



# DIKSHANT TODAY

## OCTOBER 2023



### What's special

- ⇒ 'One nation, one election
- ⇒ DIKSHA e-education platform
- ⇒ Parliament panel on NEP
- ⇒ Five Eyes intelligence alliance
- ⇒ India-Middle East-Europe Mega Economic Corridor
- ⇒ Global Innovation Index 2023
- ⇒ 'Nairobi Declaration'
- ⇒ Global Biofuels Alliance (GBA)
- ⇒ Women Reservation Bill 2023
- ⇒ Bharat Drone Shakti 2023
- ⇒ Practice Question For UPSC Pre. & Mains Exam



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## OCTOBER 2023

### EDITOR IN CHIEF

Dr. S. S. Pandey

### DIRECTOR

Shipra Pandey

### EXECUTIVE EDITOR

Rakesh Pandey

### CO-EXECUTIVE EDITOR

Saket Anand

### MANAGEMENT CONSULTING

Shankar Bharti, Marina

### EDITING SUPPORT

Niraj, Sudhir Prasad, Manoj Singh,  
Abhijeet, Md. Shoaib, Prakash Jaiswal

### TYPE SETTING AND DESIGNING

Suryajeet, Sunil, Praveen

\*\*\*\*\*

### HEAD OFFICE

289, Dhaka Johar, Near Dusshara  
Ground, Dr. Mukherjee Nagar, Delhi-09

### CONTACT OFFICE

704, In Front of Batra Cinema, Dr.  
Mukherjee Nagar, Delhi-09

**Contact:** 7428092240,

9312511015, 8851301204

**Email :** dikshantias2011@gmail.com

**Web.:** www.dikshantias.com

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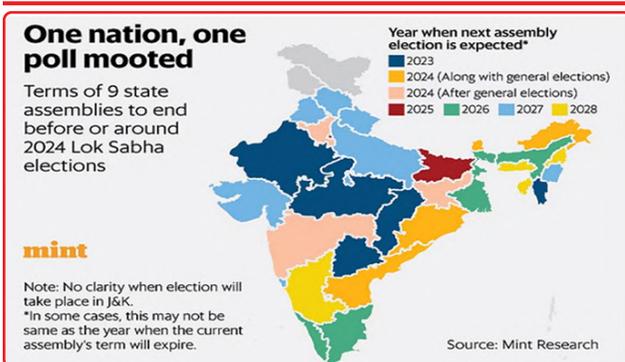


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## POLITY & GOVERNANCE

### GOVT. PANEL TO STUDY SIMULTANEOUS POLLS TO LS, STATE ASSEMBLIES



#### Why in news?

- The Centre has once again initiated discussions on the 'One Nation One Election' policy in India, a topic that has been on the agenda for several years.
- The Union government has formed a committee under the headship of former President of India Ram Nath Kovind, to look into the feasibility of simultaneous elections to State Assemblies and the Lok Sabha.

#### Background:

- The implementation of the 'One Nation One Election' proposal is expected to present significant challenges due to the democratic, constitutional, and structural alterations necessary for its enactment.
- Modifying the Constitution through legislative implementation is complex and time-consuming. But it is not impossible, going by the 105 constitutional amendments made until now.
- Most recently, the Constitution was amended in August 2021 when three Articles were altered to restore state governments' authority to identify socially and educationally backward Other Backward Classes (OBCs).

#### Constitutional amendments required:

- To make the 'One Nation One Election' policy a reality, the Parliament will have to revise the following listed constitutional and legal provisions to enable simultaneous elections across India.
- Such amendments should adhere to Article 368 of the Indian Constitution that outlines the rule for amendments.

