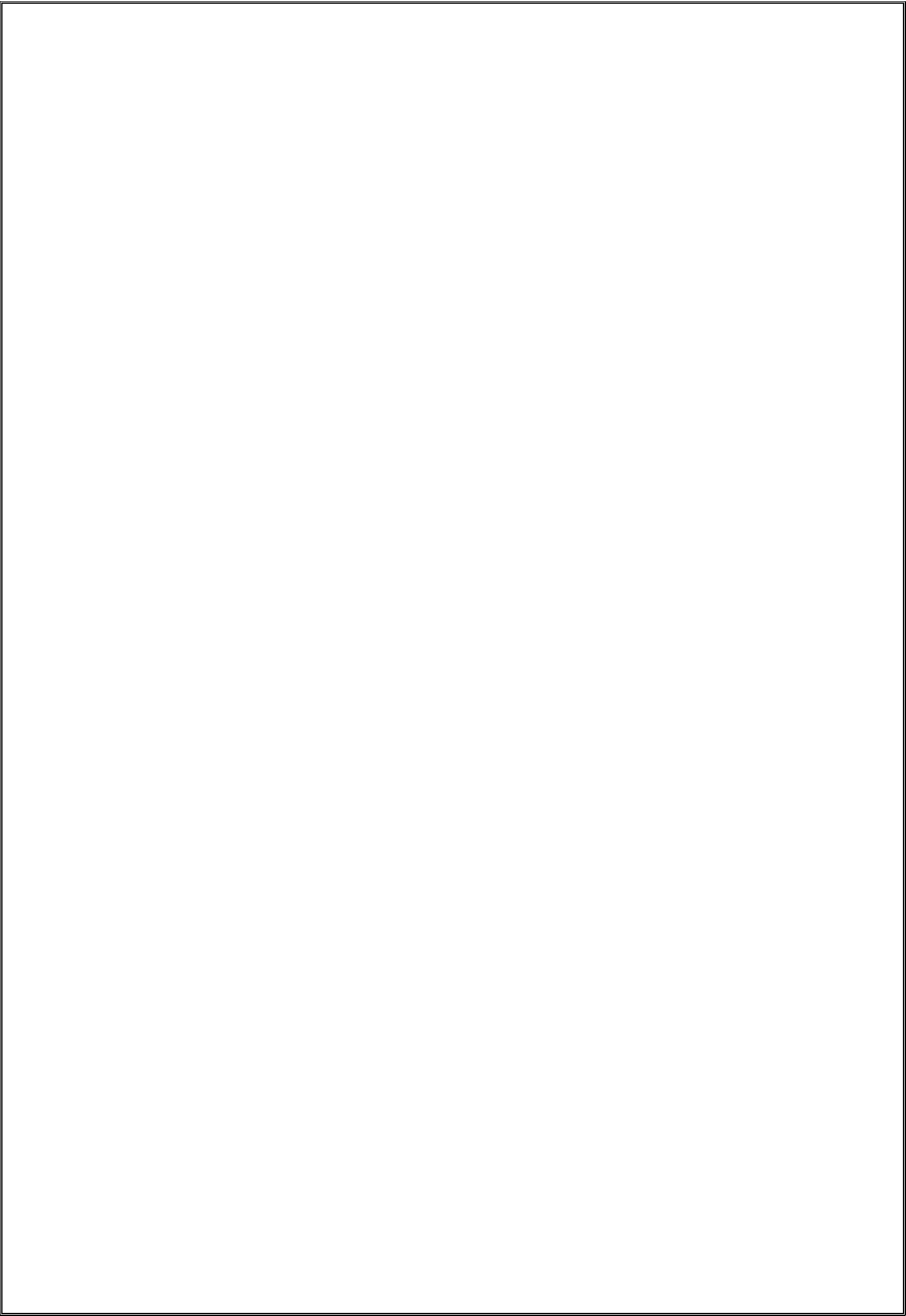




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UPSC CURRENT AFFAIRS SEPTEMBER- 2023



S.No	Index	Pg.No
	INDIAN HISTORY & CULTURE	1
1	KOKBOROK LANGUAGE	
2	THREE HOYSALA TEMPLES DECLARED UNESCO WORLD HERITAGE SITES	1
3	SHIVA’S NATARAJA FORM	2
4	NEW NATIONAL AWARDS NAMED “RASHTRIYA VIGYAN PURASKAR (RVP)”	3
5	ADI SHANKARACHARYA	3
6	ADOPT A HERITAGE 2.0	4
7	INDIA’S FIRST LIGHTHOUSE FESTIVAL	5
8	CHAUSATH YOGINI TEMPLE	5
9	EXCAVATION IN KEELADI	5
10	MATANGINI HAZRA	6
11	SANATAN DHARMA	6
12	SANTINIKETAN	7
13	MEWAR SCHOOL OF PAINTING	8
14	TOTO LANGUAGE	8
15	53RD DADASAHEB PHALKE LIFETIME ACHIEVEMENT AWARD	9
16	MOKSHAGUNDAM VISVESVARAYA	9
17	OLD PARLIAMENT BUILDING	9
18	BOJJANNAKONDA	10
	GEOGRAPHY	
1	OMEGA BLOCKING	11
2	SIANG RIVER	12
3	EARTHQUAKE IN MOROCCO	12
4	KILAUEA VOLCANO	
	POLITY & GOVERNANCE	
1	PRISON REFORM	13
2	AYUSHMAN BHAV CAMPAIGN	14
3	NARI SHAKTI VANDAN ADHINIYAM 2023 (WOMEN’ RESERVATION BILL)	14
4	ACHIEVEMENTS OF PRADHAN MANTRI MATSYA SAMPADA YOJANA (PMMSY)	17

5	INDIAN RAILWAY BOARD CHAIRMAN: JAYA VERMA SINHA	18
6	CAUVERY WATER MANAGEMENT AUTHORITY	19
7	EASTERN MARITIME CORRIDOR (EMC)	19
8	GUJARAT DECLARATION	20
9	ARTIFICIAL INTELLIGENCE AND ELECTIONS	20
10	75% OF VILLAGES ARE NOW ODF PLUS	22
11	PENSION FUND REGULATORY AND DEVELOPMENT AUTHORITY (PFRDA)	23
12	IGOT KARMAYOGI PLATFORM	23
13	SHREYAS SCHEME	23
14	INDIA AGEING, ELDERLY TO MAKE UP 20% OF POPULATION BY 2050: UNFPA REPORT	24
15	WORLD COFFEE CONFERENCE	27
16	SIMULTANEOUS ELECTIONS	28
17	VVPAT	29
18	KISAN RIN PORTAL	29
19	PRADHAN MANTRI UJJWALA YOJANA (PMUY)	30
20	FOREIGN CONTRIBUTION REGULATIONS ACT	31
21	'BIMA SUGAM' ONLINE PLATFORM	31
22	GITA MITTAL COMMITTEE	32
23	OIML (INTERNATIONAL ORGANIZATION OF LEGAL METROLOGY)	32
24	MALAVIYA MISSION – TEACHERS TRAINING PROGRAMME (MM-TTP)	33
25	SECRETARIAT OF THE PARLIAMENT	33
26	E-CABINET SYSTEM	35

INTERNATIONAL RELATIONS

1	UNITED NATIONS COMMISSION ON INTERNATIONAL TRADE LAW (UNCITRAL)	35
2	INDIA AND G20	35
	2.1 NEW DELHI DECLARATION	38
	2.2 INDIA-MIDDLE EAST- EUROPE ECONOMIC CORRIDOR (IMEC)	40
	2.3 AFRICAN UNION: A PERMANENT MEMBER OF THE G20	42
	2.4 .GLOBAL BIOFUEL ALLIANCE	43

3	9 DASHED LINE	45
4	INDIA-ASEAN	46
5	INDIA-SAUDI ARABIA RELATIONS	48
6	GLOBAL NORTH/SOUTH DIVIDE (BRANDT LINE)	50
7	ABRAHAM ACCORDS	51
8	AZERBAIJAN (NAGORNO-KARABAKH)	53
9	L.69 GROUPING	53

ECONOMY

1	OFF-BUDGET BORROWINGS (OBBS)	54
2	GLOBAL INNOVATION INDEX 2023	54
3	WORLD FOOD PRICE INDEX	55
4	CROSS BORDER PAYMENTS	55
5	AGRICULTURAL CESS	57
6	DIGITAL INCLUSION IN EMERGING TECHNOLOGIES	58
7	CRUDE OIL BENCHMARK	62
8	OVERNIGHT INDEX SWAP (OIS)	62
9	INDIAN POST PAYMENT BANK (IPPB)	62
10	REGULATION OF CRYPTO ASSETS	63
11	GRESHAM'S LAW	66
12	NATIONAL LOGISTICS POLICY (NLP)	67
13	INLAND WATERWAYS	69
14	PM VISHWAKARMA SCHEME	72
15	DIGITISATION OF AGRICULTURE	75

INTERNAL SECURITY

1	SPAMOUFLAGE	77
2	OPERATION SAJAG	78
3	NYOMA AIRFIELD (EASTERN LADAKH)	78
4	SMISHING	78
5	EXERCISES IN NEWS	78

ENVIRONMENT

1	WASTEWATER - TURNING PROBLEM INTO SOLUTION	79
2	NORMAN BORLAUG FIELD AWARD FOR FIELD RESEARCH AND APPLICATION	80
3	RED FIRE ANTS	80
4	NAMAMI GANGE PROGRAMME (NGP)	81
5	IPBES ASSESSMENT REPORT ON INVASIVE ALIEN SPECIES AND THEIR CONTROL	83
6	UNESCO WORLD HERITAGE SITES	86
7	PACIFIC DECADEAL OSCILLATION (PDO)	88
8	MULTI-PURPOSE SEAWEED PARK (TAMIL NADU)	90
9	SAGO	91
10	‘ATLANTIFICATION’ OF THE ARCTIC OCEAN	91
11	SEGUR ELEPHANT CORRIDOR	92
12	MARINE LIGHT POLLUTION	92
13	ARTIFICIAL REEF (AR)	93
14	AAROGYA MAITRI CUBE UNDER PROJECT BHISHM	94
15	ECOCIDE	94
16	FUJIANVENATOR	94
17	AGUMBE RAINFOREST COMPLEX (ARC)	95
18	MITHUN (‘FOOD ANIMAL’)	96
19	PROJECT SAMUDRAYAAN	96
20	PTERYGOTRIGLA INTERMEDICA – NEW FISH SPECIES	97
21	SAND MINING: IRREVERSIBLE DAMAGE TO OCEAN BENTHIC LIFE	98

SCIENCE & TECHNOLOGY

1	DOLLY SHEEP	100
2	LIGO-INDIA: NEXT FRONTIER FOR INDIA AFTER CHANDRAYAAN AND ADITYA	100
3	BHARAT DRONE SHAKTI 2023	102
4	VANADIUM	103
5	NEW DISCOVERIES BY WEBB TELESCOPE	105
6	‘PRALAY’ BALLISTIC MISSILES	106
7	XRISM SPACE TELESCOPE AND SLIM LUNAR LANDER	106
8	PEROVSKITE	106

9	ARXIV	107
10	PHOSPHORUS	107
11	HIV ACT	108
12	NATIONAL GREEN TRIBUNAL	108
13	ADITYA-L1	109
14	BATTERY ENERGY STORAGE SYSTEM (BESS)	111
15	GENE-DRIVE TECHNOLOGY (GDT)	114

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INDIAN HISTORY & CULTURE

1. KOKBOROK LANGUAGE

- Kokborok is the **language spoken by the Borok people** belonging to Tripura.
 - Borok are **branch of Boro people** of Assam belonging to **Sino-Tibetan linguistic group** and **racially Mongoloids**.
- **Kokborok belong to Tibeto-Burman family** and has close **affinity with other language family** like Bodo, Garo, Dimasa etc.
 - **Doulot Ahammad** wrote the **first Kokborok Grammar** (1897).
- It is one of the **state languages of Tripura**.
 - It is declared as **official language of Tripura Tribal**
- **Areas Autonomous District Council.**

2. THREE HOYSALA TEMPLES DECLARED UNESCO WORLD HERITAGE SITES

Context: Three Hoysala temples in Karnataka were declared UNESCO World Heritage Sites

All three temples are protected by the Archaeological Survey of India (ASI) and the nominations were entered as “The Sacred Ensembles of Hoysalas”. They have been on UNESCO’s Tentative list since 2014.

Temple	Features
Chennakeshava Temple (Belur, Hassan, Karnataka) 	• Year: 1117 AD (period of king Vishnuvardhana) • Deity: Lord Vishnu (Chennakesava) • Richly sculptured exterior depicting scenes from Vishnu's life, epics, and some representations of Shiva. • "Chenna" means beautiful, "Keshava" means Vishnu • Follows a stellate plan with a raised platform. Constructed using chloritic schist (soapstone).
Hoysaleswara Temple (Halebidu, Hassan, Karnataka) 	• Year: 1121 CE • Deity: Lord Shiva (Hoysaleswara) • Known for more than 240 wall sculptures depicting various themes • Walled complex with three Jaina basadi (temples) and a stepped well in Halebid.
Keshava Temple (Somanathapura, Mysuru, Karnataka) 	• Year: 1268 CE (regime of Narasimha III) • Deity: Lord Krishna (Keshava, Janardhana, Venugopala) • Trikuta Temple dedicated to Lord Krishna in three forms: Janardhana, Keshava, and Venugopala. • The main Keshava idol is missing, and the Janardhana and Venugopala idols are damaged.

Significance:

The temples’ inclusion as World Heritage Sites signifies global recognition for their cultural and architectural significance and is likely to promote tourism in the region

Hoysala architecture, developed between the **11th and 14th centuries in southern Karnataka** under the Hoysala Empire, is characterized by:

- A unique style blending elements of **Dravida and Nagara architectures**.
- Influences from **Bhumija, Nagara, and Karnataka Dravida** architectural traditions.
- **Distinctive ‘Hoysala Temple’ form** with multiple shrines around a central pillared hall in a **star-shaped layout**.
- **The use of soapstone**, allowed intricate carving of sculptures, especially in the jewelry adorning temple walls

What is a World Heritage site?

A World Heritage Site is an **area or object listed on the UNESCO World Heritage List**, recognized for its “**outstanding universal value**” under the **Convention Concerning the Protection of the World Cultural and Natural Heritage 1972**. These sites, categorized into three types - **Cultural, Natural, and Mixed**, are internationally acknowledged for their cultural, natural, or combined significance.

As of 2023, there are **42 World Heritage Sites located in India**. Out of these, **34 are cultural, 7 are natural, and one, the Khangchendzonga National Park**, is of mixed type. India has the **sixth-largest number of sites in the world**.

3. SHIVA’S NATARAJA FORM

Context:

The G20 Leaders’ Summit will feature a **towering 27-foot-tall ‘Nataraja’ statue of Lord Shiva’s dancing form**.

- This magnificent statue made of **‘Ashtadhatu’ (eight-metal alloy)** was crafted by **sculptors from Swamimalai in Tamil Nadu, India**, and is inspired by **three revered Nataraja idols from Chola temples**.

About Nataraja form of Shiva:

- The Nataraja form of Shiva, as a cosmic dancer, **became iconic under the Cholas and is renowned for its intricate bronze sculptures**.
- In this form, Lord Shiva is depicted as **the ‘Lord of Dance’ or Nataraja**, embodying **both creative and destructive forces**.
- The Nataraja image is encircled by a **flaming halo and has four arms**. He **holds a drum and fire in his upper hands, symbolizing creation and destruction**. Under his foot, there’s a **dwarf-like figure representing illusion**, which he crushes, **guiding humanity away from delusion**.
- Nataraja’s raised feet and gestures also **symbolize protection and reassurance**, all while he wears a **smiling expression**.

Lost Wax Technique:

- The sculpture was crafted using the traditional **‘lost-wax’ casting method**, a technique that dates back thousands of years and was perfected by the Cholas.
- In this method, **a detailed wax model is covered with alluvial soil**, which, when **heated, melts the wax away, leaving a hollow mould for casting molten metal**.
- The Cholas, who ruled much of peninsular India from the **9th to the 11th centuries AD**, were **great patrons of art and culture**. They were **devout Shaivites, known for constructing elaborate Shiva temples across their territories**.

4. NEW NATIONAL AWARDS NAMED “RASHTRIYA VIGYAN PURASKAR (RVP)”

About Awards

- **Objective:** To acknowledge **remarkable contributions made by scientists** across diverse fields of science & technology.
- **Domains for Awards:** 13 domains, including Physics, Chemistry, Atomic Energy, Space, etc.
- Representation from each domain including **gender parity** will be **ensured**.
- **Eligibility:**
 - Scientists/ technologists/innovators working in **government, private sector organizations or any individual** working outside any organization.
 - **People of Indian Origin staying abroad** with exceptional contributions benefiting Indian communities.
 - **Selection Process:** Selected by **Rashtriya Vigyan Puraskar Committee**, headed by **Principal Scientific Adviser** to Government of India. It will comprise of
 - **Secretaries** of Science Departments,
 - Members of **Science and Engineering Academies** and
 - **Distinguished scientists and technologists**.
- **Other**
 - Awards shall be announced on **11th May (National Technology Day)**.
 - Award Ceremony will be held on **23rd August (National Space Day)**.
 - All Awards will have a **Sanad & a medal**.

Award Categories

 Vigyan Ratna	 Vigyan Shri	 Vigyan Yuva-Shanti Swarup Bhatnagar	 Vigyan Team
Celebrates lifetime accomplishments	Commends distinguished contributions	Recognises young scientists up to the age of 45 years	Recognizes teams comprising 3 or more scientists, researchers for collaboratively achieving remarkable feats

5. ADI SHANKARACHARYA

Context:

- **Madhya Pradesh** Chief Minister recently unveiled a **108-foot-tall ‘Statue of Oneness’** dedicated to the **Hindu saint Adi Shankaracharya in Omkareshwar, Madhya Pradesh**.
- This statue represents **Adi Shankaracharya at the age of 12** when he is believed to have **visited Omkareshwar**.

About Omkareshwar:

- Omkareshwar, located on the **Mandhata island along the Narmada River**, is home to **two of the 12 Jyotirlingas**, sacred to **Lord Shiva**. It is also near the **Mahakaleshwara Jyotirlinga in Ujjain**. The island hosts **Shaivite, Vaisnavite, and Jain temples** dating back to the **14th and 18th centuries**.

About Adi Shankaracharya:

Adi Shankaracharya, who lived between **788 and 820 AD**, was born in **Kerala's Kaladi** and became a **sanyasin at a young age**. He travelled extensively, visiting important spiritual centres and authoring many works, including **commentaries on the Upanishads, the Brahmasutra, and the Gita while advocating Advaita Vedanta**.

Comparison between Adi Shankaracharya and Sri Ramanujacharya:

Context: Prime Minister has paid tributes to Jagadguru Adi Shankaracharya and Sri Ramanujacharya on their birth Anniversary.

	Adi Shankaracharya	Sri Ramanujacharya
Birth and Lifetime	Born in 788CE in Kaladi, Kerala, and passed away in 820 CE	Born in 1017 CE in Sriperumbudur, TamilNadu, and passed away in 1137 CE
Philosophy	Advaita Vedanta (Non-Dualism)	Vishishtadvaita Vedanta (Qualified Non-Dualism)
Interpretation of Vedas	Argued that the ultimate reality is Brahman and that the universe is an illusion (Maya)	Argued that Brahman is the ultimate reality, but also that the universe is real and a manifestation of Brahman
Approach to God	Emphasized the importance of renunciation and meditation to realize the ultimate reality	Emphasized devotion (bhakti) to achieve union with the divine
Scriptures	Emphasized the importance of the Upanishads and the Brahma sutras	Emphasized the importance of the Bhagavad Gita and the Divya Prabandham
Influence	Revived Hinduism and helped unify various philosophical schools of thought. Founded four mathas (Monasteries) in India.	Popularized devotion to Vishnu and helped revive the Bhakti movement in India.
Key works	Vivekachudamani, Upadesa Sahasri, and commentaries on the Upanishads, Bhagavad Gita, and Brahma Sutras	
Legacy	His teachings have had a profound impact on Indian intellectual and spiritual life.	
Statue	A 12-foot statue of Adi Shankaracharya at Kedarnath (Uttarakhand)	

6. ADOPT A HERITAGE 2.0

Context:

- The Archaeological Survey of India (ASI) has launched a **revamped version of the 'Adopt a Heritage' program**, along with an **Indian Heritage app** and an **e-permission portal**.
- This updated program encourages corporate stakeholders to **utilize their Corporate Social Responsibility (CSR) funds** to **enhance facilities at historically important monuments**.
- It also provides a comprehensive guide through the **Indian Heritage app**, offering information on **ASI's monuments, including historical structures, pictures, public facilities, and geo-tagged locations**.

- The ‘**Adopt a Heritage 2.0**’ program includes various changes, such as a **streamlined management structure** for partner agencies, **clear guidelines for semi-commercial activities**, and a **detailed scope of work and amenities required for monuments**.
- The updated program **offers more flexibility, allowing companies to adopt entire monuments and develop their tourism infrastructure or provide specific amenities** like drinking water facilities or cleaning services for one or more sites.

7. INDIA’S FIRST LIGHTHOUSE FESTIVAL

Context:

- **India’s First Lighthouse Festival** is set to begin in **Goa**.
- The festival will take place with the **aim of transforming historic lighthouses into tourist destinations**.
- This festival is a **part of the ‘Lighthouse Heritage Tourism’ campaign**, which aims to **revamp 75 historic lighthouses across India and promote them as tourist spots**.
- The initiative **aligns with Prime Minister Narendra Modi’s vision to transform these lighthouses into captivating tourism sites**, showcasing their cultural significance and economic potential

8. CHAUSATH YOGINI TEMPLE

- It is believed that the design of the old Parliament building was inspired from **Chausath Yogini temple located in mitaoli village in Madhya Pradesh**.
- Old Parliament building was designed by architects **Edwin Lutyens and Herbert Baker**.
- The grand Chausath Yogini **temple is circular**, with 64 chambers dedicated to the 64 yoginis, and a **central shrine dedicated to Shiva**.
- The 64 yoginis are **believed to be powerful warriors and sorceresses**.
- It was built around 1323 by King Devapala of the **Kachchhapaghata dynasty**.

Chausath Yogini temple



9. EXCAVATION IN KEELADI

Context:

- Excavations in Keeladi have uncovered two **carnelian beads**, reaffirming the **historical trade connections between Tamil Nadu and the western regions of India**, specifically Maharashtra and Gujarat.

- These carnelian beads, **normally found in Gujarat and Maharashtra**, were discovered within an urn at a **burial site in Konthagai during the excavation.**
- Last year, 74 carnelian beads were also unearthed in the same area, further highlighting the trade links between Tamil Nadu and western India.

Carnelian beads are **small decorative objects made from carnelian gemstones**. Carnelian is a **reddish-brown to orange variety of chalcedony**, a type of **microcrystalline quartz**. These beads are prized for their **vibrant colours** and have been used for **jewellery and ornamental purposes for centuries**.

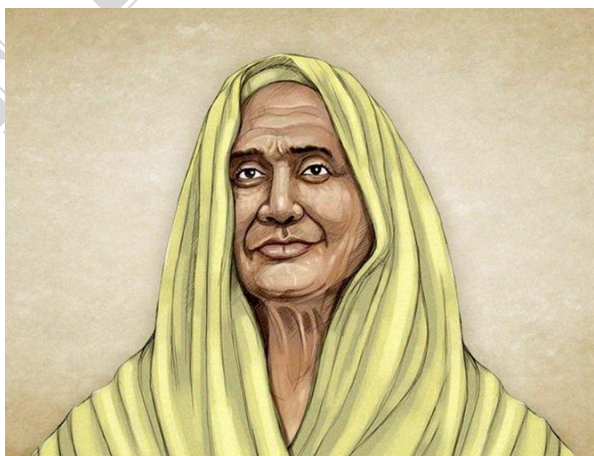
10. MATANGINI HAZRA

Context:

- **Matangini Hazra**, affectionately known as ‘**Gandhi Buri**,’ was a **dedicated Gandhian** and a prominent figure in the **Indian freedom struggle**.
- She met a tragic **end during the Quit India Movement in Tamluk, Bengal**, when she led a protest march against British rule. Her **death turned her into a martyr and marked one of the early casualties of the Quit India movement**

About Matangini Hazra:

- Matangini Hazra **was deeply influenced by Mahatma Gandhi’s message** and charisma, leading her to join the **freedom struggle with great enthusiasm**.
- One noteworthy incident from her life **involved a daring protest march in 1933** when she confronted British authorities in front of the Governor’s palace, **holding the freedom movement’s flag high and demanding, “Go back, lat sahib.”**
- Hazra’s involvement in the freedom struggle **intensified during the Quit India Movement of 1942**. At **the age of 73, she led a procession of around 6,000 protesters, primarily women**.
- She was **shot three times by British police while holding the Indian flag high**.



11. SANATAN DHARMA

Context:

The term “**Sanatan Dharma**” is a Sanskrit phrase that can be **translated as “eternal religion” or “eternal law.”** It is commonly associated with Hinduism but is **also used by Jains and Buddhists who believe in rebirth**.

- The term gained popularity in the **late 19th century** when it was used to **signify Hindu orthodoxy** in response to **reform movements led by missionaries and groups like the Brahmo Samaj and Arya Samaj**.
- In the 19th century, “**Sanatan Dharma**” was used to **promote Hindu orthodoxy** as a reaction to **reform movements**. This term was adopted by **various organizations and sabhas** to defend **traditional Hindu practices against reformers**.
- It was seen as a way to **preserve the caste system and idol worship** as **essential aspects of the Sanatan Dharma tradition**.
- While the term “**Sanatan Dharma**” has been used to **signify Hinduism**, it **does not represent a universally recognized philosophy within Hinduism**, as there is no agreement on a static or universal doctrine. Instead, it has been **employed to evoke a sense of homogeneity within Hinduism without specifying the exact nature of that homogeneity**.

12. SANTINIKETAN

Context:

Santiniketan, the **renowned university town in West Bengal** established by **Rabindranath Tagore**, has been added to **UNESCO’s World Heritage List**.

The decision was made during the **45th World Heritage Committee Meeting held in Riyadh, Saudi Arabia**

Santiniketan is a renowned cultural and educational institution (comprising Viswa Bharati University) located in the Birbhum District of West Bengal, India.		
Meaning of Name	Santiniketan literally means "abode of peace" in Bengali.	
Origin	Initially, it started as an ashram (hermitage) founded by Rabindra Nath Tagore's father, Debendranath Tagore , but eventually developed into a centre of art, culture, and learning.	
Teaching	It is known for its unique educational philosophy , which emphasizes the integration of nature, creativity, and holistic learning . It follows the concept of an open-air classroom where students are encouraged to learn in close connection with nature.	
Key Features	Santiniketan is also adorned with splendid sculptures, frescoes, murals, and paintings created by renowned artists such as Rabindranath Tagore, Nandalal Bose (one of the pioneers of modern Indian art) and Ramkinkar Baij (master sculptor and painter) among others.	
Significance	Cultural and heritage place, associated with Nobel laureate Rabindranath Tagore	
West Bengal's Representation	If selected, Santiniketan would be the second cultural symbol from West Bengal to be included in the UNESCO list (1 st being ‘ Durga Puja in Kolkata ’ in UNESCO’s list of Intangible Cultural Heritage of Humanity, 2021)	
UNESCO World Heritage site	Landmarks or areas selected for their cultural, historical, scientific, or other significant value	
Selection Criteria	Sites must be already-classified landmarks , unique and significant culturally or physically	
World Heritage Committee	Selects and monitors World Heritage Sites , manages the World Heritage Fund, and provides financial assistance	
Membership	India is a member of the World Heritage Committee (2021-2025)	

About Santiniketan:

- Santiniketan was **originally an ashram** established by **Rabindranath Tagore’s father, Debendranath Tagore**, where people of all castes and creeds **could meditate on the one Supreme God**.

- It has **historical and architectural significance**, including structures like **Santiniketan Griha** and the **Mandir (temple)** with stained glass, which are associated with the **founding of Santiniketan** and the **promotion of universal spiritual values**.
- **Visva-Bharati University**, located in **Santiniketan**, was founded by Rabindranath Tagore, and offers a wide range of degree courses.
- It has been declared a **central university and an institution of national importance** by an **Act of Parliament in 1951**, with the Prime Minister serving as its chancellor.

13. MEWAR SCHOOL OF PAINTING

About	Description
Mewar miniature painting	The Mewar school of miniature painting, known for vibrant colours, direct emotional appeal and intricate narratives , thrived from the 17th to the 18th century.
Origin	It originated in south-central Rajasthan , parts of Madhya Pradesh, and Gujarat
Famous works and their significance	Chawand Ragamala series (1605) by Nasiruddin: Earliest dated manuscript In the 18th century, political shifts prompted regional kingdoms to form alliances, resulting in the creation of court scenes portraying the king and his entourage E.g., "A Royal Hunting Party" (1705-15) influenced by Mughal painting
Golden Age	The golden age of Mewar painting is considered to be from 1628-1651 A.D. , during the reign of Maharana Jagat Singh
Notable artists of Mewar school	Allah Baksh : Known for comprehensive depictions of Mahabharata and Gita. Sahibdin : Renowned for portraiture in works like the Rasikpriya series (1630), Gita Govinda (1628), and Ramayana (1649)
Unique feature of Mewari artists	Mewari miniature painters seldom signed their works , similar to European artists during the Renaissance. Only a few names, like Nasiruddin, Manohar, Allah Bakhsh, and Mansur, have surfaced
Future prospects	Mewari painting's distinctive style has gained global recognition , with some works being auctioned and appreciated worldwide



Miniature paintings are small, highly detailed artworks known for their vibrant colors. They originated in the 6th-7th century and aimed to depict reality in a compact form. E.g., Pala Odisha, Jain, Mughal, and Rajasthani school of miniature paintings.

14. TOTO LANGUAGE

Context:

A dictionary titled **"Toto Shabda Sangraha"** is set to be released with the **aim of preserving the Toto language**, which is spoken by a **mere 1,600 people** in parts of **West Bengal bordering Bhutan**.

About Toto Language:

- The Toto language, a **Sino-Tibetan language**, is primarily spoken **orally** and is **currently written in the Bengali script**.
- While a **script for Toto** was developed in 2015 by Dhaniram Toto, a prominent community member, **most Toto speakers still use the Bengali script or write in Bengali**.

- The **trilingual dictionary** will translate **Toto words into Bengali and English**, making it accessible to a wider audience, as the **Toto script** is still in its early stages of development, and the tribe is more familiar with the **Bengali script**.

15. 53RD DADASAHEB PHALKE LIFETIME ACHIEVEMENT AWARD

Waheeda Rehman will receive the **53rd Dadasaheb Phalke Lifetime Achievement Award** for 2021. The award will be presented at the **69th National Film Awards ceremony**.

About Dadasaheb Phalke Lifetime Achievement Award:

It is India's highest cinema honour and is presented annually at the **National Film Awards ceremony** by the **Directorate of Film Festivals**. It was established in **1969** and was **first awarded to actress Devika Rani**. This award commemorates Dadasaheb Phalke, the director of India's inaugural full-length feature film, "**Raja Harishchandra**," in 1913. The prize includes a **Swarna Kamal (Golden Lotus)** medallion, a shawl, and a cash prize of **10 lakh**.

About Waheeda Rehman:

Waheeda Rehman is an Indian actress regarded as one of **Hindi cinema's most accomplished** actresses. Her accolades include a **National Film Award**, Padma Shri and Padma Bhushan honours and three Filmfare Awards. She is renowned for her roles in iconic Hindi films like "**Pyasa**," "**Kaagaz ke Phool**," and "**Guide**."

16. MOKSHAGUNDAM VISVESVARAYA



Mokshagundam Visvesvaraya

	Details
About	Mokshagundam Visvesvaraya (1861-1962) , a pioneering civil engineer and administrator in colonial India celebrates his birthday on September 15 th . This day is marked as Engineer's Day . 
Education	Bachelor of Arts from the University of Madras; Diploma in civil engineering
Career	Assistant Engineer in the Government of Bombay; 19th Dewan of Mysore
Contributions	Introduction of the block system of irrigation in the Deccan canals in 1899; Solved the problem of the "muddy and discoloured" water in the city of Sukkur (now in Pakistan) located on the banks of the Indus River Inventing automatic gates meant to regulate the flow of water in reservoirs He was the architect of the Krishnaraja Sagara dam in Mysore
Emphasis on Education	Advocated for quality education in India; Played a role in establishing the University of Mysore ; Established Bangalore Agricultural University , University Visvesvaraya College of Engineering etc
Literary Works	" Reconstructing India " (1920); Unemployment in India; Its Causes and cure (1932), " Planned Economy of India " (1934); Memories of my working life (1951),
Legacy	Left a lasting impact on India's infrastructure and education; Emphasized modernization for material prosperity; Awards: Bharat Ratna award, 1955
Ethical Values	Dedication to Public Service, Integrity, Technological Innovation, and Perseverance

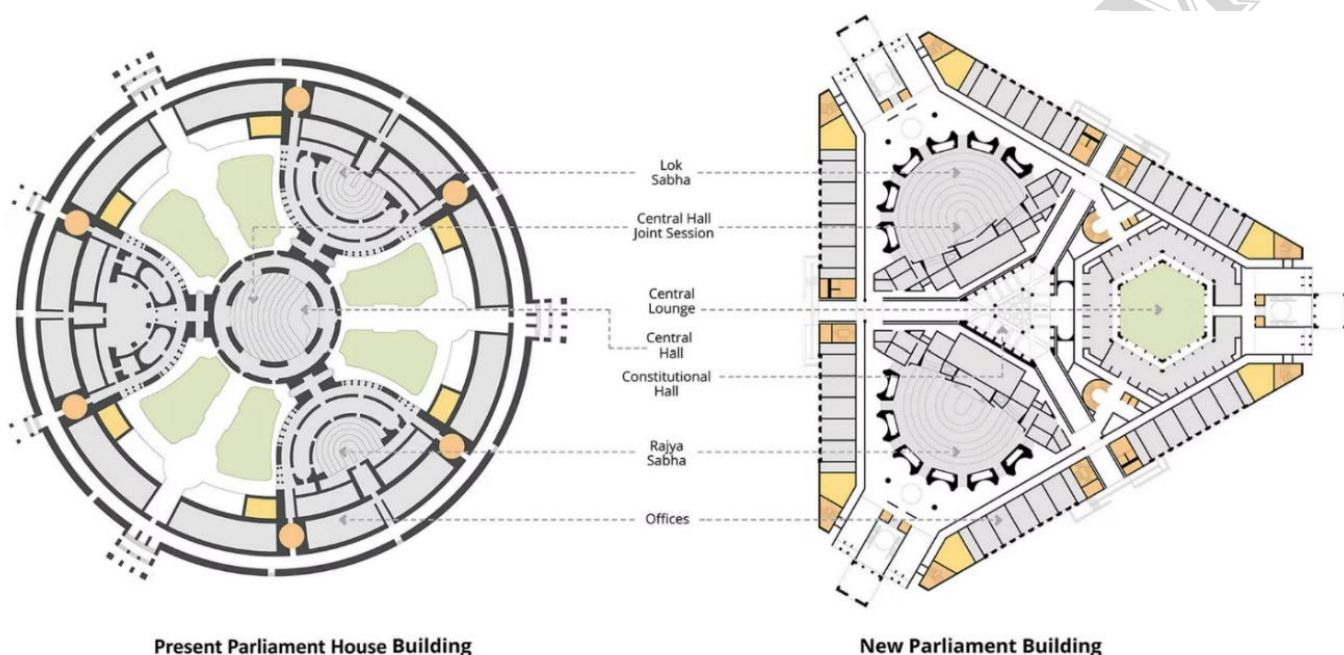
17. OLD PARLIAMENT BUILDING

Context: Parliament proceedings will soon shift to the new Parliament Building

The Sansad Bhavan is **India's parliamentary seat**, home to the Lok Sabha (lower house) and Rajya Sabha (upper house).

