperative for establishing governance and regulations , such as the Harmonized Rules on AI, to ensure responsible and accountable AI deployment.

The evolving nature of AI prompts the **need for a multidisciplinary approach in education**, balancing technological advancements with ethical considerations. **EU’s Harmonized**

rules on AI (ACI Act 2023), aim to address socio-economic benefits and potential risks. In the face of technological change, **Higher Educational Institutes (HEIs)** play a crucial role in preparing a multi-skilled workforce for the future.

Insta Links:

- [Can AI be Ethical and Moral?](#)
- [A new global standard for AI ethics](#)

CONTENT FOR MAINS ENRICHMENT

1. BOEING SUKANYA PROGRAM

Context:

PM inaugurated the **Boeing India Engineering & Technology Center (BIETC)** campus in Bengaluru, and the launch of the **Boeing Sukanya Program** to promote the entry of girls into India’s aviation sector.

The program aims to **empower girls and women in STEM fields**, offering training for aviation jobs. It includes **creating STEM Labs at 150 locations** to foster interest and providing scholarships for women training to be pilots. India boasts a noteworthy **15% of female pilots, three times** the global average. While female enrollment in STEM courses has risen to over 42% in 2021-22, workforce participation remains at a modest **14% in 2021**.

Usage: The example can be used to show how foreign investments can help drive economic as well as social changes in India

2. ARTIFICIAL GREENING AND PLANTATIONS

Context:

In India, **invasive alien plant species** are displacing native vegetation, posing a significant **threat to wildlife by disrupting natural habitats** and depleting essential food sources.

A study suggests that about **66% of the country’s natural systems are infested by 11 invasive species**, compromising or threatening **two-thirds of the available food for wild animals**. The invasion is driven by human actions, including **horticultural practices and land-use changes**.

What is Artificial greening and plantations?

It refers to **human-initiated efforts to introduce or promote specific vegetation** in an area, often for ecological restoration, aesthetic purposes, or to address environmental issues. These practices involve **planting selected plant species**, typically non-native or commercially valuable ones, to modify or enhance the existing vegetation in a particular area.

While some experts view artificial greening as a way to ecological restoration, livelihood enhancement, Aesthetic Landscaping, Erosion Control, etc. But artificial greening if done with **non-native species can have an irreversible impact** on the overall ecological landscape.

3. NATIONAL GIRL CHILD DAY (NGCD)

Context:

It is observed annually **on January 24**, and sheds light on challenges faced by girls in Indian society.

Established in 2008 by the Ministry of Women and Child Development, **NGCD** advocates for **equal opportunities in education, healthcare, and nutrition**. It commemorates the inaugural anniversary of the **Beti Bachao, Beti Padhao Scheme launched on January 22, 2015**, aiming to improve the child sex ratio and empower girls and women. The day also holds significance as it marks the **anniversary of Smt. Indira Gandhi took the oath as the first woman Prime Minister of India on January 24, 1966**. **NGCD** promotes equal opportunities for the girl child while raising awareness about the injustices they face.

Activities this year:

The government urged states and union territories to conduct a **five-day campaign** at the grassroots level to raise awareness about the **importance of the girl child**. The campaign includes various activities, such as **Gram Sabha or Mahila Sabha, oath-taking ceremonies, workshops on menstrual hygiene**, and celebrating local champions in education, sports, social welfare, and **community mobilization**.

Quotes on Girl Child:

1. “Empower a girl, empower a nation. The strength of our future lies in the hands of every girl child.”
2. “Girls are not just a part of the story; they are the storytellers, shaping the narrative of a better tomorrow.”
3. “Girls are not liabilities; they are assets that enrich the fabric of society with their intelligence and compassion.”

Usage: The examples can be used in Essays/ Ethics (value of gender equality)/ Case studies etc.

FACTS FOR PRELIMS

GS-1

1. SOLIGAS AND YERAVAS

Context: The Soligas and Yeravas, indigenous groups living in the **Western Ghats, forage foods from the biodiversity-rich region**, forming a significant part of their diets.

- The recently launched book **“Forgotten Trails: Foraging Wild Edibles”** chronicles the diverse foods foraged by these tribes, emphasizing the importance of preserving traditional knowledge and addressing the **impact of land use changes and shifting policies on their food sources.**

About Soligas:

- The **Soligas are an indigenous community residing in the Cauvery Basin and surrounding hills of peninsular India.**
- The Soligas speak Sholaga, belong to the Dravidian family, and practice a blend of naturism, animism, and Hinduism, with Madeshwara as their primary deity.
- Notably, they are the **first tribal community within an Indian tiger reserve to have their forest rights formally acknowledged by a court of law.**

About Yeravas:

- The **Yeravas**, another indigenous community in the same region, **migrated from Wayanad district in Kerala and settled in Kodagu district.**
- They speak the Revula language, practice Hinduism, and believe in spirits residing in natural elements.
- **Yeravas, often agricultural labourers in coffee and tea plantations, include a higher quantity of tubers in their diet compared to Soligas.**
- They consume mushrooms during the monsoon season, and their settlements are called ‘Kunju.’

2. MADHIKA LANGUAGE

Context:

The **Chakaliya community** in the remote colony of Kookanam, near Karivellur grama panchayat in Kannur, is **facing the imminent extinction of its unique language, Madhika.**

- The language, has **no script and is a blend of Telugu, Tulu, Kannada, and Malayalam,** will be lost soon.
- Despite its diverse influences, **Madhika is losing ground among the younger generation,** who prefer **mainstream languages like Malayalam.**
- The **Chakaliya community, considered untouchables in the past,** faced social stigma, contributing to the neglect of their language.

3. SRIRANGAM TEMPLE

Context:

The Prime Minister visited **Srirangam Sri Ranganathaswamy Temple,** marking the first visit by a **servicing Prime Minister to the temple,** according to temple priests.

Sri Ranganatha Swamy Temple, also known as Srirangam Temple, is a **Hindu temple in Srirangam,** Tiruchirapalli, Tamil Nadu, India. It is dedicated to **Ranganatha, a form of Vishnu.** The temple is **considered the first and most important of the 108 main Vishnu temples.**

It is constructed in **Dravidian style and temple Complex has 21 sculpted Gopurams,** 50 sub-shrines, and 9 sacred pools

(tanks).