- **Article 83:** specifies the duration of Parliament sessions for both Rajya Sabha and Lok Sabha. It further provides guidelines on what steps to follow regarding the functioning of Parliament during the Proclamation of Emergency.
- **Article 172:** This Article ensures that each State Legislature functions for a period of five years, unless dissolved earlier. In the event of an emergency, Parliament can extend the period of the House's operation for not more than one year. Article 172 also deals with dissolution of the Legislative Council.
- **Article 85:** By way of a proclamation and notification to the Speaker of the Lok Sabha, the President of India has the constitutional authority under Article 85(2)(b) to dissolve the Lok Sabha.
- **Article 174:** Article 174(2)(b) gives the governor of a state the power to dissolve the legislature. The Governor may do so through a proclamation and a notification to the Speaker of the state legislature.
- **Article 356:** In the case of emergencies enacted under Article 356, the President can dissolve the legislative assembly prematurely.
- **Article 75:** According to Article 75(3), the Council of Ministers is directly and collectively accountable to the Lok Sabha. Their power is contingent upon the confidence of the Lok Sabha, and a votary motion can disband it.
- **Article 164:** Article 164(2) stipulates that the Council of Ministers at the State level is accountable to the State's Legislative Assembly and their power is dependent on the support of the Legislative Assembly.
- **Article 324:** Article 324 empowers the Election Commission to oversee, direct, and control elections to the Lok Sabha and State Legislative Councils.
- **Tenth Schedule:** The Tenth Schedule deals with the Anti-Defection Law, which includes grounds on which an MP or MLA can be disqualified.
- **The Representation of People Act, 1951:** The Representation of People Act, 1951, passed by the Parliament, delineates the complete methodology of election proceedings in India, supplementing the powers granted to the Election Commission.

#### Simultaneous elections in other nations:

- India seems to be moving towards holding elections simultaneously for the Lok Sabha and the state assemblies. If India makes that happen, it will be

- only the fourth country in the world to hold polls simultaneously.
- The other three countries that hold simultaneous elections are Belgium, Sweden and South Africa. The fact that Sweden holds elections for county and municipal councils concurrently with general elections (Riksdag elections) every four years is not commonly known.
  - General elections for the Riksdag, regional or county council assemblies, and municipal councils are held in Sweden every four years. The polls are usually held in September. All these elections in Sweden take place on the same day.
  - Sweden has a proportional electoral system, which means that political parties are assigned a number of seats in the elected assembly based on their share of the vote.
  - In Belgium, Federal Parliament elections are held every five years, in sync with European elections, which impact regional elections.

### Nepal's Simultaneous Elections in 2017

- Nepal has the experience of holding national and state elections simultaneously once in 2017.
- On August 21, 2017, the Nepal government ordered the holding of national and state elections across the country simultaneously.
- This was to be Nepal's first election after the country adopted a new Constitution in 2015.
- But the Election Commission of Nepal raised concerns about the difficulty of organising such concurrent elections across the country. The government then went for a two-phase election with a gap period.

### The South Africa Case Study

- Area-wise, Belgium, Nepal and Sweden are smaller countries, and holding simultaneous polls there isn't that big a logistical challenge. A better example, though not exactly proportionate to the Indian scale, therefore, would be South Africa.
- India is seventh biggest in terms of area, whereas South Africa is the 24th.
- Provincial and national elections are held simultaneously every five years in South Africa. The African country has nine provinces.
- Separate voting papers are provided to voters to cast ballots for the national and provincial legislatures.
- South Africa's electoral system is based on a proportional representation (PR) framework for choosing members of parliament and provincial legislatures.
- The national Parliament has 400 MPs, but the makeup of the nine provincial legislatures varies, ranging from 30 to 90 seats depending on the population of the province.

- The execution of these elections is entrusted to the Independent Electoral Commission (IEC).
- South Africa's electoral process, however, is very different from India's.
- Before the elections, political parties draw up a list of candidates for each of the legislatures they wish to contest. For the national assembly, parties can submit half their candidates on a national list and half on provincial lists.
- When the poll results are announced, the IEC works out how many people from each party list should take up seats in the legislature.

### Challenges in India:

- Apart from the debates around the pros and cons, there are multiple logistical challenges in conducting polls simultaneously for the Lok Sabha and the state assemblies.
- Though they might be conducted in multiple phases, simultaneous elections would need manpower to be deployed around the same time at a stretch. It would also require greater numbers of electronic voting machines (EVMs) and voter verifiable paper audit trail (VVPAT) machines.
- Also, complexities could arise if any state government collapses or gets dissolved before their scheduled five-year term.

### Earlier experience of India:

- India began its electoral endeavour in 1951 with simultaneous elections. Independent India's first elections were held between October 25, 1951, and February 21, 1952, an exercise for over 100 days.
- However, as states were restructured and assemblies were prematurely disbanded, this set-up fell apart. Nonetheless, simultaneous elections were held in 76% of the states in 1957, and 67% in 1962 and 1967.
- The continuity of this synchronized electoral cycle was shattered in Kerala in July 1959, when the Central government dismissed the Communist Party-led government under E M S Namboodiripad. As a result, state elections were held in February 1960, within three years of the last assembly poll.
- By 1972, the synchronized election trend had been broken, as no state election coincided with the general election for the Lok Sabha.
- However, assembly polls in Andhra Pradesh, Odisha, Arunachal Pradesh and Sikkim are concurrently held with the Lok Sabha elections.