Historical aspects:

- **Foundation:** The foundation stone was laid on February 12, 1921, by the **Duke of Connaught**
- **Architect:** The architects, **Sir Edwin Lutyens and Sir Herbert Baker**, incorporated Indian motifs and styles into the building's design.
- **Inauguration:** The building was inaugurated on **January 18, 1927, by Lord Irwin**, the Viceroy of India at the time. It initially housed the Imperial Legislative Council.
- The Constituent Assembly of India took control after independence, and it became the Parliament of India in 1950.
- **Former Home of the Supreme Court:** The Chamber of Princes in the Parliament Building was also used by the Federal Court of India before independence. Afterwards, it served as the Supreme Court's location for over ten years before the court moved to its own building.



Architectural Aspects:

- **Blend:** The building is renowned for its **architectural blend of Western and Indian styles**. While it incorporates **classical Western elements**, it also features Indian architectural motifs, such as the use of **columns and domes**.
- It was inspired by the Ekattarso Mahadeva Temple (Chausath Yogini Temple) in Madhya Pradesh
- The perimeter of the **building is circular, with 144 columns** on the outside.
- The building is surrounded by **large gardens and the perimeter** is fenced off by sandstone railings (jali).

18. BOJJANNAKONDA

Context:

- Bojjannakonda, a **centuries-old Buddhist heritage site** in (at Sankaram, near Visakhapatnam) Andhra Pradesh, is set to become a major tourist attraction thanks to investments from both the Central and State governments.

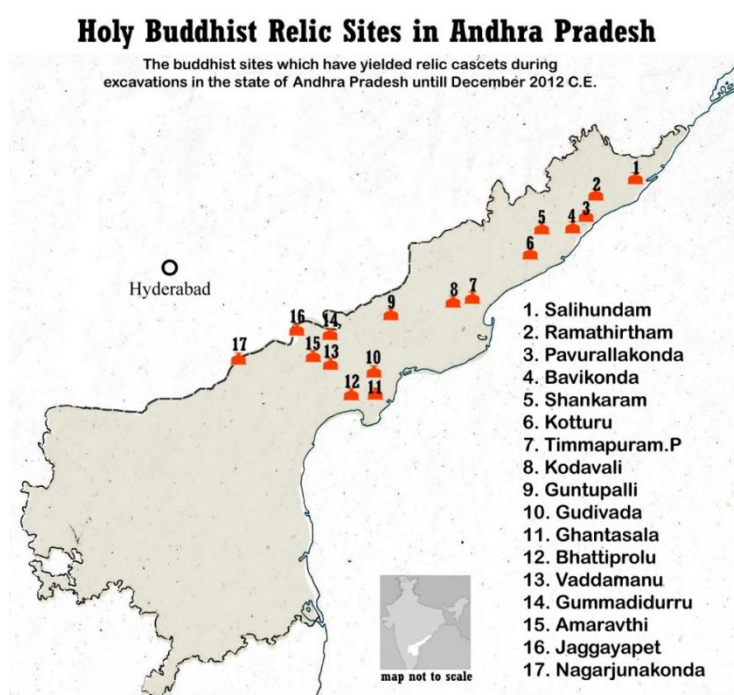
About Bojjannakonda:

- **Bojjannakonda and Lingalametta** are ancient Buddhist monasteries from the **3rd century BC**. The main stupa at Bojjannakonda is a **rock-carved structure** covered with bricks and adorned with Buddha sculptures. Lingalametta boasts rows of **rock-cut monolithic stupas**.

These sites show elements of all the three Buddhist phases:

- **Theravada** (Lord Buddha was considered a teacher)
- **Mahayana** (Buddhism was more devotional)
- **Vajrayana** (Buddhist tradition was more practised as Tantra and in esoteric form)

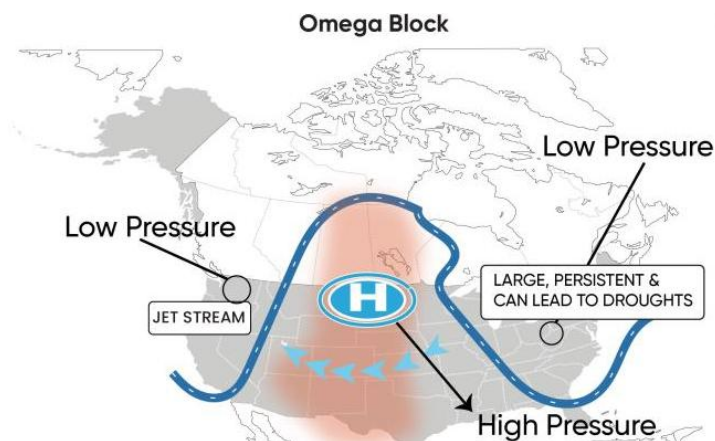
The site is famous for many votive stupas, rock-cut caves, brick-built edifices, early historic pottery, and Satavahana coins that date back to the 1st century AD. Visakhapatnam is renowned for other Buddhist sites like Thotlakonda, Appikonda, and Bavikonda



GEOGRAPHY

1.OMEGA BLOCKING

- According to a study, recent **floods in the Mediterranean** regions were caused by **lowpressure systems forming around an Omega Block** centred over the **Netherlands**.
- Omega block occurs when **two low-pressure systems become cut off from the main flow of the jet stream**, sandwiching a high-pressure system between them.
- It **resembles the Greek letter Ω** on a weather map.
- Omega-blocking events have also been **linked to other extreme weather events in the past**, including Pakistan floods in 2011, 2019 heatwaves during May in France and July in Germany etc.

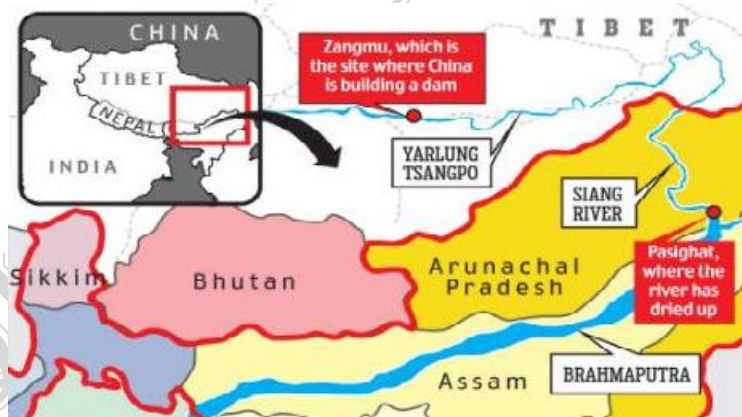


2. SIANG RIVER

- India is planning to build a **large barrage on the Siang River** to protect it from a Chinese dam being built in Tibet. The dam is being built on the **Yarlung Tsangpo River in Tibet's Medog district**.
- Arunachal Pradesh Chief Minister Pema Khandu warned that if India does not respond to the dam, his state and neighbouring Assam could face environmental disasters, including floods.

What is a barrage?

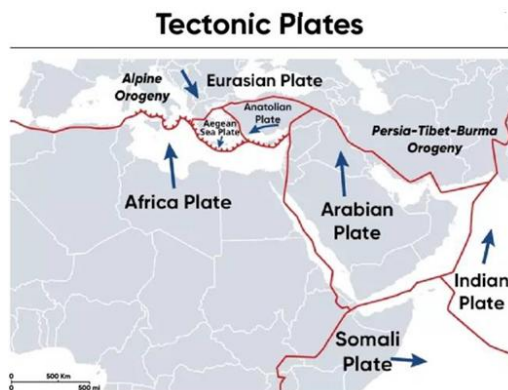
- A **barrage is a dam** or barrier built across a river or watercourse to control the flow of water. It typically **consists of gates or sluices** that can be opened or closed to manage the flow of water downstream.
- Barrages are primarily used for **flow control and water diversion**, while **Dams** are designed for **water storage and regulation on a larger scale**.
- Yarlung Tsangpo River (Brahmaputra)** breaks through the Himalayas in great gorges (including the Yarlung Tsangpo Grand Canyon) and enters into Arunachal Pradesh, where it is known as **Dihang or Siang**.



3. EARTHQUAKE IN MOROCCO

- Earthquake is caused** by to **release of energy** within the earth's lithosphere generating waves.
- Epicentre:** located in the Atlas Mountains.
- Reasons for the strongest earthquake in this region**
- Northward convergence of the African plate** with respect to the **Eurasian plate along a complex plate boundary**.
- It was **attributed to oblique-reverse faulting** at shallow depth within the Moroccan High Atlas Mountain range.

- This type of **faulting is common in areas** of compression along the convergent plate boundaries



4. KILAUEA VOLCANO

- **Kilauea volcano** has erupted again in US state of Hawaii.
- **Kilauea** aka **Mount Kilauea**, the **world's most active volcanic mass**, is located on **southeastern part of island of Hawaii**, Hawaii state, U.S.
- **Volcano** is a **vent** in the crust of Earth, from which eruptions of **molten rock, hot rock fragments, and hot gasses** take place.

POLITY & GOVERNANCE

1. PRISON REFORM

- Parliamentary Committee on Home Affairs submitted report on '**Prison conditions, Infrastructure and Reforms**'.
- **Key highlights**
 - **Overcrowding:** National Average Occupancy Rate in prisons across India is **130.2%**, with **77.1%** of all the prisoners in the country being **undertrials**.
 - **Understaffed:** Prisons are understaffed by **approximately 30%**.
 - **Women prisoners:** Of the total of **22,918** women inmates, **1,650** women inmates are with **1,867** children.
 - ✓ **Fewer number of women prisons and low representation of women in prison staff** (only 13.77%) intensify their difficulties.
 - **Prison budget:** Only **0.6%** of prison budget is spent on **vocational/ educational training** of prisoners and **1% on their welfare activities**.
- **Recommendations**
 - **Undertake a comprehensive study** covering the population of the region, crime rate etc. to develop a suitable plan to enhance the **capacity of the prisons or another alternative**.
 - Implement the "**Support to Poor Prisoners programme**" announced in the Union Budget 2023.
 - **Utilise** technology like **trackable bracelets** to keep **track of prisoners on bail**.
 - **Renovate colonial-era prisons** to preserve their heritage and earn revenue by **encouraging tourism**.
 - **State Governments may create a Prison Development Fund** for the welfare activities of the prisoners.

- **Steps taken by the Centre for Prison Reforms:**
- **Prisons and persons detained** therein are **enumerated in the State list of the 7th Schedule** of the Constitution.
- However, given the significance of prisons in **the Criminal Justice System** **Union Ministry of Home Affairs** provides **guidance and financial support** to states. It has issued
 - **Model Prison Manual 2016 and Model Prisons**
 - **Model Prisons and Correctional Services Act, 2023**

2. AYUSHMAN BHAV CAMPAIGN

It is a **collaborative effort spearheaded by Gram Panchayats** to extend **comprehensive healthcare coverage** to every village and town.

It has **3 components**:

- **Ayushman Apke Dwar 3.0:** to provide Ayushman cards to remaining eligible beneficiaries enrolled under the **PM-JAY** scheme.
- **Ayushman Melas:** To facilitate the **creation of Health IDs** and **issuance of Ayushman Bharat Cards**.
- **Ayushman Sabhas:** To **raise awareness** about vital health schemes and disease conditions.

3. NARI SHAKTI VANDAN ADHINIYAM 2023 (WOMEN' RESERVATION BILL)

Context:

The Lok Sabha passed the Women's Reservation Bill (Nari Shakti Vandan Adhiniyam 2023) with more than a two-thirds majority.

Status of Women Representation in India:

- **According to the Global Gender Gap Report 2022**, India ranks **48th out of 146** in the Political Empowerment (Percentage of Women in Parliament and in Ministerial Positions) dimension.
- At present, only **about 14.4% of the** members of the Indian Parliament are women, the **highest so far**.
- **Voting Share improving:** Almost as many women as men cast ballots in the most recent Lok Sabha election in 2019, marking a **turning point in India's journey towards gender equality in politics**

Major provisions of the Bill and their significance:

Context: The Lok Sabha passed the Women's Reservation Bill with more than a two-thirds majority

Previously, the Women's reservation was passed in 2010 in the Rajya Sabha

	Provisions	Significance
Reservation	Reserves 33% (one-third) of Lok Sabha seats (inserted Article 330A) and state assembly seats (inserted Article 332A) for women through direct election	Ensures greater gender representation: addressing gender disparity in politics.
For SC/STs	Provides Sub-reservation for SCs, STs, and Anglo-Indians among women candidates	Promotes intersectional representation
	Inserts a clause in Article 330A, reserving one-third of seats for women within SCs and STs in	Empowering marginalized women

	Lok Sabha	
For-NCT, Delhi	Inserts a subsection in Article 239 AA, reserving seats for women in the legislative assembly of the National Capital Territory of Delhi	Provides women in Delhi with representation at the state level.
	Subsection (bb) reserves one-third of SC and ST seats in the Delhi Assembly for women	Ensures marginalized women's participation in Delhi's legislative assembly
Duration	The reservation period initially lasts for 15 years from the commencement of the act, with the possibility of extension by Parliament.	Will encourage more women to join active politics
Enforcement	The implementation of reservation begins after the completion of the delimitation process based on the first Census conducted after the Bill's passage.	Will ensure correct representation of data on women and subsequent seat reservation
Rotation of Seat	Seat rotation for reserved seats occurs following each subsequent delimitation	This will ensure a fair chance for every section in a particular

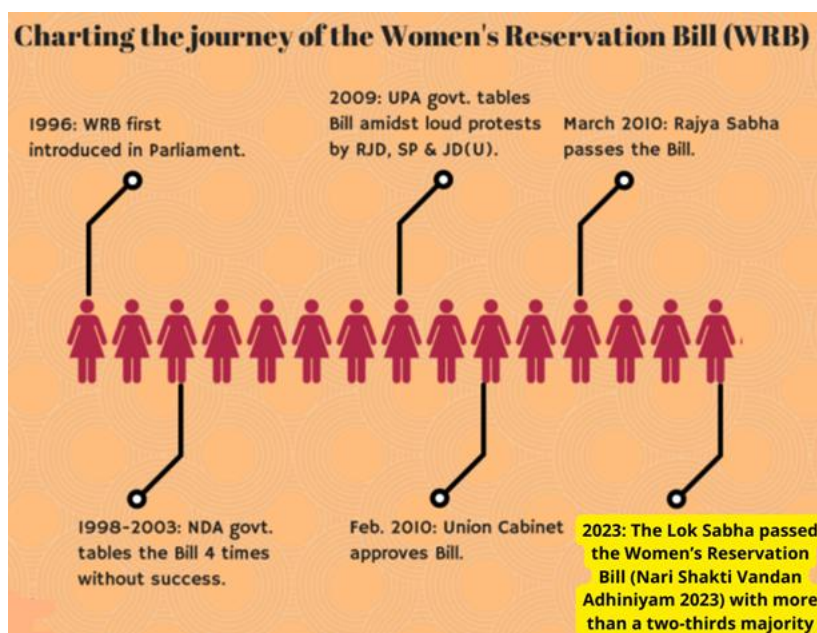
After Lok Sabha?

The bill will have to be passed by Rajya Sabha by a majority of the total membership of the house and by a majority of **not less than 2/3rd of members** of the House "present and voting". Bill will require ratification by at least 50%

Historical Background of Women's Reservation:

Period	Events
Pre-Independence Period	Long-standing demand for political reservation of women. In 1931, three women's bodies sent a letter to the British Prime Minister requesting a political reservation for women during the National Movement.
Government of India Act, 1935	The Government of India Act of 1935 gave women separate electorates but did not reserve seats for them in the legislature. It marked a step toward political participation for women.
Constituent Assembly	The issue of women's reservation was discussed in the Constituent Assembly debates. However, it was rejected on the grounds that a democracy should provide representation to all groups.
Committee of the Status of Women 1971	The committee recommended the reservation of women in local bodies.
The National Perspective Plan for Women in 1988	This plan also recommended the reservation of women in local bodies.
Constitutional Amendments (1992)	These recommendations led to the 73rd and 74th amendments to the Constitution, which mandated all State governments to reserve one-third of the seats for women in local bodies.

Arguments in favour of the Women's Reservation Bill:



Argument	Significance
Increase in political representation of women	Addresses India's low global ranking in women's political representation.
	India ranks low in global women's legislative representation , trailing behind 140 other countries - IPU 2021 Report
The ability of women's leadership to bring change	Empirical evidence shows that women leaders focus on public goods related to women's concerns.
	Women legislators have been associated with improved economic outcomes and infrastructure development.
A step towards decriminalization of politics	Reserved seats can potentially reduce the presence of politicians with serious criminal cases.
	The current Lok Sabha includes 159 MPs with serious criminal charges, including rape, murder, attempt to murder, kidnapping, and crimes against women.
More women vote share	Aligns political representation with the voting patterns of women. The vote share of women in elections has been continuously increasing.
Breaking patriarchy	Promotes gender equality in political leadership and decision-making.
Changing stereotypes	Challenges traditional gender roles and perceptions of women's roles.

Arguments against the Bill:

Argument Against the Bill	Explanation
Not a Homogeneous Group	Women are not a homogenous community like caste groups, making comparisons with caste-based reservations inappropriate.
Violation of the Equality Principle	Critics argue that reserving seats for women contradicts the Constitution's equality guarantee , as it may be per-

	ceived as a lack of competition based on merit.
No Separate OBC Reservation	The Bill does not provide separate reservations for OBC women, despite OBC women constituting a significant portion of the female population.
Exclusion from Rajya Sabha and Legislative Councils	The Bill does not extend reservation to women in the Rajya Sabha and legislative councils.
Dependency on Census and Delimitation	Implementation of women's reservation depends on the census and delimitation processes , which can be delayed or politically sensitive.
Fear of Proxy Representation	There are concerns that women may be used as proxies by male family members, similar to what has happened in panchayats (local governments).
Restriction on Voters' Choice	Some argue that reserving seats for women limits voters' choices , suggesting alternatives like women's reservation within political parties.

What Should be Done:

- **Raise Awareness and Education:** Educate women about their rights and the importance of political involvement through awareness campaigns.
- **Combat Gender-Based Violence:** Address gender-based violence and harassment with policies and legal measures to create a safer political environment for women.
- **Electoral Reforms:** Implement electoral reforms like **proportional representation** and preferential voting to ensure more women are elected.
- **Intra-Party Democracy:** Institutionalize intra-party democracy to encourage more women candidates.
- **Strengthen Women's Self-Help Groups:** Promote women's participation at the grassroots level to groom potential candidates for higher offices.
- **Support Women's Agencies:** Strengthen organizations that work for gender equality and women's empowerment.
- **Engage Young Women:** Encourage girls' participation in student politics and political debates at colleges and universities.

4. ACHIEVEMENTS OF PRADHAN MANTRI MATSYA SAMPADA YOJANA (PMMSY)

Context:

The PMMSY has been instrumental in addressing critical gaps in the fisheries value chain in India

About PMMSY:

Pradhan Mantri Matsya Sampada Yojana (PMMSY)



Dimension	Information
About	PMMSY (Under the Ministry of Commerce and Industry) aimed at the sustainable development of the fisheries sector and to bring about the ' Blue Revolution '.
Origin	Launched in response to the COVID-19 pandemic , it allocated a substantial investment of ₹20,050 crore, the largest in the history of Indian fisheries.
Implementation	It is being implemented in all States and Union Territories for 5 years from FY 2020-21 to FY 2024-25. It provides insurance coverage and financial assistance to fishermen.

Implementation	It is being implemented in all States and Union Territories for 5 years from FY 2020-21 to FY 2024-25. It provides insurance coverage and financial assistance to fishermen.
Aim	Rural development and boosting the rural economy; " Reform, Perform, and Transform " motto; Core and trunk infrastructure development and Modernization of Indian fisheries. PMMSY focuses on various aspects of the fisheries sector , including marine and inland fisheries, fishermen's welfare, infrastructure development, cold water fisheries, ornamental fisheries, aquatic health management, and seaweed cultivation.
Type of Scheme	Umbrella scheme with Central Sector Scheme and Centrally Sponsored Scheme components —meaning that the Central government bears project cost and States/UTs share the cost of sub-components/activities.
Targets	Enhanced fish production of 22 million metric tons ; Increase fisheries sector GVA in agriculture GVA to 9% ; Double export earnings to about Rs. 1 lakh crore; Reduction of post-harvest losses to about 10% and doubling of incomes of fish farmers .
Achievements	The fisheries sector has achieved growth rate of over 14% . All-time high fish production and exports. Shrimp production growth has increased by 267% from 2013-14 to 2022-23. Seafood exports have also doubled during this period. Empowering Youth : E.g., young women in Kashmir are rearing cold water rainbow trout , while aquapreneurs in Nellore are exporting biofloc-cultivated shrimps . Expansion to Non-Traditional Areas : Expansion of scheme to 20,000 hectares of fresh pond; ornamental fisheries, pearl culture, and seaweed cultivation (e.g., Seaweed Park in Tamil Nadu) Infrastructure Development : PMMSY has supported the establishment of 900 fish feed plants and 755 hatcheries.
Other Initiatives	Fisheries & Aquaculture Infrastructure Development Fund (FIDF); Kisan Credit Cards for Fishermen.
Fishery Sector	India is the 3rd largest fish producing and 2nd largest aquaculture nation in the world.

5. INDIAN RAILWAY BOARD CHAIRMAN: JAYA VERMA SINHA

Context:

- Jaya Verma Sinha has become the **first woman to lead the Railway Board** (in the Railway Board's **118-year history**), the **top decision-making body** for India's Ministry of Railways.

About Indian Railways:

The Ministry of Railways (founded 1905; HQ: Rail Bhawan, New Delhi) functions as the **statutory authority for the Indian Railways**, a monopoly in rail transport. The **Chairman and CEO of the Railway Board** leads this organization.

About Indian Railway Board:

- In 1901, on the recommendations of the **Sir Thomas Robertson Committee** regarding the administration and working of the railways, **an early version of the railway board was constituted. It initially had three members.**
- In 1921, the **Railway Board was reorganized**, and a **Chief Commissioner of Railways** was appointed to make technical decisions and advise the Government on policy matters.
- In December 2019, the **Union Cabinet decided to reduce the size of the board from eight to five.** It also decided to **merge its different cadres into a single Railway Management Service.** The restructured Railway Board will comprise a **Chairman acting as CEO** and **four members overseeing infrastructure, operations, rolling stock, and finance**

6. CAUVERY WATER MANAGEMENT AUTHORITY

Context:

- The Cauvery Water Management Authority (CWMA) needs to take action in formulating a **distress-sharing formula for the Cauvery River**, as recent **submissions by Karnataka and Tamil Nadu have highlighted the urgency of the matter**.
- Both states, Tamil Nadu and Karnataka acknowledge the concept of distress sharing, but the **disagreement lies in the specifics of the formula**.
- Tamil Nadu considers factors such as deficit in inflows to Karnataka's reservoirs and rainfall patterns in the Cauvery catchment, while Karnataka believes that the distress situation cannot be determined until the end of January, taking both southwest and northeast monsoons into account.

The Cauvery Water Management Authority (CWMA) is a **regulatory body established by the Indian government to oversee the equitable distribution and management of the Cauvery River's waters among the riparian states of Karnataka, Tamil Nadu, Kerala, and Puducherry**.

7. EASTERN MARITIME CORRIDOR (EMC)

Context:

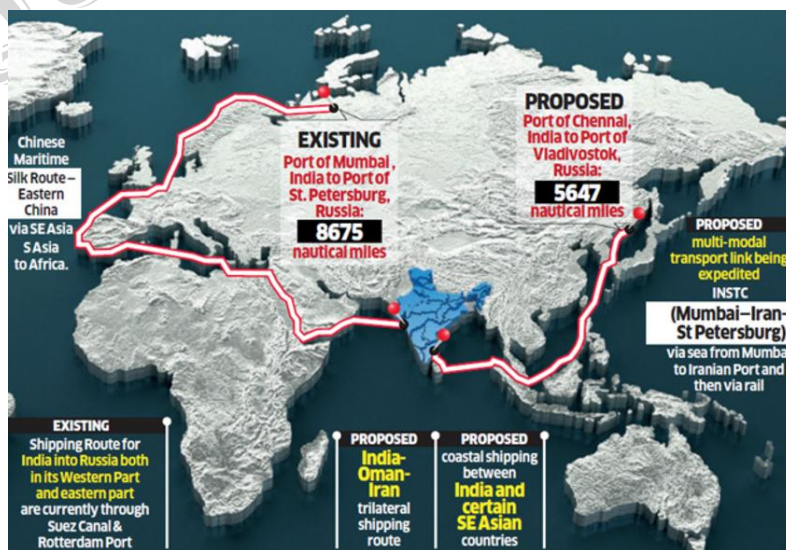
Union Minister Sarbananda Sonowal has extended an invitation for an Indo-Russian Workshop on the **Eastern Maritime Corridor (EMC) in Vladivostok, Russia**.

What is the Eastern Maritime Corridor (EMC)?

- The Eastern Maritime Corridor is a **proposed sea route between Chennai, India, and Vladivostok, Russia**, passing through the **Sea of Japan, the South China Sea, and the Malacca Strait**.

Benefits for India include:

- **Significant time reduction:** It shortens the **transportation time by up to 16 days**, making it more efficient.
- **Presence in Southeast Asia:** Chennai Port's strategic location opens trade opportunities with Southeast Asian nations like Thailand, Vietnam, and Indonesia.
- **Access to Russia's Far East:** Vladivostok Port provides access to resource-rich regions, offering opportunities in sectors like energy, mining, and technology for Indian businesses



This initiative follows a **Memorandum of Intent** on the development of maritime communications exchanged between **Vladivostok and Chennai in 2019**.

8. GUJARAT DECLARATION

Context:

The “**Gujarat Declaration**,” released as **the outcome of the first WHO Traditional Medicine Global Summit 2023**, emphasizes the **global commitment to harnessing the potential of traditional medicine for the betterment of health and well-being worldwide**.

Outcomes	Description
Reaffirmation of Global Commitments	Commitment to indigenous knowledge, biodiversity, and traditional medicine . Emphasis on rigorous scientific methods for holistic health approaches .
India's Role	India's importance as host of the WHO Global Traditional Medicine Centre . India's role in enhancing WHO's support for member states and stakeholders .
Promotion of Traditional Medicine	Scaling up evidence-based Traditional Complementary Integrative Medicine (TCIM) interventions . Collaboration among regions, disciplines, and stakeholders for global health benefits .
Integration into National Health Systems	Integration of TCIM into national health policies and systems based on research . Regulation and formal utilization of scientifically proven TCIM products and practices.
Standardization and Data Collection	Policies to standardize TCIM documentation using WHO's ICD-11 for evidence integration . Establishment of a global network of TCIM reference clinical centres for data collection .
Digital Health and Biodiversity	Advancement of digital health technologies, including AI, for TCIM resources . Protection of biodiversity, Indigenous knowledge, and Indigenous Peoples' rights .
WHO Traditional Medicine Global Summit 2023 Details	Organized by WHO and co-hosted by the Ministry of Ayush .

9. ARTIFICIAL INTELLIGENCE AND ELECTIONS

Context:

- Five Swiss political parties have signed a code of conduct agreeing to limit the use of artificial intelligence (AI) in their campaigns for the federal elections.

Role of AI in elections

- Predictive Modelling:** The prediction models can be built using AI. It will help determine the probability of a voter backing a specific candidate.

- Factors such as demographics, voting patterns and issues that matter can be considered to build a model that helps identify the voters who will vote for a particular candidate.
- **Social Media Analysis:** Using AI, parties can analyze the trends and sentiment to build a social media outreach program, as per the voters' preferences.
- **Personalization:** AI can aid in tailoring communications for specific voters based on their interests, preferences, and traits. This can **assist candidates in connecting with the audience** more deeply.
- **Real-Time Data Analysis:** Campaigns may adapt their messaging and outreach methods in reaction to shifting conditions by using AI to **evaluate real-time data on social media trends, sentiment, and influencers**.
- **Increased Efficiency:** AI can track and measure the performance of various campaign activities such as advertising, canvassing, and events. This enables campaigns to identify what works and doesn't and make data-driven decisions to optimize their activities.
- **Enhance participation:** AI also generates chances for participative democracy, like enhanced voter education and mobilisation.

Do you know

Artificial Intelligence is the ability of a machine to display human-like capabilities such as reasoning, learning, planning and creativity.

Concerns Associated with AI in Elections

- **Manipulation:** AI can be used to create deepfake videos, misinformation, and social media manipulation, influencing voters and distorting the truth.
 - **Public figures can be defamed or even blackmailed** with deepfakes, **influencing political life** or withdrawing from elections or politics.
- **Erode trust in Elections:** AI tools can be used to conduct an influence campaign that has the **potential to undermine public trust in democratic institutions and elections**.
- **Lack of regulation:** There is a lack of comprehensive regulation specifically addressing the use of AI in elections.
- **Accuracy and Data Quality:** The effectiveness and precision of AI systems deployed in political campaigns are hindered by the accuracy and reliability of the algorithms used, as well as the quality and quantity of available data.
- **Cyber security vulnerabilities:** Using AI to gather and analyse personal voter data raises **privacy and data protection concerns due to lack of cyber security infrastructure**, data storage devices and increased cyber-attacks.

Way forward

- **Regulatory Frameworks:** Governments should establish clear regulatory frameworks for the use of AI in elections, including data protection, and campaign advertising.
- **Strengthen the Election Commission of India (ECI):** To reduce the risk of AI misuse by political campaigns, ECI should **strengthen disclosure requirements** covering online communications.
 - ECI must establish clear guidelines and ethical frameworks for the use of AI in elections, emphasizing accountability and responsibility.

- **Innovation and Detection:** The government should ramp up efforts to **promote innovation in the detection of deep fake, voting disinformation campaigns and strengthen infrastructure** to protect elections from cyber attacks fuelled by language models and chatbots.
 - Security Agencies should create and share resources to help election offices address disinformation campaigns that exploit deep-fake tools and language models to undermine election processes.
- **Adaptive Response:** Continuously monitor and adapt to emerging threats and challenges related to AI in elections, responding swiftly to maintain the integrity of the electoral process.

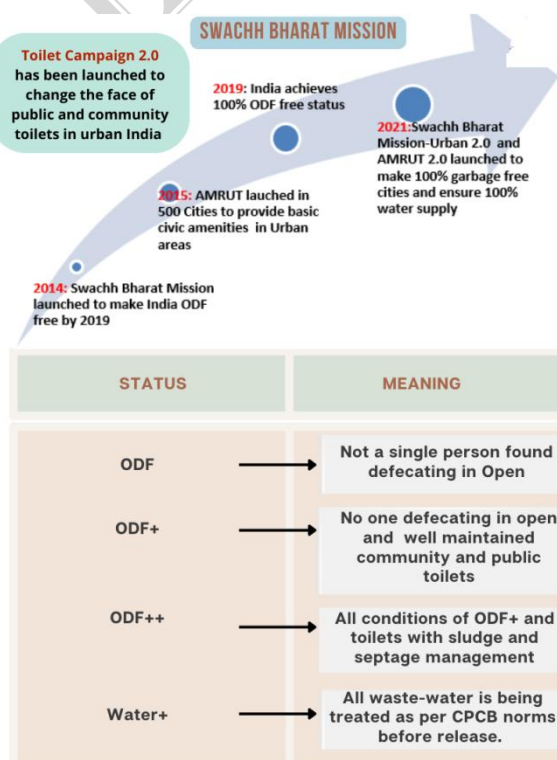
10. 75% OF VILLAGES ARE NOW ODF PLUS

Context:

- India has achieved a **significant sanitation milestone under the Swachh Bharat Mission (Grameen) Phase II**, with **75% of villages in the country** now declaring themselves ODF Plus.
- As of now, **over 4.43 lakh villages have achieved ODF Plus status**, a significant step toward the **SBM-G Phase II goals for 2024-25**.
- Several states and union territories have achieved **100% ODF Plus villages, including Andaman & Nicobar Islands, Dadra Nagar Haveli & Daman Diu, Jammu & Kashmir, and Sikkim**, which also have 100% ODF Plus Model villages.
- The **Swachh Bharat Mission (Grameen) Phase II aims to make all villages ODF Plus by 2025**.

The achievement of 75% ODF Plus villages demonstrates India's commitment to sanitation and hygiene, moving from ODF to ODF Plus in Swachh Bharat Mission Phase II.

ODF Plus status means that a village has maintained its Open Defecation Free (ODF) status while also implementing solid or liquid waste management systems.



11. PENSION FUND REGULATORY AND DEVELOPMENT AUTHORITY (PFRDA)

Context:

- The **Pension Fund Regulatory and Development Authority (PFRDA)** has requested the government to **increase the guaranteed pension amount under the Atal Pension Yojana (APY)** due to concerns that the **current amount may not be attractive enough for potential subscribers**

About Atal Pension Yojana (APY):

APY is a contributory scheme aimed at establishing a universal social security system for workers in the unorganised sector. Currently, subscribers aged 18 to 40 contribute and receive a fixed pension amount ranging from Rs 1,000 to Rs 5,000 after reaching 60.

About Pension Fund Regulatory and Development Authority (PFRDA):

The **Pension Fund Regulatory and Development Authority (PFRDA)** is a **statutory body** that regulates **India's pension sector**. It was established in 2013 by the Pension Fund Regulatory and Development Authority Act

12. IGOT KARMAYOGI PLATFORM

Context:

- The **iGOT Karmayogi Bharat platform**, in **partnership with NITI Aayog**, has introduced a new collection dedicated to the **Aspirational Blocks Programme (ABP)**.
- This initiative aims to **enhance the competencies of 5,000 Block-level officials in 500 identified Blocks**, helping them perform their duties effectively in **under-served areas**.
- The curated module includes ten courses covering topics such as **time management, communication, leadership, sustainable development goals, problem-solving, stress management, and team building**.

About iGOT Karmayogi Platform:

iGOT Karmayogi (<https://igotkarmayogi.gov.in/>) is a **comprehensive online portal to guide government officials in their capacity-building journey**. The portal combines 6 functional hubs for online learning, competency management, career management, discussions, events and networking.

13. SHREYAS SCHEME

Context:

The **“SHREYAS” scheme**, consisting of **four central sector sub-schemes**, has played a significant role in empowering students **from Scheduled Castes (SC) and Other Backward Classes (OBC) in India since 2014-15**.

The sub-schemes are as follows:

- Free Coaching Scheme for SCs and OBCs**
- Top Class Education for SCs**
- National Overseas Scheme for SCs**
- National Fellowship for SC Students**

These sub-schemes under the SHREYAS umbrella have significantly contributed to the education and empowerment of SC and OBC students, enabling them to pursue higher education and excel in their chosen fields.

14. INDIA AGEING, ELDERLY TO MAKE UP 20% OF POPULATION BY 2050: UNFPA REPORT

Context:

The United Nations Population Fund, India, has released the “**2023 India Ageing Report**,” which projects a significant increase in the elderly population in India

Major Findings of the Report:

Findings	Description
Elderly Population Growth	The population of people aged 80+ years is projected to grow by around 279% between 2022 and 2050.
By 2046 it is likely that the elderly population will have surpassed the population of children (aged 0 to 15 years) in the country	
Elderly Population Share	By 2050, the elderly population in India is expected to make up over 20% of the total population (The present share of elderly is about 10% in 2021)
Poverty Among the Elderly	More than 40% of the elderly in India are in the poorest wealth quintile, with over 18% having no income.
Gender Differences in Life Expectancy	Women, on average, have a longer life expectancy compared to men, with variations across states.
Sex Ratio Among the Elderly	The sex ratio among the elderly is increasing, indicating longer survival of women compared to men.
Gendered Poverty in Old Age	Poverty is gendered in old age , with older women more likely to be widowed, living alone, and dependent on family support.
Challenges in Demographic Transition	Significant inter-state variations in the elderly population reflect different stages of demographic transition.
Policy Recommendations	The report suggests policies to address the feminization and ruralization of the elderly population, increase awareness of schemes for older persons, and promote in-situ ageing.