Situated on island of Srirangam **bounded by Cauvery and Kollidam (tributary of Cauvery) Rivers.**



4. BHARAT RATNA KARPOORI THANKUR

Context:

The Centre has announced the **posthumous award of the Bharat Ratna to Karpoori Thakur,** former **chief minister of Bihar,** on his birth centenary.

- Known as **“Jannayak” (leader of the people),** Thakur was a **prominent backward caste leader in Bihar.**
- Thakur’s radical policy decisions, **including removing English as a compulsory subject, implementing alcohol prohibition, and introducing a layered reservation system,** had a significant impact.

About Bharat Ratna:

The **Bharat Ratna is the highest civilian award in India,** awarded by the President of India.

It is conferred **“in recognition of exceptional service/performance of the highest order”** without distinction of race, occupation, position, or sex.

The award was established on **January 2, 1954, by the first President of India, Rajendra Prasad.**

Initially, the Bharat Ratna was only awarded for exceptional services in the fields of science, arts, literature, and public services, but **the criteria were later expanded to include any field of human endeavour.**

The recipients receive a certificate signed by the President and a medallion. **The number of annual awards is restricted to a maximum of three in a particular year. It does not carry any monetary grant. It is not a title under Article 18.**

5. 'SAPINDA' MARRIAGES

Context:

The Delhi High Court has **affirmed the constitutional validity** of a provision in the **Hindu Marriage Act** that prohibits '**sapinda**' marriages, those between individuals related through ancestors unless their custom permits.

What is 'Sapinda' marriage?

'**Sapinda**' marriages refer to unions between individuals who are **closely related through their common lineal ancestors**. According to the **Hindu Marriage Act**, individuals are considered 'sapindas' if one is a direct ancestor of the other within specified limits or if they share a common lineal ascendant within the 'sapinda' relationship boundaries. The Act aims to regulate such unions to prevent potential issues and ensure adherence to recognized customs.

Sapinda' relationship extends up to the **third generation through the mother's line and the fifth generation through the father's line**.

GS-2

1. ALLIANCE FOR GLOBAL GOOD- GENDER EQUITY AND EQUALITY

Context:

India launched the "**Alliance for Global Good- Gender Equity and Equality**" at the World Economic Forum (WEF) 2024 in Davos.

More about the initiative:

Led by the Union Minister of Women & Child Development, the **alliance aims to promote women-led development globally**. The alliance **focuses on global best practices**, knowledge sharing, and investments in women's health, education, and enterprise. Aligned with **G20 Leaders' Declaration**, it reflects **India's commitment to women-led development**. Supported by the **Bill and Melinda Gates Foundation**, anchored by the CII Centre for Women Leadership, WEF acts as a '**Network Partner**,' and **Invest India** as an 'Institutional Partner.'

The initiative **reinforces India's commitment** to global cooperation and the overarching WEF theme, '**Rebuilding Trust**.' The launch was complemented by a **women's leadership lounge (We Lead lounge)** at WEF, featuring discussions and showcasing products by women entrepreneurs.

2. DIGITAL STUDY MATERIAL IN INDIAN LANGUAGES

Context:

The Ministry of Education (MoE) has **instructed schools and higher education institutions**, including regulators like UGC, AICTE, NCERT, NIOS, IGNOU, and prominent educational institutions, to provide **digital study material for all courses in Indian languages** within the next three years.

The **National Education Policy 2020** emphasizes **multilingualism** at all education levels. **Article 350 A** of the Constitution mandates education in the mother tongue for children from linguistic minority groups at the primary stage. The **Right to Education Act 2009** recommends using the mother tongue as the medium of instruction whenever possible.

Initiatives in Education:

Initiative	Description
PM e-Vidya	A comprehensive initiative under Atma Nirbhar Bharat Abhiyaan (2020) for digital/online/on-air education . Offers multi-mode access to education for students across all states at no cost.
Anuvadini (AI based App)	Translation of Engineering, Medical, Law, UG, PG, and Skill books through an AI-based app.
e-KUMBH Portal	Launched by AICTE to provide free access to technical education books in various Indian languages.
DIKSHA Portal	Offers study material for school education in over 30 Indian languages .
Bhasha Sagar Project	A project aimed at developing a mobile application and a web-based platform for learning Indian languages.
Natural Language Translation	A mission facilitating access to teaching and research material across all regional languages.
Sathee Portal	Developed in collaboration with IIT Kanpur , this portal assists students preparing for competitive exams nationwide, including in their native language

Q. Which of the following provisions of the Constitution does India have a bearing on Education? (UPSC 2012)

1. Directive Principles of State Policy
2. Rural and Urban Local Bodies
3. Fifth Schedule
4. Sixth Schedule
5. Seventh Schedule

Select the correct answer using the codes given below:

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

Ans: D

Mains Links

Q. How have digital initiatives in India contributed to the functioning of the education system in the country? Elaborate on your answer. (UPSC 2020)

3. PRADHAN MANTRI SURYODAYA YOJANA

Context:

The **Pradhan Mantri Suryodaya Yojana**, launched recently, aims to provide rooftop solar panels for consumers.

- The scheme intends to **supply power to households** through solar rooftop installations and offers **additional compensation for excess electricity output**.

Key Features:

- The goal is to **install rooftop solar on 1 crore houses, providing 1 crore families access** to rooftop solar energy.
- The scheme is designed to **benefit poor and middle-income households**, helping them **reduce electricity bills**.

This initiative **follows the government's 2014 Rooftop Solar Programme**.

About solar rooftop system:

A solar rooftop system consists of **solar modules, solar inverter(s) and other electrical components such as meter(s), cables etc.**

Solar Photovoltaic modules and allied electrical equipment are installed on residential and commercial rooftops and connected to the power grid.

These are known as **Grid connected Rooftop Photovoltaic systems (GRPV)**.

4. SURROGACY ACT, 2021

Context:

The Union Health Ministry has **requested data from all States and Union Territories** regarding the **number of couples and single and unmarried women** who have successfully availed **surrogacy under the Surrogacy Act, 2021**, and the number

of **couples and single women who have opted for Assisted Reproductive Technology (ART) under the ART Act, 2021**.

The **Surrogacy (Regulation) Act, 2021** is a law that **regulates and promotes surrogacy in India**. The law also prohibits commercial surrogacy and regulates in **vitro fertilization (IVF) clinics**.

The purpose of the **ART Act is to regulate and supervise assisted reproductive technology (ART) clinics and banks** in India. The Act also aims to ensure that **ART practices are safe and ethical**.