### Way Forward:

- The idea and practice of holding elections to the state assemblies and the Parliament is not new in India's case. But the challenges are many.
- And if India indeed opts for 'one nation, one election', the world's biggest democracy will set another unique example.

## WHAT IS THE DEBATE AROUND 'ONE NATION, ONE ELECTION'?

### Why in news?

- On September 1, the Central government set up a panel headed by former President Ram Nath Kovind to explore the feasibility of the 'one nation, one election' (ONOE) plan.



### What is the ONOE plan?

- The idea of ONOE centres around the concept of synchronising the timing of Lok Sabha and State Assembly elections across all States to reduce the frequency of polls throughout the country.
- After the enforcement of the Constitution on January 26, 1950, the first-ever general elections to Lok Sabha and all State Assemblies were conducted simultaneously in 1951-1952.
- The practice continued into the three subsequent Lok Sabha elections until 1967, after which it was disrupted. The cycle was first broken in 1959 after the Centre invoked Article 356 (failure of constitutional machinery) of the Constitution to dismiss the then-Kerala government.
- Subsequently, due to defections and counter-defections between parties, several Legislative Assemblies dissolved post-1960, which eventually led to separate polls for Lok Sabha and State Assemblies.
- Currently, the assembly polls in the States of Arunachal Pradesh, Sikkim, Andhra Pradesh and Odisha are held together with the Lok Sabha elections.

### What do reports say about ONOE?

- In August 2018, the Law Commission of India (LCI), chaired by Justice B. S. Chauhan, released a draft report on simultaneous elections, wherein the constitutional and legal questions related to the issue were analysed.
- It submitted that simultaneous elections are not feasible within the existing framework of the Constitution.
- It said that the Constitution, the Representation of the People's Act 1951 and the Rules of Procedure of Lok Sabha and State Assemblies would require appropriate amendments to conduct simultaneous

polls. The commission also recommended it receive ratification from at least 50% of the States.

- However, with respect to the advantages of holding simultaneous polls, the commission said that ONOE will lead to the saving of public money, reducing the strain on the administrative setup and security forces, timely implementation of government policies, and administrative focus on development activities rather than electioneering.
- Way back in 1999, the LCI headed by Justice B. P. Jeevan Reddy also advocated for simultaneous elections.

### What are the concerns?

#### Feasibility.

- Article 83(2) and 172 of the Constitution stipulates that the tenure of Lok Sabha and State Assemblies respectively will last for five years unless dissolved earlier and there can be circumstances, as in Article 356, wherein assemblies can be dissolved earlier.
- Therefore, the ONOE plan raises serious questions, what would happen if the Central or State government collapses mid-tenure? Would elections be held again in every State or will the President's rule be imposed?
- Amending the Constitution for such a significant change would not only necessitate extensive consideration of various situations and provisions but would also set a concerning precedent for more constitutional amendments.

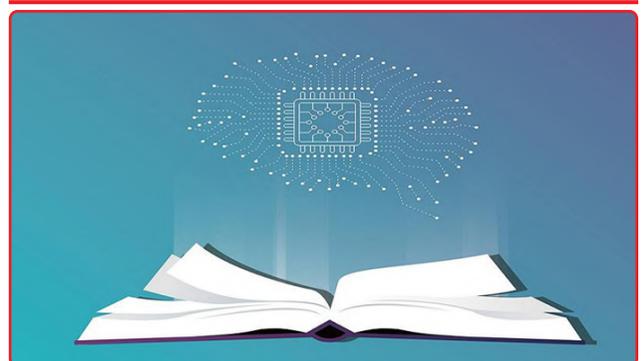
#### Federalism:

- The idea of ONOE does not square with the concept of 'federalism' as it is established on the notion that the entire nation is "one" contradicting the content of Article 1 which envisages India as a "Union of States".

#### Democracy:

- The present form of recurrent elections can be seen as beneficial in a democracy as it allows voters to have their voices heard more frequently.
- As the underlying issues of national and State polls are different, the present framework prevents the blending of issues, ensuring greater accountability.