Policy recommendations from the “2023 India Ageing Report”:

Recommendations	Description
Address Gender-Specific Challenges	Policies should specifically address the challenges faced by older women, including widowed and dependent elderly women.
Promote In-Situ Aging	Encourage and facilitate ageing at home (in-situ ageing) where possible, ensuring that elderly individuals can stay within their communities.
Increase Awareness of Schemes	Raise awareness about government schemes and programs designed for older persons, ensuring they can access necessary support.
Regulate Old Age Homes	Implement regulatory measures to oversee Old Age Homes, ensuring the well-being and rights of residents.
Inclusion in Data Collection Exercises	Include relevant questions related to older persons in national data collection exercises to gather credible data on elderly issues.
Focus on Multigenerational Households	Encourage elderly individuals to live in multigenerational households, promoting better care and support within families

Other aspects of Ageing:

Effects of globalization on India's ageing population:

Positive Effects:

Effects	Description
Access to Healthcare	Globalization has improved healthcare facilities and technologies, enhancing the health of the elderly.
Economic Opportunities	New economic opportunities have improved the financial situation of elderly citizens relying on savings or pensions.
Technology Access	Increased technology access enables elderly citizens to stay connected with family worldwide.
Social Inclusion	Globalization fosters social inclusion and participation by introducing new cultures and lifestyles.

Negative Effects:

Effects	Description
Ageism	Globalization has led to ageism, devaluing the role of the elderly in society.
Economic Insecurity	Economic insecurity has arisen due to job loss or reduced savings resulting from globalization's impact on the economy.
Social Isolation	Changing family structures and urban migration of younger generations have increased social isolation among the elderly.
Health Risks	Unhealthy lifestyles, like processed food consumption, lack of physical activity, and pollution exposure, have increased health risks for the elderly.

Challenges faced by women in old age due to rising life expectancy and widowhood

Challenges	Description
Financial Dependence	Limited access to employment opportunities, lower wages, and inadequate savings can lead to financial dependence in old age.
Deteriorating Health	Aging can bring deteriorating health, including chronic diseases, mobility issues, and mental health challenges.
Social Isolation	Older women, especially widows, may experience social isolation and loneliness due to the loss of a spouse and limited social networks.
Rural Situation	Older women in rural areas face unique challenges like limited access to healthcare, inadequate infrastructure, and caregiving or agricultural burdens.
Intersectionality	Women from marginalized communities may face compounded challenges in old age due to their socio-economic background, and tribal or minority status.
Ageism and Misogyny	Older women may encounter ageism and misogyny, leading to stereotypes, discrimination, and limited opportunities for engagement in various aspects of life.

Suggested measures

Measures	Description
Social Security Systems	E.g., Kalaingar Magalir Urimai Thittam is a women's rights grant scheme just rolled out in Tamil Nadu aimed at providing financial support to eligible women recognized as heads of families
	Karnataka Gruha Lakshmi Scheme supports women heads of families by providing eligible women will receive financial assistance of ₹2000 per month.

	Intergenerational programs: Programs that promote intergenerational bonding, such as mentorship programs and community service projects
Access to Healthcare	Improve access to healthcare services, including geriatric care, preventive screenings, and mental health support, to address the specific health needs of older women.
Social Inclusion	Promote social inclusion and active participation of older women through community-based programs, intergenerational activities, and support networks.

Civil Society Engagement	Community-based initiatives and CSO engagement through Senior citizen clubs and programs , can provide social support and help prevent social isolation among the elderly E.g. Asha Deep Foundation provides Day Care Centre for the elderly members of our community who are either neglected, have no children or are abandoned by their families.
Demographic Stability	Focus on policies and programs that address population ageing and the needs of older women, such as promoting family planning , women's empowerment, and intergenerational solidarity.
Community-based care system for elders	<u>ASHA program</u> could be used for building a community-based workforce to support the diverse health and social care needs of elders
Age-friendly cities	Cities can be designed to be age-friendly , with infrastructure and public spaces that are accessible to all, including elderly citizens.

Government Scheme for Old Age:

Scheme	About
<u>National Social Assistance Programme (NSAP)</u>	Offers non-contributory pensions for the elderly, widowed women, and disabled individuals. Administered by the Ministry of Rural Development.
<u>Pradhan Mantri Vaya Vandana Yojana (PMVVY)</u>	Exclusive pension scheme for senior citizens aged 60 and above. Extended up to 2023 for three more years beyond 2020.
Integrated Program for Older Persons (IPOP)	Aims to enhance the quality of life for senior citizens by providing basic amenities such as food, shelter, medical care, and entertainment opportunities.
<u>Rashtriya Vayoshree Yojana</u>	Central sector scheme funded by the Senior Citizens' Welfare Fund. Provides aids and assistive living devices to elderly BPL individuals with age-related disabilities.
SAMPANN Project	Launched in 2018, an online pension processing system for Department of Telecommunications pensioners. Direct credit of pension into bank accounts of pensioners.
SACRED Portal for Elderly	Developed by the Ministry of Social Justice and Empowerment. Citizens above 60 can register to find jobs, and work opportunities, and access information and guidance on various issues.
Elder Line: Toll- Free Number for Elderly	Provides information, guidance, emotional support, and immediate assistance for elderly citizens, particularly on pension, medical, and legal matters.
SAGE (Seniorcare Ageing Growth Engine) Initiative	A platform offering access to elderly care products and services by credible start-ups, supporting entrepreneurship in the field of elderly care.

Conclusion:

By recognizing the specific needs of older persons and providing targeted support, we can create a society that values and empowers them, ensuring their well-being and active participation in all spheres of life

About UNFPA (United Nations Population Fund):

It is a UN agency (founded 1969; HQ: New York) dedicated to enhancing **global reproductive and maternal health**. It works on **national healthcare strategies**, access to birth control, and campaigns against child marriage, gender-based violence, obstetric fistula, and female genital mutilation. Operating in over 144 countries across four regions, it's a key member of the **United Nations Development Group**, focusing on achieving the Sustainable Development Goals. UNFPA has been operating in India since 1974

15. WORLD COFFEE CONFERENCE

Context:

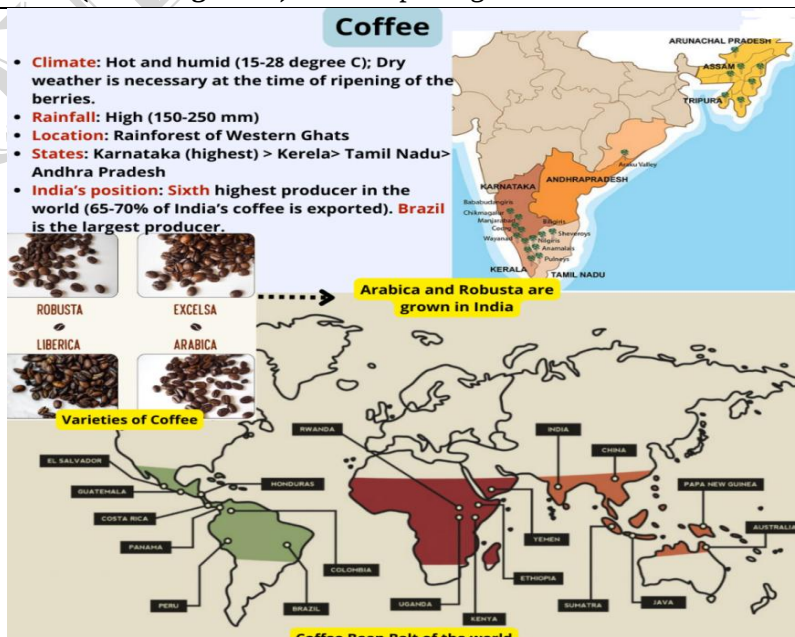
- The **5th World Coffee Conference (WCC)** was held in Bengaluru, and organized by the **International Coffee Organization (ICO)**, a UN body focused on highlighting the economic importance of coffee.
- It is being held for the **first time in an Asian coffee-producing country**.
- One of the key topics discussed at the conference was “**regenerative agriculture**,” a holistic farming approach that emphasizes **soil health, food quality, biodiversity, water quality, and air quality**.

About Regenerative agriculture:

Regenerative agriculture is a **holistic farming approach** that focuses on improving soil health, biodiversity, and sustainability by minimizing soil disturbance, diversifying crops, using cover crops, and integrating livestock. It aims to **enhance resources rather than deplete them**, by adhering to principles such as conservation tillage, crop diversification, soil cover with cover crops, and integration of livestock.

About ICO:

ICO (established in 1963, under the UN; HQ: London) serves as the only intergovernmental organization for coffee. It administers the **International Coffee Agreement (ICA)**, an important instrument for development cooperation. Aims to **strengthen the coffee sector** and promote sustainable growth for the Global Coffee Value Chain (G-CVC). It is the sole intergovernmental coffee organization, uniting exporting and importing governments. It has **43 exporting members (including India)** and 6 importing members



16. SIMULTANEOUS ELECTIONS

Context:

The Government has formed a committee, headed by former President Ram Nath Kovind, to explore the possibility of “one nation, one election,” **which** refers to holding simultaneous Lok Sabha (Parliament) and state assembly elections.

What is one nation, one election (ONOE)?

- The concept of “**one nation, one election**” refers to **holding elections to Lok Sabha and State Legislative Assemblies simultaneously, once in five years.**

Background:

- Simultaneous elections were held in the country **during the first two decades after Independence up to 1967. The dissolution of certain Assemblies in 1968 and 1969 followed by the dissolution of the Lok Sabha led to the disruption** of the conduct of simultaneous elections

Benefits of “one nation, one election”

Benefit	Description
Reducing Election Expenditure	Conducting all elections simultaneously minimizes expenses on logistics, security, and campaigning.
Better Governance	Simultaneous elections allow elected governments to focus on governance rather than preparing for the next election. It will help in streamlining the election cycle to avoid policy disruptions due to the <u>Model Code of Conduct</u>
Voter Convenience	Ensures voters are not subjected to multiple rounds of voting , leading to better turnout and voter convenience.
Reduced Security Concerns	Conducting elections together reduces overall security concerns and enhances security setup across the country.
Level Playing Field	Provides a level playing field for all parties and candidates , promoting fairness and transparency in elections.
Reduced Impact on Education	Simultaneous elections reduce the impact on the education sector , as fewer teachers are involved in the electoral process.

Challenges of “One Nation, One Election”:

Challenge	Description
Constitutional Challenges	Requires constitutional amendments , necessitating consensus among political parties and states, a complex and lengthy process
Anti-federal	Assembly elections focus on local issues, and combining them with general elections may overshadow regional narratives.
Logistical challenges	Conducting all elections simultaneously involves logistical arrangements, security deployment, voter rolls, and polling booth management, leading to administrative difficulties.
	Need for approximately 30 lakh electronic voting machines (EVMs) and voter-verified paper audit trail (VVPAT) machines
Possibility of Domination by National Parties	Simultaneous elections may favour national parties with more resources, potentially marginalizing regional parties and issues.
Impact on Democracy	Voters may struggle to engage with all issues simultaneously, potentially leading to uninformed choices and undermining the democratic process.

Way forward

- **Recommendation of Parliamentary Standing Committee on Law and Justice: A two-phase election schedule**, according to which elections to some legislative assemblies whose term **end within six months to one year** before or after the election date could be held during the **midterm of Lok Sabha**. For the rest of the states, elections could be held along with the general elections to Lok Sabha.
- Cost can be brought under control by ensuring that the **legal cap on the expenditure of candidates is followed by all parties**.
- Concept of **One year, One election** will be easier than ONOE, and will have the same benefits.
- **International Examples**: Simultaneous Elections are successfully held in **South Africa (national and provincial), and Sweden** (including local elections as well on the same day).

Conclusion:

While the idea of “One nation, one election” has its own merits, it is important to consider the **practical challenges and limitations** of implementing it. A **comprehensive study** is required to examine the feasibility of this concept in India.

17. VVPAT

Context:

- A petition **by the Association for Democratic Reforms (ADR)** has called for the **100% counting of Voter Verifiable Paper Audit Trail (VVPAT) slips** during elections as the **current system fails to guarantee that votes are counted as cast**.
- Currently, the Election Commission of India (ECI) mandates **counting VVPAT slips in five randomly selected polling stations** per Assembly constituency or segment.
- The **ECI responded** by stating that **counting all VVPAT slips in every election would revert to manual polling methods via indirect means**.
- Initially, **one polling station’s VVPAT slips per Assembly constituency were counted**, later increased to **five stations after a Supreme Court judgment in 2019**

About VVPATs:

VVPATs are devices attached to **Electronic Voting Machines (EVMs)** that print a paper slip with the **voter’s choice**, allowing **voters to verify their vote**.

The VVPAT concept **emerged in 2010**, and it was **gradually introduced in elections, with 100% coverage starting in June 2017**.

18. KISAN RIN PORTAL

Context:

- The Indian government has launched the **“Kisan Rin Portal”** as part of the **Kisan Credit Card (KCC) scheme to revolutionize the agriculture sector**.
- Additionally, the government launched the **Weather Information Network Data Systems (WINDS) portal** and initiated a **door-to-door KCC campaign**.

Kisan Rin Portal:

- The Kisan Rin digital platform will offer a **comprehensive view of farmer data, scheme utilization progress, loan disbursement specifics, and interest subvention claims**, enhancing integration with banks for more efficient agriculture credit.

About Weather Information Network Data Systems (WINDS) portal:

- WINDS leverages advanced weather data analytics to provide stakeholders with actionable insights for informed weather-related decisions in agriculture.
- The portal includes a comprehensive manual for stakeholders to understand its functionalities, data interpretations, and effective utilization.

19. PRADHAN MANTRI UJJWALA YOJANA (PMUY)

Context:

- The government has extended the Pradhan Mantri Ujjwala Yojana (PMUY), a scheme providing **LPG connections to households**, to an additional 75 lakh consumers over **three years from 2023-24 to 2025-26**.
- The scheme's total beneficiaries will now reach **10.35 crore**.

Pradhan Mantri Ujjwala Yojana (PMUY)

The government expanded PMUY, offering LPG connections to **75 lakh more consumers** from 2023-24 to 2025-26



Aspect	Description
About	The Pradhan Mantri Ujjwala Yojana (PMUY) is a government program in India that aims to provide clean cooking fuel (LPG) to rural and deprived households .
Objective	It empowers women, protects health, reduces deaths from unclean cooking fuel, and prevents respiratory illnesses in children.
Nodal Ministry	Ministry of Petroleum and Natural Gas (MoPNG)
Benefits	Financial Support: Rs 1600 for each LPG connection to BPL households. Deposit-free LPG connection , free first refill, and a free hotplate Subsidies: Beneficiaries receive subsidies on the first six refills of 14.2 kg cylinders or eight refills of 5 kg cylinders. EMI Facility: To cover the stove and initial refill costs.
PAHAL	Beneficiaries can join the PAHAL scheme to receive subsidies directly in their bank accounts.
Phases	Phase I: Launched on May 1, 2016, with a target of providing 8 crore LPG connections by March 2020. LPG coverage increased significantly. Ujjwala 2.0: Announced in the FY 21-22 Union budget, to release an additional 1 crore LPG connections by March 31, 2022. Initial targets have been achieved.
Achievements	In the first phase of PMUY, 8 crore poor families , including Dalit and tribal communities, received free cooking gas connections. Opening of over 11,000 new LPG distribution centres nationwide (past 6 years) The scheme's total beneficiaries will now reach 10.35 crore .
Challenges	Limited Refill Consumption: Average PMUY beneficiary refilled fewer than four LPG cylinders in 2022-23 Rising LPG Cylinder Prices: Steep price hikes in LPG cylinders, even with subsidies, have reduced affordability for rural and deprived households Subsidy Expenditure: Subsidised LPG cylinder rates increased by 82% between January 2018 and March 2023 International Factors Impacting LPG Prices: LPG prices are influenced by various factors, including import charges, bottling costs, freight, delivery fees, GST, and distributor commissions.

20. FOREIGN CONTRIBUTION REGULATIONS ACT

Context:

Under the Foreign Contribution Regulation Act (FCRA), NGOs and associations registered to **receive foreign contributions must now annually declare** details of **movable and immovable assets created using those contributions**.

About the Foreign Contribution Regulation Act:

- FCRA was enacted **during the Emergency in 1976** amid **apprehensions that foreign powers were interfering in India's affairs** by pumping money into the country through independent organisations.
- The law sought to **regulate foreign donations to individuals and associations so that they functioned in a manner consistent with the values of a sovereign democratic republic**.

21. 'BIMA SUGAM' ONLINE PLATFORM

Context:

The Insurance Regulatory and Development Authority of India (IRDAI) is creating the 'Bima Sugam' **online platform**, which is described as a **'game-changer'** and a **'UPI moment'** for the insurance sector.

Benefits of the portal:

- It will serve as a **one-stop destination for insurance-related needs**, including policies, portability, agent changes, and claims.
- Buyers can **directly purchase life, motor, or health policies** through web aggregators, brokers, banks, and insurance agents. Insurance companies will be major shareholders in the platform, which will offer services via an **'e-insurance account' (E-IA)**.
- The platform aims to **centralize data, facilitate policy porting**, offer a wide range of policy choices, reduce intermediary commissions, and enable the acceptance of new products.
- The launch date for Bima Sugam is set for June 2024, following delays from the original deadlines.

Ownership:

Life insurance and general insurance companies will own a **47.5 per cent** stake each, while brokers and agent bodies will **own 2.5 per cent each**.

IRDAI (Bima Trinity of the policy):

- **1st element is Bima Sugam**
- **2nd element is Bima Vistar:** It will be a bundled risk cover product, which offers defined benefits for each risk and aims to provide faster claim payouts without the need for surveyors.
- **3rd element is Bima Vaahaks:** The third component of the plan involves deploying a women-centric workforce called Bima Vaahaks (carriers) in each Gram Sabha (village council) to promote the benefits of insurance products.

Other plans:

- **State-level insurance committees:** To achieve the goal of providing insurance coverage for all citizens by 2047, the IRDA plans to establish State-level insurance committees and involve State governments in formulating district-level insurance plans.

- **Amendment to insurance laws (Insurance Act, 1938)** to allow differentiated capital requirements for niche insurers, attract more investments, and enable the addition of value-added services to insurance policies.

About IRDAI

The **Insurance Regulatory and Development Authority of India** (founded 1999; HQ: Hyderabad) is a statutory body (under the IRDA Act 1999) and is under the jurisdiction of the Ministry of Finance and is tasked with regulating and licensing the insurance and re-insurance industries in India.

22. GITA MITTAL COMMITTEE

Context:

- The Supreme Court of India has **informed petitioners involved in the Manipur ethnic violence case that it cannot oversee the administration of the state** and encouraged petitioners to **place their trust in the Justice Gita Mittal Committee to address the issues.**
- These issues include the **distribution of Aadhaar cards and disability certificates** to displaced individuals, **compensation for families of the deceased, reconstruction of religious buildings and homes damaged during the violence, handling of bodies, and the functioning of courts in the state.**
- Justice Gita Mittal committee was established by the Supreme Court to monitor relief and rehabilitation efforts in Manipur.

23. OIML (INTERNATIONAL ORGANIZATION OF LEGAL METROLOGY)

Context:

- **India** has achieved the **distinction of becoming the 13th country in the world authorized to issue Internationally Accepted OIML (International Organization of Legal Metrology) Certificates.**
- This accomplishment allows **domestic manufacturers in India to have their weighing and measuring instruments tested within the country** and then sell them in the international market.

About OIML:

- The OIML is an **intergovernmental organization established in 1955**, with India becoming a **member in 1956**. It has **63 Member States and 64 Corresponding Members**

Significance:

- Benefits **indigenous manufacturers** as they can **export their weighing and measuring instruments worldwide** without incurring additional testing fees, resulting in cost savings.
- India can support **foreign manufacturers by issuing OIML pattern approval certificates** through its certified RRLs, **generating foreign exchange through fees and services.**
- Influence **OIML policies and provide input to the OIML Strategy.**
- India now joins an exclusive group of nations, including **Australia, Switzerland, China, Czech Republic, Germany, Denmark, France, United Kingdom, Japan, Netherlands, Sweden, and Slovakia**, as the 13th country worldwide authorized to issue OIML approval certificates.

24. MALAVIYA MISSION – TEACHERS TRAINING PROGRAMME (MM-TTP)

- University Grants Commission's MM-TTP was launched.

About MM-TTP

- It is proposed by **restructuring of existing schemes of capacity building of teachers** under Department of Higher Education.
- It envisages **capacity-building training for the faculty and staff across higher educational institutions (HEIs)**, in the light of **National Education Policy (NEP) 2020** within **two years through multiple training centres**.
- **Human Resource Development Centres (HRDCs)** will also be **renamed as Madan Mohan Malaviya Teachers' Training Centre**.

25. SECRETARIAT OF THE PARLIAMENT

Context:

- As the Parliament completes 75 years, Parliament secretariat has been the custodian of procedure, precedent and legislative knowledge of the two Houses.

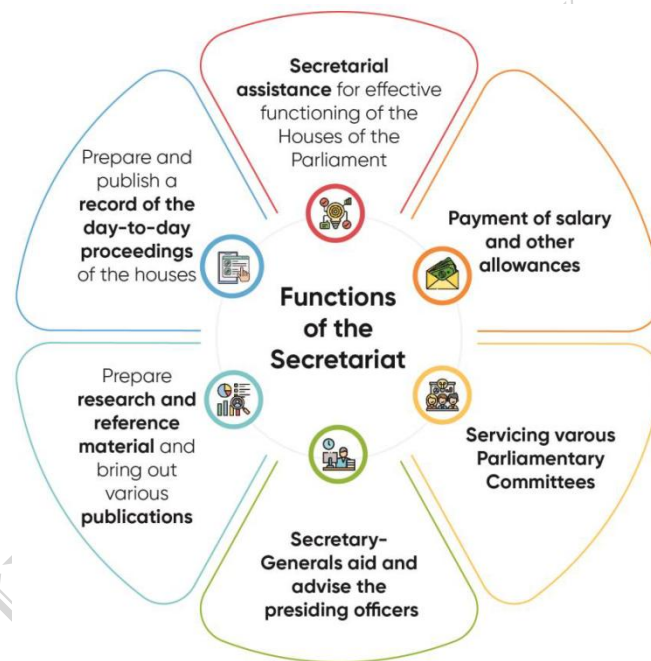
Constitutional provisions

- **Article 98:** Each House of Parliament shall have a **separate secretarial staff**.
 - **Parliament may by law** regulate the recruitment, and the conditions of service of persons appointed, to the secretarial staff of either House of Parliament.
 - It also allows creation of **posts common to both** the Houses of Parliament.
- **Article 187** makes similar provisions for Secretariat of State Legislatures.
- **Council of States (Rajya Sabha)** and the **House of the People (Lok Sabha)** came into existence in **1952**.
 - However, the **Secretariat of the House of the People** continued to be called the '**Parliament Secretariat**' and a new Secretariat called the '**Council of States Secretariat**' was set up for the Rajya Sabha.
 - The **names of the two Secretariats were changed in 1954** to **Rajya Sabha Secretariat** and **Lok Sabha Secretariat** respectively.

Structure of the Secretariats

- **Lok Sabha Secretariat**
 - **Speaker (Lok Sabha):** Vested with ultimate guidance and control over the secretariat.
 - **Administrative Head:** Secretary General.
 - **Recruitment and Conditions of Service:** Governed by the **Lok Sabha Secretariat (Recruitment and Conditions of Service) Rules, 1955** promulgated by the President in consultation with Speaker.
 - ✓ The rules provide for strength and composition of the secretariat.
 - ✓ All appointments to the posts shall be made by the Speaker.
 - ✓ Speaker may delegate to the Secretary-General or any other officer of the Secretariat, his power to make appointments.
- **Rajya Sabha Secretariat**

- **Chairman (Rajya Sabha):** Vested with administrative control over the secretariat.
- **Administrative Head:** Secretary General.
- **Recruitment and Conditions of Service:** Governed by the **Rajya Sabha Secretariat (Recruitment and Conditions of Service) Rules, 1957** promulgated by the President in consultation with Chairman (similar to Lok Sabha).
- **Other Key Information:**
 - Secretariat of both the houses has been **divided into 10 services on functional basis like Legislative, Executive and Administrative services, verbatim reporting services, etc.**
 - **Speaker and Chairman can create new posts** in respective secretariat. However, for posts in Class I or Class II, **prior consultation with the Union Ministry of Finance** is mandatory.
 - **Secretary-Generals of both the houses hold rank equivalent to that of the Cabinet Secretary** to the Government of India.
 - ✓ However, in the **table of precedence**, Cabinet Secretary is placed at 11th position, whereas Secretary, Lok Sabha/ Rajya Sabha are placed at 23rd position.



Limitations of the Secretariats of the Parliament

- **Absence of legislative framework:** No law has so far been passed under the Article 98(2) regulate the recruitment, and the conditions of service of the secretarial staff of either House of Parliament.
- **Lack of autonomy:** Parliament Secretariats are often alleged of partisanship in favor of executive in terms of disallowing parliamentary questions, rejection of amendments and resolutions on flimsy grounds, etc.
- **Lack of independent cadre:** Most of the senior posts are held by those nominated from All-India Services which adversely impacts the independence of the legislature.

Conclusion

Through its dedicated efforts, Parliament Secretariat ensures that the wheels of the government keep turning smoothly, facilitating the law-making process, and upholding the principles of accountability, transparency, and representation.

26. E-CABINET SYSTEM

Context:

- The Tripura Chief Minister has launched an e-cabinet system in Agartala, making Tripura the fourth Indian state and the second in the Northeast to adopt this digital governance initiative.
- With the e-cabinet system, all future cabinet meetings in the state will be conducted without paper documents, promoting environmental sustainability and reducing the carbon footprint.
- The e-cabinet application will enable the uploading of cabinet memos with date and time stamps, and ministers, the chief secretary, secretaries, and other officials will be able to review and approve them online.
- The introduction of the e-cabinet system aims to eliminate delays caused by the physical movement of paper documents and inject dynamism into the government's decision-making process.

INTERNATIONAL RELATIONS

1. UNITED NATIONS COMMISSION ON INTERNATIONAL TRADE LAW (UNCITRAL)

- India hosts inaugural UNCITRAL South Asia
- Conference.
- UNCITRAL (established in 1966) is a subsidiary body of General Assembly of UN with a mandate for further harmonization and unification of law of international trade.
 - It is composed of 70 Member States elected by General Assembly.
 - Members are elected for terms of six years (India is member till 2028).
- UNCITRAL is not a part of WTO.
 - WTO deals with trade policy issues whereas UNCITRAL deals with laws applicable to private parties in international transactions and is not involved with "state-to-state" issues.

2. INDIA AND G20

Context:

India recently held the Presidency of the G20 summit for the first time at New Delhi, with the theme “Vasudhaiva Kutumbakam” or “One Earth, One Family, One Future”.

G20

About

- Premier forum for international economic cooperation, that meets regularly to discuss the most pressing issues facing the global economy.

Genesis

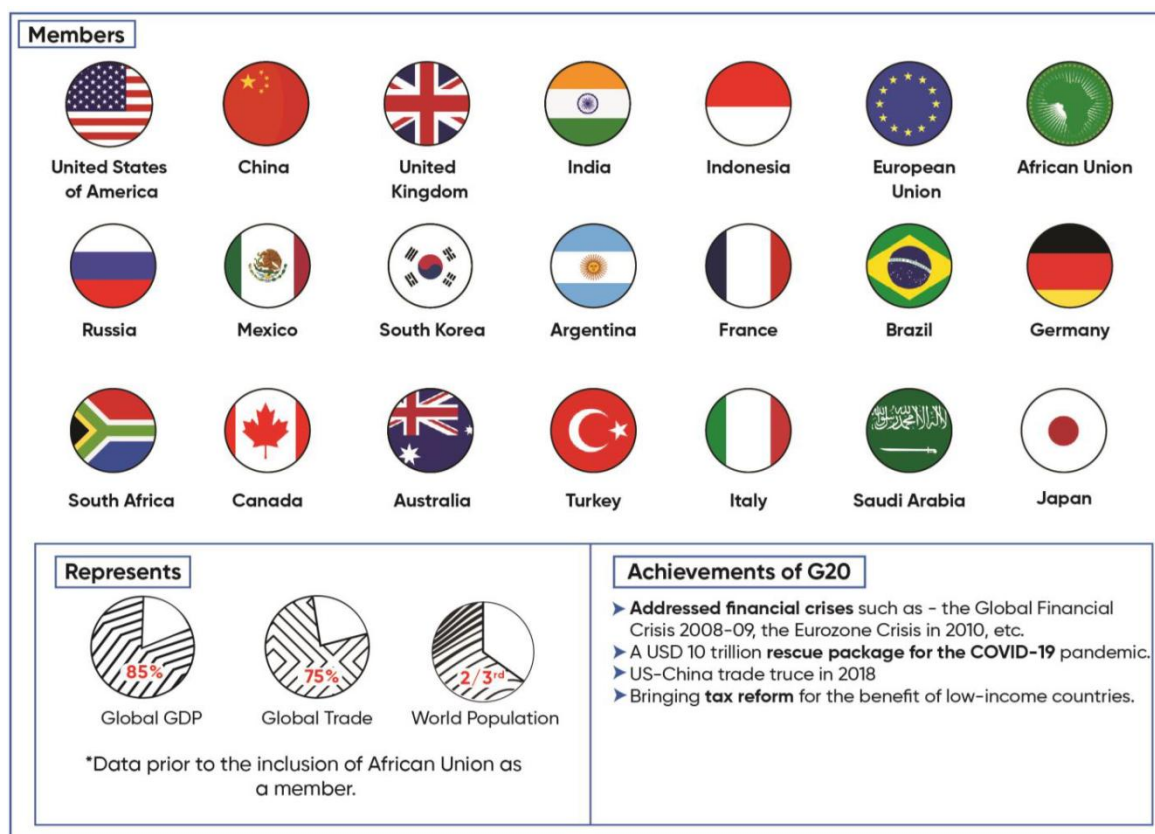
- Founded in 1999, following the Asian financial crisis, as a forum for finance ministers and Central Bank Governors to discuss global economic and financial issues.

Purpose

- Plays an important role in shaping and strengthening global architecture and governance on all major international economic issues.

Working

- G20 Summit held annually, under the leadership of a rotating Presidency.
- Presidency is supported by the Troika – previous, current and incoming Presidency.
 - Troika consists of Indonesia, India and Brazil.
- Consists of two parallel tracks: the Finance Track and the Sherpa Track.
- Does not have any permanent secretariat or staff.



Key Outcomes of the G20 Summit

- Unanimous adoption of the **G20 New Delhi Leaders' Joint Declaration**.
- **Launch of the Global Biofuel Alliance (GBA)** to increase the consumption of biofuels.
- Memorandum of Understanding (MoU) to establish **India Middle East Europe Economic Corridor (IMEC)**.
- Formal inclusion of the **African Union as a permanent member of the G20**.
- **Other outcomes:**
 - **Proposal to launch a G-20 Satellite Mission for Environment and Climate Observation**, with an aim to help the countries of the Global South.
 - Global regulatory framework for **crypto-assets and use of Artificial Intelligence responsibly**.
 - Consensus on G20 framework for **GDPIR (Global Digital Public Infrastructure Repository respectively)**.

Important outcomes and declarations of the G20 Summit have been discussed in detail in the subsequent articles.

Significance of G20

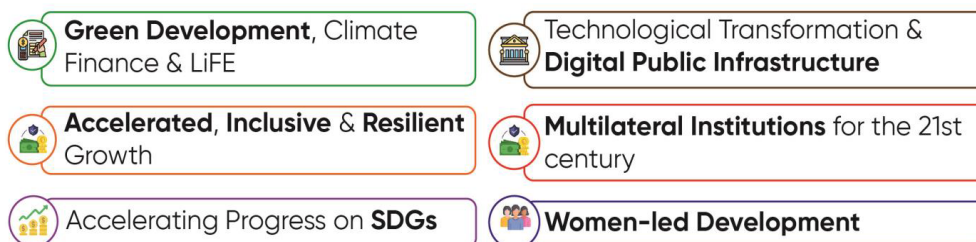
- **Supporting global financial stability:** It plays a key role in promoting global financial stability, through financial regulation, crisis prevention, and management.
- **Addressing global development challenges:** It has made efforts to address a range of development challenges, including poverty reduction, infrastructure financing, and sustainable development.
- **Human resource development and Employment:** At the 2014 Summit in Brisbane, G20 leaders committed to reduce the gender gap in labour force participation by 25 per cent by the year 2025 compared to 2012 (the 25x25 goal).

- **Recast Bilateral ties:** Bilateral meetings on the summit's sideline have occasionally led to major international agreements.

Significance of G20 Presidency for India

- **Showcase Leadership:** India got the chance to prove its leadership role **in steering discussions, building consensus** as well as **offering solutions** to address developmental and geopolitical issues.
- **Voice of the Global South:** Through its presidency, India was able to embed priorities of the Global South in the larger global conversation and advance its own credentials as a voice of the Global South.
- **E.g.,** India's initiative led to the African Union being accepted as a permanent member of the G20.
- **Economic opportunities:** India's G20 presidency is expected to translate into trade and investment opportunities for Indian businesses' global expansion.
- **Expand India's footprint:** By hosting the summit, India was able to demonstrate its contemporary technology advancement and its heritage, culture and traditions, enhancing India's stature and status in global politics.
- **Build trust:** India's heritage of being the moderating influence helped in building consensus and lessen the East-West polarization and the North-South divide.
- **Steering global agenda and reshaping world order:** India used the opportunity to reshape the global agenda based on its priorities and promote its interests on the international stage.

India's G20 Priorities



Challenges

- **Divergent interests and priorities among member countries:** This can make it difficult to reach a consensus on key issues and to promote a coherent approach.
- **Lack of effective power:** G20 is not a legally binding institution.
- **Geopolitical Tensions:** Geopolitical tensions between G20 members, undermine cooperation and make it difficult to achieve consensus on important issues.
- **Inadequate response to global challenges:** The G20 has faced criticism for its perceived lack of action on key global challenges, such as climate change and inequality.
- **Limited accountability and transparency:** It operates largely behind closed doors, with limited opportunities for public scrutiny and accountability, and lacks a formal charter.
- **Rising Protectionism:** There is a growing trend towards protectionism and trade tensions between major economies.

Way forward

- **Inclusivity:** It must reach out to non-member states and non-state actors, giving voice and consideration to their concerns.
- **Avoiding internal conflicts:** Collective action and problem-solving should be encouraged that transcends traditionally like-minded groups of countries.
- **Effective implementation:** Summit leaders should solidify the forum's role through swift action on promises.
- **Maintaining continuity:** Promote collective action on a sustained basis and should maintain continuity on issues taken up across presidencies.