5. STANDARDS MACHINE APPLICABLE READABLE AND TRANSFERABLE (SMART)

Context:

The Director General of the **Bureau of Indian Standards (BIS)**, advocates for the implementation of **the SMART (Standards Machine Applicable Readable and Transferable) approach** to make **Indian standards easily readable and understandable for all stakeholders**.

- A SMART standard initiative by the **International Electrotechnical Commission (IEC) and the International Organization for Standardization (ISO)**, emphasises **machine interpretability and readability as key factors**.
- There is a **need for accessible standards**, especially for **sectors dominated by small enterprises**, which constitute **more than 80% of the licenses granted by BIS**.

GS-3

6. FAO'S COMMITTEE ON FISHERIES (COFI)

Context:

India has been appointed as the first vice-chair of the **UN Food and Agriculture Organization (FAO) Committee on Fisheries (COFI) Sub-Committee on Fisheries Management**, marking the first time in 59 years.

Significance:

- This appointment comes as various countries raise concerns about **China's illegal fishing practices in international waters**. China has faced criticism for its illegal, unreported, and unregulated fishing practices, fishing in the exclusive economic zones of over 80 countries.
- India's inclusion in this committee is seen as **bringing balance and perspective to global narratives** on fisheries governance and management.

About COFI:

The **UN Food and Agriculture Organization Committee on Fisheries (COFI)** is the primary global intergovernmental forum addressing major international fisheries and aquaculture issues. **Established in 1965**, COFI reviews the **FAO work program** on fisheries, conducts periodic reviews of global fishery problems, and proposes solutions. It has **two subsidiary bodies**: the Sub-Committee on Aquaculture and the Sub-Committee on Fish Trade. COFI played a key role in **negotiating the Code of Conduct for Responsible Fisheries and the Agreement to Promote Compliance** with International Conservation and Management Measures by Fishing Vessels on the High Seas.

About the Food and Agriculture Organization (FAO):

It is a **specialized UN agency established on October 16, 1945**, headquartered in Rome, Italy. It aims to lead global efforts to eliminate hunger and ensure food security for all. With 195 members, including 194 countries and the European Union, FAO's goal is to provide regular access to high-quality food for active, healthy lives. **World Food Day** is celebrated annually on October 16th. FAO's sister bodies include the World Food Programme and the International Fund for Agricultural Development (IFAD).

7. HAVISURE

Context:

Indian Immunologicals Ltd (IIL), a subsidiary of the **National Dairy Development Board (NDDB)** and a leading biopharmaceutical company in India, has **launched India's first indigenously developed Hepatitis A vaccine called 'Havisure'**.

- This vaccine is expected **to play a crucial role in preventing Hepatitis A**, a highly contagious **liver infection transmitted through contaminated food or water**.
- Hepatitis is an inflammation of the **liver that can cause a range of health problems and can be fatal**. It's caused by swelling that occurs when **tissues of the body are injured or infected**.

HEPATITIS	How it spreads	Prevention	Treatment
A	Feces Contaminated food or water	<ul style="list-style-type: none"> • Vaccine • Practice good hygiene 	<p>No specific medication available</p> <p>Treated through supportive care (rest, adequate nutrition, and fluids) to help relieve symptoms</p>
B	Through contact with the blood or bodily fluids of an infected person	<ul style="list-style-type: none"> • Vaccine • Practice safe sex • Blood screening 	Combination antiviral therapies (with Tenofovir or Tenofovir derivatives plus lamivudine)
C	Blood-to-blood contact	<ul style="list-style-type: none"> • Practice safe sex • Avoid sharing needles, toothbrushes, razors or nail scissors 	Combination therapies with direct acting antivirals (DAAs)
D	Contact with infected blood (only occurs in people already infected with hepatitis B)	<ul style="list-style-type: none"> • Hepatitis B vaccine • Avoid sharing needles, toothbrushes, razors or nail scissors 	Interferon
E	Feces Contaminated food or water	<ul style="list-style-type: none"> • Practice Good Hygiene • Avoid drinking water that has come from a potentially unsafe source • Cook food well 	<p>No specific medication available</p> <p>Supportive Care</p>

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8. CORAL REEF

Context:

Scientists **have mapped the largest known deep-sea coral reef** off the US Atlantic coast, stretching about **310 miles from Florida to South Carolina**.

- Unlike tropical coral reefs, **deep-sea coral must filter food particles from the water for energy**.
- The newly discovered reef, **which provides habitat for various marine species**, has been called **"breath-taking in scale"** and covers nearly three times the size of Yellowstone National Park.

A coral reef is a **complex underwater ecosystem** made up of colonies of coral polyps held together by **calcium carbonate**. Coral reefs are often called the **"rainforests of the sea"** and support about **25% of all known marine species**.

About Deep Sea Corals:

Deep-sea corals are also called **cold-water corals**. They don't rely on photosynthesis because they're living in the dark. Instead, they use the **tentacles on their polyps to filter food out of the surrounding waters**.

9. LASER COMMUNICATION WITH CHANDRAYAAN-3 LANDER

Context:

NASA's Lunar Reconnaissance Orbiter (LRO) has **successfully pinged India's Chandrayaan-3 mission's Vikram lander** on the Moon using a laser instrument.

The laser beam was **transmitted and reflected between the LRO** and a retroreflector on the Vikram lander, located near the Moon's south pole. The **Laser Retroreflector Array on Chandrayaan-3's lander**, developed in partnership between NASA and ISRO, has started serving as a **marker or reference point on the Moon**.

Significance: This achievement opens up new **possibilities for precisely locating targets** on the lunar surface. The technique holds potential for future lunar missions utilizing retroreflectors.

About **Laser communication** (also known as optical communication)

It is a method of **transmitting information using laser beams**. Instead of traditional radio frequency signals, laser communication relies on light waves to carry data. It involves **modulating the intensity of a laser beam to**

encode digital data, which is then transmitted and received by specialized equipment. Laser communication offers advantages such as higher data transfer rates, greater bandwidth, and potentially more secure communication channels

10. END-TO-END ENCRYPTION

Context:

End-to-end encryption (E2E) is a **method of protecting digital information** by transforming it **into an unreadable format**, and it has significant implications for **privacy and security**.

- Encryption **fundamentally involves changing consumable information into an unconsumable** form based on specific rules.