## CENTRE'S DIKSHA E-EDUCATION PLATFORM TO OFFER AI HELP



**Why in news?**

- The National e-Governance Division (NeGD) of the Ministry of Electronics and Information Technology (MeitY) is set to integrate Personalised Adaptive Learning (PAL) into its existing Digital Infrastructure for Knowledge Sharing (DIKSHA) platform.
- The PAL's software-based approach is expected to allow each student to have an individualised learning experience over the course of the curriculum based on their unique needs and abilities.

**About DIKSHA:**

- DIKSHA, which comes under the Education Ministry, provides e-content for schools by an online portal and a mobile application. It has embedded assistive technologies for learners with visual or hearing challenges. However, DIKSHA is a static content repository.
- DIKSHA features digitised National Council of Educational Research and Training (NCERT) textbooks used by national and State Boards.
- Apart from this, DIKSHA hosts 2.43 lakh contributions by 11,624 academics by way of teaching videos, explainers, and practice questions.

**PAL's integration into DIKSHA:**

- The NCERT has sought the MeitY's expertise in facilitating the PAL's integration into DIKSHA.
- In an example of how it works, if a student of Class 9 is learning the Pythagoras theorem and makes a calculation mistake, the AI learning system flags it and loops the student back to a basic video of how to make the calculation.
- In some States, private players are already administering the PAL, which works on AI or Artificial Intelligence, but budget constraints have been an obstacle.

**Experiments in States:**

- Andhra Pradesh has signed contracts with three privately owned edtech companies; Reliance Jio Platform's start-up Embibe, ConveGenius, and Mindspark for training teachers to use IT applications in the classroom, provide analytics for remedial learning, and help students improve their conceptual understanding.
- In Assam, for instance, the PAL was adapted in 200 schools from Classes 6 to 10. Each school had nearly 200 students, and Embibe provided 10 devices per school. After implementing the project for two years, Assam discontinued it, citing lack of funds.
- Similarly, in Haryana, after floating the tender, the State government said Embibe's quote for streaming content was too high, and the process of adopting PAL came to a standstill.
- Madhya Pradesh is mulling over introducing PAL for students from Classes 6 to 10 on its flagship State education portal, the CM-RISE.

**Way Forward:**

- Apart from PAL, MeitY is also considering the introduction of voice commands in DIKSHA 2.0 as a part of AI-enabled learning.
- The NeGD will float an Expression of Interest to assess the market for edtech companies that can help launch PAL and possibly integrate it with DIKSHA 2.0.

**INDIA THAT IS BHARAT, FROM THE RIG VEDA TO THE CONSTITUTION OF INDIA****Why in news?**

- The opposition politicians have been posting images of an official invitation to a G20 dinner hosted by "The President of Bharat" instead of the usual "President of India".

**Details:**

- There is speculation of an official change in the name of the country from India to Bharat, even though Article 1 of the Constitution uses the two names interchangeably: "India, that is Bharat, shall be a Union of States."
- Also, several names such as Reserve Bank of India and the Indian Railways already have Hindi variants with "Bharatiya" in them.
- In June 2020, the Supreme Court had dismissed a PIL seeking to remove "India" from the Constitution and retain only Bharat in order to "ensure the citizens of this country...get over the colonial past" saying: "India is already called Bharat in the Constitution itself."

**Where does the name 'Bharat' come from?**

- The roots of "Bharat", "Bharata", or "Bharatvarsha" are traced back to Puranic literature, and to the epic Mahabharata. The Puranas describe Bharata as the land between the "sea in the south and the abode of snow in the north".
- Social scientist Catherine Clémentin-Ojha explained Bharata in the sense of a religious and socio-cultural entity, rather than a political or geographical one. 'Bharata' refers to the "supraregional and subcontinental territory where the Brahmanical system of society prevails".
- Bharata is also the name of the ancient king of legend who was the ancestor of the Rig Vedic tribe of the

Bharatas, and by extension, the progenitor of all peoples of the subcontinent.

- Writing in January 1927, Jawaharlal Nehru alluded to the “fundamental unity of India” that has endured from “the remote past”: “a unity of a common faith and culture. India was Bharata, the holy land of the Hindus, and it is not without significance that the great places of Hindu pilgrimage are situated in the four corners of India – the extreme South overlooking Ceylon, the extreme West washed by the Arabian Sea, the East facing the Bay of Bengal and the North in the Himalayas.”