2.1. NEW DELHI DECLARATION

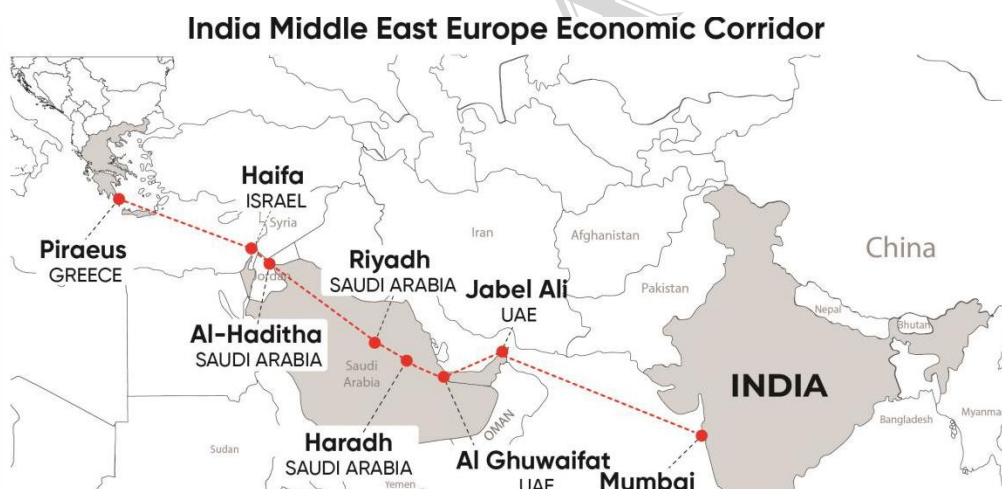
Key highlights of the New Delhi Declaration

THEME	Details
Accelerating progress on SDGs	• Endorsed the G20 Principles on Harnessing Data for Development (D4D) and welcomed the decision to launch the Data for Development Capacity Building Initiative. • Strengthening the Agricultural Market Information System (AMIS) and the Group on Earth Observations Global Agricultural Monitoring (GEOGLAM), for greater transparency to avoid food price volatility. • Emphasis on adopting a one-health approach.
Strong, Sustainable, Balanced, and Inclusive Growth	• G20 2023 Financial Inclusion Action Plan (FIAP), aimed at advancing financial inclusion for individuals and MSMEs. • Adoption of G20 Generic Framework for Mapping Global Value Chains (GVC) to help members identify risks and build resilience. • Establishment of the Start-up 20 Engagement Group.
Women empowerment	• Creation of a full-fledged working group on women's empowerment to prioritize gender equality, women empowerment, and leadership.
Multilateral Institutions for the 21 st Century	• Agreement on UNGA 75/1 (UNSC reforms) for the first time in G20. • Roadmap for implementing the recommendations of the G20 independent review of the Multilateral Development Banks Capital Adequacy Framework.
Technological transformation and Digital Public Infrastructure (DPI)	• Proposal of the One Future Alliance (OFA), a voluntary initiative for supporting implementing DPI in low and low-middle-income countries. • India plans to build and maintain a Global Digital Public

	Infrastructure Repository (GDPIR), a virtual repository of DPI, voluntarily shared by G20 members. Joint roadmap to support a coordinated and comprehensive policy and regulatory framework for cryptoassets.
International taxation	Reaffirms commitment to twin pillars of international package. (Profit allocation and nexus and Global Minimum Taxation)
Green Development	Encourage efforts to triple renewable energy capacity by 2030.
Pact for a Sustainable Future	- Recognition of the need for about USD 5.8-5.9 trillion in the pre-2030 period for developing countries to implement their NDCs. - Call to set an ambitious, traceable, transparent New Collective Quantifiable Goal of climate finance in 2024. - Launch of initiatives like the Resource Efficiency Circular Economy Industry Coalition (RECEIC), Travel for LiFE etc.
For Planet, People, Peace and Prosperity	Build consensus on Ukraine issue: In line with the UN Charter, States agreed to uphold the principles of territorial integrity and sovereignty. - Addressed the adverse impact of Russia-Ukraine war on global economy and welcome constructive initiatives that support a comprehensive, just, and durable peace in Ukraine.
Promotion of thematic Roadmaps and Principles	Jaipur Call for Action for enhancing MSMEs' access to information to promote the integration of MSMEs into international trade. Chennai High-Level Principles for a Sustainable and Resilient Blue/Ocean-based Economy. Gandhinagar Implementation Roadmap (GIR) and Gandhinagar Information Platform (GIP) for strengthening the G20 Global Land Initiative. - G20 Global Land Initiative aims to prevent, halt and reverse land degradation with an ambition to reduce degraded land by 50 percent by 2040. Deccan High-Level Principles on Food Security and Nutrition 2023. Goa Roadmap for Tourism as a Vehicle for Achieving the Sustainable Development Goals to achieve Sustainable Tourism. - It has 5 priorities- Green Tourism, Digitalization, Skills,

2.2. INDIA-MIDDLE EAST- EUROPE ECONOMIC CORRIDOR (IMEC)

- The Memorandum of Understanding (MoU) to establish the 'India-Middle East- Europe Economic Corridor' (IMEC) was signed between **India, US, Saudi Arabia, European Union, UAE, France, Germany, and Italy.**
- The IMEC will consist of **railroad, ship to- rail networks** (road and sea) and **road transport routes** (and networks), extending across two corridors
 - **The east corridor:** Connects India to the Arabian Gulf.
 - **The northern corridor:** Connects the Arabian Gulf to Europe.
- **Aim:** To provide a reliable and cost-effective cross-border ship-to-rail transit network enabling goods and services to transit to, from, and between **India, the UAE, Saudi Arabia, Jordan, Israel, and Europe.**
 - Along the railway route, Participants also intend to enable the laying of cable **for electricity and digital connectivity**, as well as pipe for **clean hydrogen export.**
- The project forms part of **the Partnership for Global Infrastructure and Investment (PGII).**
 - PGII was announced in 2021 **during the G7 summit in the UK** and is seen as a counter to China's Belt and Road Initiative (BRI).
 - **Other projects under PGII:** Trans-African Corridor.



Significance of IMEC

- **Crucial milestone in the shift of global order towards Eurasia:** It signifies the commitment of the US, Europe, and emerging powers such as India, Saudi Arabia, and the UAE to promoting a more balanced and interconnected Eurasian order.
- **Trade facilitation and accessibility:** It would create a consolidated trade route that will **reduce trade costs, promote market access, and encourage investment opportunities** between the participating countries.
- **Enhanced regional connectivity:** Improved transportation infrastructure, cross-border cooperation, energy supply, and logistical efficiencies will enhance regional connectivity.
- **Economic unity:** It is expected to act as an effective medium of economic integration between India, West Asia and Europe.

- **Diplomatic collaboration and geopolitical stability:** Close economic ties resulting from the corridor will incentivize cooperation on security, counterterrorism, and regional stability.
- **Secure regional supply chains:** It will make the global supply chain more resilient.
- **Sustainable development:** IMEC also aims to promote clean energy development and export, expand energy grids and telecommunications, advance clean energy technologies, and improve internet access for all.

Significance of IMEC for India

- Expected to **speed up trade between India and Europe by up to 40%.**
- **Reduce logistics costs** as well as boost trade in goods and services between India and other countries.
- Boost to **Act West policy** of India

IMEC vs China's Belt and Road Initiative (BRI)

- In terms of objectives, both mega transnational projects are similar.
- China's New Silk Route **is larger in terms of scale.**
 - Announced in 2013, China has signed BRI cooperation documents with more than 150 countries and over 30 international organizations and created over 3,000 projects.

Expected benefits of IMEC over BRI		
Parameters	IMEC	BRI
Design	Based on collaborative consultations with all participant	Centrally designed.
Benefits	For the common benefit of all in the region	Primarily serves China's interests
Employment	Focus on generating employment for the local population	Mainly generates employment for Chinese companies.
Debt practices	Proposes to follow the best international debt practices	Criticised for putting unsustainable debt burdens on participating nations

Challenges and considerations

- **Complex geopolitics of the region:** The corridor extends across diverse nations with varying political dynamics, interests, and previous tensions.
 - E.g., uncertainties surrounding Saudi Arabia and Israel relations may hamper cooperation.
- **Existing rivalries:** As a strategic competitor, China may seek to divert trade and investments towards its own corridors, potentially undermining the effectiveness of IMEC.
 - Further, IMEC corridor, being an alternative land route, may pose a potential threat to **Egypt's dominance in the region**, diverting trade away from the Suez Canal.
- **Logistical challenges:** Establishing a multi modal network across multiple countries with diverse geographical terrains, regulatory procedures, transportation protocols, financial mechanisms and infrastructural capabilities will be challenging.
- **Security concerns:** The region is susceptible to various security threats, including terrorism, conflicts, and political instability.

- **Challenge with multi-modal routes:** The IMEC consists of land and sea sections, which may escalate cost in comparison to exclusively land or maritime routes.
- **Financial Commitments:** There is a lack of commitment regarding the financial cost, which is expected to be finalized in the coming months.

Way Forward

- **Establish diplomatic dialogue and a unified vision** among all participating nations to mitigate potential conflicts.
- **Harmonize regulatory frameworks** such as customs procedures and enhance financial connectivity.
- **Strengthen regional cooperation** on defense, security by sharing intelligence, and creating joint initiatives to counter security risks.
- **Create robust financial framework** to attract investments from multiple stakeholders, including governments, international organizations, and private sector entities.

Reasons for India's rising interest in the Middle East

- **Improved security conditions and enhanced political stability:** Diplomatic negotiations within nations and political stability in the region will allow India to maintain robust relations with all three poles of power — Israel, Iran, and Saudi Arabia.
- **Geopolitical Interests:** India has strategic interests in the Middle East due to its proximity to important maritime trade routes and its role in countering terrorism and extremism.
- **Energy Security:** The Middle East is a major source of India's energy imports, particularly oil and natural gas.
- **Diaspora:** There are more than 8 million Indians (or people of Indian origin) working in the larger Middle East region.
- The Indian workforce in the Middle East sends home more than \$50 billion a year in remittances.
- **Defense:** India has strong bilateral agreements in the region, such as the defense agreement with Qatar, and intelligence sharing with the United Arab Emirates, Saudi Arabia, Oman, and Israel.

2.3. AFRICAN UNION: A PERMANENT MEMBER OF THE G20

- African Union became the **second regional organization** to become a permanent member of the G20



African Union



About: It is a continental body consisting of the **55 member states** that make up the countries of the African Continent.



Genesis: Launched in 2002 as a **successor to the Organisation of African Unity (OAU, 1963–1999)**.



Aim: Promoting Africa's growth and **economic development** by championing citizen inclusion and **increased cooperation and integration of African states**.



Other Key Information:

Collectively the group has a GDP of \$3 trillion with some 1.4 billion people.

Significance of inclusion of African Union in the G20

For the G20	For India	For Africa
• Utilize Africa's enormous potential in mitigating climate change: Africa is home to 60% of the world's renewable energy assets and more than 30% of the minerals important to renewable and low-carbon technologies. • Boost credibility of its policies and decisions: AU's inclusion enhances G20's capacity to devise inclusive and equitable solutions that are truly beneficial to the global community. • Reinvent its image: It makes G20 more representative, repurposing the G20 to be the vehicle for building a fairer, more prosperous, and sustainable.	• Championing the cause of global south: India's successful endorsement for inclusion of AU in the G20 solidifies its image as the Voice of the Global South. • Align with India's aspirations: The step aligns with India's own global aspirations to foster a multipolar world and a more equitable and representative international order. • Permanent seat in UNSC: India is keen to garner support from AU for Permanent Membership of the UNSC. • Resource diversification: Africa is a resource-rich continent dominated by commodities like crude oil, gas, pulses and lentils, leather, gold, and other metals.	• Inclusivity: It gives more leadership and voice to African countries on issues like global tax reforms, debt relief, climate change discussions, etc. • Correcting imbalance: Africa has remained a passive receiver rather than an active contributor to discussions shaping its economic destiny. • Signal toward Growth of Africa: It signals the rise of a continent- otherwise framed as a victim of war, extremism, hunger, and disaster.

India's efforts in promoting integration with the African continent

- **The Pan African E network Project (PANEP):** it is an information and communications technology (ICT) project that seeks to connect the member states of the Union through a satellite and fiber-optic network to India and to each other.
- **India Africa Forum summit:** It aims for greater cooperation between India and Africa.
- **The Indian Technical and Economic Cooperation Programme:** It is the leading capacity-building platform of the Ministry of External Affairs active in the African Union.
- **Asia-Africa Growth Corridor:** It seeks to develop infrastructure and digital connectivity in Africa through Indo-Japan collaboration.

2.4 GLOBAL BIOFUEL ALLIANCE

- It was launched by India along with the leaders of **Singapore, Bangladesh, Italy, USA, Brazil, Argentina, Mauritius and UAE**.
- The alliance will also act as a **central repository of knowledge** and an expert hub.

- **Aim:** To serve as a catalytic platform, fostering global collaboration for the advancement and widespread adoption of biofuels.
- **Present GBA Members include:**
 - **7 G20 countries:** Argentina, Brazil, Canada, India Italy, South Africa, USA
 - **4 G20 invitee countries:** Bangladesh, Singapore, Mauritius, UAE.
 - **8 non-G20 countries:** Iceland, Kenya, Guyana, Paraguay, Seychelles, Sri Lanka, Uganda, and Finland.
 - **12 International organizations** including World Bank, Asian Development Bank, World Economic Forum, International Energy Agency, etc.



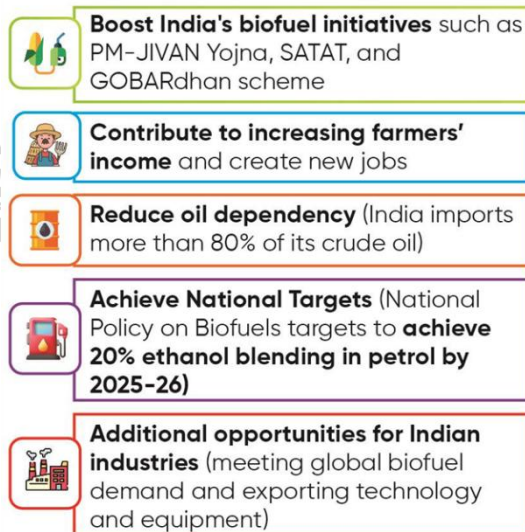
Data Bank

➤ **Over 80% of global sustainable biofuel production** is concentrated in just four markets: the **United States, Brazil, Europe and Indonesia**. (Biofuel Policy in Brazil, India and the United States, IEA)

Significance of GBA

- **Develop a market for biofuels:** GBA will ensure a stable supply of eco-fuels and create a virtual marketplace connecting industries, countries, and tech providers, enhancing demand-supply mapping.
- **Robust standards:** It will facilitate the development, adoption, and implementation of internationally recognized standards, and regulations to incentivize biofuels adoption and trade.

Benefits of GBA for India



- **Contribute to climate efforts:** International Energy Agency (IEA) estimates that global sustainable biofuel production would need to **triple by 2030** to put the world's energy system on track towards net zero emissions by 2050.
- **Decarbonize transport sector:** The transport sector is responsible for approximately one-quarter of greenhouse gas emissions.
- **Awareness:** It will help raise awareness about biofuels' role in reducing greenhouse gas emissions.

Challenges for GBA

- **Lack of clear definition:** There is a lack of consensus on what sustainable fuels are and countries don't think biofuels are sustainable.
- **Technology transfer:** Developing countries may encounter resistance from developed nations due to concerns about technological secrecy.
- **Geopolitical contestation:** Oil-producing nations might not favor the alliance.
- **Slow growth:** The deployment of biofuels is not accelerating fast enough, especially compared to other renewable resources like solar and wind.
- **Production-related challenges:** Limited availability of quality feedstock, effect on food production and prices, changes in cropping pattern, lack of cost-effective technologies, etc. may hamper sustainable production of biofuels.

Conclusion

The alliance will have to develop sustainable long-term plans, make sufficient investments, foster innovation, resolve supply chain issues, quickly resolve any disputes, and encourage collaboration.

3. 9 DASHED LINE

- Several Southeast Asian countries, including the Philippines, Malaysia, Vietnam, and Taiwan, have joined India in rejecting **China's new national map and 9 Dashed Line in the South China Sea**.
- India specifically protested **China's claims over Arunachal Pradesh and Aksai China**

What is a Nine-dash line?

- The nine-dash line is a **historical demarcation line on a map used by China** to assert territorial claims in the **South China Sea**.
- China asserts a claim to **90% of the South China Sea**, primarily based on the **historical U-shaped nine-dash line drawn on a map** in the 1940s and encompassing several islands, notably the **Paracels and Spratlys**.
- However, the Permanent Court of Arbitration under UNCLOS (United Nations Convention on the Law of the Sea) has determined that **China's claim in this region lacks a legal foundation**



4. INDIA-ASEAN

Context:

Recently, the Prime Minister of India attended the 20th ASEAN-India Summit and the 18th East Asia Summit (EAS) in Jakarta, Indonesia.

Association of Southeast Asian Nations (ASEAN)

 About	ASEAN was established in 1967 with signing of ASEAN Declaration (Bangkok Declaration) by Indonesia, Malaysia, Philippines, Singapore and Thailand.
 Member states	 Brunei Darussalam  Cambodia  Indonesia  Myanmar  Lao PDR  Malaysia  Philippines  Singapore  Thailand  Vietnam
 Purpose of ASEAN	- Accelerate economic growth, social progress and cultural development - Promote regional peace and stability. - Promote active collaboration and mutual assistance on matters of common interest. - Provide assistance to each other in form of training and research facilities.
 Institutional Mechanism	ASEAN Chairmanship: Rotates annually based on alphabetical order of the English names of Member States. ASEAN Summit: Highest policy-making body in ASEAN comprising the Heads of State or Government of ASEAN Member States. ASEAN Summit Meetings held twice annually. ASEAN Secretariat: Indonesia, Jakarta.
 Regional Cooperation Mechanism	ASEAN Plus Three Cooperation: ASEAN member states, China, Japan and Republic of Korea. East Asia Summit: ASEAN Member States, Australia, China, India, Japan, New Zealand, Republic of Korea, Russian Federation, and USA

Key highlights of ASEAN-India summit

- India presented a **12-point proposal** for strengthening India-ASEAN cooperation. Some of them are
 - Establishing multi-modal connectivity and economic corridor **linking South-East Asia-India-West Asia-Europe**.
 - Sharing **India's Digital Public Infrastructure Stack** with ASEAN Partners.
 - ASEAN-India Fund for Digital Future** focuses on cooperation in digital transformation and financial connectivity.
 - Invitation to ASEAN countries to join the **Global Centre for Traditional Medicine** and **Coalition for Disaster Resilient Infrastructure**.
 - AITIGA:** India emphasized the need to complete the **review of the ASEAN- India Trade in Goods Agreement (AITIGA)** in a time-bound manner.
 - ✓ AITIGA review is expected to make AITIGA more **user-friendly, simple, and trade facilitative for businesses as well as support for sustainable and inclusive growth**.

Key highlight of EAS POA (2024-2028)

- Mainstreaming and implementation of the **ASEAN Outlook on the Indo-Pacific (AOIP)**.
- Reinforces the **centrality of ASEAN and ASEAN-led mechanisms** as the driving force within the EAS.
- Emphasis on strengthening partnerships, through **cross-sectoral collaborations** that includes efforts in furthering **the implementation of the 2030 Agenda for Sustainable Development**.

About ASEAN- India Trade in Goods Agreement (AITIGA)

- **AITIGA was signed in 2009 and entered into force in 2010.**
- It is sometimes referred to as **ASEAN-India Free Trade Agreement**.
- Under the Agreement, India and ASEAN decided to open their markets by **progressively reducing and eliminating duties on more than 76% goods and committed to liberalize tariffs on over 90 percent of goods.**

Key highlights of the East Asia Summit

- Reviewed the implementation of the EAS Plan of Action (POA) 2018-2022 and welcomed the **adoption of the new EAS POA (2024-2028).**
- India reaffirmed ASEAN centrality in the Indo-Pacific and called for ensuring a free, open and rules-based Indo-Pacific.

Significance of India- ASEAN relations

- **Geopolitical:** ASEAN is **central to India's Act East Policy and Indo-Pacific Vision** and contributes to the Security and Growth for All in the Region (SAGAR) initiative.
- **Regional Integration and Multilateral Cooperation:** India's engagement with ASEAN is part of its broader commitment to regional integration and multilateralism. ASEAN serves as a platform for dialogue and cooperation on various regional and global issues.
- **Economic Cooperation:** India and ASEAN registered a bilateral trade of USD 131.5 billion in 2022-23. The trade with ASEAN **accounted for 11.3% of India's global trade in 2022-23.**
- **Development of Northeast:** Connectivity through the **India-Myanmar-Thailand Trilateral Highway (IMT) and the Kaladan Multimodal Project etc.,** have led to greater connectivity with the Northeast **and ensured progress and development in the region.**
- **Security:** Partnership between ASEAN and India helps in **countering Terrorism, Violent Extremism and Transnational Crimes** through the implementation of the **ASEAN Plan of Action in Combating Transnational Crime (2016-2025)**
- **China Factor:** Countering China has been a major driving factor behind India's interactions with Southeast Asian countries.
 - China releasing a new map and falsely claiming territories (land and maritime) of India and Southeast Asian countries would further add to the shared concerns between India and ASEAN.
- **Soft Power:** For India to become a civilisational superpower, apart from economic and military might, **South-East Asia is a natural destination to practice soft power.**
 - South-East Asia shares cultural commonalities with India, including temples, yoga, epics like the Ramayana and Mahabharata, and the practice of Ayurveda.

Concerns associated with India- ASEAN relations

- **Great power competition:** Southeast Asia is increasingly becoming a theatre of great power competition between the United States (US) and China because of its location in the broader Indo-Pacific region
- **Widening trade deficit:** There is a **disproportionate trade balance favouring ASEAN** due to non-tariff barriers, import regulations etc.

- The trade deficit has widened to USD 43.57 billion in 2022-23 from USD 25.76 billion in 2021-22. It was just USD 5 billion in 2010-11.
- **Competing regional agreements:** The engagement of ASEAN countries with other regional agreements like the RCEP and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) diverts attention and resources away from the ASEAN-India relationship.
- **Lack of market access and connectivity:** Physical and digital connectivity between India and ASEAN countries remains limited, affecting trade, investment, Business-to-business and people-to-people ties.
- **Delayed projects:** Since the conception of project IMT trilateral highway in 2002, it has faced various delays and challenges, including political instability in Myanmar and financial issues. Now, it is expected to be completed by 2027.
- **China Factor:** India's primary strategic focus in Southeast Asia is countering China's influence. However, India has yet to offer a compelling alternative, allowing China to maintain its dominance in both the economic and strategic realms within Southeast Asia.

Way forward

- **Comprehensive Strategic Partnership:** strengthening comprehensive strategic partnership could ensure greater coordination between India's Indo-Pacific Oceans Initiative (IPOI) and ASEAN's ASEAN Outlook on Indo-Pacific (AOIP).
- **Maritime cooperation:** Greater maritime cooperation with ASEAN would complement ASEAN-centrism which is a core principle of India's as well as the Quad's policy towards the Indo-Pacific Region.
- **Value chain integration:** Enhance focus on a range of policy measures including trade facilitation, liberalisation of goods, services and capital, competition policy, and infrastructure quality, that promote value chain integration.
- **Enhanced Connectivity:** Expediting the IMT trilateral highway project, building an economic corridor along it and extending it to Cambodia, Lao PDR, and Vietnam can boost connectivity vis-à-vis trade with ASEAN.
- **Cultural and Educational Exchanges:** Promote cultural understanding and people-to-people ties through cultural events, tourism, and educational exchanges.

5. INDIA-SAUDI ARABIA RELATIONS

Context:

- Recently, the Indian prime minister and Saudi crown prince cochaired the first summit-level meeting of the India-Saudi Arabia Strategic Partnership Council (SPC).

Key highlights of the meeting

- Decision to expedite the implementation of the \$50-billion West Coast refinery project,
 - It will involve the construction of a 60 million-ton refinerycum-petrochemical complex on the Maharashtra coast.
 - It will be a collaborative effort between India, Saudi Arabia, and Abu Dhabi.
- Discussions regarding possible cooperation in various infrastructure sectors, including the power grid, gas grid, optical grids, and fiber networks.

- MoUs signed in the fields of **New and Renewable Energy, Digitization and Electronic manufacturing, enhancing bilateral investment, seawater desalination, etc.**

The India-Saudi Arabia Strategic Partnership Council

- It was **set up in 2019**.
- **India is the fourth country** with which Riyadh formed such a partnership, after the UK, France, and China.
- **Aim:** To establish a high-level council to steer the Indo-Saudi relationship.
- **Two main pillars:** The Committee on Political, Security, Social and Cultural Cooperation; and the Committee on Economy and Investments.



Significance Saudi Arabia for India

- **Economic partnership:** Trade with Saudi Arabia accounted for 4.53% of India's total trade in FY23.
- **Energy security:** Saudi Arabia is a key partner for ensuring India's energy security and was the third-largest crude and petroleum products source for FY23.
- **Geostrategic:** Saudi Arabia's strategic location in West Asia makes it crucial to India's foreign policy priorities in the region including advancing India's '**Look West**' policy and cooperation on the proposed **India-Middle East-Europe Economic Corridor**.
- **Defense and Security:** Security cooperation between both countries is significant in combating terrorism and its financing as well as in the areas of cyber security, maritime security, combating transnational crime, narcotics, and drug trafficking.
- **Shared interest in multilateral forums and organizations:** Saudi Arabia supports India's call for comprehensive reforms of the United Nations Security Council

Overview of India- Saudi Arabia relations

- **Diplomatic relations:** Began in 1947 and the bilateral relationship elevated to a 'Strategic Partnership' in 2010.
- **Bilateral Trade:** India is Saudi Arabia's 2nd largest trade partner and Saudi Arabia is India's 4th largest trade partner.
- **Bilateral exercise:** Al Mohed Al Hindi.

- **Trade agreement:** Saudi Arabia can play a key role in expediting the stalled **India-Gulf Cooperation Council (GCC)**

- **Free Trade Agreement (FTA)** negotiations.
- **Indian Diaspora:** There are more than 2.4 million Indian expatriates gainfully employed in Saudi Arabia.
- **Cultural linkage:** Saudi is home to the holy cities of Mecca and Medina known for the annual Haj and Umrah pilgrimage.

Challenges for the relations

- **Regional conflicts in the Middle East:** The complex and multidimensional politics of the Middle East region pose a challenge.
- **Diaspora issues:** Issues like exploitation of Indian workers, Saudi's policy to provide more jobs to its citizens, and more tax on migrants hamper bilateral relations in the fields of labour and human resources.
- **Influence of Pakistan:** Saudi Arabia's historically close ties with Pakistan, can be an issue.
- **Energy dependency:** India is highly dependent on Saudi Arabia for crude oil and natural gas imports.
 - OPEC countries charge Asian premiums (extra charges) from Asian countries while selling oil in comparison to Western countries.
- **Trade deficit:** India's trade deficit with Saudi reached an all-time high in the fiscal year 2022-23.

Way forward

- **Balanced approach:** India and Saudi Arabia will both have to strike a balance in dealing with each other's adversaries.
- **Bilateral engagements beyond trade and commerce:** Both countries would need to improve political and cultural exchanges to realize the vision of a 'strategic partnership'.
- **Labor Welfare:** Ensuring the welfare and protection of the large Indian expatriate community in Saudi Arabia is a key priority.
- **Counterterrorism:** Strengthen cooperation in counterterrorism efforts and intelligence sharing to combat extremism and ensure stability in the region

6. GLOBAL NORTH/SOUTH DIVIDE (BRANDT LINE)

- **The Brandt Line (an imaginary line)** is a concept that categorizes the world into richer countries mainly in the Northern Hemisphere and poorer countries mostly in the Southern Hemisphere, highlighting global economic disparities.
- **“Global North” (wealthier communities) and a “Global South”** (poorer communities) exist both within and among nations.
- The line is based on the **“North-South: A Programme for Survival”**, a report addressing the problems of international inequality



7. ABRAHAM ACCORDS

Context:

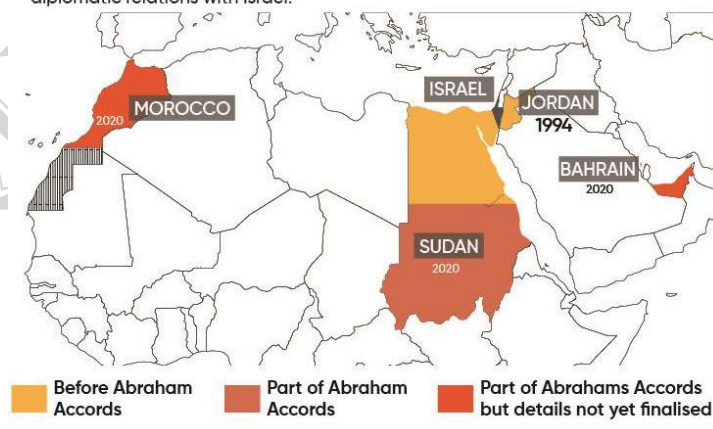
Three years have been completed since the signing of the Abraham Accords.

About Abraham Accords

- Abraham Accords refers to the **collective agreement between the United States (US), the United Arab Emirates (UAE) and Israel** that was signed in September 2020.
 - These Accords were later extended to the countries of **Sudan, Bahrain and Morocco**.
- The agreement marks the **first normalisation of ties between Israel and an Arab country** since Jordan in 1994.
 - Egypt was the first Arab State to sign a peace deal with Israel in 1979. Jordan signed a peace pact in 1994.
- As per the agreement, the UAE and Bahrain will **establish embassies, exchange ambassadors, cooperate and work together with Israel** across a range of sectors, including tourism, trade, healthcare and security.

Arab countries with diplomatic ties to Israel

Only five Arab states - Egypt, Jordan, UAE, Bahrain and Morocco - have diplomatic relations with Israel.



- The Accords were called **‘the Abraham Accords’** as the three major monotheistic religions of the world, Islam, Christianity and Judaism, all find their roots in Prophet Abraham.

Significance of Abraham Accords

- Stability in the region:** Many experts opine that the Abraham Accords are designed to create a collective security framework for enhancing stability and preventing conflict in the Persian Gulf.

- **Solution to Israel-Palestine issue:** The Abraham Accords can advance the two-state solution by **opening channels of communication between the Arab states of the Gulf and Israel.**
 - Amid the recent Israel-Palestine conflict, **Bahrain and the United Arab Emirates (UAE)**, both signatories of the Abraham Accords, are **calling for de-escalation among all involved parties** to safeguard the well-being and lives of the people involved.
- **Economic significance:** The trade between Israel and other West Asian countries increased by 74% between 2021 and 2022.
- **Religious significance:** The Abraham Accords also opened the door for communities to visit the historic religious sites in Israel such as the **Al-Aqsa Mosque in Jerusalem.**
- **Cooperation in technology:** For instance, the Prosperity Green & Blue agreement between Israel, the UAE, and Jordan determined that a solar field to supply electricity to Israel would be established in Jordan, while in return, a desalination plant in Israel would deliver water to Jordan.
- **Education:** A number of Emirati students have enrolled in Israeli universities. Bahrain has also embraced the prospects for shared educational activities and signed a number of agreements with Israel to advance student and professor exchanges.

Emerging Challenges for Abraham Accords

- **Changing Geopolitical Alliances in West Asia:** The region of West Asia attracts the world because of the existence of the main source of energy.
 - Britain and France ruled over Arab countries from the beginning of the twentieth century till decades.
 - After the Second World War, the US started to grab West Asia in its command.
 - The growing involvement of Russia and China has introduced new complexities to the region's political landscape.
- **Palestinian Issue:** The Abraham Accords were criticized for not effectively addressing the fundamental causes of the Palestinian conflict.
- Recently, Gaza-based group Hamas mounted a mass-scale attack against Israel.
- **Antipathy towards Iran:** The Abraham Accords were perceived to be motivated by shared concerns over Iran's nuclear program and regional influence.
- **China's Saudi-Iran diplomacy:** The China-backed Saudi-Iranian deal is seen as a setback to efforts to build a regional anti-Iran coalition, a main driver of the Abraham Accords. It could delay Israel's attempt to normalise ties with Saudi Arabia.
 - Russia views China's growing diplomatic assertiveness in the Middle East, which was evidenced by its brokering of the Saudi Arabia-Iran normalization deal, as a positive step toward a multipolar regional order.
- **Internal Opposition:** In the countries that signed the accords, there were segments of the population that opposed normalization with Israel.
 - Decades of mistrust and past conflicts mean that while government-to-government relations might improve, people-to-people ties would take longer to develop.

Significance for India

- **Regional cooperation:** Accords have laid the foundation for **expanded regional and multinational cooperation**. A concrete illustration of this is the establishment of the I2U2 Group, formed by **Israel, India, the UAE, and the U.S.**
 - The focus of I2U2 will be on areas such as water, energy, transportation, space, health, and food security.
- **Economic Opportunities:** The normalization of relations between Israel and Arab countries could potentially open up new economic opportunities for India.
 - The vibrant Indian diaspora in the Gulf now has the convenience of direct flights between the UAE/ Bahrain and Israel.

Conclusion

- The Abraham Accords represent a significant step towards fostering peace and stability in West Asia. By establishing diplomatic relations and economic cooperation between Israel and several Arab nations, it has opened doors for increased regional cooperation. However, in the context of the recent Israel-Palestine conflict, it is difficult to envision how the Abraham Accords and their expansion can achieve peace or stability, even in the short term. Sustainable peace requires addressing the root causes of conflict which is the Israel and Palestine issue.

8. AZERBAIJAN (NAGORNO-KARABAKH)

- Azerbaijan launched a **military operation in the disputed Nagorno-Karabakh region**, resulting in casualties and significant tensions. The region, recognized as part of Azerbaijan but **controlled by ethnic Armenians**, has been a source of conflict for decades, with recent escalations in 2020 and 2023.
- The Nagorno-Karabakh **conflict is an ethnic and territorial dispute between Armenia and Azerbaijan**. It centres on the **Nagorno-Karabakh region**, predominantly Armenian-populated but within **Azerbaijan's borders**. A ceasefire mediated by **Russia in 1994** left the region under **Armenian control**, though it's still recognized as part of Azerbaijan. The area is now governed by separatist Armenians and called the “**Nagorno-Karabakh Autonomous Oblast**.”

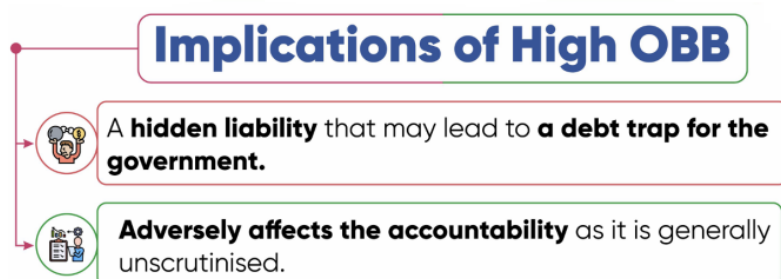
9. L.69 GROUPING

- L.69 grouping, in a meeting hosted by India, **called for reform of UN Security Council (UNSC)**.
- L.69 is a pro-reform grouping that **includes developing countries from Africa, Latin America and the Caribbean, Asia and the Pacific**.
- The countries were **united by a common desire to achieve comprehensive reform of UNSC** and strengthen **multilateralism**.
- **India is a leading country in L.69.**

ECONOMY

1. OFF-BUDGET BORROWINGS (OBBS)

- Centre for Social and Economic Progress (CSEP) recently released a report on ‘**Off-Budget Borrowings (OBB)**’ by Indian Governments.
- OBBs refer to **borrowings that are not reflected in the budget**, even though **budgetary resources** will have to be **used for their repayment**.
- Thus, OBB is **not part of the calculation of the fiscal indicators** despite fiscal implications
- **OBBs are taken** not by government directly but **by another public institution** on its direction.
 - For example, **loan by FCI for paying food subsidy bill** (this practice is discontinued from FY 2020-21).
- **Reasons for resorting to OBB**
 - **Bypass Fiscal Deficit targets** under the FRBM Act, 2003,
 - **Avoid borrowing limits** under **Article 293 (3)** of the Constitution.
 - ✓ Article mandates **States to take consent of the Centre before raising any loan if they have any outstanding loan to the Centre or loans where the Centre is the guarantor.**
 - **Avoid delay in central grants**, or reduction in other sources of revenue.
- **Ways of OBB:** National Savings Schemes Government Fully Serviced Bond, Domestic /Foreign Market borrowings, etc.



2. GLOBAL INNOVATION INDEX 2023

Context:

- India has **retained its 40th position in the Global Innovation Index (GII) 2023.**
- This ranking is attributed to **India’s vibrant start-up ecosystem, knowledge capital, and contributions from public and private research organizations.**
- India also maintained its **top position in the lower-middle-income group and the Central and South Asian region.**

About Global Innovation Index:

- **The GI, published by the World Intellectual Property Organisation (WIPO), evaluates 132 economies on their innovation capabilities.**
- **Switzerland secured the top position in the index**, followed by Sweden, the United States, the United Kingdom, and Singapore.