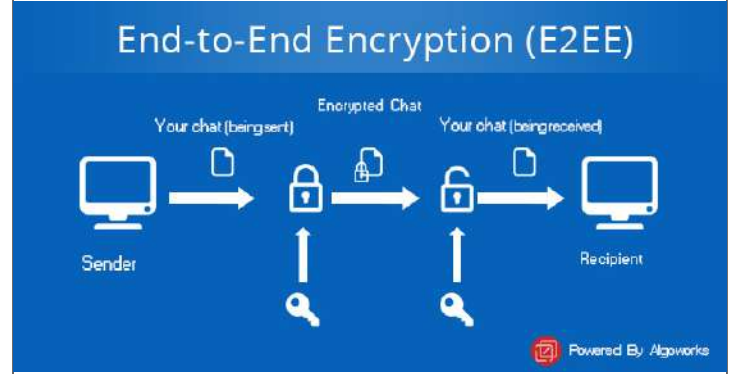
There are two main types of encryptions: **symmetric and asymmetric**.

- **Symmetric Encryption:** In symmetric encryption, **the key used to encrypt information is the same key needed for decryption**. Notable examples include **the Data Encryption Standard (DES) and the Advanced Encryption Standard (AES)**.
- **Asymmetric Encryption:** Asymmetric encryption **uses different keys for encryption and decryption**. A public key encrypts the information, and a **corresponding private key decrypts it**. The length of the key influences the level of protection. **Asymmetric encryption is useful when the sender and recipient are different, providing a higher level of security**.

Issues with E2E encryption:

- E2E **encryption is not foolproof**. It can be **vulnerable to man-in-the-middle (MITM) attacks**, where an **attacker intercepts the key and decrypts the message**.
- E2E encryption may **induce user complacency, and other vulnerabilities** like malware or backdoors **installed by service providers could compromise security**.

End-to-end encryption (E2EE) is a secure communication method that **prevents third parties from accessing data** while it's transferred **from one device to another**.



11. MPEMBA EFFECT

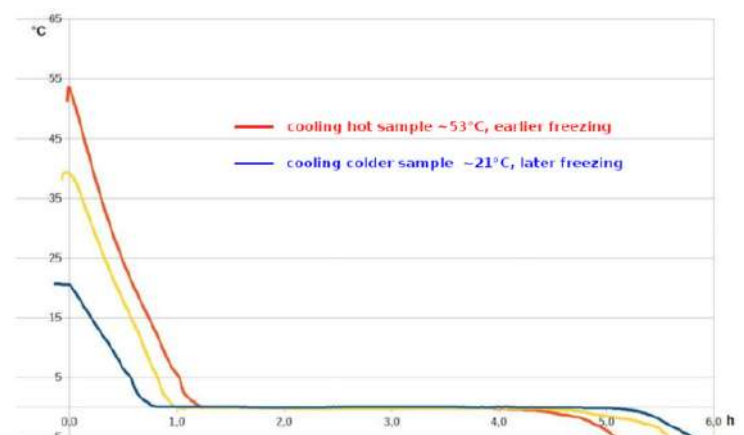
Context: The **Mpemba effect**, named after **Tanzanian student Erasto Mpemba**, describes the **counterintuitive phenomenon** where **hot water can freeze faster than cold water in similar conditions**.

- Although noticed by historical figures like **Aristotle, Francis Bacon, and René Descartes**, **the effect gained attention after Mpemba highlighted it in 1969**.

Despite various experiments, **scientists have not reached a consensus on the exact causes of the Mpemba effect**.

Several factors are considered, such as **microbubbles promoting convection and heat transfer in heated water, increased evaporation in warmer water, and the insulating effect of frost in cold water**.

Compounds **like calcium carbonate in water may also play a role**.



12. ELUSIVE BINTURONG AND THE SMALL-CLAWED OTTER

Context:

Two new mammalian species, the elusive binturong (bearcat) and the small-clawed otter, have been added to Assam's Kaziranga National Park and Tiger Reserve.

- The binturong, the largest civet in India, was photographed during a migratory bird count, while the small-clawed otter was spotted after a training program.
- Both species are listed under Schedule I of the Wildlife Protection Act of 1972.

Species	Binturong (Bearcat)	Small-clawed Otter (Asian Small-clawed Otter)
Description	Largest civet in India.	Primarily found in freshwater habitats.
Native	South-East Asia.	India (West Bengal, Assam, Arunachal Pradesh, Karnataka, Tamil Nadu, and Kerala), Southeast Asia, and Southern China.
Distribution	India (Meghalaya, Sikkim), Indonesia, Thailand, Malaysia, etc.	
Conservation	Vulnerable (IUCN); Appendix III (CITES).	Vulnerable (IUCN); Appendix I (CITES).



13. HYDROCARBON EXPLORATION

Context:

Wedge Bank, is under threat due to the Indian government's proposal to offer three oil and gas blocks for exploration and development.

- The blocks identified for exploration overlap with Wedge Bank, an ideal place for nutrient-rich marine life.

About Hydrocarbons:

- Hydrocarbons are organic compounds made up of hydrogen and carbon. They are found in crude oil, natural gas, and coal.
- Hydrocarbon exploration is the search for deposits of hydrocarbons, such as petroleum and natural gas, in the Earth's crust. It's also known as oil and gas exploration

Wedge Bank is a 10,000 square kilometre area of the sea south of Kanyakumari. It is a shallow zone with a nearly flat bottom topography and a continental shelf. The bank is rich in biodiversity and is a fertile fishing ground.



Location of Wedge Bank with respect to Project site

14. PLANTS "TALKING" TO EACH OTHER

Context:

Scientists from Japan have captured real-time footage of plants communicating with each other for the first time.

- The research revealed that plants release airborne compounds, similar to smells, to warn nearby plants of danger.

About the study:

The study observed how undamaged plants responded to volatile organic compounds (VOCs) released by plants damaged by insects or other factors.

Using an air pump connected to containers with leaves, caterpillars, and Arabidopsis thaliana (a mustard family weed), the researchers observed bursts of calcium signaling in undamaged plants, indicating their response to the warning messages.

Volatile organic compounds (VOCs) are organic chemicals that have a high vapour pressure at room temperature. This high vapour pressure results from a low boiling point, which allows their molecules to evaporate from the liquid to the gas phase.

VOCs are in thousands of daily use products, including paint, varnish, wax, and various cleaning, degreasing, and

cosmetic products. Many VOCs are human-made chemicals that are used and produced in the **manufacture of paints, pharmaceuticals, and refrigerants.**

15. CAMEROON LAUNCHED MOS-QUIRIX

Context:

It launched the **world's first malaria vaccine program for children (Mosquirix)**, aiming to vaccinate about 250,000 children this year and next.