### What about ‘India’ and ‘Hindustan’?

- The name Hindustan is thought to have derived from ‘Hindu’, the Persian cognate form of the Sanskrit ‘Sindhu’ (Indus), which came into currency with the Achaemenid Persian conquest of the Indus valley (northwestern parts of the subcontinent) that begin in the 6th century BC (which was the time of The Buddha in the Gangetic basin).
- The Achaemenids used the term to identify the lower Indus basin, and from around the first century of the Christian era, the suffix “stan” came to be used with the name to create “Hindustan”.
- The Greeks, who had acquired knowledge of ‘Hind’ from the Achaemenids, transliterated the name as ‘Indus’. By the time the Macedonian king Alexander invaded India in the 3rd century BC, ‘India’ had come to be identified with the region beyond the Indus.
- By the time of the early Mughals (16th century), the name ‘Hindustan’ was used to describe the entire Indo-Gangetic plain. Historian Ian J Barrow in his article, ‘From Hindustan to India: Naming Change in Changing Names’ wrote that “in the mid-to-late eighteenth century, Hindustan often referred to the territories of the Mughal emperor, which comprised much of South Asia”.
- From the late 18th century onwards, British maps increasingly began to use the name ‘India’, and ‘Hindustan’ started to lose its association with all of South Asia.
- Part of the appeal of the term India may have been its Graeco-Roman associations, its long history of use in Europe, and its adoption by scientific and bureaucratic organisations such as the Survey of India.

### How did ‘Bharat’ and ‘India’ come into the Constitution?

- In ‘Discovery of India’, Nehru referred to “India”, “Bharata” and “Hindustan”: “Often, as I wandered from meeting to meeting, I spoke to my audiences of this India of ours, of Hindustan and of Bharata, the old Sanskrit name derived from the mythical founders of the race.”
- But when the question of naming India in the Constitution arose, ‘Hindustan’ was dropped, and both ‘Bharat’ and ‘India’ were retained.

- During the Constituent Assembly debates the “Name and territory of the Union” was taken up for discussion on September 17, 1949. Right from the time the first article was read out as “India, that is Bharat, shall be a Union of States”, a division arose among the members.
- There were quite a few members who were against the use of the name ‘India’, which they saw as being a reminder of the colonial past.
- Hari Vishnu Kamath suggested that the first article should read, “Bharat, or in the English language, India, shall be and such”.
- Seth Govind Das, representing the Central Provinces and Berar, proposed: “Bharat known as India also in foreign countries”.
- Hargovind Pant, who represented the hill districts of the United Provinces, made it clear that the people of Northern India “wanted Bharatvarsha and nothing else”.
- Pant argued: “So far as the word ‘India’ is concerned, the Members seem to have, and really I fail to understand why, some attachment for it. We must know that this name was given to our country by foreigners who, having heard of the riches of this land, were tempted towards it and had robbed us of our freedom in order to acquire the wealth of our country. If we, even then, cling to the word ‘India’, it would only show that we are not ashamed of having this insulting word which has been imposed on us by alien rulers.”
- None of the suggestions were accepted by the committee. However, as Clémentin-Ojha pointed out in her article, they “illustrated contrasting visions of the budding nation”.

### TELANGANA GOVERNMENT TO BEGIN LARGEST DISTRICT COOLING PROJECT IN ASIA



#### Why in news?

- The Telangana government has signed up with Tabreed, a cooling utilities company based out of Abu Dhabi, to change the cooling landscape in the state.
- The partnership will see the development of top-tier cooling infrastructure for industrial and commercial parks, starting with the largest district cooling

Public-Private Partnership (PPP) project in Asia, for Hyderabad Pharma City (HPC).

#### Details:

- Tabreed is set to invest up to \$200 million to develop 1,25,000 RT of district cooling plants and networks. This initiative will provide sustainable long-term cooling services through a utility cooling-as-a-service model for process cooling and storage requirements of industrial units.
- It is expected to bring about significant benefits, including superior cost-efficiency, unprecedented economies of scale, and highly reliable solutions.
- It is projected to result in 6,800 GWh of power savings and 41,600 mega litres of water savings, reducing greenhouse gas emissions by saving 6.2 million tons of CO<sub>2</sub> over the project's lifetime.