- **China ranked 12th among middle and lower-middle-income** economies, with no others in the top 30.

3. WORLD FOOD PRICE INDEX

Context:

- The **United Nations Food and Agriculture Organization (FAO)** reported that the **world food price index fell to a new two-year low recently**.
- This decline reversed a **previous month's rebound**, with **most food commodities experiencing decreases**, although **rice and sugar prices increased**.

- **FPI**, released by the **Food and Agriculture Organization (FAO)** is a **measure of the monthly change in international prices of a basket of food commodities**.
- It consists of the average of **five commodity group price indices - cereals, oilseeds, dairy products, meat and sugar**, weighted with the average export shares of each of the groups.

4. CROSS BORDER PAYMENTS

Context:

- **G20 TechSprint 2023** was organised to promote innovative solutions aimed at improving cross-border payments.

More about the news

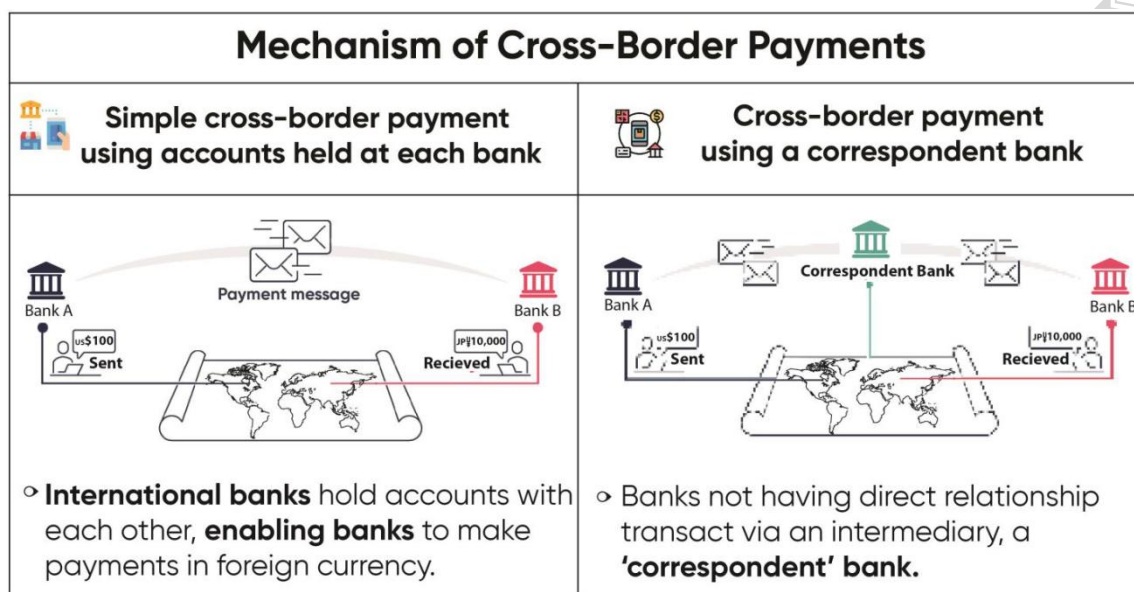
- **G20 TechSprint 2023** is a joint initiative of the Reserve Bank of India (RBI) and the Bank for International Settlements (BIS) Innovation Hub.
- The G20 nations have agreed to promote cross-border payments, as outlined in the G20 Roadmap for Enhancing Cross-border Payments.
- Further, on the sidelines of the G20 summit, India has proposed to expand its presence for **cross-border bill payments in the UK** through the Bharat Bill Payment System (BBPS).

About Cross border payments

- It is a type of transaction that takes place between financial institutions, businesses, and individuals, where the **sender and recipient are based in separate countries**.
- The cross-border payments market value is estimated to be **\$190 trillion in 2023** and expected to reach \$290 trillion by 2030.

Common types of cross-border payment	
Type	Working
International Wire Transfers	• Involves the sender providing their bank with instructions to send money to a recipient in another country. • E.g., using SWIFT codes to transfer from one bank to another bank in a different country.
Digital Wallets	• Using products such as PayPal, Google Pay, or Apple Pay. • Suitable for small transaction.

International money orders	Paper-based payment method that can be sent through the mail or transmitted electronically using a third-party provider.
Credit card transactions	Businesses can accept payments from customers in different currencies through accepted Credit cards.
Cryptocurrencies	Cryptocurrencies such as Bitcoin and Ethereum are decentralized digital currencies that can be used to make cross-border payments.

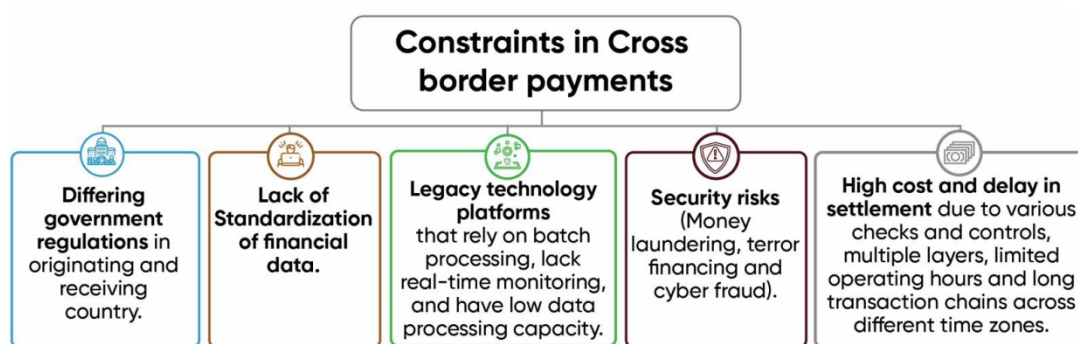


Significance of cross-border payments

- Financial inclusion:** It can play a pivotal role in bridging the gap and enabling underserved communities to participate in the global economy.
- Access to global markets:** It allows businesses to expand into international markets and reach new customers, suppliers, and partners.
- Diversification:** It enables businesses to diversify their customer base, supplier base, and investment portfolio.
- Globalization:** Cross-border payments are a fundamental element of the globalization process

Additional significance of cross-border payments for Indian economy

- Ease Remittances:** Since 2016, India's crossborder remittances have been growing at a CAGR of 8%.
- Facilitating Travel and tourism:** In 2021, the travel and tourism industry in India contributed around 178 billion U.S. dollars to the country's GDP.
- Accelerating foreign investment:** India received a total FDI inflow of US\$70.97 billion in FY 2023.



Steps taken in India for strengthening cross-border payments

- **RBI Payments Vision 2025:** One of its focus areas is to bring ease in cross border payment by using bilateral and multilateral arrangements.
- **NIPL (NPCI International Payments Limited),** has undertaken various initiatives across nations to enable cross-border acceptance of BHIM UPI QR at merchant establishments.
- Currently, BHIM UPI QR has gained acceptance in **Singapore, UAE, Mauritius, Nepal and Bhutan.**
- **RBI has allowed access to Unified Payments Interface (UPI) to foreign nationals and NRIs** visiting India by enabling them to make payments using UPI while they are in India.
- **India-UAE MoU on use of CBDC for Cross-border payments:** RBI and the Central Bank of United Arab Emirates have signed an MoU to conduct pilots to test central bank digital currency (CBDC) transactions for cross-border payments

Way forward

- **Improve existing payment infrastructures and arrangements** through measures like aligning processes and operating hours across systems, interlinking existing payment systems etc.
- **Adopt a harmonized ISO 20022 version** (an open global standard for financial information) for message format.
- **Collaborate with fintech companies** specializing in cross-border payments to leverage their expertise and innovative solutions.
- **Explore the potential role of new payment infrastructures and arrangements** like central bank digital currencies (CBDCs).
- **Ensure compliance with international and local regulations,** including anti-money laundering (AML) and know-yourcustomer (KYC) requirements.
- **Rigorous and effective risk assessments** to reduce the burden associated with compliance checks and facilitate market entry.

5. AGRICULTURAL CESS

Context:

- The government has **removed the 15 per cent agriculture cess** (also called Agriculture infrastructure and development cess (AIDC)) on imports of LPG, liquified propane, and **liquified butane starting from September**
- This exemption reverses the previous imposition of the **agriculture cess on these goods in July**

- It is also imposed on **Crude Palm Oil**

What is Cess?

- Cess is a kind of **special-purpose tax** which is levied over and above basic tax rates.

What is AIDC?

- The AIDC was introduced in the **Budget 2021**. The purpose of the AIDC is to raise funds to **finance spending on developing agriculture infrastructure**.

6. DIGITAL INCLUSION IN EMERGING TECHNOLOGIES

Context:

- Recently, the Telecom Regulatory Authority of India (TRAI) has released a Consultation Paper on “**Digital Inclusion in the Era of Emerging Technologies**”.

More on news

- It aims to explore and address the challenges and opportunities presented by the rapid advancement of emerging technologies, with a **focus on ensuring inclusivity for all segments of society and industries** particularly Micro Small and Medium Enterprises (MSMEs).

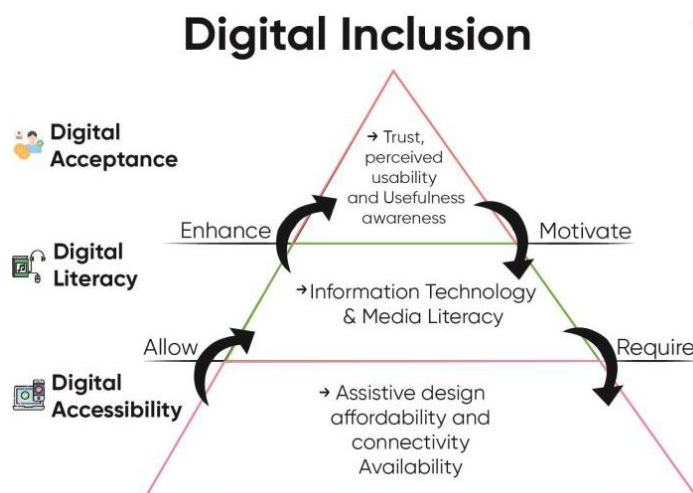
Know the term

Emerging technology is a term generally used to describe new, advanced and futuristic technology at a given point in time and may also refer to the continuing development of an existing technology. They include 6G, Artificial Intelligence, Distributed Ledger Technology, Internet of Things, etc.

Importance of Digital Inclusion in Emerging Technology

- **Extent Job Market:** Digital technologies **provide job opportunities for individuals**, especially in fields like data science, data engineering etc.
 - As per the Future of Jobs Report 2023 by the World Economic Forum, Data analysts and scientists are expected a 30-35% increase in demand.
- **Enhanced learning:** Digital Inclusion and online learning can **bring down the cost of education**, reduce the digital divide etc.
 - Technologies like Augmented reality (AR) /Virtual Reality (VR) have enabled students to visualize events and experiments, thus making the **learning process more active, effective, and meaningful**.
- **Inclusive workspace:** Digital Inclusion improves workplace participation and **bridges the gap between employment opportunities for men, women, and disabled employees**.
 - This empowers disabled and female workers to transcend limitations tied to **part-time or lowskilled positions**.
- **Better pay/wages:** Enhanced IT skills and digital inclusion **boost individual earning potential** in the workforce and significantly **contribute to business innovation and overall workplace productivity** in tech-savvy professions.

- **Healthcare:** Digital Inclusion can **improve the accessibility, affordability and quality** of healthcare. It can facilitate clinical support, map and monitor the spread of infectious diseases, as well as track supplies of drugs and vaccines.
 - For example, **tele-consultations through the e-Sanjeevani platform** touched one million during the pandemic highlighting the importance of Digital Inclusion in medicine.
- **MSMEs:** Emerging technologies that could be useful through the development of use cases for MSMEs include Ecommerce; the Internet of Things; Process automation etc.



Digital Inclusion for Micro, Small and Medium Enterprises (MSMEs)

- **Benefits of Digitalisation for MSMEs**
 - **Reduce manual effort, errors, and improve overall efficiency** of MSMEs operations.
 - **Increased reach of MSMEs** through online platforms like ecommerce websites etc. **to expand their customer base and increase sales.**
 - **Easy access to finance** through digital lending platforms like online marketplaces and peer-to-peer lending platforms.
 - **Efficient storing and managing data** on customer.
- **Challenges faced by MSMEs:** Poor affordability of internet; **building trust with online consumers** and managing logistics; lack of **knowledge and expertise to leverage digital technologies** etc.
- **Initiatives undertaken in India for MSMEs**
 - **Udyam Registration Portal:** To register MSMEs businesses and access various government schemes, financial support, and resources.
 - **MSME Sampark:** Digital platform **connecting job seekers with recruiters in the MSME sector.**
 - **CHAMPIONS (Creation and Harmonious Application of Modern Processes for Increasing Output and National Strength) scheme:** To promote use of modern technologies in MSMEs and provide them with necessary support to enhance their productivity and competitiveness.
 - **MSME Global Mart platform: Business-to-Business (B2B) web portal,** which helps MSMEs in Market access through online presence by showcasing their products and services.
 - **Open Network for Digital Commerce (ONDC):** ONDC aims to create new opportunities to curb digital monopolies and support MSMEs in their digitalisation by enabling them to use digital commerce

for their business operations.

Challenges of Digital Inclusion in Emerging Technology

- **Access:** The rapid pace of **technological advancements** and the **high costs of adopting** and utilizing emerging technologies can **widen the digital divide**, particularly for marginalized communities and underserved regions.
 - In 2021, 49% of Indian adult men-owned smartphones, while only 26% of women did, revealing a gender disparity in ownership.
- **Infrastructure:** Lack of access and investment to 5G network, and AI technologies could **hinder the equitable deployment of emerging technologies**, thus worsening the existing disparities in digital inclusion.
 - Lack of **fiberization** (the process of connecting radio towers with each other via optical fibre cables) of mobile towers hampers the quality of internet access.
- **Affordability:** In India in 2022, **the cost of the cheapest internet-enabled smartphone was 35.91%** of the average monthly income.
- **Limited Digital literacy** is a key barrier to Digital Inclusion in both developed and developing markets.
- **Cyber-attacks:** Digital spaces can be misused and can **act as a tool for online gender-based violence, stalking and bullying**, spread of misinformation, phishing and hate speech.
 - This creates **barriers to connecting, engaging, and adopting** emerging technologies.

Initiatives taken wrt Digital Inclusion in Emerging Technologies

- **For Digital Connectivity**
 - **Universal Service Obligation Fund (USOF):** Established under Indian Telegraph Act 1885 to provide support for **affordable access to a reliable and ubiquitous telecom network** to remote and rural areas.
 - **BharatNet project:** Formerly known as National Optical Fibre Network, aimed to **connect all Gram Panchayats and Villages in country by high-speed broadband connectivity** using Optical Fibre Cable.
 - **National Broadband Mission 2019:** It aims to achieve **availability of broadband connections and create digital fibre map of Digital Communications network and infrastructure**, including Optical Fiber Cables and Towers throughout the country.
 - **Digital India Programme:** Its vision is centred around three key vision areas i.e.
 - ✓ Digital Infrastructure (e.g. High speed internet, secure Cyber-space) as a core utility to Every Citizen.
 - ✓ Governance & Services on Demand.
 - ✓ Digital Empowerment of Citizens (Digital Literacy).
- **For Digital Affordability**
 - **National Policy on Electronics 2019:** It promotes **domestic manufacturing and export** of electronic devices including smartphones, laptops, and tablets; and **producing 1 billion mobile handsets by 2025**.
 - **Design Linked Incentive Scheme:** It offers **financial incentives as well as design infrastructure**

support across various stages of development and deployment of semiconductor design(s) for Integrated Circuits (ICs), Chipsets, etc. over a period of five years.

- **For Digital Literacy**
 - **Pradhan Mantri Gramin Digital Saksharta Abhiyan:** It aims to **digitally literate 60 million people** (14-60 years age) from rural areas by **training them to operate computer or digital access devices** (tablets, smartphones, etc.), send and receive e-mails, etc.
 - **Digital Skilling Programme:** It focuses on skilling, reskilling and upskilling students via internships, apprenticeships, and **employment to 1 crore students in emerging technologies**

Way forward

- **Policy intervention:** To ensure comprehensive Digital Inclusion, it is imperative to **implement targeted policies to address gaps** arising due to emerging technologies **focusing on digital literacy programs and affordable access** to all sections of society.
- **Investment:** Public and private **funding for high-speed internet infrastructure development** is crucial for ensuring digital inclusion in un-served and underserved.
- World Bank has estimated that a 10% increase in fixed broadband penetration would increase GDP growth by 1.21% and 1.38% in developed and developing economies respectively.
- **Tax rebates:** It is essential to reduce mobile sector-specific taxes (like import duties) and fees discouraging internet usage and adoption of mobile devices (import duties).
- **Stakeholders Collaboration:** Government, telecom industry, multinational corporations, and non-governmental organizations must collaborate to **address bureaucratic hurdles, and develop strategies to facilitate Digital Inclusion** and adoption of digital technologies by businesses.

International Practices for Digital Inclusion

- **Smart Nation Singapore programme:** Vision is **digital-first Singapore** where, **Digital Government, Digital Economy and Digital**
- **Society will act as three pillars of a smart Singapore** and harness technology to effect transformation in health, transport, urban living, government services and businesses.
- **Affordable Connectivity Program, USA:** It ensures that households can afford the broadband they need for work, school, healthcare and more.

Related News: Generative AI (GAI) and Jobs

- The **International Labour Organization (ILO)** released a paper titled ‘Generative AI (GAI) and Jobs: Global analysis of potential effects on job quality and quantity.
- **GAI** is a branch of artificial intelligence that uses **deep-learning models** like OpenAI’s **ChatGPT** and Google’s Bard to create high-quality content like text, speech, etc.
 - It leverages advanced **Natural Language Processing** to understand complex language structures.
- **Key observations**

- **GAI is more likely to augment jobs** as opposed to **fully automating occupations**.
- Share of jobs potentially exposed to automation with GAI grows with the income of the country.
- **Poorly managed tech transition** has gendered effects **and can disproportionately harm women**.
- **Recommendations**
 - **Negotiation between employers and workers** to encourage redeployment/training over job loss.
 - Instituting **social protection and skills development programs**.
 - Enhancing **job quality, training, and income support** mitigates automation's gender effects.
 - Bring **AI regulation laws** involving **tripartite systems of workers, employers, and governments**.

7. CRUDE OIL BENCHMARK

Context:

Brent crude and West Texas Intermediate crude (WTI) futures fell due to a stronger dollar.

Benchmark	Region/Source	Characteristics
Brent Crude	Europe, Africa, Middle East (North Sea)	Light oil; International benchmark; Used by OPEC
WTI	United States (US oil fields)	Light and sweeter than Brent; Benchmark for the US market
Dubai/Oman		The third major benchmark crude

8. OVERNIGHT INDEX SWAP (OIS)

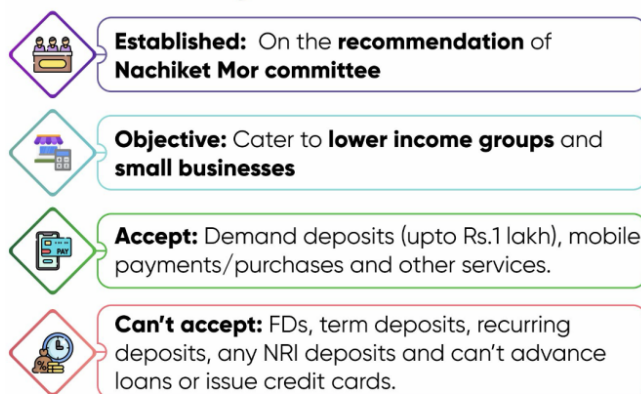
- Indian OIS rates **rose to their highest levels** in last 10 months.
- An OIS is an **interest rate derivative** contract in which **two entities agree to swap/ exchange a fixed interest rate payment (OIS rate) for a floating interest rate payment**.
- OIS is also considered a **measure of monetary policy** expectation.
- Floating rate is **usually overnight interbank rate** {reference rate for Indian OIS contracts is Mumbai Interbank Outright Rate (MIBOR)}.
- **Benefits of OIS:** hedging interest rate risks, reduction of credit risk, effective management of debt portfolios by financial institutions etc.

9. INDIAN POST PAYMENT BANK (IPPB)

- Recently the IPPB **completed 5 years**.
- In 2018, IPPB was established under **the Department of Posts, Ministry of Communication** with **100% equity owned by the Government** of India.
 - **Vision:** Build the most **accessible, affordable and trusted bank** for the common man in India.
 - **Mandate:** Spearheading **financial inclusion** by removing barriers and **reducing costs for accessing banking services**.

- IPPB is registered under **the Banking Regulation Act, 1949** duly licensed by RBI to carry on the **business of payments bank** in India.
 - It is a **scheduled payment bank** offering range of products like savings and current accounts, remittances and money transfer, Aadhar Enabled Payment System etc.
 - It offers three accounts: **Safal** (regular account); **Sugam**, (Basic Savings Bank Deposit Account (BSBDA)); and **Saral** (BSBDA-Small).
- **Achievements of IPPB**
 - **More than 6 crore accounts** have been opened across country including **96 lakh in aspirational districts**. 1.90 lakh postmen and Gramin Dak Sevaks have been **equipped with smart phones and biometric devices**.
 - 1.55 lakh banking access points through Post Offices network PAN India.
- **Challenges:** Competition from private companies, low financial literacy and poor infrastructure in rural areas

About Payment Banks (PBs)



10. REGULATION OF CRYPTO ASSETS

Context:

G20 countries adopted the New Delhi Leaders' Declaration which called for effective regulation of crypto assets.

Crypto regulation in India

- **Legal provision:** At present, the exchange, transfer, safekeeping or administration of cryptocurrencies is under the **ambit of the Prevention of Money Laundering Act (PMLA) 2002**.
 - This would require all entities dealing with crypto to implement **mandatory KYC processes, report suspicious activities**, and require financial entities/crypto companies **to maintain client details** for five years.
- **RBI's stance:** RBI has, on several occasions, voiced its concerns about crypto assets, saying that these assets threaten financial stability.
 - **2013:** RBI issued a **statement cautioning users, holders, and traders of virtual currencies**, including cryptocurrencies, about the potential risks associated with their use.
 - **2017:** RBI **cautioned** users, holders and traders of virtual currencies, including Bitcoins, regarding various risks associated in dealing with such virtual currencies.

- **2018:** RBI issued a **circular prohibiting banks and other regulated entities** from providing services to individuals or businesses **dealing in cryptocurrencies**. The circular effectively made it illegal for Indian residents to buy or sell cryptocurrencies.
- **2020:** The ban was **overturned by the Supreme Court** stating that it was disproportionate and that it violated the fundamental rights of citizens. This decision **effectively legalised the use of cryptocurrencies** in India and opened the door for their wider adoption.
- **Regulatory Framework:** In 2022, the Ministry of Finance released a report proposing the creation of a digital rupee, a state-backed cryptocurrency, as well as a framework for regulating private cryptocurrencies.
 - The report also recommended the **establishment of a Digital Currency Regulatory Authority (DCRA)** to oversee the use of cryptocurrencies in India.
- **Tax regime:** In 2022, the Union Budget, for the first time officially classified digital assets, including cryptocurrency, as “**virtual digital assets.**”
 - In the proposed tax regime, the government has announced a flat **30-percent income tax on the transfer of “crypto-assets”**.
 - The Centre also announced another **1% tax deducted at source (TDS)**.

Need for Regulation of Crypto Assets



Challenges in Regulating Cryptocurrency

- **Blanket Ban:** Blanket bans making crypto-asset activities illegal can be costly and technically demanding to enforce.
 - Circumvention can be achieved by many **technology solutions** due to the inherent borderless nature of crypto assets.
 - This will result in **heightened financial integrity risks**, and create inefficiencies.
- **Regulatory consistency:** Achieving consistency in crypto regulations across different countries remains a complex task.
- **Lack of harmonized taxonomies:** Different jurisdictions define and categorize crypto-assets in various buckets, creating ambiguity in understanding the risks posed as well as a lack of clarity for market participants.
- **Fragmentation:** Fragmented monitoring, supervision and enforcement due to a lack of coordination among various law enforcement agencies.

- **Balancing innovation and risk:** Striking the right balance between fostering innovation and mitigating risks remains a delicate task.
- **Cross-border enforcement:** Enforcing regulations in a global, decentralized ecosystem and different national priorities poses significant challenges.

How India is shaping global regulation of crypto assets?

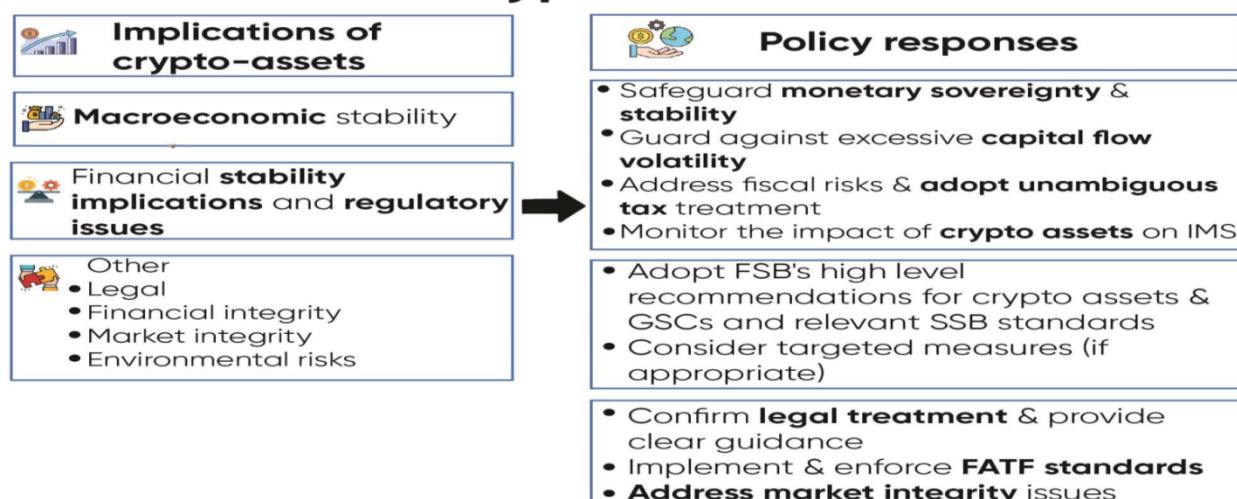
- The **IMF-FSB Synthesis Paper on Crypto Assets** was spearheaded by India.
 - The paper highlighted potential systemic implications of crypto assets, cross-border challenges, and various regulatory approaches that can be adopted.
- **Advocacy for inclusive regulation:** India advocated for regulatory approaches that promoted financial inclusion, especially for underserved populations.
- **Risk Mitigation:** India's leadership raised issues like money laundering and terrorist financing through crypto assets and called for the inclusion of such concerns in crypto regulation.

Global Regulation of Crypto Assets

- **IMF-FSB Synthesis Paper:** In the recently concluded G20 summit, the countries endorsed the report by the International Monetary Fund (IMF) and the Financial Stability Board (FSB) on risks and the framework for regulating crypto assets.
 - This includes **not banning the assets and creating reporting and licensing mechanisms** for the regulation of digital assets by 2025.
- **Markets in Crypto-Assets Regulation (MiCA):** Framed by the European Union, it is the **first cross-jurisdictional regulatory and supervisory framework** for crypto-assets.
- **Emerging markets and advanced economies:** Both of these **lag on regulatory development**. Only 25% of the economies studied have regulations in place on taxation, AML/CFT, consumer protection, and licensing.

Global Regulatory Approaches	Description
Principle based regulation	Instead of prescribing detailed rules, this regulatory approach outlines the results and performance expected.
Risk based regulation	It works on the idea of intervention based on the associated level of risk.
Agile regulation	Agile regulation adopts a responsive, iterative approach, acknowledging that policy is no longer limited to governments but is a multistakeholder effort.
Self- and co-regulation	In self-regulation, industry representatives coordinate and collaborate to formulate voluntary standards or codes of conduct In co-regulation, a non-governmental organization is formed by participants of a particular industry or sector to assist in the regulation of enterprises in that area with the oversight of the regulator..
Regulation by enforcement	It indicates that enforcement actions are being used to define regulatory frameworks and making rules.

Implication and Policy Response of Crypto Assets



Way Forward for Crypto Regulation

- **Implication – Policy Linkage:** Identifying implications of crypto assets and framing an adequate policy responses can be a way forward (see infographic).
- **No outright ban:** Blanket ban makes crypto-related activities like trading illegal and hence tough to monitor.
- **Licence and supervision:** Licensing of crypto assets service providers and supervising them in the same way as financial institutions.
- **Anti-money laundering:** Once licensed and regulated, the service providers should implement measures like customer due diligence, record keeping and reporting of suspicious activities.
- **Clarity on taxation:** In addition to a **clear tax policy** that takes into **consideration cross-border transactions**, it should also leverage third-party information, especially from intermediaries such as crypto-asset trading platforms, brokerdealers etc. to enhance tax compliance.
 - The G20 nations have endorsed forming a framework like the **Crypto Asset Reporting Framework (CARF)** for cross-border data sharing for effective tax compliance.
- **Robust data framework:** Authorities should have access to the data as necessary and appropriate to fulfil their regulatory, supervisory and oversight mandates.

11. GRESHAM'S LAW

- It states that, **in a fixed exchange rate system**, “**bad money drives out good**”.
- It comes into play **when exchange rate between two currencies is fixed** by government at a certain **ratio that is different from market exchange rate**.
 - It causes **undervalued currency** to go out of circulation.
 - **Overvalued currency** remains in circulation but it **does not find enough buyers**.
- It applies not just to paper currencies but **also to commodity currencies and other goods**.
- Law, **named after English financier Thomas Gresham**, came into play **recently during Sri Lanka crisis**

12. NATIONAL LOGISTICS POLICY (NLP)

Context:

- India recently marked the **first year anniversary of the National Logistics Policy (NLP)**.

Logistics Sector in India

- **Logistics' means Transportation & handling of goods** between points of production and consumption, storage, value addition and allied services.
- The logistics infrastructure **comprises ports, stations, Multimodal Logistics Parks (MMLPs), warehouses, connected by roads, railways, shipping, inland waterways, air routes, pipelines, etc.**



Key Aspects



About National Logistics Policy (NLP)

- NLP was introduced in September 2022, to promote **seamless flow of goods across the country** and **improve Indian goods competitiveness** in domestic as well as global markets.
- Vision:** To drive economic growth through an **integrated, seamless, efficient, reliable, green, sustainable and costeffective logistics network** by leveraging best in class technology, processes and skilled manpower.
- Targets of NLP**
 - Reduce cost of logistics in India to global benchmarks by 2030.
 - Improve the **Logistics Performance Index ranking** – and be among top 25 countries by 2030.
 - Create **data driven decision support mechanism** for an logistics ecosystem.
- Implementation of the National Logistics Policy:** Through a **Comprehensive Logistics Action Plan (CLAP)**, which consists of interventions divided into specific action areas including:

8 Action areas of CLAP



Progress under NLP so far

Components	Description	Progress
Digitalisation	Use of Unified Logistics Interface Platform (ULIP) , the Data-based platform which integrates 34 logistics related digital systems	Over 614 industry players have registered on ULIP. 106 private companies have signed Non-Disclosure Agreements

	including GST data, across departments.	(NDAs).
Export Import (EXIM) Logistics	A Comprehensive port connectivity plan was developed to address last and first mile infrastructure gaps under it.	60 projects of Ministry of Road Transport and Highways and 47 Ministry of Railways have been sanctioned to improve last mile connectivity to ports.
State Engagement	To bring holistic focus on ‘logistics’ in public policy at State level, States/UTs are developing State Logistics Plans (SLPs) aligned with NLP.	22 States have notified their logistics policies so far.
Issues and Grievance redressal	Ease of Logistics Services (E-logs) Portal aims to use technology platforms ‘to improve good governance and stakeholder outreach in the logistics sector’.	Around 29 business associations have been empanelled so far.

Challenges in NLP

- **Fragmented Logistics sector in India and Lack of integrated digital logistics systems.**
 - Ex: Unorganized players control 90% of the market.
- **Lack of logistics standardisation which results in difficulty in interoperability, raises handling risks and leads to delays.**
- **Lack of skilled workforce in the logistics sector:** The logistics sector is a labour-intensive sector that employs nearly 22 million people and of these, **only 4.7% are formally skilled.**
- **Lack of coordination between states in logistics** leading to delays in shipments and increased costs.
- **Lack of acceptance of Digital technologies** by transporters due to issues of digital literacy and anti-competitive practices by transport unions.
- **Limited alternatives to first & last mile connectivity.**

Way forward

- **Implementation of Roadmap and Monitoring,** through a thorough study on gap assessment across sectors and creation of a workable solution with regular monitoring.
- **Addressing infrastructure and procedural gaps in India’s Export Import (EXIM) connectivity** and create efficient and reliable logistics network
- **Improving regulatory interface** to enable seamlessness between sectors, promote standardization, formalization and inter-operability
- **Develop Sectoral Plans for Efficient Logistics (SPEL)** aligned with PM GatiShakti for each sector with underlying philosophies of inter-operability, resiliency, sustainability.

- **Better State Engagement**, by providing support for development of state and city level logistics plans and set up institutional framework for the same.

Role of States in Logistic Policy implementation

- **To create a dedicated agency for the development of logistics in the state** and provide better coordination between departments for providing single window clearances.
- **To identify local logistics infrastructure requirement** for creation of logistics zone, ware houses, expressways etc.. to achieve last mile connectivity.
- **To create quality storage facilities** according to the landscape and local industrial requirements.
- **To provide impetus to the industries** in the form of subsidies like Capital Interest Subsidy, Stamp duty subsidy, etc.
- **To integrate quality data from various state's master plan**, for better and wider adoption of logistic policy initiatives like PM Gatishakti.
- **To enable area-based development** and for gap identification, project planning, etc. at grass root level

13. INLAND WATERWAYS

Context:

- Recently, the Standing Committee on Transport, Tourism and Culture submitted its report on 'Development and Expansion of Existing and New National Inland Waterways'.

Inland Water Transport

- Inland Water Transport (IWT) is a fuel efficient, environment-friendly and cost effective mode of transport.
- India has about 14,500 km of navigable waterways comprising **rivers, canals, backwaters, creeks, etc.**
- As per constitutional provisions, only those waterways which are declared as **National Waterways come under the purview of the Central Government** while the rest of the waterways remain in the purview of the respective State Government.



Inland Waterways Authority of India (IWAI)



Ministry: Ministry of Ports, Shipping and Waterways.



Genesis: Setup as a Statutory body in 1986, under The Inland Waterways Authority of India Act, 1985.



Mandate:

- **Conduct surveys, techno-economic feasibility** for developing inland water transport mode;
- **Development and regulation** of National Waterways for shipping and navigation .
- **Regulation of traffic, coordination** with other modes of transport for movement on the National Waterways etc;
- **Assist and advise Central and State Government** on matters relating to Inland Water Transport.

- **Importance of Inland Water Transport**
- **Cost savings:** The cost of developing waterways is much lower than rail & road. IWT thus can reduce logistics costs, which amounts to approximately 13-14% of GDP in India. (Global average 8%)

- **Environment friendly:**
 - Least fuel consumption per tonne–km.
 - CO2 emission is 50 per cent that of trucks.
 - Safe mode for hazardous and over-dimensional cargo
- **Strategic importance:** The North-Eastern Region which is **strategically and economically** important had to face connectivity hurdles with mainland India due to poor conditions of roads. IWT system offers **natural navigation channels** connecting the entire region.
- **Supplementary mode**
 - Reduces pressure on road and rail.
 - Reduces congestion and accidents on the road.
- **Tourism and Recreation:** Inland waterways can be used for tourism and recreation, attracting tourists and generating income for local communities through activities such as boating, fishing, and sightseeing.