The vaccine, **Mosquirix**, endorsed by the World Health Organization, is around 30% effective, requires four doses, and has been approved for use despite its imperfections. The campaign is considered a milestone in the fight against **malaria** in Africa, where the disease **accounts for 95% of global malaria deaths.** The vaccination effort is part of a broader initiative by **Gavi, involving 20 other African countries**, with hopes to immunize over 6 million children by 2025.

The R21, otherwise referred to as Matrix-M malaria vaccine, is the second vaccine ever developed for a disease, after **RTS, S or mosquirix** was approved by the WHO in 2021.

Since 2015, **9 countries have been certified by the WHO Director-General as malaria-free**, including Maldives, Sri Lanka, Kyrgyzstan, Paraguay, Uzbekistan, Argentina, Algeria, China (2021) and El Salvador (2021).

Initiatives to Curb Malaria:

Initiatives	Details
Global Initiatives	
The WHO's E-2025 Initiative	Identifies 25 countries with the potential to eradicate malaria by 2025.
WHO's Global Technical Strategy (2016–2030)	Aim to reduce malaria case incidence and mortality rates by at least 40% by 2020, 75% by 2025, and 90% by 2030 against a 2015 baseline.
High Burden to High Impact (HBHI) Initiative	Initiated in 11 high malaria burden countries, including India. Implementation of HBHI Initiative: Started in four states: West Bengal, Jharkhand, Chhattisgarh, and Madhya Pradesh.
Indian Initiatives	
Government of India's Target	Set a target to eliminate malaria in India by 2027.
National Framework for Malaria Elimination (2016-2030)	Developed to shift focus from control to elimination.

National Strategic Plan for Malaria Elimination	Launched in 2017, providing a roadmap to end malaria in 571 districts out of India's 678 districts by 2022.
Malaria Elimination Research Alliance-India (MERA-India)	Established by the Indian Council of Medical Research (ICMR), a partnership working on malaria control.

16. KUMKI ELEPHANTS

Context:

To **address the increasing human-elephant conflict** in Odisha, the state government has requested **four Kumki elephants and their mahouts from Tamil Nadu.**

- Kumki elephants are **trained captive elephants** used for **operations such as trapping, rescuing, and tranquilizing wild elephants.**

The move aims to **strategically deploy Kumki elephants in conflict-prone areas to reduce damage to crops, human habitation, and potential loss of lives.**



17. EXERCISE 'CYCLONE'

Context:

The **2nd edition of the India-Egypt Joint Special Forces Exercise CYCLONE** has begun.

- The exercise **aims to familiarize both sides with operating procedures related to Special Operations in desert/semi-desert terrain under Chapter VII of the United Nations Charter.**
- The exercise involves military cooperation discussions, tactical military drills, and three phases covering areas like Improvised Explosive Device (IED) training, combat first aid, and joint tactical exercises in built-up areas and hostage rescue scenarios.
- The goal is to **enhance bilateral military cooperation and strengthen** the bond between **the Indian and Egyptian armies.**

Here is the list of all [Military Exercises of India](#).

18. VAIBHAV FELLOWSHIP

Context:

The **Department of Science and Technology (DST)** announced the first recipients of the **'Vaibhav' fellowship**, a scheme designed to **attract Indian-origin scientists based abroad for short-term collaboration.**

- Twenty-two scientists **will spend one to two months annually**, for a **maximum of three years**, at **Indian institutes such as the Indian Institute of Science and the Indian Institutes of Technology.**
- The **fellows will receive a stipend, accommodation, and research grants for their host institutions.**

The scheme aims to **encourage collaborative projects, technology start-ups, and the establishment of long-term research connections** between diaspora scientists and Indian institutions.

19. INDIAN STOCK MARKET

Context:

India has surpassed **Hong Kong to become the fourth-largest equity market** globally, with the **combined value of shares listed on Indian exchanges reaching \$4.33 trillion compared to Hong Kong's \$4.29 trillion.**

- The top **three stock markets are currently the U.S., China, and Japan.**
- This achievement marks **India's ascent in the global financial landscape**, following the crossing of **the \$4 trillion mark.**
- India's stock market growth has been attributed to factors such as **strong GDP, political stability, foreign portfolio investment, and becoming an alternative to China** for global investors and companies.

In contrast, Hong Kong has faced challenges, **including COVID-19 restrictions, regulatory crackdowns, a property-sector crisis, and geopolitical tensions**, impacting its appeal to investors.

The **stock market** is a collection of exchanges where investors can **buy and sell company shares and other securities.** It also includes **over-the-counter (OTC) marketplaces** where investors can trade securities directly with each other.

Types of Markets	Purpose
Primary Market	Issuance of new securities by companies to raise capital. This includes processes like IPOs (Initial Public Offerings) and Rights Issues.
Secondary Market	Trading of existing securities among investors without the involvement of the issuing company through exchanges such as NSE, BSE etc. Provides liquidity to investors and allows for price discovery based on market demand and supply.

20. DYNAMIC WIRELESS CHARGING TECHNOLOGY

Context:

The **Union Ministry of Road Transport and Highways** is considering the electrification of the **Golden Quadrilateral, connecting Delhi, Mumbai, Chennai, and Kolkata**, as part of Vision 2030: **PM Public Transport Sewa.**

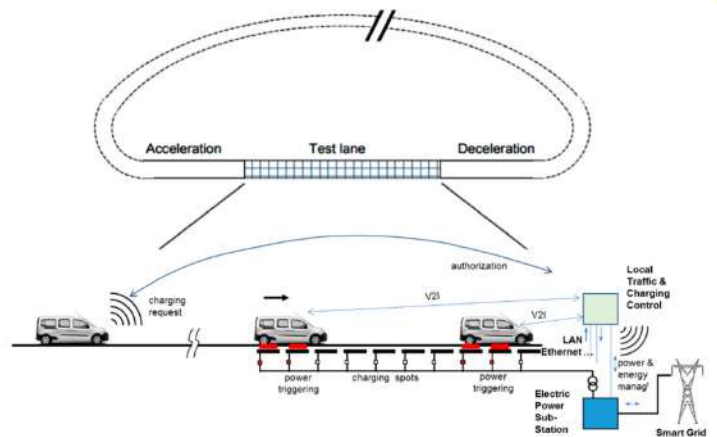
- The plan, expected to be implemented over the next seven years, **aims to boost e-mobility and deploy e-buses.**
- The proposal includes **dynamic wireless charging technology**, enabling **EVs to charge while on the move.**
- This approach could **potentially reduce the battery size, making EVs more affordable.**