#### Project in Cyberabad:

- In addition to the HPC project, the state government and Tabreed have signed a Memorandum of Understanding to explore district cooling infrastructure in existing and upcoming commercial districts of Cyberabad and other mixed-use development areas.
- This could potentially reduce over 200 MW of peak electricity demand, resulting in a CO<sub>2</sub> reduction of 18 million tons over a 30-year period.

#### Way Forward:

- By prioritising cooling as a key action area through cool roof policies and energy-efficient district cooling, state is contributing significantly to ambitious vision of making Telangana net-zero by 2047".

### EDUCATION MINISTRY ASKS STATES TO BRING ALL DATA UNDER ONE PLATFORM



#### Why in news?

- Under the National Digital Education Architecture (NDEAR), the Education Ministry is pushing States to open Vidya Samiksha Kendras (VSKs), which are data repositories that will have data from all schemes run by the Ministry.

#### This will include regularly updated data from

- the PM-POSHAN mid-day meal programmes;
- teacher training data from the National Initiative for

School Heads' and Teachers' Holistic Advancement portal;

- textbook content from the Digital Infrastructure for Knowledge Sharing;
- school dropout and attendance-related data on the Unified District Information System for Education (UDISE+);
- students' learning outcomes from the National Achievement Survey; and
- Performance Grading Index which evaluates school education system at the State and Union Territory (UT) level.

#### About Vidya Samiksha Kendras (VSKs):

- Currently, at the Central level, a VSK is housed in the Central Institute of Educational Technology building on the National Council for Educational Research and Training (NCERT) campus, with multinational IT company Ernst and Young (EY) managing its operations.
- It is an open-source platform run on C-Qube software.
- EkStep Foundation, a non-profit organisation co-founded by former Chairman of Unique Identification Authority of India Nandan Nilekani, is on board in an advisory role for implementing the VSK project.
- This is in line with the National Education Policy (NEP)-2020 talking about developing operational standards for making data open source.

#### Funding:

- The Centre has allocated funds ranging from ₹2 crore to ₹5 crore to each State for adopting and establishing VSKs that include pre-configured open-source hardware and software as well as hiring human resources.
- States like Gujarat, Maharashtra, Odisha, and Jharkhand have already begun the process of setting up the tech platform.
- The idea of bringing all data on one platform is to employ analytics for correlation.
- For instance, in certain schools, Gujarat has employed biometrics to capture attendance patterns of students and teachers.

#### Way Forward:

- The idea of developing VSKs is also to map the school location layer with the population layer to assess the Gross Access Ratio, which can help plan for new schools, or for industry clusters to understand skilling requirements of the area, and help plan higher educational institutions based on demand and future scenarios.

### BIS COMMITS TO THE MISSION OF QUALITY CONSCIOUS INDIA THROUGH GRAM PANCHAYATS

#### Why in news?

- The Bureau of Indian Standards (BIS) has embarked on a mission to create awareness and promote compliance with Indian standards at the grassroots level.

- The BIS has undertaken a comprehensive initiative to sensitize Gram Panchayat Presidents and Secretaries across the country.



#### Objective:

- The primary objective of this initiative is to instill an understanding of the significance of adhering to Indian Standards among Gram Panchayats and ensuring compliance to these standards while implementing government programs and schemes at the village level.
- It aims to promote the culture of standardization and benefits of using products conforming to Indian Standards among Gram Panchayats, who play a crucial role in the execution of various government initiatives at the grassroots level.

#### Key Highlights of the Initiative are

- 2.4 Lakh Gram Panchayats reached out: BIS has communicated to all Gram Panchayats across the country. The Gram Panchayats are provided with booklet of important and useful Indian Standards relevant to different sectors, underlining the importance of adhering to these standards while executing various state/central government programs and schemes by the panchayats.
- Sensitization Workshops: BIS has also initiated training of Gram Panchayat Presidents and Secretaries in collaboration with state and district authorities across the country. These training programs for Presidents and Secretaries of Gram Panchayats are planned to be held at block and district levels through the nation-wide network of 38 BIS Branch Offices.

#### The benefits of the Initiative are:

- Enhanced Quality and Safety: By fostering compliance to Indian standards, the initiative aims to enhance the overall quality and safety of government programs and schemes implemented at the village level.
- Consumer Protection: Compliance with standards ensures that products and services meet specified quality and safety criteria, protecting consumers from substandard or unsafe offerings.
- Environmental Conservation: Adherence to standards can contribute to environmental protection by regulating processes that may have adverse ecological impacts.