 Mode	 Railways	 Highways	 IWT
Freight cost (Rs/TKm)	1.36	2.50	1.06
Energy Consumption	0.0048 litre/TKm	0.0313 litre/TKm	0.0089 Litre/TKm
Vehicle operating cost	0.843 rs./TKm	1.179 Rs./TKm	1.009 Rs./TKm

*Tonne-kilometre (TKM)

Do you know?

Freight movement on waterways in India is having about 2% of modal share whereas USA stands at 4% the Netherlands at 49%, China at 14% and Vietnam at 48%.

Issues associated with the development of IWT

- **Unviability of projects:** Of the 111 notified national waterways, 23 have been made operational.
 - The development of 63 national waterways is not being taken up due to **financial and staffing constraints**.
- **Low level of investment compared to road and rail modes:** key factors **discourage companies from shifting to inland waterways** are
 - The slow pace of development of waterways
 - Poor hinterland connectivity
 - High vessel and equipment costs
- **Least Available Depth (LAD):** Maintaining a depth of the river which is navigable for vessels with a capacity of 1500-2000 tons is a challenge.
- **Impact on the environment:** While inland waterways have a low environmental impact during operations, their **development alters the ecology of the river**.
 - For instance, dredging and construction on the national waterway-I disrupted the activities of Gangetic Dolphin.
- **High cost of development of Ancillary facilities,** like, multimodal terminals, jetties, and river information systems

- **Lack of convergence** between IWT and other modes of transport
- **Recurring siltage** and irregular siltation
- **Clearance at Cross Structures/bridges**

Important national water ways

- **National Waterway 1:** Ganga-Bhagirathi-Hooghly River System (Haldia - Allahabad)
- **National Waterway 2:** Brahmaputra River (Dhubri - Sadiya)
- **National Waterway 3:** West Coast Canal (Kottapuram - Kollam), Champakara and Udyogmandal Canals
- **National Waterway 4:** Krishna River (Vijayawada – Muktyala)
- **National Waterway 5:** Dhamra-Paradio via Mangalagadi to Pankopal.

Steps taken for Inland Water Transport

- **Development of National Waterways (NWs):** For the development of Inland Water Transport (IWT), 111 waterways (including 5 existing and 106 new) spread over 24 States have been declared NWs under the **National Waterways Act, 2016**.
- **Jal Marg Vikas Project (JMVP)** for capacity augmentation of navigation on NW-1 is being implemented with the technical assistance and investment support of the World Bank.
- **Ro-Ro (Roll-on-Roll-off) and Ro-Pax (Roll-on/Roll-off with passenger) Ferry Service** Commenced in Various National Waterways, such as between Neamati and Kamalabari (Majuli), Guwahati and North Guwahati etc.
- **Revision of Levy & Collection of Fees**, including the proposal to waive waterway user charges initially for a period of three years.
- **Digital solutions** for ease of doing business, such as:
 - **CAR-D** (Cargo Data) Portal is a web-based portal for collecting, compiling, analysing, and disseminating all cargo and cruise movement data of National Waterways to the stakeholders.
 - **PANI** (Portal for Asset & Navigation Information) integrates river navigation and infrastructure information on a single platform.
- **Enhanced regional trade using IWT mode.**
 - Addition of new Ports of Call and routes in under **Indo Bangladesh Protocol on Inland Water Transit and Trade**.
 - Stone exporters from Bhutan have identified Inland waterways as an alternate mode of transportation
- **IWT under Maritime India Vision 2030:** The following focus areas have been identified under the Vision.
 - Enhancement and development of infrastructure at 23 priority NWs.
 - Development of terminal infrastructure for Ro-Ro & Ferry Services.
- **IWT under Blue Economy Vision 2047:** Initiatives under the vision are:
 - Enhance **regional connectivity** through waterways with Bangladesh, Nepal, Myanmar and Bhutan – known as **Regional Waterway Grid (RWG)**.
- Flagging off of **the world's longest river cruise- 'MV Ganga Vilas'**.

Way forward

- **Financial incentives:** Provide financial incentives and subsidies to encourage industries to shift their cargo transportation to inland waterways.
- **Public-Private Partnership:** Active involvement of the private sector in the inland waterways sector is imperative to ensure greater efficiency and competitiveness and attract higher investment for infrastructure development.
- **Waterway Connectivity:** IWAI may ensure that the connectivity to rail, road and ports be comprehensively dealt with in the Detailed Project Report (DPR) itself.
- **Environmental Considerations:** Research and Development studies should be conducted to make an assessment of the impact of the increased inland water transport activities on aqua-marine life.
- **International Collaboration:** Collaborate with neighbouring countries on the development of transboundary waterways, facilitating regional trade and connectivity.
- **Promote river cruise:** The government should launch programmes to incentivize river cruise operators so that the available potential can be fully realised.

14. PM VISHWAKARMA SCHEME

Context:

Recently, Prime Minister launched ‘PM Vishwakarma’ Scheme for traditional artisans and craftspeople on occasion of Vishwakarma Jayanti.

About PM Vishwakarma scheme

- It envisages to provide end-to-end **holistic support to the traditional artisans and craftspeople** in scaling up of their conventional products and services.
- **Objective:**
 - To enable **recognition of artisans and craftspeople** as Vishwakarmas.
 - To **provide incentives for digital transactions** to encourage **digital empowerment of Vishwakarmas**.
 - To provide a **platform for brand promotion and market linkages** to help them access new opportunities for growth.
- **Type:** Central Sector Scheme.
- **Duration:** FY 2023-24 to FY 2027-28.
- **Nodal Ministry:** Ministry of Micro, Small & Medium Enterprise (MoMSME).
- **Scheme will be jointly administered:** By MoMSME, the Ministry of Skill Development and Entrepreneurship (MSDE), and the Department of Financial Services (DFS) under the Ministry of Finance.
- **Registration:** Free of charge through **Common Services Centres** using a **biometric-based PM Vishwakarma Portal**.
- **Recognition:** Artisans and craftspeople will be provided recognition through the **PM Vishwakarma certificate and ID card**.

- **Approach:** Strengthen and nurture the **Guru-Shishya parampara** or family-based practice of traditional skills
 - **Rolled out in rural and urban areas** with a focus on saturating districts in a phased manner.
- **Eligibility criteria:**
 - An artisan or craftsman **working with hands and tools** and engaged in one of the **recognized (18) familybased traditional trades with minimum age of 18 years**.
 - Beneficiary should **not have availed loans** under similar credit-based schemes of Central Government or State Government for self-employment/ business development, e.g. PMEGP, PM SVANidhi, Mudra, **in the past 5 years**.
 - **Government employee** and their **family** members **not eligible**.
 - Benefits under the Scheme shall be restricted to **one member of the family**.
 - ✓ Under the Scheme, a 'family' is defined as consisting of the husband, wife and unmarried children.
- **Required documents or information:** like Aadhaar, mobile number, bank details, ration card.
- **Lending institutions:** Scheduled Commercial Banks, Regional Rural Banks, Small Finance Banks, Cooperative Banks, NBFCs and Micro Finance Institutions.

18 Traditional trades

 Carpenter (Suthar)	 Cobbler (Charmkar)/ Shoemsmith/Footwear artisan
 Boat Maker	 Mason (Rajmistri)
 Armourer	 Basket/Mat/Broom Maker/Coir Weaver
 Blacksmith (Lohar)	 Doll & Toy Maker (Traditional)
 Hammer and Tool Kit Maker	 Barber (Naai)
 Locksmith	 Garland maker (Malakaar)
 Goldsmith (Sonar)	 Washerman (Dhobi)
 Potter (Kumhaar)	 Tailor (Darzi)
 Sculptor (Moortikar, stone carver), Stone breaker	 Fishing Net Maker

Benefits of Scheme

- **Marketing Support:** National Committee for Marketing (NCM) will provide services such as **Quality Certification, Branding & Promotion, E-commerce linkage, Trade Fairs advertising, publicity** and other marketing activities.
- **Cheap credit:** Credit support will rejuvenate sector.
 - **Collateral free Enterprise Development Loans:** Rs 1 lakh (First Tranche for 18 months repayment) & Rs 2 lakh (Second Tranche for 30 months repayment).
 - **Concessional Rate of Interest:** 5% to be charged from the beneficiary with Interest Subvention cap of 8% to be paid by MoMSME.
 - **Credit Guarantee fees** to be borne by GoI.

- **Skill Upgradation:** Basic Training of 5-7 days and Advanced Training of 15 days or more, with a stipend of Rs. 500 per day.
- **Creating a holistic support ecosystem:** Provisions such as incentives for Digital Transactions and Marketing Support, liberal loan terms, etc. will help to develop a supporting ecosystem for this industry.
 - **Incentive for Digital Transaction:** Re 1 per transaction for maximum upto 100 transactions (monthly)
- **Preserving Traditions:** The scheme encapsulates the essence of preserving heritage while embracing progress.
- **Promote Gender justice and social justice:** As per the census of crafts conducted during the Seventh Plan period, there were more than 68.8 lakh crafts persons in the country.
 - **Women (56.13%) and socially and economically disadvantaged sections** like SC, ST and OBC (which together make up more than 72%) account for a majority of the pool.

Other such initiatives for Artisans

- **National Handicraft Development Programme (NHDP) by the Ministry of Textiles** which provides supports to the handicraft clusters and artisans.
- **Comprehensive Handicrafts Cluster Development Scheme (CHCDS) by the Ministry of Textiles** which aims to mobilize the artisans into Self-Help Groups, thrift and credit, training of SHGs for community business enterprise.
- **PEHCHAN scheme by the Ministry of Textiles**, to provide a new identity to handicraft artisans so that the benefits of various schemes are provided to the deserving artisans.
- **Other Schemes:** Upgrading the Skills and Training in Traditional Arts/Crafts for Development (USTTAD); Scheme of Fund for Regeneration of Traditional Industries (SFURTI), etc.

Concern Raised

- **Available data on the crafts landscape is outdated:** The last census of crafts was carried out during the Seventh Plan period, which ended in 2012.
- **Caste-Based Occupations:** There is concern that the scheme may inadvertently reinforce caste-based occupations, limiting the opportunities for community members to explore more lucrative professions.
- **Non-Recognition of Guru (Master) as Trainer:** Under Guru-Shishya parampara, the Master used to provide valuable training, which he has learned from his experiences to new employee remain unrecognized as formal training under the scheme.
- **Silent on Wages:** Low wages causing the gradual erosion of artisan communities.
- **Lack of economic viability:** Due to poor market coverage and quality concerns product often gets lower price tag causing a lack of economic viability for their output.

Way forward

- **Standards and certification:** It will help tackle the multiplicity of non-tariff barriers that impede access to global markets for traditional crafts and help artisans realise better value for their work.
- **New Markets:** Linking traditional artisans with modern techniques can help open up new markets both at home and abroad, much as it has done for the handloom sector.

- **Addressing Root Causes of poverty and inequality** among artisan communities with such as limited access to education and employment opportunities.

15. DIGITISATION OF AGRICULTURE

Context:

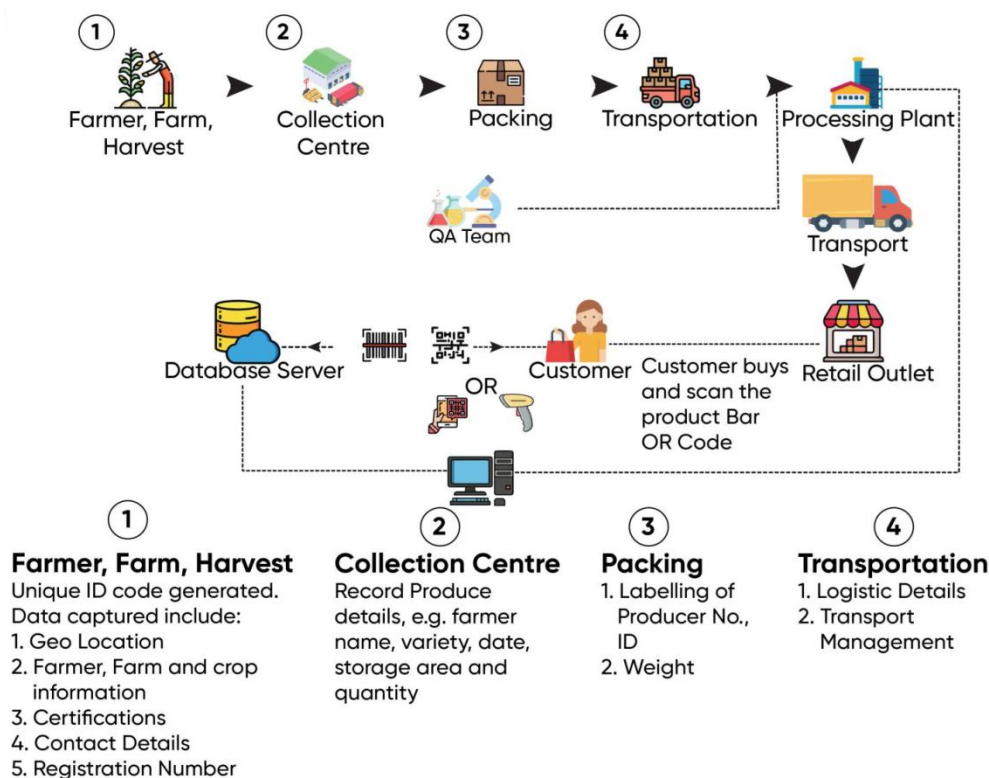
- The G20 Delhi declaration has **committed to promote responsible, sustainable and inclusive use of digital technology** by farmers and an ecosystem of Agri-Tech start-ups and MSMEs.



About Digitisation of Agriculture

- It is **integration of cutting-edge digital technologies into the farm production system**, including Artificial Intelligence (AI), robotics, unmanned aviation systems, sensors, and communication networks is referred as Digitisation of Agriculture.
- **Significance of Digitisation of Agriculture**
 - **Across the agricultural value chain:**
 - ✓ **Input Supply:** Helps to optimizes the input-resources like fertilisers, pesticides, water etc. at the right time.
 - ✓ **Ex:** Use of AI with agricultural data.
 - ✓ **Production:** Increases operational efficiency and decreases production cost of farming due to reduced manpower requirement and labour hours. **Ex:** Sub Mission on Agricultural Mechanization (SMAM).
 - ✓ **Trading:** Right price for the produce is obtained by elimination of middleman thereby increasing the profitability. **Ex:** e-NAM.
 - ✓ **Warehousing:** Aids scientific decision making in farming activities, which will reduce burdens of crop loss or failure, low yield, pest attack etc. **Ex:**
 - **Improved Governance:** Better agriculture governance, by using agriculture data gathered cross the country for the welfare of farmers and citizens. **Ex:** National e-Governance Plan in Agriculture (NeGP-A). India Digital Ecosystem of Agriculture (IDEA) framework.
 - **Social benefit:** Bridges the gender gap, through promotion of women centric innovations enabling them to involve in agricultural activities at par with males. **Ex:** PM-KISAN Mobile App.

Digitalisation of Agriculture across its value chain



Challenges in Digitisation of Agriculture in India

- **Digital illiteracy** makes the farmers shy away from trying new generation technologies in agriculture
- In addition, **the recent increase in digital fraud** cases using mobile devices has affected the trust in digital mode.
- **Lack of awareness** about the schemes and subsidies provided by the government to make use of digital technologies.
- **Capital requirement is high** at the initial stages and makes it difficult for a small and marginal farmer to acquire them
- **Fragmented landholdings** is a major concern for digitisation as it **make the scalability of a technology difficult**.
- As per the latest Agriculture Census, **the average size of operational holdings has decreased from 2.28 hectares in 1970-71 to 1.08 hectares in 2015-16**.
- **Fear of unemployment** as the automation would reduce the number of man power required for the process
- **Nascent stage of Agritech startups** and they find it difficult to get funding as well as a reliable customer base.
- Presently, there is **only 1% agritech startup penetration** in India (as per EY India).
- **Lack of infrastructure** in rural areas like access to electricity, internet, service centres for the machineries etc
- **Limitations of available the products** like lack of content in regional languages, user friendly interface, Inadequate farm and farmer-level datasets etc.

Way forward

- **Improving the access to innovative products** to the farmers by educating them and providing finances to acquire the same.
- **Focusing on producing technologies at affordable cost**, which enables the farmers to acquire them
- **Portable Hardware models needs to be focused as small, plug and play hardware**, which can be commonly shared among a group of farmers
- **Bridging the gap between field and academic institutes** for them to better understand the ground level issues faced by the farmers and work towards them
- **Arrangement of better financing options and incubation centres** for the Agritech startups for them to stabilise and sustain

Latest initiatives in digitisation of agriculture

- **Unified Portal for Agricultural Statistics (UPAg)** is an advanced agricultural data management platform designed to generate crop estimates and integrate with other systems generating Agriculture Statistics such as Price, Trade, Procurement, Stock etc.
- **The Kisan Rin Portal (KRP)** offers a comprehensive view of farmer data, loan disbursement specifics, interest subvention claims, and fosters seamless integration with banks for more focused and efficient agriculture credit.
- **Weather Information Network Data Systems (WINDS) manual**, leverages advanced weather data analytics to **provide stakeholders with actionable insights on weather** and empowers farmers, policymakers, and various agricultural entities to make well-informed choices.
- **YES-TECH** is a technology-driven **yield estimation system**, offering methodologies, best practices, and integration insights for accurate yield assessments at the Gram Panchayat level.
- **National e-Governance Plan in Agriculture (NeGP-A)**, A Centrally Sponsored Scheme under **Ministry of Agriculture & Farmers Welfare**, aims to achieve rapid development in India through use of modern technologies in agriculture.

INTERNAL SECURITY

1. SPAMOUFLAGE

- Meta has **taken down thousands of Facebook accounts** that were part of a campaign known as “Spamouflage”.
- Spamouflage was a widespread **online Chinese spam operation** which **posted praise for China** and criticisms of the USA, western foreign policies, and critics of Chinese government.
- Similar campaign by Russia, named **Doppelganger**, was disrupted last year.
- It **mimicked websites of mainstream news outlets** in Europe and **post bogus stories** about Russia's war on Ukraine, then try to spread them online.

2. OPERATION SAJAG

Context:

- The Indian Coast Guard conducted a **coastal security drill** named ‘**Operation Sajag**’ along the west coast.
- This drill aimed to **involve all stakeholders in the coastal security system, reaffirm the effectiveness of coastal security measures, and raise awareness among fishermen at sea.**
- To enhance coastal security, several measures have been implemented, including the issuance of **biometric cards for fishermen, color-coding of fishing boats according to each state, manned fish landing centres, access control at entry/exit points, coastal mapping, allocation of specific marine band frequencies for security agencies, and training of marine police personnel by the Indian Coast Guard.**
- Biometric card readers have also been **provided to security agencies, and efforts are made to monitor dhows, enhance island security, and establish community interaction programs as part of the coastal security framework.**

3. NYOMA AIRFIELD (EASTERN LADAKH)

- The **Border Roads Organisation (BRO)** will construct **India’s highest fighter airfield** in Nyoma, a village in Ladakh. The Nyoma village is **located close to the south Bank of Pangong Tso** at an altitude of about 13,700 feet. Nyoma is around 46 kilometres from the Line of Actual Control with China.
- Also, the Construction of the **Shinkun La Tunnel, the world’s highest tunnel at an altitude of 15,855 feet** is set to start. The tunnel will connect **Lahaul-Spiti in Himachal to the Zaskar Valley in Ladakh** and provide all-weather connectivity

4. SMISHING

- **Smishing is a social engineering attack** (uses psychological manipulation and exploits human error) that **uses fake mobile text messages to trick people** into downloading malware, sharing sensitive information, or sending money to cybercriminals.
- Smishing is a **combination of SMS (short message service) and phishing.**
- Phishing is a **broad term for cyberattacks that use social engineering** to trick victims into paying money, handing over sensitive information, or downloading malware.
- **Main difference** between the different **types of phishing attacks is the medium used** to carry out the attacks.

5. EXERCISES IN NEWS

- **Varuna:** It is bilateral exercise between **Indian and French Navy.**
- **SIMBEX:** Singapore India Maritime Bilateral Exercise (SIMBEX) is an **annual bilateral naval exercise between India and Singapore.**

ENVIRONMENT

1. WASTEWATER - TURNING PROBLEM INTO SOLUTION

Context:

- Recently, a report prepared by **Global Wastewater Initiative (GWWI)**, a global platform bringing together UN agencies, NGOs, the private sector etc. to tackle wastewater pollution, “**Wastewater - Turning Problem to Solution**” was released.
- This report follows up on the **Sick Water report from 2011** and aims to address the urgent need for **sustainable water and wastewater management**.

What is Wastewater?

- Wastewater refers to water that has been used and contaminated through various human activities, such as domestic, industrial, or agricultural processes.

Key Messages of the Report:

- **Wastewater reuse could supply** more than ten times the current **global desalination capacity**.
- To unlock this potential, **public perceptions and concerns** about wastewater resource recovery and reuse must change.
- **Elevating wastewater reuse** in international policy is crucial to addressing climate, nature, and pollution crises.
- **The huge potential of wastewater:** It could serve as an alternative energy source for up to half a billion people, reduce global fertilizer use by **over 10%**, and irrigate around 40 million hectares of land.
- **Raw source for Industries:** Wastewater can be a source of raw materials for various industries, including paper, polymers, pesticides, rubber, paint, biodiesel, food additives, and more, contributing to economic and environmental sustainability.

The Issues:

- **Improper wastewater management is a global challenge**, exacerbated by population growth, urbanization, and climate change.
- **By 2030, domestic and municipal wastewater production** is estimated to rise by **24-38%**
- **Only 11% of domestic and industrial wastewater** is currently being reused, indicating untapped potential.
- Untreated wastewater remains a significant issue, **with approximately 50% of it entering the environment**.
- **Vulnerable groups**, especially women and children, are disproportionately affected by poor wastewater management.
- **Sustainable wastewater management offers** co-benefits like improved environmental and human health, **reduced dependence on synthetic fertilizers**, and **energy diversification**.
- **Barriers to wastewater resource recovery** include inadequate political support, governance issues, data deficits, financing challenges, and cultural perceptions.

The Solution:

- **Sustainable wastewater management** involves three key action areas:
 - Reducing wastewater production

- Preventing contamination
- Sustainably managing wastewater for resource recovery and reuse.
- Addressing these areas requires building blocks **like effective governance, mobilizing investment, enhancing capacity**, fostering innovation, data collection, and increasing communication and awareness.
- **Realizing the economic value of wastewater is essential**, and a shared vision and collective action are needed from individuals, businesses, governments, and society to drive change at scale.
- **Detailed guidance on sewage treatment** and reuse technologies.
- **Effective financing mechanisms** that permit sufficient cost recovery.

Conclusion:

Wastewater needs to be viewed as a **valuable resource** with the potential to address environmental and societal crises. The transformation of wastewater from a pollution problem to a valuable resource is essential for addressing water scarcity, pollution, and climate change, and ensuring a sustainable future

2. NORMAN BORLAUG FIELD AWARD FOR FIELD RESEARCH AND APPLICATION

- **Dr. Swati Nayak**, an Indian scientist at International Rice Research Institute (IRRI), was named the recipient of the prestigious award in 2023.
 - She is recognized for her **innovative approach to engaging smallholder farmers in demand-driven rice seed systems** and adoption of **climate-resilient and nutritious rice varieties**.
- \$10,000 award **recognizes exceptional, science-based achievement** in international agriculture and food production **by an individual under the age of 40**.
- **Endowed by:** Rockefeller Foundation.

3. RED FIRE ANTS

Context:

- **Red fire ants**, known scientifically as **Solenopsis invicta** and **originating from South America**, have **invaded Europe**.
- These invasive ants are **ranked as the world's fifth-costliest species to combat**.
- Their painful stings can cause **pustules, allergies, and even fatal anaphylactic shock**. The researchers believe that **climate change may facilitate their further spread in Europe**.
- **Invasive species:** drive plant and animal extinctions, **threaten food security and exacerbate environmental catastrophes**.



4. NAMAMI GANGE PROGRAMME (NGP)

Cotext:

- According to the latest projections on the Namami Gange Programme (NGP), the installed waste treatment plants are capable of treating just 20% of the sewage estimated to be generated in the 5 major States that lie along the river.

More on News

- The projection has also revealed that out of a total of 409 projects, only 232 projects have been completed and made operational (till December 2022).



NMCG

-  **Genesis:** Registered as a society in 2011 under the **Societies Registration Act 1860**.
-  **Structure:** Two two-tier management structure (Governing **Council** and **Executive Committee**).
 - Executive Committee has been authorized to accord approval for all projects up to Rs.1000 crore.
-  **Legal backing:** It is placed at third place in **five tier structure** envisaged by the **Environment Protection Act, 1986** for river Ganga. Other tiers are:
 - **National Ganga Council**, chaired by PM.
 - **Empowered Task Force (ETF)** on river Ganga under chairmanship of Union Minister of Jal Shakti.
 - **State Ganga Committees**
 - **District Ganga Committees**
-  **Key Objectives:**
 - Maintain minimum **ecological flows** in the river Ganga.
 - Ensure effective abatement of pollution and rejuvenation by adopting a **river basin** approach.
-  **Key Functions:**
 - Implement the World Bank supported National Ganga River Basin Project.

About NGP

- Objective: Integrated Conservation Mission** to accomplish the twin objectives of **effective abatement of pollution, conservation, and rejuvenation of River Ganga**.
 - Also covers its tributaries under **one umbrella programme**.
- Phases:**
 - Namami Gange Mission- I: 2014-2021.**
 - Namami Gange Mission- II: 2022-2026.**
- Key features**
 - Type:** Central Sector Scheme.
 - Implementing Agency:** **National Mission for Clean Ganga (NMCG)** and its state counterparts—State Programme Management Groups.
- Key pillars:** Sewerage Treatment Infrastructure, River-Front Development, River-Surface Cleaning, Bio-Diversity, Afforestation, Public Awareness, Industrial Effluent Monitoring, and Ganga Gram.
- Major States covered:** **Uttarakhand, Uttar Pradesh, Jharkhand, Bihar and West Bengal.**
- Activities split into three segments or targets
 - Entry-level activities immediate** (for visible impact).
 - Medium-term activities** (to be implemented within 5 years of time frame).

- **Long-term activities** (to be implemented within 10 years).

Challenges faced by NGP

- **Delay in Implementation of Projects:** Mainly due to factors such as **delays in handing over land, delays in getting permission from the National Highways Authority of India (NHAI) and Railways**, etc.

Achievements of Namami Gange Programme

- Median value of **Dissolved Oxygen** (indicator of river health) has been found to be within acceptable limits as per survey in 2022.
- Out of 1072 Grossly Polluting Industries (GPIs) 885 have been brought under **Central Pollution Control Board's Online Continuous Effluent Monitoring Stations (OCEMS)**.

Other Key Initiatives for Cleaning Ganga

- **Clean Ganga Fund:** In 2014, it was formed to clean up the Ganga, set up waste treatment plants, and conserve the biotic diversity of the river.
- **National River Ganga Basin Authority (NRGBA):** It was constituted under the provisions of the EPA, 1986. It has been dissolved in 2016, consequent to constitution of **National Council for Rejuvenation, Protection and Management of River Ganga (NCRPM)** or National Ganga Council.
- **It is implemented by NMCG.**
- **Ban on Waste Disposal:** In 2017, the National Green Tribunal banned the disposal of any waste in the Ganga.
- **Collaboration with Other Countries:** Such as Australia, United Kingdom, Germany, etc.

- **Poor financial management:** Only about **14,745cr of funds have been released by NMCG** to State Governments, State Missions for Clean Ganga (SMCG), and other agencies till June 2023.
 - **States** are dependent on the **Centre** for **funds**.
- **Inadequate Sewage treatment:** Untreated sewage and substantial industrial effluents are **still being discharged** into the river or its tributaries. This is because of the absence of requisite functional treatment capacity.
- **Governance issues:** There are a number of authorities at the **state** and **the national levels** which cause duplication of effort. There is a lack of coordination among agencies.
- **Lack of Participation:** Not much enthusiasm is shown by the **private entities** and **civil society** at large to take extra steps without being dependent on the government funds.

Namami Gange: Strategic Areas of Intervention

 Nirmal Ganga	 Aavir Ganga	 Jan Ganga	 Gyan Ganga	 Arth Ganga
• Sewerage Infrastructure • Industrial Pollution • Wastewater reuse and recycle • Rural sanitation • Solid Waste management	• Maintaining ecological flow • Wetland mapping and conservation • Floodplain management • Sustainable agriculture • Afforestation and biodiversity conservation • Small river rejuvenation	• Riverfront, ghats and crematoria • Community engagement • Ganga Run • Ganga Utsav • Ganga Quest • Ganga Amaran Abhiyan	• Water quality monitoring • High resolution mapping of Ganga stretch • Microbial diversity • Aquifer mapping & spring rejuvenation • Cultural mapping & spring rejuvenation • Cultural mapping & climate scenario mapping • River Cities Alliance	• Zero Budget Natural Farming • Monetisation of Reuse of Sludge & Wastewater • Livelihood Generation • Public Participation • Culture Heritage & Tourism • Institutional Building

Way forward

- **Verification:** The existing and planned sewage treatment plants (STPs) need to be verified on efficiency, reliability and technology parameters by independent agencies.
- **Revenue Generation:** Evolve new and innovative ways to generate sufficient revenues for operation and maintenance (O&M) of water and wastewater infrastructure through pricing and valuing water.
- **Restore local storages** (ponds, lakes, wetlands): It should be an integral part of river restoration and conservation strategy.
- **Mapping and updating of land records:** Map the entire looped length of each and every tributary of the Ganga and correct the land records.
- **Start restoring lower-order streams** and smaller tributaries in the Ganga Basin.
- **Other Strategies:** Many of the strategies like river-linking, riverfront development projects, access to toilets, making villages open defecation-free, etc. need to be integrated with long-term ecological and sustainability goals.

5. IPBES ASSESSMENT REPORT ON INVASIVE ALIEN SPECIES AND THEIR CONTROL

Context:

Recently, the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) has released the 'Assessment Report on Invasive Alien Species and their Control'.



Data Bank

- **>37,000** alien species established worldwide.
- **3,500** invasive alien species, with negative impacts on nature, and also, in some cases, on people.
- **34%** proportion of impacts reported in the Americas (31% Europe and Central Asia; 25% Asia Pacific; 7% Africa).
- **75%** of negative impacts are reported from the terrestrial realm, especially temperate and boreal forests and woodlands and cultivated areas.

More on news

- The report **analyzes the extent of the threat** posed by such species to various categories of biodiversity and ecosystem services.
 - It **assesses the effectiveness of current international, national and subnational control measures** and associated policy options that could be employed to prevent, eradicate and control invasive alien species.

About Invasive Alien Species

- **Invasive alien species** represent a **subset of alien species** known to have established and spread with negative impacts on biodiversity, local ecosystems and species.
 - **Alien species** are animals, plants, and other organisms that have been **introduced by human activities** to new regions.

- **All Alien species are not invasive species.**
- As per the report, **invasive alien species are one of the five major direct drivers of biodiversity loss globally**, alongside land and sea use change, direct exploitation of organisms, climate change, and pollution.
- **Common characteristics of invasive alien species include:**
 - Rapid reproduction and growth
 - High dispersal ability
 - Ability to adapt physiologically to new conditions.
 - Ability to survive on various food types and in a wide range of environmental conditions.



Reasons for the growth of Invasive Alien Species

- **Lack of legislation:** 83 per cent of countries do **not have national legislation or regulations** directed specifically toward the prevention and control of invasive alien species.
 - Nearly half of all countries (45 per cent) do **not invest in the management of invasive alien species.**
- **Human activities:** Many human activities facilitate the transport, introduction, establishment and spread of invasive alien species.
 - It is estimated that, by 2050 the total number of alien species globally is expected to be about 36% higher than in 2005.
- **Global Trade:** There is a strong link between the volume of commodity imports and the number of invasive alien species in a region.
- Increasing **international trade of exotic plants and animals** and the movement of people, including tourism, facilitate the spread of invasive alien species.
- **Climate change:** Climate change facilitates the spread and establishment of many alien species and creates new opportunities for them to become invasive.

Impact of Invasive Alien Species

- **Environmental damage:** They have **devastating effects on native plant and animal species**, leading to human-wildlife conflicts. Invasive alien plants, especially trees and grasses, can sometimes be **highly flammable and promote more intense fires.**
 - **60%** of global extinctions have been caused, solely or alongside other drivers, by invasive alien species.
- **Food security:** Invasive species are the major cause of **crop loss** and **degraded soil quality.**

- **Social impact:** They negatively **affect the autonomy, rights and cultural identities of Indigenous Peoples** through the **loss of traditional livelihoods and knowledge, reduced mobility and access to land**, and increased labour to manage the invasive alien species.
 - More than 2,300 invasive alien species are found on lands of Indigenous Peoples across all regions of Earth.
- **Health:** Invasive alien species can serve as vectors for infectious zoonotic diseases that can lead to epidemics, such as malaria, dengue fever, chikungunya, Zika, yellow fever etc.
- **Economic burden:** The global **economic cost** of invasive alien species **exceeded \$423 billion annually in 2019**, with costs having at least quadrupled every decade since 1970.

Initiatives against Invasive Alien Species

- **Target 6 of Kunming-Montreal Global Biodiversity Framework** aims to eliminate, minimize, reduce and or mitigate the impacts of IAS on biodiversity and ecosystem services by 2030.
- **Global Invasive Species Programme (GISP):** It was established in 1997 to address global threats caused by Invasive Alien Species and to provide support to the implementation of **Article 8(h) of the Convention on Biological Diversity (CBD)**.
- **Article 8 (h)** of CBD calls to **prevent the introduction of, control or eradicate** those alien species which threaten ecosystems, habitats or species.
- **Global Register of Introduced and Invasive Species (GRIIS)** presents validated and verified national checklists of introduced (alien) and invasive alien species at country, territory, and associated island level.
- **Ramsar Convention:** Ensure that the impact on wetlands from invasive species is prominently addressed.
- **United Nations Convention on the Law of the Sea (UNCLOS):** States are required to protect and preserve the marine environment from intentional or unintentional introduction of alien species.

Know the term

Biological invasion: It is process involving intentional or unintentional transport or movement of a species outside its natural range by human activities and its introduction established and spread.

Way Forward

- **Effective Management:** Biological invasions and their adverse impacts can be prevented and mitigated through effective management of
 - **Pathways of introduction** and spread of invasive alien species.
 - ✓ Pathway management involves strictly enforced import controls, pre-border, border and post-border biosecurity, and measures to address escape from confinement.
 - Target invasive alien species **at either local or landscape scales**
 - **Site-based or ecosystem-based management**
- **Awareness:** Public engagement with citizen-science platforms or community-driven eradication campaigns can raise awareness and contribute to actions that reduce the threat of invasive alien species.
- **Integrated Governance:** There is a need for a context-specific integrated governance approach, involving complementary strategic actions such as
 - Enhancing coordination and **collaboration across international and regional mechanisms**.
 - Developing and adopting **effective and achievable national strategies**
 - **Sharing efforts and commitment** and understanding the specific role of all actors

- **Investment:** Capacity building and **targeted investment in research innovation** and environmentally sound technology is required for the eradication of invasive alien species.

6. UNESCO WORLD HERITAGE SITES

Context:

According to new research, the **World Heritage Sites (WHS's)** make up less than 1 % of the Earth's surface, but they harbour more than 20 % of the planet's biodiversity.

More on News

- Research was conducted by **United Nations Educational, Scientific and Cultural Organization (UNESCO) and the International Union for Conservation of Nature (IUCN)**.
- They are estimated to protect over 20,000 endangered species.
- **WHS's** have been referred as **last line of defense against extinction**.
 - Played key role in protection of **Javan Rhinos, Vaquitas** (the world's smallest cetacean) and **Pink Iguanas**.
 - Also protected **Sumatran Rhinos, Sumatran Orangutans** and **Mountain Gorillas**.