About Dynamic Wireless Charging Technology:

Dynamic wireless charging technology refers to a **system that enables electric vehicles (EVs) to charge while on the move by using base pads embedded under the surface of the road.**

Unlike traditional stationary wireless charging, dynamic wireless charging **allows EVs to receive power continuously as they travel, eliminating the need to stop charging.**

This technology relies on **inductive transfer of energy, similar to stationary wireless charging.** The **base pads installed beneath the road's surface generate a magnetic field**, and a corresponding pad on the vehicle receives this energy, **facilitating charging without physical connections.**



21. EVOLUTION OF UNIVERSE

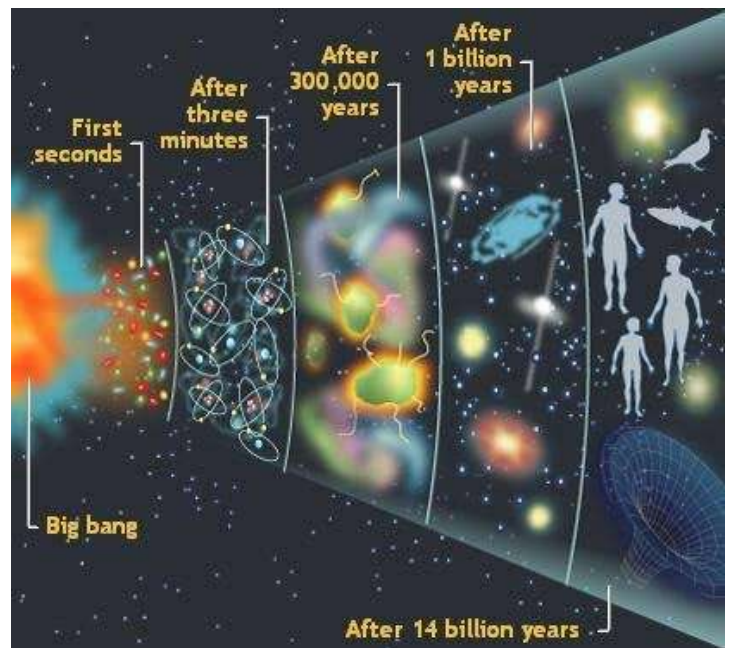
Context:

As the universe ages, its future is shaped by **fundamental laws of physics.** Utilizing a logarithmic clock, cosmologists can trace the evolution of the universe from the Big Bang to the present.

Various stages in the evolution of the universe:

Stage	Description
Initial Singularity	The universe begins as an extremely hot and dense point called a singularity . This marks the starting point of the Big Bang theory, where all matter and energy are concentrated in a tiny, infinitely dense space.
Inflationary Epoch	A brief period of exponential expansion, known as cosmic inflation , occurs within the first fractions of a second after the Big Bang. This rapid expansion helps explain the uniformity and large-scale structure observed in the present universe.
Quark Epoch	As the universe cools further, quarks and gluons combine to form protons and neutrons. This transition occurs in a matter of microseconds.
Hadron Epoch	Protons and neutrons continue to form and combine , creating a “soup” of particles called hadrons. This epoch lasts for a few minutes and is crucial for the formation of light elements like helium and deuterium .
Lepton Epoch	The universe becomes transparent as it cools, allowing photons to move freely. Electrons and positrons annihilate, leaving behind a small excess of electrons , which form the basis for the cosmic microwave background radiation.
Photon Epoch	Photons dominate the universe, interacting with charged particles. As the universe expands and cools, it enters a phase where photons no longer interact frequently, marking the transition to the era of cosmic microwave background radiation .
Formation of Structure	Over millions of years, gravitational instabilities lead to the formation of cosmic structures. Gas clouds collapse to form galaxies, stars, and other celestial structures , shaping the large-scale structure observed in the universe today.
Stellar Evolution	Stars form from collapsing gas clouds, undergo fusion, and eventually exhaust their nuclear fuel. Depending on their mass, stars may end their lives as supernovae, neutron stars, black holes, or white dwarfs . Stellar evolution contributes heavy elements to the cosmos.

Galactic Evolution	Galaxies evolve through interactions, mergers, and the continuous formation of new stars. Over billions of years, galaxies take on various forms, influencing the distribution of matter and shaping the cosmic landscape.
Dark Energy Dominance	In late cosmic history, dark energy, a mysterious force driving the accelerated expansion of the universe , becomes more dominant. It counteracts the gravitational pull, leading to an ever-faster expansion.
Beginning of End	Over time, stars will exhaust fuel, galaxies collide, and new stars will form from merging brown dwarfs . Eventually, stars will be ejected from galaxies, and black holes will dominate, consuming rogue stars until their evaporation.



22. DIRECT TAX TO GDP RATIO

Context:

During the fiscal year 2022-23, the share of direct taxes in India’s gross domestic product (GDP) reached a 15-year high of **6.11%**.

What is the Direct Tax to GDP ratio?

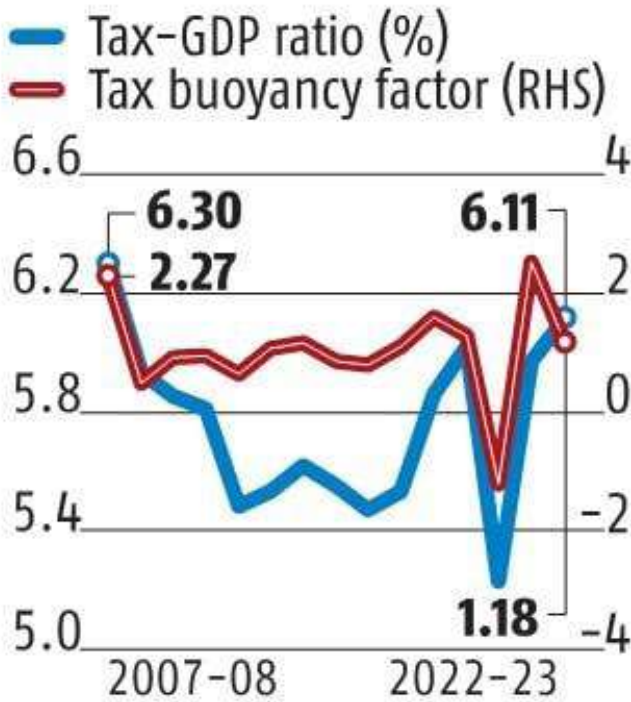
The Direct Tax to GDP ratio is a financial metric that represents the **percentage of a country’s gross domestic product (GDP) contributed by direct taxes**. A higher ratio implies a **larger share of tax revenue** relative to the overall economic activity. It gives an estimate of a **country’s ability to mobilise resources to fuel its development**. Direct taxes **contributed**

over **54%** to the overall tax collection during FY23.