- Capacity Building: The Sensitization Workshops are designed to empower Gram Panchayat officials with the knowledge and tools necessary to implement standards effectively.
- National Progress: The initiative aligns with the vision of a prosperous and progressive India by fostering a culture of quality and safety in all sectors.
- Awareness on BIS Care App: For empowering the consumers, BIS has also developed BIS Care App available for both Android and iOS Platforms. Consumers can use the app to access the information on Indian Standards, products covered under compulsory certification, list of BIS certified manufacturers, verifying authenticity of certified goods and materials, and mechanism to lodge the complaints in case of dissatisfaction, if any.

### HOW FRATERNITY IN INDIA IS DIFFERENT FROM THE IDEA ENSHRINED IN THE CONSTITUTION



#### Context:

- While fraternity remains one of the chief goals of India's parliamentary democracy, and is actually the foundational political objective of its constitutional democracy, the current nature of India's fraternity is different from the political fraternity espoused in its Constitution.

#### Idea of fraternity:

- The idea of fraternity, as philosopher Angel Puyol argues in his 2019 book Political Fraternity-Democracy beyond Freedom & Democracy, should be mainly understood in the domain of the political.
- The concept involves the emancipation and empowerment of the people despite its variegated history, since the time of Plato; and though neglected, it remains a significant tenet of liberal political philosophy along with the idea of liberty and equality.
- India's independence struggle, and the subsequent emergence of constitutional democracy saw the necessity of liberty, equality and fraternity for a complex Indian society at the precipice of becoming an independent republic.
- In this context, Ambedkar's stress on the inseparability of the three ideas and the underlining of fraternity cannot be emphasised enough.

⇒ The framers of the Indian Constitution knew the significance of fraternity in a society, divided on the basis of various hierarchical social inequalities.

### Origins of the concept:

#### Ancient times:

- ⇒ In Plato's Lysis, the philosopher invokes the word *philia* (love) for the strong desire to pursue wisdom. That is, love and friendship with others becomes more meaningful through the sharing of knowledge. The emphasis is on 'share' which gives an early idea on the discourse of fraternity in ancient Greece.
- ⇒ In Aristotle, there is emergence of the polis – the logical location of a man who remains, first and foremost, a political being, and hence is part of the polis and not of the wild. Justice and friendship among citizens came to be the most enduring features of the polis. This here, is the birth of the idea of political fraternity.

#### Middle ages:

- ⇒ In the middle ages, fraternity flourished mostly through religion, within the churning of Christian society in Europe.
- ⇒ The concept of fraternity then eventually found its entry into politics with the French revolution of 1789 in the triptych of 'liberté, égalité, fraternité'.

### Friendship among equals:

- ⇒ In community ties, one sees an integral value system which is the foundation of the idea of fraternity. The privileging of the idea of community and the moral values associated with it, over the individual, gradually gave way to religious morality and its associated 'way of life'.
- ⇒ For, in order to have fraternal bonding between individuals, they must have a shared past.
- ⇒ The shared history of India is marred by the caste system, and it militates against the principle of equality as well as the idea of liberty.
- ⇒ The traditional roots of organising civic life in India is predominantly communal; but the Constitution privileges the individual leading to everyday conflict with community.

### Feasibility in India:

- ⇒ Therefore, the only conception of fraternity feasible for India must be rooted in politics, the only realm where caste privilege can be challenged.
- ⇒ The idea needs to be curated and carved, and instilled through political conditioning and not from the stand point of any moral considerations.
- ⇒ One of the main ideas behind the introduction of a slew of affirmative actions, of which the reservation system has survived was to build a certain equality between extremely different social groups in terms of their access to social and economic goods.

### The limits to fraternity:

- ⇒ Certain preconditions are necessary in order to achieve the kind of political fraternity inculcated by the Constitution of India.

⇒ At the very first, fraternity does not mean anything if it glosses over social inequalities and then invokes social solidarity. Such a solidarity comes riding on the hate against an imaginary other, and tends to maintain social status quo which bolsters the already privileged at the cost of the continued subjugation of the underprivileged.

⇒ The call of such a fraternity is increasingly replaced with the rhetoric of belligerent nationalism which castigates a home grown religious minority as its arch enemy. Religious minorities have faced such social and political opprobrium countless times in this country.