About World Heritage Sites (WHS) and Convention

- It is any of the areas or objects inscribed on the **UNESCO World Heritage List**.
- These sites are designated as having **outstanding universal value** under the **World Heritage Convention of 1972**.
- There are total 1199 heritage sites under the Convention (as of 27th Sept, 2023).
- Sites are selected under three categories i.e. **cultural, natural, and mixed**.
 - There are 42 **World Heritage Sites** in India. Out of these, 34 are cultural, 7 are natural, and one is of mixed type.
- **World Heritage Convention**
 - It has been adopted as **Convention Concerning the Protection of the World Cultural and Natural Heritage**.
 - **Principle:** Recognizes the way in which **people interact with nature**, and the fundamental **need to preserve the balance between the two**.
 - **Parties and Implementing Agency:** 195 State parties including India and World Heritage Committee.
 - **Strategic Objectives (Five Cs):** Credibility, Conservation, Capacity-building, Communication and Communities.

Why World Heritage Sites are unique in conserving biodiversity?

- **Covers wide Horizon:** Deals with both natural, cultural heritage and mixed heritage sites. These are conferred the highest level of international protection. E.g., Khangchendzonga National Park of India.
- **Regional Planning Programme (RPP):** Parties are encouraged to integrate the protection of the sites into RPP. E.g., National Biodiversity Strategies and Action Plans (NBSAPs).
- **World Heritage Fund:** It fulfils the urgent need during disasters or natural calamities.

- **Reporting Mechanism:** Convention stipulates the obligation on Parties to report regularly to the **World Heritage Committee (WHC)** on the state of conservation of their World Heritage properties.
 - E.g., In Kaziranga National Park (India) and Chitwan National Park (Nepal), the population of Greater one-horned Rhinos has been doubled since their inscription on the UNESCO World Heritage List.
- **Public Participation:** Encourages **States Parties to strengthen** the appreciation of the public to enhance protection through educational and information programmes.
- **Policy Action:** Facilitate dialogue between **policymakers and World Heritage actors** in the development and implementation of effective actions.
- **Balance between Nature and Culture:** Strengthen the link between **nature and culture**, as many cultural sites, including those in **urban areas** are promoting biodiversity.

Challenges faced by World Heritage Sites

- **Decline in the population of the endangered species:** Either by natural factors such as disease or by human-made factors such as poaching. E.g. Tropical Rainforest Heritage of Sumatra.
- **Development Activities:** It includes activities like construction of reservoirs which flood important parts of the property, industrial and agricultural development etc.
 - **Human encroachment** also threatens the integrity of the sites. E.g. Lake Turkana National Parks in Kenya
- **Climate Change:** Every **1°C increase in global temperature** could **double the number of species threatened** by dangerous climate conditions. Due to it, migration pattern, food availability etc. have changed.
- **Funding:** World Heritage Fund is not able to fulfil need of all nations as many nations do not contribute on time.
- **Armed conflict:** Along with **rising frequency of disasters**, heritage sites **face brunt of armed conflicts**.
 - E.g., UNESCO sites of Kyiv and L'viv are inscribed on the **List of World Heritage in Danger** due to Ukraine-Russia conflict.
- **Other:** Nations modify the **legal protective status** of the area, severe deterioration of the **natural beauty or scientific value, etc.**

Conclusion

WHS need to be given more protection and priority as they are playing key role in biodiversity conservation. It will play key role in achieving the target of **Kunming-Montreal Global Biodiversity Framework**.

UNESCO

About

- Established in 1945, as a **specialised agency** of the **United Nations** to **promote international cooperation in education, sciences, culture, communication and information**.
- **Membership:** 194 Members including India and 12 Associate Members.
- **Structure:** Secretariat, headed by Director-General, implements the decisions of General Conference and Executive Board

Functions

- Attaining quality education for all and promoting lifelong learning
- Mobilizing **scientific knowledge** and policy for sustainable development
- Addressing emerging **social and ethical challenges**
- Fostering cultural diversity, intercultural dialogue and a culture of peace
- Building inclusive knowledge societies through information and communication

Key Initiative/Other Information

- **Man and Biosphere Programme (MAB), 1971:** MAB is an **Intergovernmental Scientific Programme** that aims to establish a **scientific basis** for the **improvement of relationships between people and their environments**.
- **Budapest Declaration on World Heritage (2002):** Adopted to ensure that the **World Heritage Convention** applies to heritage in all its diversity. It is an instrument for the sustainable development of all societies through **dialogue** and **mutual understanding**.
- **UNESCO strategy for gender equality** in and through education 2019-2025
- It is also a member of **United Nations Sustainable Development Group (UNSDG)**.
- All Member States have established a **National Commission** for UNESCO.

7. PACIFIC DECADAL OSCILLATION (PDO)

Context:

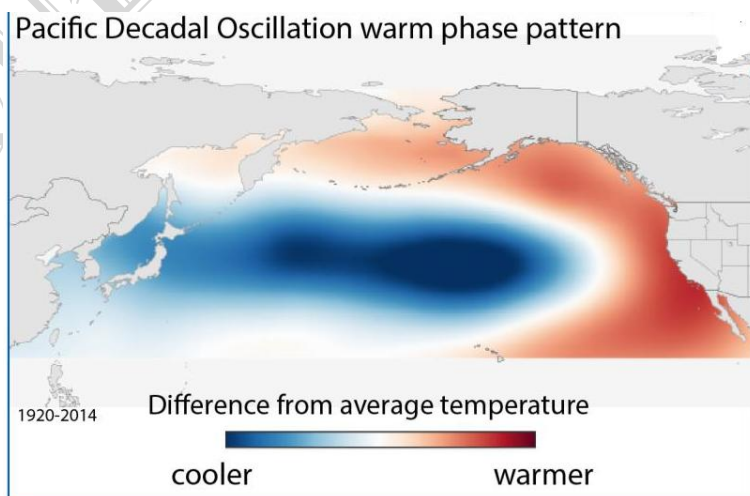
According to a recent study, a combination of global warming and the Pacific Decadal Oscillation (PDO) could make cyclones more frequent in the coming years.

More on News

- Also, both PDO and **El Nino Southern Oscillation (ENSO)** impact each other.
- Scientist have also pointed the linkage of PDO and global warming.

About PDO

- **PDO** is a long-term ocean **fluctuation** in the **Pacific Ocean**.
- It has **two phases**:
 - **Cool or Negative Phase:** Characterized by a **cool wedge** of lower than normal **sea-surface heights/ocean temperatures** in the **eastern equatorial Pacific**.
✓ And a warm **horseshoe pattern** of higher than **normal sea-surface heights** connecting **the north, west and southern Pacific (refer to image)**.
 - **Warm or positive phase:** It is reverse of cool phase. In it, **West Pacific Ocean** becomes cool and the wedge in the **east warms**.
- It waxes and wanes approximately every 20 to 30 years. However, in the **recent time**, the '**warm**' and '**cold**' phases have been much shorter.



Why PDO enhances the frequency of Cyclones?

- **Negative PDO** along with **La Nina** phase creates **suitable condition** for the tropical cyclones.

- In 2019, the PDO entered a **cooler or negative phase**. If it remains so, it could mean **more tropical cyclones** in the **post-monsoon months** that originate near the equator.
 - The number of **equatorial-origin cyclones** was 43% fewer in 1981-2010 compared with 1951-1980, and this was because the **PDO was in a ‘warmer’ or positive phase**.
- It's usually rare for cyclones to form near the Equator (due to the absence of Coriolis force) but when the waters are warm, they can **gain more moisture and rise in intensity**.

About ENSO

- Though ENSO is a **single climate phenomenon**, it has **three states or phases**. Which are as Follows:
 - **El Niño**: A **warming** of the ocean surface or **above-average** sea surface temperatures (SST), in the **central and eastern tropical Pacific Ocean**.
 - ✓ It leads to drought and deficient rainfall in Asia.
 - ✓ Due to it, recently global monthly mean ocean temperatures has raised at an all-time high relative to temperatures since records started to be kept.
 - **La Niña**: A **cooling** of the ocean surface or **below-average** sea surface temperatures (SST), in the **central and eastern tropical Pacific Ocean**.
 - **Neutral**: Neither El Niño or La Niña. Often tropical Pacific SSTs are generally close to average.

Relation between PDO and El Nino Southern Oscillation (ENSO)

- **Climate impacts** experienced during a **PDO** event can go **hand-in-hand** with **impacts of ENSO**.
 - If **both phenomena** are in the **same phase**, their associated **impacts can be amplified**.
- **Impact on Indian Monsoon**: ENSO (El Niño phase) with a **positive PDO** is generally **not good for the Indian monsoon**.
 - When **ENSO** (in La Nina phase) is linked with a **negative PDO**, it intensifies monsoon in India.

Relation between PDO and Global Warming

- It is thought that negative phases could be linked to times of **slower warming**.
- This happens because **cold or negative phases** of the **PDO** tend to increase **mixing of colder, deep ocean waters with warmer surface waters**.
 - This temporarily reduces the rate of **global warming** caused by **increasing greenhouse gas emissions**.
- However, positive phases of PDO have the opposite effect i.e. **increases the global warming**.

Conclusion

- PDO is a complex phenomenon. It impacts region ranging from USA to India. Due to climate change and other related events such as ENSO its cycle has changed in the recent time. Still research is going on to understand its different dimensions.

Related News: Marine Heatwaves (MHWs)

- **Long-term, persistent warming** and discrete periods of extreme regional ocean warming is called **MHWs**.
 - Indian Ocean (Arabian Sea and the Bay of Bengal) experienced it recently.
- **Causes**: It occurs when the surface temperature of a **particular region** of the sea rises to **3 or 4 degrees Celsius** above the **average temperature** for at **least five days**.

- **El Nino** has contributed in its **occurrence**.
- **Key Characteristics:**
 - MHWs can last for weeks or even years.
 - They can affect small areas of coastline or span multiple oceans.
 - MHWs have increased by 50% over the past decade and now last longer and are more severe.
- **Impacts:**
 - **Marine ecosystems:** Deaths of **several marine species**, alter their **migration patterns**, lead to **coral bleaching** and even **impact weather patterns**.
 - **Humans:** Can make **storms stronger** and severely **affect coastal communities**. **These make hurricanes and tropical cyclones stronger more intense and frequent**.
 - **Precipitation:** Due to its presence in the **Bay of Bengal**, **northwest India received sufficient rainfall**.

8. MULTI-PURPOSE SEAWEED PARK (TAMIL NADU)

- On the third day of Sagar Parikrama Phase VIII, the Ministry of Fisheries, Animal Husbandry & Dairying laid the **Foundation Stone for a Multi-Purpose Seaweed Park** in Tamil Nadu (Valamavur, Ramanathapuram district).

What are Seaweeds?

- **Seaweeds are a type of marine algae, often found in coastal waters.** It can vary in size and colour and is used in various industries, including food, cosmetics, and agriculture. Seaweed is rich in nutrients and has diverse applications worldwide.

About the Park:

- The park aims to **promote seaweed cultivation for employment**, value-added products, and conservation. It involves **136 coastal fishing villages** and offers support to entrepreneurs. The **Multipurpose Seaweed Park** is a significant investment to promote seaweed cultivation and research, benefiting scientists, researchers, and local communities.

About Sagar Parikrama Yatra

- It aims to raise awareness about sustainable marine resource use and promote schemes for coastal communities. It emphasizes a **balance between marine resource use for food security** and livelihoods while protecting marine ecosystems.

Status of the Fisheries Sector in India:

Status	About
Production Ranking	2nd largest fish producer through aquaculture globally
Export Ranking	4th largest fish exporter, contributing 7.7% to global fish production.
Production Rankings	1st in inland capture fish production, 3rd in

	overall fish production worldwide.
Livelihood Impact	Provides livelihood to about 3 crore people in India

Initiatives related to the Fisheries Sector:

Initiatives	Description
<u>Pradhan Mantri Matsya Sampada Yojana</u>	Government scheme to boost fisheries and aquaculture.
Palk Bay Scheme	A program focused on the Palk Bay region to enhance fisheries.
Fisheries and Aquaculture Infrastructure Development Fund (FIDF)	Fund for developing fisheries infrastructure

9. SAGO

- SAGOSERVE (a cooperative society) received **GI tag for its Sago produced in Salem (TN)**.
- Sago is **derived from raw tapiocas** and is in the **form of small hard globules or pearls** and is pearl white in colour.
- **Tapioca is a horticultural crop**, that **grows in tropical, warm humid climate** with **rainfall of over 100 cm** per annum.
- Sago comprises of **high carbohydrate content** and is **low in protein, fat, minerals, vitamins** etc.
- It is **easy to digest** and **provides rapid energy**.

10. 'ATLANTIFICATION' OF THE ARCTIC OCEAN

Context:

- A recent study has **identified the cause of the decline in Arctic Ocean Sea ice since 2007**. Researchers found that the periodic reversal of an atmospheric phenomenon known as **the Arctic dipole plays a significant role in driving drops in sea ice**.
- The study, published in the journal Science, explores the ecosystem **responses to the Arctic dipole and its impact on the Arctic Ocean climate, a phenomenon referred to as Atlantification**.
- The Arctic dipole follows a **roughly 15-year cycle**, and data spanning several decades suggest that it is **approaching the end of its current regime**.
- The current **“positive” phase of the Arctic dipole, which has been in place since 2007, involves high pressure over the Canadian Arctic and low pressure over the Siberian Arctic**.
- This wind pattern drives upper ocean currents and has year-round impacts on **air temperatures, heat exchanges, sea-ice drift, and ecological consequences**.

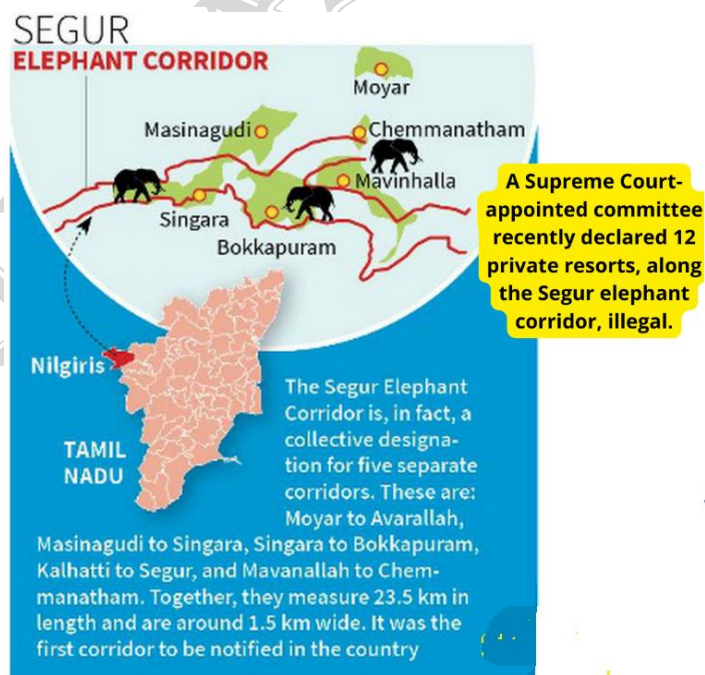
Significance:

- The study highlights the importance of **water exchanges between the Nordic seas and the Arctic Ocean for the Arctic climate system**, with sea ice decline serving as a significant indicator of climate change.
- Researchers observed changes in Atlantic water flow into the Arctic Ocean, including decreased flow through the **Fram Strait** and **increased flow into the Barents Sea**, which they referred to as a “**switchgear mechanism**” driven by the Arctic dipole.
- This change in water flow has **had a significant impact on sea ice loss, slowing it down from 2007 to 2021**.
- The study also notes that these changes in **water inflow have profound effects on marine life, creating more favourable conditions for sub-Arctic boreal species in certain areas**.

11. SEGUR ELEPHANT CORRIDOR

Context:

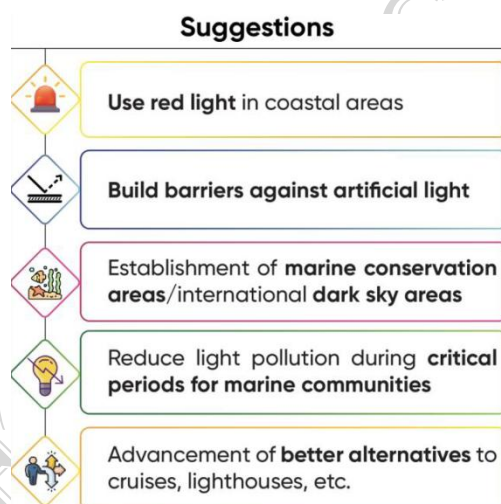
- A **Supreme Court-appointed committee** has declared **12 private resorts** along the **Segur elephant corridor illegal**.
- This corridor is **vital for the movement of elephants and other wildlife between habitats** in the **Nilgiri Biosphere Reserve**.
- The resorts were challenged by the owners who claimed the corridor did not comprise an elephant habitat. The **committee ruled in favour of protecting the corridor**, noting that the resorts had erected **illegal structures that hindered elephant movement**.
- While this decision safeguards the corridor, it has economic consequences for local communities reliant on resort employment



12. MARINE LIGHT POLLUTION

- According to a study by Journal Aquatic Conservation **marine light pollution threatens coastal marine systems**.

- **Light pollution** also known as ‘**Artificial Light at Night**’ (ALAN) is an excessive, misdirected, or obtrusive artificial (usually outdoor) light in the environment.
- **Sources of light for Marine Ecosystem:**
 - **Natural Sources-** Sunlight, **moonlight**, **starlight**, and bioluminescent light (**result of endogenous biochemical reactions**).
 - **Artificial light:** City lights, by **offshore oil and gas platforms**, wind farms, and island development.
- **Significance of Light for Marine Ecosystem**
 - **Ocean is generally divided into three zones** based on the **amount of sunlight it receives** i.e., Euphotic (<200 m), Dysphotic(200 and 1,000 m), and Aphotic zones (**below 1,000 m**).
 - Marine organisms have **visual systems guided by light** and **solar and lunar cycles** to regulate their life events e.g., eggs hatching, etc.
- **Impacts of ALAN:**
 - **Behavior change**-mating, reproductive
 - **Symbiosis** or inter species interaction impacted.
 - **Physiology** e.g hormones, metabolism and growth.
 - **Photosensitive systems** of species get disturbed.



13. ARTIFICIAL REEF (AR)

Context:

- The **Department of Fisheries** is **actively promoting the use of Artificial Reefs (AR)** as a means to **rejuvenate coastal fisheries**.
- Under the **Pradhan Mantri Matsya Sampada Yojana (PMMSY)**, the department has approved **732 artificial reef units for 10 coastal states**.
- These projects are part of the “**Integrated Modern Coastal Fishing Villages**” program within the **Centrally Sponsored Scheme (CSS)**.
- The implementation of these artificial reefs is being carried out **with technical support from the Fishery Survey of India (FSI) and ICAR-Central Marine Fisheries Research Institute (CMFRI)**.
- The **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** was **launched in May 2020** to bring about a **Blue Revolution by promoting sustainable and responsible development** in the fisheries sector

Artificial reefs are **human-made structures or objects** that are **intentionally placed on the seabed to mimic the characteristics of natural reefs**. These structures serve various ecological, economic, and recreational purposes

14. AAROGYA MAITRI CUBE UNDER PROJECT BHISHM

- India has built the **world's first disaster hospital**, called **Aarogya Maitri Cube** which can be **airlifted and assembled in 72 cubes**.
- These cubes contain medical equipment and supplies to **support 200 survivors for 48 hours**.
- These medical cubes have been indigenously developed under **Project BHISHM (Bharat Health Initiative for Sahyog Hita and Maitri)**.
- India has already **donated two Aarogya Maitri Cubes to Myanmar** as a goodwill gesture and one is **being readied for donation to Sri Lanka**.

15. ECOCIDE



Ecocide

Context: Several countries, including **Mexico**, are considering ecocide legislation to criminalize environmental damage that harms humans, animals, and plant species.

Aspect	Description
Definition	Ecocide refers to the wilful and extensive destruction, damage, or harm to the environment , including ecosystems, that results in severe and long-term consequences.
Examples	U.S. military's use of Agent Orange (an herbicide) during the Vietnam War Nova Kakhovka Dam Collapse (2023): This incident, under investigation for Russia's involvement, led to a catastrophic flood affecting 40 regions in Ukraine. It also resulted in oil spillage and toxic leakage into the Black Sea. Proposed Maya Train Project: Mexico's \$20 billion Maya train project, spanning 1,525 km, has been labelled a "megaproject of death." It endangers the Yucatán peninsula's wildlife, caves, and indigenous communities, raising concerns about its environmental impact.
Origins	The term ecocide was coined in the 1970s (by Biologist Arthur Galston) and gained prominence as a response to environmental destruction, particularly in the context of warfare, industrialization, and development projects .
Legal Status	Ecocide is a crime in 11 countries , and many more are considering legislation to criminalize environmental damage.
European Parliament	The European Parliament voted unanimously to enshrine ecocide in law , recognizing the need for legal instruments to protect the environment.
Purpose	Ecocide laws aim to provide legal protection for the environment itself , as existing international criminal laws focus on crimes against people.
Liability and Deterrence	Ecocide laws can hold individuals and corporations accountable and potentially deter environmentally harmful activities.
Symbolic Impact	Equating ecocide with war crimes changes the perception of nature's value, recognizing ecosystems' worth in their own right.
Indian Stance	India has not fully embraced ecocide in its laws , and there is a need to align existing environmental legislation with the concept of ecocide.

16. FUJIANVENATOR

Context:

- Scientists in China** have uncovered fossils of a peculiar, **bird-like dinosaur named Fujianvenator prodigiosus**, which lived around **148 to 150 million years ago** in southeast China.

- This dinosaur had **long legs and arms** resembling wings, with an **unusual anatomy** suggesting it may have **been a fast runner or lived like a modern wading bird**.
- Researchers believe that **Fujianvenator** sheds light on a critical evolutionary stage in the origin of birds.

Features:

- It is **described as a “bizarre” animal with bird-like features** but significant differences, such as three claws on its wing-like forelimb.
- **Fujianvenator’s** discovery **contributes to our understanding of the evolutionary history of birds**, which evolved from **two-legged, feathered dinosaurs** known as theropods during the late Jurassic period.
- The fossils are **relatively complete but lack the skull and parts of the feet**, making it challenging to determine their **exact lifestyle and diet**.
- Notably, **its lower leg bone (tibia) was unusually long compared to its thigh bone (femur)**, a feature distinct from other theropods like Tyrannosaurus.

17. AGUMBE RAINFOREST COMPLEX (ARC)

Context:

- The Agumbe Rainforest Complex (ARC) in Karnataka, known for its high rainfall, has seen a decline in its peak monsoon rainfall over the past two years, losing its reputation to lesser-known towns in the Udupi district.
- Agumbe has historically been famous for **receiving over 8,000 mm of rainfall** during the monsoon and was nicknamed **the ‘Cherrapunji of the South.’** However, towns like Nadpal and Mudradi in Udupi district have recorded **higher rainfall than Agumbe recently**.



18. MITHUN ('FOOD ANIMAL')

Context: The Mithun, a culturally significant bovine in the North-eastern states of India, has been recognized as a 'food animal' by the Food Safety and Standards Authority of India (FSSAI) since September 1



A 'food animal' refers to an animal species that is raised and utilized for human consumption as food

Mithun (<i>Bos frontalis</i>) (also called Drung ox or Gayal) is a unique bovine species with cultural significance, primarily found in the North-eastern states of India.		
Species	Ruminant species of the Bovidae family	
Habitat	It is endemic to Arunachal Pradesh, Nagaland, Manipur, Mizoram (also in some parts of Bangladesh, Myanmar, and Bhutan)	
State Animal	Arunachal Pradesh and Nagaland	
IUCN	Vulnerable ; CITES Appendix I	
Skin Colour	The skin colour of the head and body is blackish-brown in both sexes, and the lower portion of the limbs are white or yellowish	
Similarity with other animals	Similar to that of Gaur (Indian bison) but are smaller in size.	
Characteristics	Traditionally, Mithun is semi-domesticated and roams freely in forests, needing little shelter or extra food except for salt . Their affinity for salt leads them to lick it off farmers' hands due to the low salt content in the acidic soil of their habitat.	
Population (2019)	Around 4 lakhs in Arunachal Pradesh, Nagaland, Manipur, and Mizoram	
Significance	Reserved for special occasions, including feasts by-election candidates	
Initiatives	M-ANITRA app by the Indian Council of Agricultural Research (ICAR) to register Mithun farmers as "buyers" and "sellers" for competitive business opportunities	
Other food animals	Himalayan yak was accepted as a food animal by FSSAI in 2022	

What are 'Food Animals'?

- A 'food animal' **refers to an animal species that is raised and utilized for human consumption** as food. This category includes livestock like cattle, poultry, and pigs, and now, in the case of the Mithun in Northeast India, certain indigenous animals have been officially recognized as suitable for human consumption.

Benefits of Recognition:

- This recognition has opened up **opportunities for farmers and tribal communities** to benefit commercially from the sale and processing of Mithun meat.
- Traditionally reserved for special occasions, Mithun **meat can now be sold in the market**, offering economic potential for farmers.
- Efforts include **training farmers in better Mithun care** and promoting **Mithun products** in regions beyond their traditional consumption areas.

19. PROJECT SAMUDRAYAAN

Context:

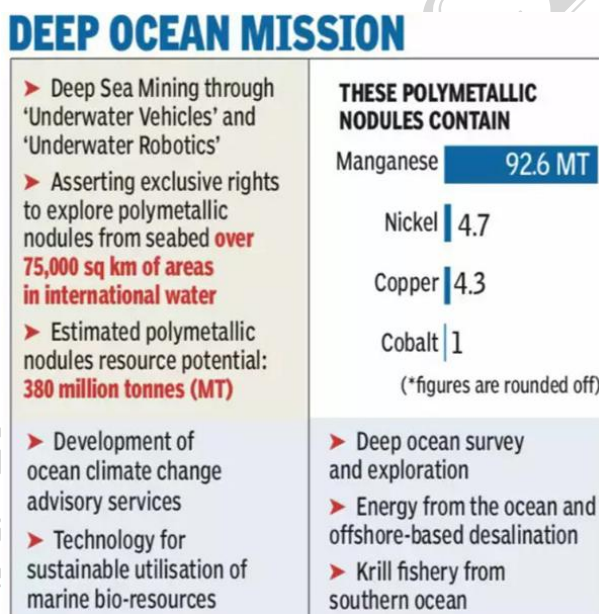
- Indian scientists are gearing up for an ambitious project called Samudrayaan, which involves **sending three people 6,000 meters underwater in a domestically developed submersible named Matsya 6000**.
- This mission aims to **explore the ocean depths** of precious metals and minerals such as cobalt, nickel, and manganese

About Matsya 6000:

- Matsya 6000 has been in **development for nearly two years and will undergo its first sea trials in the Bay of Bengal** off the Chennai coast in early 2024. The submersible's design has been reviewed carefully, **taking into account materials, testing, certification, redundancy, and standard operating procedures.**
- The submersible's **design includes a 2.1-meter diameter sphere made of 80mm-thick titanium alloy**, capable of **withstanding the immense pressure at 6,000 meters depth**, which is 600 times greater than sea level pressure. **The vehicle is designed to operate continuously for 12 to 16 hours, with a 96-hour oxygen supply.**

About Mission Samudrayaan:

- The **Samudrayaan mission is part of the Deep Ocean Mission**, and sea trials at a **depth of 500 meters are planned for the first quarter of 2024.** The mission's full realization is **expected by 2026.**
- It's **worth noting that only a few countries, including the US, Russia, Japan, France, and China,** have developed manned submersibles.
- In addition to searching for valuable minerals like nickel, cobalt, and manganese, Matsya 6000 will investigate the **chemosynthetic biodiversity in hydrothermal vents and low-temperature methane seeps in the ocean.**



20.PTERYGOTRIGLA INTERMEDICA – NEW FISH SPECIES

Context:

- Scientists from the **Zoological Survey of India (ZSI)** have discovered a **new species of deep-sea marine fish in Digha Mohana, West Bengal, named Pterygotrigla intermedica**, commonly known as **gurnards or sea-robins.**
- This fish belongs to the **Triglidae family** and is characterized by its **vibrant orange color.** It is the **fourth species of the Pterygotrigla genus reported in India** and adds to the **178 species of the Triglidae family found worldwide.**



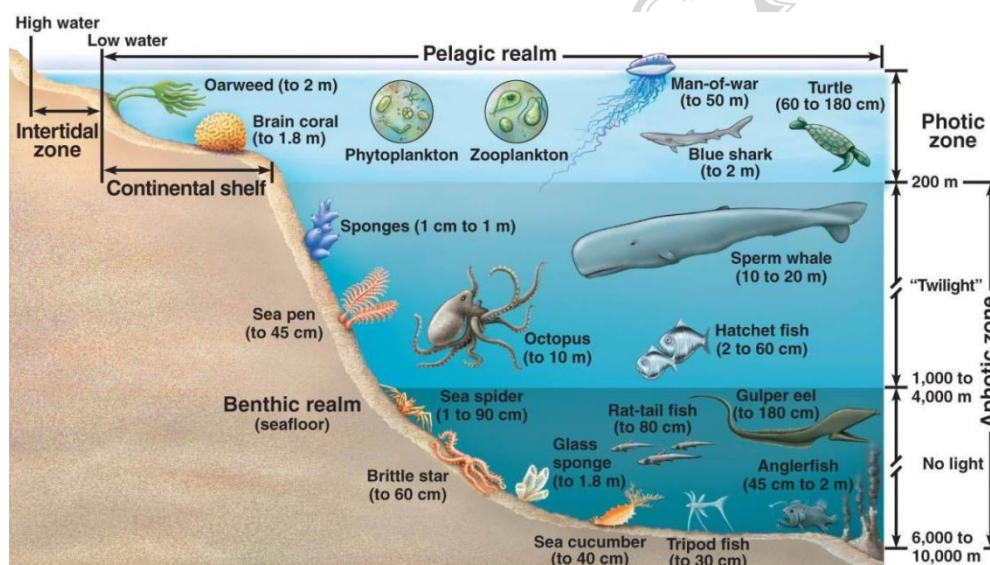
21. SAND MINING: IRREVERSIBLE DAMAGE TO OCEAN BENTHIC LIFE

Context:

- Approximately **six billion tonnes of sand** are **extracted** annually from the world's oceans, causing irreversible damage to benthic life, according to a new global data platform called **Marine Sand Watch**.

What is Benthic Life?

- Benthic life refers to **organisms that live on or near the bottom of aquatic environments**, such as oceans, seas, lakes, and rivers. These organisms are adapted to life on the seabed or riverbed and play crucial roles in the ecosystem, including decomposing organic matter and providing food for other aquatic species.



Impact of Sand Extraction on Benthic Life:

Impact	Description
Disruption of Habitat	Sand extraction disturbs the seabed, destroying the habitat and shelter of benthic organisms such as worms, crustaceans, and small fish.
Sediment Resuspension	Dredging activities stir up sediment, increasing water turbidity . This reduces light penetration, affecting photosynthetic organisms and altering the benthic environment.
Altered Nutrient Dynamics	Changes in sediment composition and nutrient availability can disrupt the food web and nutrient cycling, affecting benthic communities' survival and reproduction.
Noise Pollution	The machinery and vessels used in sand extraction generate underwater

	noise, which can disturb and stress benthic organisms, impacting their behaviour and health.
Smothering of Organisms	Depositing dredged sand can smother benthic life and the creatures living within the seabed, preventing them from accessing food and oxygen.
Migration and Displacement	Benthic organisms may need to migrate or are forcibly displaced due to sand extraction, disrupting their natural life cycles and behaviours.
Reduced Food Availability	Altered sediment composition can reduce the availability of food sources for benthic organisms, leading to reduced populations and potential extinctions.
Increased Mortality	Sand extraction can directly harm benthic life through physical disturbance and sediment burial, leading to increased mortality rates.

Examples of the impact of Coastal Sand Mining on Indian Coasts:

Impacts	Description
Periyasampuram, Tamil Nadu	Reduced fish catch - Dried palm trees - Brackish groundwater - Sea intrusion into the village
Kerala(Kollam, Alappuzha, Pathanamthitta, Kottayam, Ernakulam)	Seawater intrusion - Coastal land inundation - Groundwater salinization due to sand mining
Loss of Turtle Nesting Sites	Sand mining disrupts turtle nesting habitats, leading to the loss of nesting sites for turtles like Olive Ridley sea turtles.
Karnataka	Rampant sand mining causing coastal erosion - Government expenditure on erosion control measures
Coastal Ecosystem Impact	Serious repercussions on the coastal ecosystem - Alarming environmental consequences
Legal Actions	The <u>National Green Tribunal</u> imposes a fine of Rs 100 crore on the Andhra Pradesh government for failing to prevent illegal sand mining in the state.

Preventive measures taken:

- Some countries — including **Indonesia, Thailand, Malaysia, Vietnam, and Cambodia** — have banned marine sand export in the last 20 years, while others lack any legislation and /or effective monitoring programmes.

Addressing these issues requires a comprehensive approach, including:

- Reducing Sand Consumption:** Promoting sand-efficient construction practices.
- Taxation and Regulation:** Implementing taxes and regulations on sand extraction.
- Alternative Materials:** Exploring alternatives to sand in construction, such as recycling concrete or using filler materials like construction waste.

- **Empowerment:** Involving local communities in decision-making, particularly those downstream or reliant on sand resources.
- **Integrated Regional Management:** Coordinating sand resource management between offshore regulators, coastal communities, and upstream river basins.

Legal Mechanisms:

- Sand is categorized as a “**minor mineral**” under the **Mines and Minerals (Development and Regulations) Act, 1957**, and its control lies with the **State Governments**. The primary sources of sand are rivers and coastal areas, and its demand has surged due to **India’s construction and infrastructure development activities**.
- **The Ministry of Environment, Forests, and Climate Change** has issued “**Sustainable Sand Mining Management Guidelines 2016**” to promote environmentally friendly sand mining practices.
- **The International Seabed Authority (ISA)**, governed by a UN treaty, regulates mineral exploration and extraction. India, as a party to the treaty, has exclusive rights to explore polymetallic nodules in the **Central Indian Ocean Basin** spanning over 75,000 sq. km.

About Marine Sand Watch

It is a global data platform developed by GRID-Geneva, part of the UN Environment Programme. It monitors and tracks sediment extraction activities in the world’s marine environments, including sand, clay, silt, gravel, and rock dredging. It uses Automatic Identification System signals from vessels and Artificial Intelligence to identify dredging operations

SCIENCE & TECHNOLOGY

1. DOLLY SHEEP

- **Sir Ian Wilmut**, who led the team that **created Dolly**, passed away recently.
- Dolly was the **first mammal to be cloned from an adult cell**.
- Dolly was **created using** a cloning method called **Somatic Cell Nuclear Transfer** or SCNT.
- In SCNT, **nucleus of an egg cell is removed and replaced with nucleus of a donor** adult cell.
- Because **99.9% of cell’s DNA is contained in nucleus** as chromosomal DNA, **resulting animal** will share almost **exactly same DNA as original donor** cell.

2. LIGO-INDIA: NEXT FRONTIER FOR INDIA AFTER CHANDRAYAAN AND ADITYA

Context:

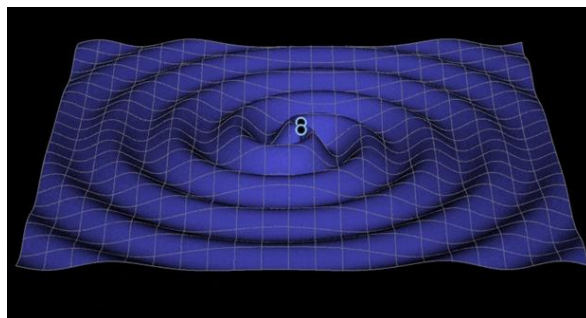
- LIGO-India, part of the Laser Interferometer Gravitational-Wave Observatory, is set to **become a prominent astronomical observatory** in the world, aiming to detect and study gravitational waves, offering a new way to observe the universe.