Other facts:

The **Tax Buoyancy decreased from 2.52 to 1.18** compared to the previous year. Tax buoyancy measures the **efficiency of tax collection in response to GDP growth**. It signifies buoyancy when tax revenues increase more than proportionately with GDP growth, even if tax rates remain constant.

TAX BOOST



Source: CBDT

In India, **central-level direct taxes include personal and corporate income taxes under the Income Tax Act of 1961**. However, **India's tax-to-GDP ratio is notably low**, ranking much below countries like OECD members with an average tax-to-GDP ratio exceeding 30%. This is attributed to factors such as the dominance of the informal sector, tax evasion, and various exemptions and incentives.

23. SCRAP STEEL

Context:

The Indian government aims to **raise the share of scrap in steel production to 50% by 2047**.

What is Scrap Steel?

Scrap steel refers to **recycled steel derived from discarded or unused metal products**, industrial waste, or end-of-life vehicles. It is processed and reused in steel production, contributing to sustainability by reducing the need for raw materials and minimizing environmental impact. Currently,

scrap contributes around **30-35% of India's overall steel production**

Using scrap in steel production is **considered less polluting**, and it is expected to contribute to environmental sustainability. India's steel sector accounts for **12% of India's CO2 emissions**. India currently ranks as the **World's 2nd Largest Producer of Crude Steel**

Other initiatives for Scrap Steel:

National Steel Policy, 2017 aims for 300MT steel capacity by 2030, **with 35-40% from the EAF** route, utilizing mostly recycled scrap. **EAF (Electric Arc Furnaces) and BFBOF (Blast Furnace-Basic Oxygen Furnace)** are steelmaking methods. **Steel Scrap Recycling Policy, 2019** aims to enhance domestic scrap availability to reduce coal consumption in steel production.

24. EXECUTION USING NITROGEN GAS

Context:

A federal appeals court in Alabama has **ruled that the state can carry out its first execution using nitrogen gas**.

The process:

Execution by nitrogen gas involves the **administration of pure nitrogen** to the condemned person. The method typically includes placing a **respirator-type face mask** over the nose and mouth to replace breathable air with nitrogen, causing death from lack of oxygen. The state predicts that the gas will cause the **inmate to lose consciousness within seconds and death within minutes**.

Critics argue that the untested method raises unknowns and potential risks, violating constitutional prohibitions against cruel and unusual punishment.

About Nitrogen gas:

It is a **colourless, odourless gas** that makes up a significant portion of Earth's atmosphere. It is inert and **non-flammable**, commonly used in various industrial applications, including food packaging and electronics manufacturing.

25. HERMIT CRABS

Context:

Hermit crabs worldwide, known for using scavenged shells as armour, are increasingly **turning to plastic waste instead**, according to an ecological study using social media photos.

The research, published in the journal Science of the Total Environment, revealed that **two-thirds of hermit crab species were pictured using "artificial shells,"** mainly discarded plastic caps.

About Hermit Crabs:

The hermit crab (IUCN: least concern) is a unique crustacean that lacks a hard shell and utilizes old shells, particularly whelk shells, for protection. Unlike other crustaceans with a complete exoskeleton, the hermit crab has a soft and squishy back part where its abdomen is located.



26. FOREIGN PORTFOLIO INVESTORS (FPIS)

Context:

The Securities and Exchange Board of India (SEBI) has extended the deadline for Foreign Portfolio Investors (FPIS) to disclose granular details of entities holding ownership, economic interest, or control in the FPI.

What are FPIs and how are they different from FDIs?

FPIs (Foreign Portfolio Investors) and FDIs (Foreign Direct Investments) are both types of investments made by foreign entities, but they differ in their nature and purpose.

Aspect	FPIs (Foreign Portfolio Investors)	FDIs (Foreign Direct Investments)
Definition	Foreign entities (e.g., mutual funds, hedge funds, pension funds) invest in financial assets like stocks, bonds, and securities in a country.	Foreign entities making a long-term investment in a business or physical assets in another country, often acquire a substantial ownership stake.
Investment Horizon	Typically short to medium-term.	Long-term.
Investment Focus	Financial assets, such as stocks and bonds.	Business or physical assets of a company.
Returns	Seek returns through capital appreciation and dividends.	Aim for lasting interest, influence, and control over the company's operations.

Control and Management Involvement	Do not seek to actively control or manage the companies in which they invest.	Actively involved in the management and decision-making processes of the invested entity.
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Why does SEBI want FPIs to disclose their details?

SEBI's move aims to prevent possible round-tripping and misuse of the FPI route. SEBI is seeking additional information from FPIs holding more than 50% of their Indian equity assets under management (AUM) in a single corporate group or with over Rs 25,000 crore in Indian equity markets. The requirement is part of efforts to address concerns that certain FPIs may be used to circumvent regulatory requirements. Sovereign wealth funds, listed companies on certain global exchanges, public retail funds, and other regulated pooled investment vehicles are exempted from enhanced disclosures.

What is round-tripping?

Round tripping refers to a process where funds are sent out of a country and then brought back into the same country through a circuitous route. This can involve complex financial transactions and may be done for various reasons, such as disguising the origin of funds, taking advantage of tax loopholes, or circumventing regulatory restrictions.



27. PANDEMIC TREATY AND DISEASE X

Context:

The World Health Organization (WHO) Director-General, Dr Tedros Adhanom Ghebreyesus, emphasizes the need for a pandemic treaty to prepare for potential future outbreaks, particularly 'Disease X,' representing an unknown disease with pandemic potential.

What is the Pandemic Treaty?

The Draft Pandemic Treaty, proposed by the World Health Organization (WHO) and member states, is an international agreement aimed at preventing, preparing for, and responding to pandemics and global health emergencies. It focuses on strengthening global cooperation and solidarity, covering aspects such as surveillance, detection, notifica-

tion, access to health technologies, collaboration, and accountability. The deadline for this agreement is set for the **77th World Health Assembly in May 2024.**

The treaty, based on **principles of human rights and equity**, responds to lessons learned from the COVID-19 pandemic. Its principal components include calls for:

1. Increased global cooperation
2. Strengthening of health systems
3. Investment in research and development
4. Transparency in information sharing
5. **Establishment of a Pathogen Access and Benefit-Sharing System (PABS)** under the WHO
6. Address **gender disparities in the healthcare workforce**, with emphasis on equal pay and promoting the representation and empowerment of health and care workers.

What is Disease X?

Disease X is a **hypothetical pathogen or threat that could trigger a major future pandemic**. Coined by scientists and the **World Health Organization (WHO)**, it refers to a new agent, virus, bacterium, or fungus **with no known treatment**, belonging to any of the 25 families of viruses capable of causing illness in people. Added to the **WHO’s Blueprint list of diseases in 2018**, scientists believe Disease X could **be 20 times more deadly** than the recent SARS-Covid virus, emphasizing its potential as a serious microbial threat to humans in the future.

The WHO is undertaking initiatives, including the **Financial Intermediary Fund for Pandemic Preparedness and Response, the mRNA technology transfer hub, and the WHO Hub for Pandemic and Epidemic Intelligence**, to enhance global preparedness and collaboration in the face of potential future outbreaks.

28. ALPINE IBEXES

Context:

Climate change is impacting **Alpine ibexes (IUCN: Least Concern)**, a species of mountain goats in the European Alps. **Warmer temperatures** are forcing these goats to shift from **diurnal to nocturnal** (from daytime to nighttime) habits to escape excess heat, making them vulnerable to **predators like wolves**.

This shift may have negative consequences on **foraging efficiency, antipredator behaviours, and overall reproduction and survival rates**. It also presents challenges for conservation planning and population estimates, as animals become less detectable during nocturnal hours.

About Ibexes:

An ibex is any of several species of wild goat, distinguished by the **male’s large recurved horns, which are transverse-ly ridged in front**. Ibex are found in Europe (Alpine Ibexes),

Russia (**Siberian Ibexes**), India (Himalayan Ibexes), North Africa and East Africa.

Across Asia, Ibex **inhabits elevations from 500 m to 6,700 m** in countries like India, Kazakhstan, Tajikistan, Mongolia, Pakistan, Southern Siberia, and China, with the **least concern about IUCN status**. The Himalayan Ibex (a distinct species and NOT part of **Siberian Ibex**) is primarily found in the **trans-Himalayan ranges** of the Union Territories of Ladakh and Jammu and Kashmir, as well as Himachal Pradesh.



29. MILITARY EXERCISES IN NEWS

Recent Military Operations/Exercises:

Exercises	Details
Operation Sarvashakti	Purpose: Counter Pakistan’s attempts to increase terrorist activities in Jammu and Kashmir. Target: Terrorists operating on both sides of the Pir Panjal mountain ranges. Previous Operation: Operation Sarpvash (2003-2017/18) aimed at flushing out terrorists who had infiltrated from across the border.
Exercise Desert Knight	Conducted by: the Indian Air Force, along with the French Air and Space Force and UAE Air Force. Purpose: Conduct joint military exercises.
NATO’s Steadfast Defender 2024 exercises	Description: NATO’s largest exercise since the Cold War involving around 90,000 troops. Objective: Rehearse how US troops could aid European allies in countries bordering Russia and on NATO’s eastern flank in a conflict situation.



3. UGANDA

Context:

The 19th Non-Aligned Movement (NAM) Summit was recently held in the Ugandan capital city Kampala.

- **Theme:** ‘Deepening Cooperation for Shared Global Affluence.’
- **Key Discussions:** Israel-Hamas war, [India’s “Vishwa Mitra” initiative](#), Call for a multipolar world

About NAM:

The [Non-Aligned Movement \(NAM\)](#) stands as an **alliance of developing nations established in 1961 during the Cold War**, with roots traced back to the Bandung Conference held in Indonesia in 1955. Currently, NAM boasts a **membership of 120 countries, including India**, one of its founding members. Ranking as the **second-largest grouping of nations globally**, NAM operates **without a permanent secretariat** or a formal founding charter, act, or treaty. The movement convenes its summit **approximately every three years**.

Uganda is a landlocked country in East Africa whose diverse landscape encompasses the snow-capped **Rwenzori Mountains and immense Lake Victoria**. Its abundant wildlife includes chimpanzees as well as rare birds. **Remote Bwindi Impenetrable National Park** is a renowned mountain gorilla sanctuary.



4. FREE MOVEMENT REGIME (FMR) WITH MYANMAR

Context:

The Indian government is considering reevaluating the Free Movement Regime (FMR) agreement with Myanmar, which allows **residents along the India-Myanmar border to travel up to 16 km inside each other’s country** without a visa.

What is FMR?

FMR, implemented in 2018, the Free Movement Regime (FMR) **permits residents on both sides of the 1,643 km India-Myanmar border** to travel up to 16 km into each other’s territory without a visa. This requires a border pass with one-year validity, allowing a two-week stay. The border spans four states: **Mizoram, Manipur, Nagaland, and Arunachal Pradesh**.

The India-Myanmar border is a 1,643-kilometer international boundary running from the tripoint with China in the north to the tripoint with Bangladesh in the south. The trijunction between India, China, and Myanmar is yet to be agreed upon, with the de facto tripoint located **just north of the Diphu Pass**. The border traverses various geographical features, including the Mishmi Hills, Patkai, Kassom Ranges, Tiau River, and Chin Hills, before reaching the Bangladeshi tripoint through irregular lines.



5. LAKE VICTORIA

Context:

Efforts are being made to restore Lake Victoria. The lake faces environmental challenges that threaten the livelihoods of approximately 45 million people dependent on its resources.

Lake Victoria, Africa's largest lake and the world's second-largest freshwater lake, spans approximately 59,947 km² and is shared by Kenya (6%), Uganda (43%), and Tanzania (51%). Fed by rivers like Kagera, Katonga, Sio, Yala, Nyando, Sondu Miriu, and Mara, it contributes to the River Nile's water. As one of the African Great Lakes, Lake Victoria holds significance as Africa's largest lake by area, the world's largest tropical lake, and the second-largest freshwater lake globally after Lake Superior in North America