What are Gravitational Waves?

- Gravitational waves are **ripples in the fabric of space and time** that travel at the speed of light. They are **created by the motion of massive objects**, such as black holes or neutron stars, which **generate gravitational waves** when they orbit or collide with each other.

The science behind Gravitational waves:

- According to Albert Einstein's theory of general relativity (1916), any object with mass warps the space-time around it. When two massive objects orbit each other or collide, they produce **ripples or waves in space-time** that propagate outward at the speed of light.



Why use LIGO?

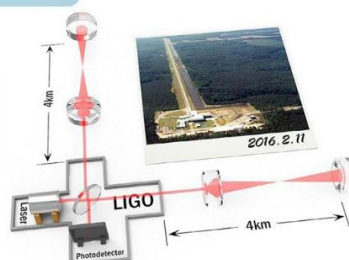
- Gravitational waves are **extremely weak and difficult to detect**. They were first directly detected by the **Laser Interferometer Gravitational-Wave Observatory (LIGO)** in 2015, a century after they were predicted by Einstein's theory.

What is LIGO-India?



Laser Interferometer Gravitational-Wave Observatory (LIGO)- India

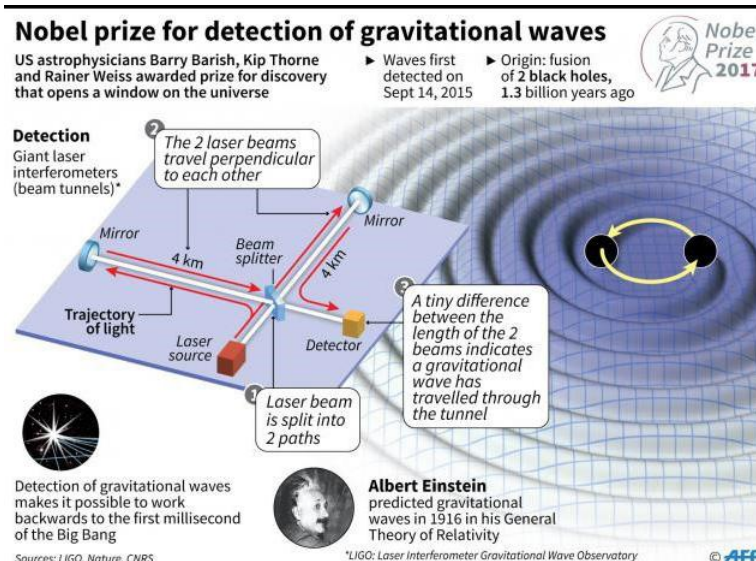
Context: Union Cabinet has approved a project to build an **advanced gravitational-wave detector** in the Hingoli district in Maharashtra. The facility's construction is expected to be **completed by 2030**.



About LIGO- India

Location	Hingoli district, Maharashtra, India
Built by	Department of Atomic Energy and the Department of Science and Technology with an MoU with the U.S. National Science Foundation
Type of facility	Laser Interferometer Gravitational-Wave Observatory (LIGO)
Purpose	To detect and study gravitational waves . LIGOs are designed to measure changes in distance of gravitation waves that are smaller than the length of the proton .
Network	Four comparable detectors need to be operating simultaneously around the globe to localise a source of gravitational waves anywhere in the sky. LIGO-India will be the third of its kind in the world, made to the exact specifications of the twin LIGO, in Louisiana (first) and Washington (second) in the U.S. A fourth detector in Kagra, Japan, will also be made.
Construction	It consists of two interferometers , each with two 4 km long arms arranged in the shape of an "L" (acting as 'antennae' to detect gravitational waves)
Expected benefits	Advances in astronomy, astrophysics, detection of astronomical events, and cutting-edge technology
About Gravitational Waves	Gravitational waves are ripples in space-time caused by the movement or collision of massive objects , and were first directly detected by LIGO in 2015 after being predicted by Einstein's theory of general relativity .

Working of LIGO?



Significance of LIGO for India:

Significance	Examples
Advancing Scientific Research	Provides India's scientific community access to cutting-edge research
	Enhances India's standing in global astrophysical research.
Technological Advancements	Promotes the development of advanced technology and instrumentation.
	Fosters collaborations with international experts.
Human Resource Development	Offers training and research opportunities for Indian scientists and engineers.
	Attracts talent in the field of astrophysics.
Educational Outreach	Inspires students and the public with the excitement of gravitational wave astronomy
	Encourages STEM education and awareness.
International Collaboration	Strengthens India's role in international scientific collaborations. Deepens ties with countries like the United States.
Economic and Industrial Benefits	Promotes industrial partnerships for the development of precision instruments. Boosts India's high-tech manufacturing capabilities.
Cultural Impact	Enhances India's global image as a hub for scientific and technological innovation. Encourages interest in science and research.

Challenges for LIGO India:

- **Funding:** Securing adequate financial resources for construction, maintenance, and research.
- **Site Preparation:** Dealing with environmental and logistical issues at the chosen site.
- **Technology Transfer:** Acquiring and adapting cutting-edge technology for Indian needs.
- **International Collaboration:** Coordinating with global partners for seamless operations.
- **Technical Challenges:** Overcoming technical obstacles in precise measurements and data analysis

3. BHARAT DRONE SHAKTI 2023

Context:

- The **Indian Air Force (IAF)** is collaborating with the **Drone Federation of India** to co-host 'Bharat Drone Shakti 2023', at the IAF's airbase in Hindan, Ghaziabad.

- This event aims to **showcase the capabilities of the Indian drone industry** and promote the use of drone technology in various sectors.
- The event will feature **over 50 live aerial demonstrations**, including **survey drones, agriculture drones, fire suppression drones, tactical surveillance drones, heavy-lift logistics drones, loitering munition systems, drone swarms, and counter-drone solutions**.
- The event serves as a **significant step toward India's goal of becoming a global drone hub by 2030**, highlighting the country's **growing interest in drone technology across various sectors**, including **defence and civilian applications**.

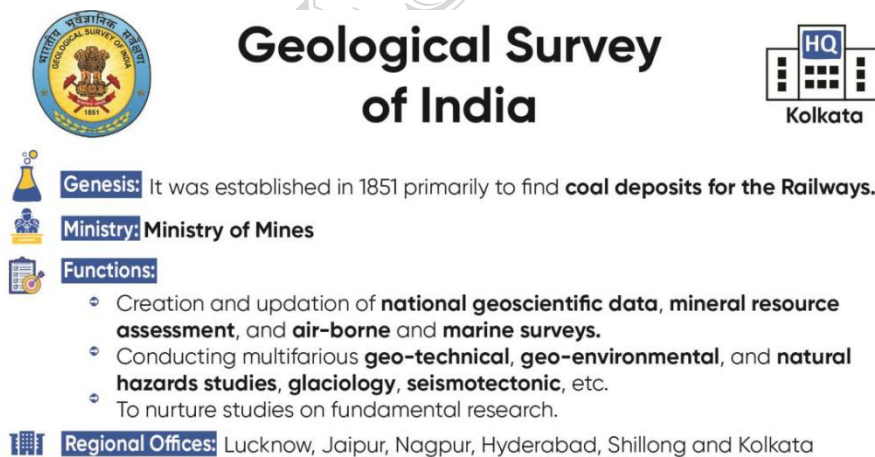
4. VANADIUM

Context:

- Researchers at the Geological Survey of India (GSI) discovered vanadium, a critical mineral from the Gulf of Khambhat in Gujarat.

More about news

- **Titanomagnetite – ore** containing vanadium has been identified in samples taken from the Gulf of Khambhat.
 - Titanomagnetite is a primary source of the element (**88% of the world's vanadium** is extracted from it) and is formed when molten lava cools rapidly.
- According to GSI, deposits in the gulf were drained from the Deccan basalt mainly through the rivers of **Narmada and Tapi**
- It is the first report of vanadium **occurrence in the offshore sediments of India**.



About Vanadium

- It is a chemical element with the symbol "V" and the atomic number 23 and is classified as a **transition metal**.
- It is an **abundant element in the earth's crust**, ranking 22nd in position in the upper continental crust.
- It is listed as one of the **30 critical minerals** identified by the Government of India.
- **Occurrence:** It rarely exists as a **free element in nature** but can be found in about 65 different minerals, including magnetite, vanadinite, carnotite, and patronite.
- It can be detected spectroscopically in the Sun's rays and occasionally in the light of other stars.

- **Physical Properties:**

- Under standard conditions, it is hard, **silvery-grey metal**.
- It is very **ductile** (can be drawn into wires), **malleable** (can be hammered into thin sheets), and **resistant to corrosion**.
- It **does not react with water or oxygen** at room temperature.

Know the term

Transition metals: They are metallic elements that serve as a bridge, or transition, between the two sides of the periodic table

Reserves of Vanadium

Globally

- **Brazil is the world's largest exporter of vanadium** (one-fourth of total exports), with Russia and South Africa as the next exporters.
- **China has the highest vanadium reserves and producer** in the world as of 2022.
- **In India**
- According to the Indian Bureau of Mines, the total estimated reserves of Vanadium in India is **around 24.63 million tonnes**.
- In 2021 vanadium reserves were also found in **Arunachal Pradesh**.

Applications of Vanadium

- **Energy storage:** Used in vanadium redox flow batteries, a type of rechargeable battery used for large-scale energy storage in renewable energy systems.
- **Steel manufacturing:** Used as an alloying element in steel production, where it imparts increased strength, toughness, and heat resistance to the steel.
- The addition of 0.15% vanadium strengthens cast iron by 10-25%.
- **Catalysts:** Vanadium compounds are used as catalysts in the production of chemicals, plastics, and other materials.
- **Nuclear reactors:** Vanadium alloys are also used to make nuclear reactors because of their low neutron absorbing properties.
- **Medicine:** It is used for the treatment of prediabetes, and diabetes.
- **Aerospace and aviation:** Used in the manufacture of aerospace and aviation components due to its high strength, lightweight, and heat resistance properties.
- **Other applications:** Used in the production of pigments, ceramics, and as a reducing agent in metallurgy.

Concerns regarding use of Vanadium

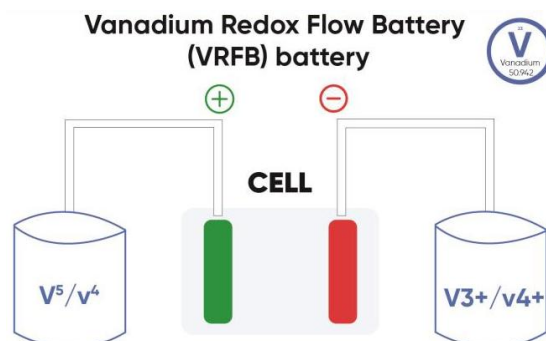


About vanadium redox flow batteries (VRFB)

They are a type of **rechargeable flow battery**, that employs **vanadium ions as the active materials**.

Working principle

- VRFBs store their energy in two electrolyte tanks, which are connected to a stack of cells.
- Vanadium has the unique characteristic of having four different stages of oxidation.
- In each of the four stages, Vanadium contains a different electrical charge and is therefore used as a catalyst to store energy.



VRFB vs Lithium-ion batteries		
	VRFB	Lithium-ion batteries
Energy Density (amount of energy compared to its weight)	Lower energy density Suitable for large scale industrial-scale operations	Higher energy densities Suitable for small devices , such as laptops and cellphones.
Lifespan	Longer life cycle , can handle more charge discharge cycles	Decay and lose capacity over time
Cost	Initial installation cost is higher , economic in the long run	Initial cost lower
Sustainability	Less waste and recyclable (Vanadium electrolyte can be easily reused and repurposed in other batteries)	High disposal costs (Lithium is challenging and currently uneconomic to extract)
Safety	Safer , uses aqueous electrolytes, which are not flammable	Less safe , contains flammable electrolytes.
Capacity expansion	Easier , by using larger electrolyte storage tank	Difficult

Conclusion

Demand for vanadium is expected to increase due to its increasing usability. VRFB's potential as a renewable, sustainable, and highly safe energy-storage system make it an exciting technology. R&D efforts will have to be initiated to meet the domestic demand for vanadium

5. NEW DISCOVERIES BY WEBB TELESCOPE

Context:

- Scientists using the James Webb Space Telescope have discovered **methane and carbon dioxide on the exoplanet K2- 18 b**.
- **K2-18 b** is located in the “**Goldilocks zone**” around **the cool dwarf star K2-18**, where it receives just enough starlight to maintain liquid water.

- It's considered a **"Hycean planet,"** a hypothetical **type of water-covered planet with a hydrogen-rich atmosphere** that some scientists believe is a good candidate for the search for signs of life.
- The presence of **methane and carbon dioxide**, along with a **shortage of ammonia**, supports the hypothesis that **K2-18 b may have a water ocean beneath its hydrogen-rich atmosphere.**
- The study also suggests the possible detection of a molecule called **dimethyl sulphide**, which on Earth is primarily produced by life, particularly **phytoplankton in the oceans.**

6. 'PRALAY' BALLISTIC MISSILES

Context:

- The **Indian defence ministry** has approved the **acquisition of a regiment of 'Pralay' ballistic missiles** for deployment along the **Line of Actual Control and the Line of Control.**
- 'Pralay' will become the **longest-range surface-to-surface missile in the Army's inventory** and will form a key part of **India's Rocket Force, alongside the BrahMos supersonic cruise missile.**

About Pralay:

- 'Pralay' has a **strike range of 150 to 500 kilometres** and can **carry a conventional warhead of 350 kg to 700 kg.**
- It is **highly versatile**, capable of carrying different types of warheads, and features advanced **technology to counter interceptor missiles.**
- It can **alter its trajectory mid-flight** and is powered by a **solid propellant rocket motor.**
- **Developed by the Défense Research and Development Organization (DRDO).**

7. XRISM SPACE TELESCOPE AND SLIM LUNAR LANDER

Context:

- Japan's **X-ray Imaging and Spectroscopy Mission (XRISM) and Smart Lander for Investigating Moon (SLIM)** were successfully **launched by Japan.**
- XRISM is focused on **studying X-ray emissions from celestial objects** to better understand the **universe's structure and evolution.** It will observe phenomena like **black holes, neutron stars, and galaxy clusters.**
- SLIM aims to **demonstrate precision landing capabilities on the Moon**, allowing for targeted scientific investigations and safe placements of future landers.

Both missions represent significant advancements in space exploration technology and research.

8. PEROVSKITE

Context:

- Scientists have **made a significant breakthrough in solar panel technology** using a **nanoscale "ink" coating.**
- This innovation **could potentially accelerate the transition to renewable energy sources.** The researchers found that this **coating can enhance the stability of perovskite solar cells, making them suitable for mass production.**

About Perovskite:

- Perovskite solar cells are **cheaper, lighter, and more efficient** than traditional silicon-based cells.
- However, **they face challenges related to a drop in efficiency and energy output** during the manufacturing process. The researchers **identified an aluminium oxide that minimizes this efficiency drop during the conditioning of perovskite solar cells.**
- Perovskite has been **recognized as a “miracle material” with the potential to revolutionize various industries, including renewable energy.**
- Recent advancements have **enabled the creation of self-healing solar panels and improved efficiency when combined with silicon in tandem cells.**

9. ARXIV

Context:

- **Recently, critique sparked a debate about the quality and impact of research shared on the arXiv platform.**
- The article discusses the **role and controversies surrounding arXiv, a widely used preprint server for scientific research papers.**

About ArXiv:

- **ArXiv was created to enable researchers in various fields, including physics, computer science, mathematics, and astronomy, to share early research findings with their peers.**
- It has gained immense popularity **due to its speed and accessibility, as papers are shared without a lengthy peer-review process.**

Issues:

- Rising, **debate about the quality and impact of research on arXiv.**
- Researchers were **using arXiv to stake claims in research areas, leading to a culture of rushing to publish rather than asking original and meaningful questions.**

Benefits:

- **arXiv provides open access to research papers, making them easily accessible to students and independent researchers.**

10. PHOSPHORUS

Context:

- India is facing a critical shortage of phosphorus, **which is essential for fertilizers but also a major environmental pollutant.**
- The **phosphorus shortage is due to its limited availability in geological formations and its contamination of water bodies when not properly managed.**

Reasons for Phosphorous shortage:

- Currently, only a few countries, **such as Morocco and the Western Sahara region, control most of the world’s phosphorus reserves, raising geopolitical concerns.**

- A significant issue is **the coexistence of cadmium**, a harmful heavy metal, with phosphorus in some deposits. **Cadmium-laden fertilizers** are often used in agriculture, leading to health concerns, including heart disease.
- **India is the world's largest importer of phosphorus**, primarily from cadmium-laden deposits in West Africa.
- Moreover, only a small **portion of mined phosphorus is used in food production**, with a **significant amount lost to water bodies as agricultural runoff**. Most of the phosphorus consumed by people **ends up in sewage**, exacerbating environmental problems like algal blooms and fish deaths.
- To address the **phosphorus scarcity**, there is **growing interest in mining urban sewage for high-quality phosphorus**. This approach could create a sustainable source of phosphorus while mitigating environmental issues.

11. HIV ACT

Context:

- The **Supreme Court of India** has directed the **central and state governments** to ensure the **effective implementation of the Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome (Prevention and Control) Act, 2017**, also known as the HIV Act.
- The court **also instructed all courts, tribunals, and quasi-judicial bodies** to prioritize cases related to **HIV-infected individuals for early disposal** as per the mandate of Section 34(2) of the HIV Act and **maintain the anonymity of HIV-infected individuals**.
- It emphasized the **protection of the property of children, their parents, or guardians affected by HIV/AIDS** and the **care and support of children infected with HIV or AIDS**.
- **HIV (human immunodeficiency virus)** is a virus that **attacks the body's immune system**. It can lead to **AIDS (acquired immunodeficiency syndrome)** if it's not treated. There is currently **no effective cure**, but with proper medical care, HIV can be controlled
- HIV is spread by contact with certain bodily fluids of a person with HIV
- HIV attacks the **white blood cells called CD4 cells**. This makes a **person more vulnerable to other infections and diseases**. As the immune system weakens, **the person is at risk of getting life-threatening infections and cancers**

12. NATIONAL GREEN TRIBUNAL

Context:

- The National Green Tribunal (NGT) central bench has issued a **ban on the operation of cruise boats in the Upper Lake (Bhoj Wetland) and other wetland sites in Madhya Pradesh**
- Additionally, the NGT has **prohibited any construction within the "no development zone" or "buffer zone"** as defined in the **Wetland Rules of 2017**.

Reasons for ban:

- They **operate as part of the travel, entertainment, or leisure industry and are run for profit**.

- These vessels have the potential to discharge sewage and trade effluents into the water.
- The proximity of the cruise's path to Van Vihar National Park, which falls under a "silent zone," yet noise pollution was observed.

About National Green Tribunal:

- The National Green Tribunal (NGT) is a **specialized judicial body in India** established to handle cases **related to environmental protection and conservation**. It is established under the **National Green Tribunal Act, of 2010**.
- The primary objective of the NGT is to provide **effective and expeditious solutions to environmental disputes and violations**.

About the Bhoj Wetland

- It is located in Bhopal, Madhya Pradesh, and earned its Ramsar site designation in 2002. It encompasses two man-made reservoirs, the **Upper Lake (Bhojtal) and the Lower Lake**

13. ADITYA-L1

Context:

- ISRO successfully launched India's **first space-based observatory-class solar mission** to study the Sun on September 2, to study the Sun.

More on News

- On September 18, ISRO successfully performed **trans-Lagrangian point 1 (L1) Insertion manoeuvre**.
 - This marks the beginning of the spacecraft's about 110-day trajectory to the destination around the L1 Lagrange point.
- Also, the **Supra Thermal & Energetic Particle Spectrometer (STEPS) instrument**, a part of the Aditya Solar Wind Particle EXperiment (ASPEX) payload, has begun the collection of scientific data.
 - **STEPS comprises six sensors**, each observing in different directions and measuring **supra-thermal and energetic ions**.
 - The data collected during Earth's orbits helps scientists to **analyse the behaviour of particles surrounding the Earth**, especially in the **presence of the magnetic field of Earth**.
 - STEPS measurements will **continue for the rest of the life of Aditya L1 mission**.

About Aditya – L1

- Launch vehicle: **PSLV C57 (25th mission using PSLV XL configuration)**
- It is planned to be placed in a **halo orbit around the Lagrangian point 1 (L1) of the Sun-Earth system**.
- **Science objectives of the mission**
 - Study of **Solar upper atmospheric (chromospheres and corona) dynamics**.
 - Study of **chromospheric and coronal heating**, physics of the partially ionized plasma, initiation of the **coronal mass ejections (CMEs)**, and **solar flares**.
 - Observe the **in-situ particle and plasma environment** providing data for the study of particle dynamics from the Sun.
 - Identify the **sequence of processes that occur at multiple layers** (chromosphere, base and extended corona) which eventually leads to solar eruptive events.

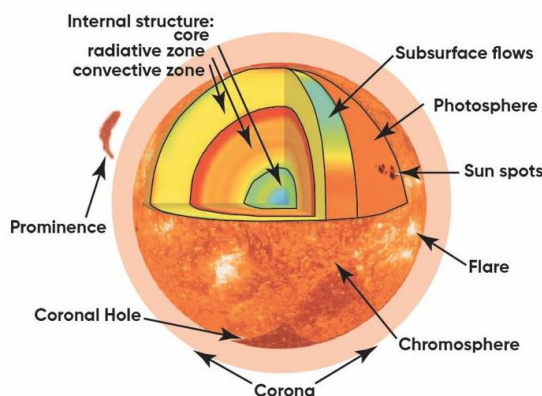
- **Drivers for space weather** (origin, composition and dynamics of solar wind).
- **Aditya – L1 carries 7 payloads** (5 by ISRO and 2 by Indian Academic institutes)
 - **Remote sensing payloads**
 - ✓ Visible Emission Line Coronagraph (VELC)
 - ✓ Solar Ultraviolet Imaging Telescope (SUIT)
 - ✓ Solar Low Energy X-ray Spectrometer (SoLEXS)
 - ✓ High Energy L1 Orbiting X-ray Spectrometer (HEL1OS)
 - **In-situ payloads**
 - ✓ Aditya Solar wind Particle Experiment (ASPEX)
 - ✓ Plasma Analyser Package For Aditya (PAPA)
 - ✓ Advanced Tri-axial High Resolution Digital Magnetometers
- **Uniqueness of the mission**
 - It will provide for the first time **spatially resolved solar disk** in the **near UV band**.
 - It will provide **information in the acceleration regime of CME** which is not observed consistently.
 - **On-board intelligence to detect CMEs and solar flares** for optimised observations and data volume.
 - **Directional and energy anisotropy of solar wind** using multi-direction observations.

Know the term

Coronal Mass Ejections(CMEs): These are large eruptions of Magnetized plasma form the Sun's outer atmosphere (Corona) that propagates outwards into the interplanetary space.

Solar Flares: A solar flare is an intense burst of radiation coming from the release of magnetic energy associated with sunspots. These are our solar system's largest explosive events.

Layers of the Sun



About Lagrangian points

- **What:** For a **two body gravitational system**, the Lagrange Points are the **positions in space** where a **small object tends to stay, if put there**.
 - For **two body gravitational systems**, there are **total of five Lagrange points** denoted as L1, L2, L3, L4 and L5. The Lagrange points for Sun-Earth system are shown in the figure.
 - Of these **five Lagrange points**, three (**L1, L2, L3**) are **unstable** and two (**L4, L5**) are **stable**.
 - **Unstable Lagrange points** lie along the **line connecting the two large masses**.

- **Stable Lagrange Points**, on the other hand, **form the apex of two equilateral triangles** that have the **large masses at their vertices**.
- **Significance:** These points in space for a **two body systems such as Sun and Earth** can be used by spacecraft to remain at these positions with **reduced fuel consumption**.
 - **Placing satellite around L1** gives advantage of **continuous observation of the Sun without any occultation/ eclipses**.
- **Mechanism:** At Lagrange point, the **gravitational pull of the two large bodies equals** the necessary **centripetal force** required for a small object to move with them.
- **Other key information:** Lagrange points are **named in honor of** Italian-French mathematician **Joseph-Louis Lagrange**.
 - Lagrange point **L1** lies **between Sun-Earth line** and the **distance of L1** from Earth is **approximately 1% of the Earth-Sun** distance.
 - NASA-ESA's joint **Solar and Heliospheric Observatory Satellite (SOHO)** mission is **placed near L1 point** while NASA's **James Webb Space Telescope** is placed around **L2 point**.

Lagrange Points

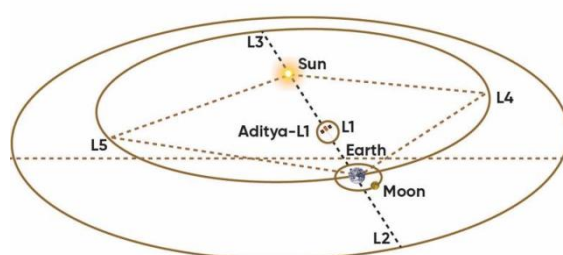


Illustration of all five Lagrange points of Sun- Earth system.
Aditya-L1 will be placed around Lagrange point 1

Conclusion

- As ISRO embarks on this ambitious journey, the mission embodies the nation's commitment to advancing scientific knowledge and securing its place on the global space exploration stage.

14. BATTERY ENERGY STORAGE SYSTEM (BESS)

Context:

Union Cabinet has approved a scheme for Viability Gap Funding (VGF) for development of Battery Energy Storage System.

Key highlights of the scheme

- Scheme envisages development of 4,000 MWh of BESS projects by 2030-31.
- It will provide a financial support of up to **40% of the capital cost as budgetary support in the form of VGF**.
 - VGF is a grant, one-time or deferred, provided **to support infrastructure projects that are economically justified but fall short of financial viability**.
- Scheme targets to achieve a **Levelized Cost of Storage (LCoS) ranging from ₹5.5-6.6 per kWh**, to make stored renewable energy a viable option **to manage peak power demand**.
 - LCoS reflects the **total cost of the BESS divided by the energy** it is projected to provide over the course of its useful life.

- A minimum of **85% of the BESS project capacity will be made available to Discoms** to enhance the **integration of renewable energy into the electricity grid** and **minimize wastage**.
- Selection of BESS developers for VGF grants will be carried out through **a transparent competitive bidding process**, to promote level playing field for public and private sector entities.

About Battery Energy Storage System (BESS)

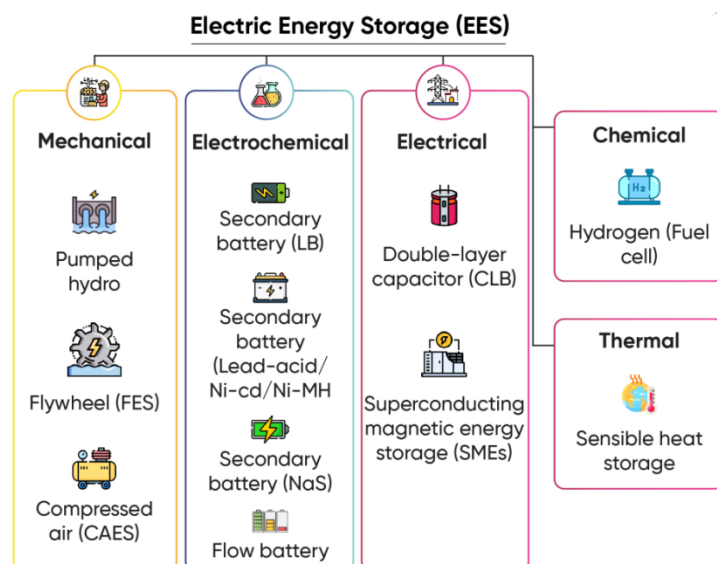
- It is **categorized under the electrochemical storage** system (refer infographics for types of Electric Energy Storages) which uses different **electrochemical reactions to store electricity**.
- Energy Storage Systems (ESS) have a multitude of applications in the **energy sector and can be used independent of or as a part of, power system infrastructure** at various levels in **generation, transmission, and distribution**.
- **Types of BESS**
 - **Standard (non-flow) batteries:** It consists of pairs of plates (**electrodes**) immersed in **electrolyte** and separated by non-conducting materials.
 - ✓ Lead-Acid (PbA) battery
 - ✓ Nickel-Cadmium (Ni-Cd) battery
 - ✓ Lithium-Ion (Li-Ion) battery
 - ✓ Sodium-Sulfur (Na-S) battery
 - **Flow batteries:** It uses **tanks of electrolyte** and **membrane to control the flow of electrons** and pumps to control the flow of electrolyte.
 - ✓ Redox Flow Battery (RFB)
 - ✓ Hybrid Flow Battery (HFB)

Need of domestic manufacturing of BESS

- **Economic:** Reduction of battery cell **imports** and prevention of outflow of **forex reserves**.
 - Advanced cell manufacturing will enable **Electric Vehicle deployment and reduce oil imports** to a greater extent.
 - It may also result in **growth of mining sector** to feed its increasing demand via domestic raw material.
- **Social:** Increasing opportunity for **skill development**, incubation centres and **entrepreneurship** programmes.
 - With the current Advanced Chemistry Cells (ACC) battery manufacturing plans of 50 GWh, IESA estimates that the program shall generate a minimum of 5 lakh employment opportunities.
- **Environmental:** Assistance in meeting **Panchamrit targets** (COP 26 of UNFCCC) of the government.
 - It will also assist in **reducing air pollution** in urban centres by reducing emissions.
 - It will enable **RE integration** with grid to ensure stable and flexible power system operation.

Do you Know?

Geological Survey of India (GSI) estimated an inferred resource of 5.9 million tones of lithium ore, in the Union Territory of J&K.



Challenges of battery manufacturing in India

- **Raw material availability:** Extremely **low reserves of in-house materials** like lithium, cobalt, nickel and battery-grade graphite, which are key constituents for manufacturing electrodes and electrolyte.
 - Absence of major **partnership or a bilateral agreement with major raw material producing countries** like Australia (Nickel, Lithium), Chile (Lithium), Brazil (Nickel), etc.
- **Policies and regulations:** **Policy uncertainty** such as discontinuation of tax holidays, reduction of accelerated depreciation benefit, etc.
- **Technology and material science:** Lack of appropriate **technology transfer** and **exchange of information** due to technology patents is also a key concern, limiting the technical expertise gained at local levels.
 - **Lack of high-quality R&D infrastructure** for research on advanced cell and battery manufacturing.
 - **Absence of EV and storage policies** and dedicated component to support indigenous battery manufacturing at state level.
- **Financing:** **Reluctance among banks/financial institutions** to provide loans for a new technology due to **lack of technical expertise** and a **standardised financial model**.
 - **Lack of assured offtake and a guaranteed market**, further aggravates the issue of financing.
- **Miscellaneous**
 - There are chances that a boom in the Li-ion battery manufacturing market can hamper the livelihood of players in the supply chain of lead acid technology.
 - **Need to protect domestic industry** against cheap and superior quality of Chinese imports.

Initiatives undertaken for BESS in India

- **Legal status for Energy Storage Systems (ESS)** as a Generator, Transmission or Distribution element, issued by Ministry of Power (MoP) on in January 2022.
- **Bidding Guidelines for Battery Energy Storage Systems (BESS)** notified by the MoP in March 2022.
- **National Framework for Promoting Energy Storage Systems** unveiled by the MoP in August 2023.
- **Battery Waste Management Rules, 2022** to promote circular economy in BESS sector.

Way Forward

- **Demand creation:** Implementation of a **soft loan facility** for Discoms/transmission companies to deploy energy storage and battery solutions.

- Facilitate **demand creation of e-buses/e-cabs/e-autos**, backed with MoUs and firm-contracts with state transport units (STUs)/cab aggregators and operators/ railways.
- **Phased manufacturing programme: Incentivising advanced cell manufacturing**, supported adequately by states to encourage investors.
 - There should be a **minimum 50% of value addition to the cell manufacturing** ecosystem in India by the manufacturer to be eligible for subsidy.
 - **State governments** can provide support under various categories, including **infrastructure support** and making provisions for subsidised utilities, such as electricity.
- **Taxation: Re-design GST rates** to discourage imports and encourage domestic procurement of batteries, granting tax-holiday to battery manufacturers, incentivize in-house R&D, etc.
- **Recycling and sustainability: Ensure effective implementation of Extended Producer Responsibility (EPR)** and digitize waste management to move from ‘**End-of-Life**’ approach to ‘**circular economy**’ in BESS.

15. GENE-DRIVE TECHNOLOGY (GDT)

Context:

- Genetically modified mosquitoes have been used in outdoor but controlled conditions in India, Brazil, and Panama which showed promising drops in mosquito populations, around 90% during the trials.

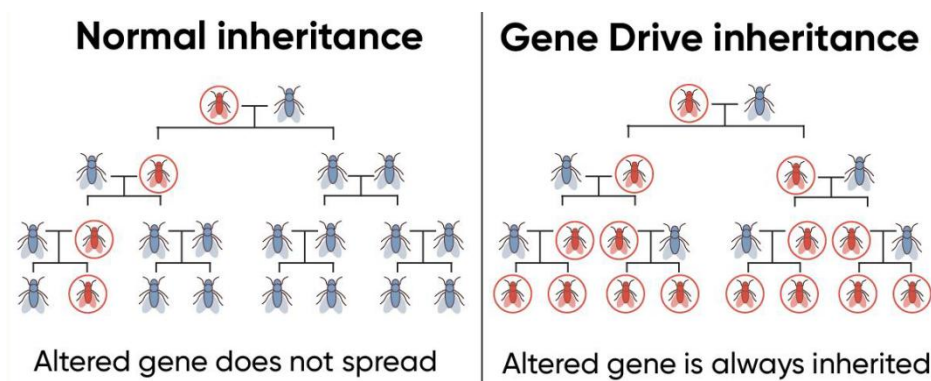
More on the News

- **Advances in genome sequencing techniques** coupled with our capacity to genetically manipulate them, offers opportunities to **systematically control population of mosquitoes** by interfering with their reproduction.

About GDT

- **GDT** is a type of genetic engineering technique that modifies genes to alter the typical rules of **Mendelian inheritance**.
 - **Mendelian inheritance** refers to certain patterns of how traits are passed from parents to offspring.
- **Components:** A gene drive consists of **three key components**:
 - **The gene to be spread;**
 - The **Cas9 enzyme** to cut DNA; and
 - **CRISPR, a programmable DNA sequence** that determines where the enzyme should cut.
 - ✓ **CRISPR** (Clustered Regularly Interspaced Short Palindromic Repeats) are **repetitive DNA sequences** developed as a method of repurposing bacterial immune system **to make breaks in DNA at precise locations**.
 - ✓ **Cas9** is an **enzyme** that acts as a **molecular scissor** that cuts the DNA at a specific location in the genome.
- **Outcomes:** The **genetic material** that encodes for these three elements **gets inserted into an animal’s DNA, in place of the naturally occurring gene**.
 - It increases the **likelihood that a particular suite of genes will be passed onto the next generation**, allowing the genes to rapidly spread through a population and override natural selection.

- **Applications:** GDT can be used to **exterminate insects such as mosquitoes** that can spread malaria, dengue, and the Zika virus.
 - Gene drives can also be used to **control invasive species such as rodents**.



- **Concerns**
 - **Ecological:** Long-term disruption in ecosystem like disturbance in balance of food-web, potentially leading to unintended ecological consequences.
 - **Legal:** Gene drive could get out of control and spread uncontrollably across international borders.
 - **Security:** It could potentially be used for bioterrorism or other malicious purposes.
 - **Ethical:** Deciding which species to target and the irreversible nature of GDT raises complex ethical and moral issues.

Conclusion

- GDT offers unprecedented potential for addressing global challenges like vector-borne diseases and invasive species, while also raising profound ethical and ecological concerns. Striking the right **balance between innovation and ethical responsibility** will be pivotal as we navigate the uncharted territory of gene drives.