### Conclusion:

- ⇒ To conclude, in India, caste and the idea of political fraternity, given its social milieu, cannot coexist.
- ⇒ One has to give way for the other to emerge. And to figure out which one survives and which goes, is the task of the politics of the future.

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## CABINET APPROVES ECOURTS PHASE III FOR 4 YEARS

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### Why in news?

- ⇒ The Union Cabinet has approved the eCourts Project Phase III as a Central Sector Scheme spanning four years (2023 onwards) with financial outlay of Rs.7210 crore.

### About eCourts Mission Mode Project:

- ⇒ The eCourts Mission Mode Project is the prime mover for improving access to justice using technology.
- ⇒ As part of the National eGovernance Plan, the e-Courts Project is under implementation since 2007 for ICT enablement of the Indian Judiciary the Phase II of which has concluded in 2023.
- ⇒ Phase III of the e-Courts Project in India is rooted in philosophy of 'access and inclusion'.

### Phase-III:

- ⇒ Taking the gains of Phase-I and Phase-II to the next level, the e-Courts Phase-III aims to usher in a regime of maximum ease of justice by moving towards digital, online and paperless courts through digitization of the entire court records including legacy records and by bringing in universalization of

- e-Filing/ e-Payments through saturation of all court complexes with e-Sewa Kendras.
- It will put in place intelligent smart systems enabling data-based decision making for judges and registries while scheduling or prioritizing cases.
- The main objective of the Phase-III is to create a unified technology platform for the judiciary, which will provide a seamless and paperless interface between the courts, the litigants and other stakeholders.

#### Implemented:

- The Centrally Sponsored Scheme of eCourts Phase III is being implemented under the joint partnership of Department of Justice, Ministry of Law & Justice, Government of India and eCommittee, Supreme Court of India, in a decentralized manner through the respective High Courts to develop a judicial system that would promote ease of justice by making the system more accessible, affordable, reliable, predictable, and transparent for all stakeholders.

#### The expected outcomes of the scheme are as follows:

- Citizens who do not have access to technology can access the judicial services from eSewa Kendras, thus bridging the digital divide.
- Digitization of court records lays the foundation for all other digital services in the project. It enables processes to become more environmental friendly by minimizing paper-based filings and reducing the physical movement of documents.
- Virtual participation in the court proceedings thus reducing costs associated with court proceedings, such as travel expenses for witnesses, judges, and other stakeholders.
- Payment of court fees, fines and penalties from anywhere, anytime.
- Expansion of eFiling for reducing the time and effort required to file documents. Thereby minimizing human errors as documents are automatically checked and also prevent further creation of paper based records.
- Use of latest technologies like AI and its subsets Machine Learning (ML), Optical Character Recognition (OCR), Natural Language Processing (NLP) to provide a smoother user experience by building a "smart" ecosystem. Registries will have less data entry and minimal file scrutiny facilitating better decision-making and policy planning. It envisages smart scheduling, intelligent system that enables data-based decision making for judges and registries, allows for greater predictability and optimisation of the capacity of judges and lawyers.
- Expansion of virtual courts beyond the adjudication of traffic violation cases, thereby eliminating the presence of litigant or lawyer in the court.
- Enhanced accuracy and transparency in court proceedings

- Emphasis on automated delivery of court summons by further expanding the NSTEP (National Serving and Tracking of Electronic Processes), hence drastically reducing the delays in trials.
- Use of emerging technologies in court processes will make them more efficient and effective, hence contributing significantly towards the reduction of pendency cases.

#### NEW PARLIAMENT BUILDING NOW DESIGNATED AS PARLIAMENT HOUSE OF INDIA



#### Why in news?

- Built at a cost of Rs 971 crore, the new Parliament building is being used for the first time during the Special Parliament session called by the Centre between September 18 and 22.
- The foundation stone of the new Parliament building was on December 10, 2020.

#### Why was a new Parliament building constructed?

- While the construction of the existing Parliament House commenced in 1921, it was not officially commissioned until 1927. The heritage Grade-I building has served the nation for nearly a century.
- During this time, due to the lack of original design records, any time the structure needed an upgrade, "ad-hoc modifications" were made.
- This includes the addition of two storeys in 1956, which obscured the Central Hall's iconic dome and also altered the building's overall facade.

#### Reasons why a new Parliament building was required:

##### Space constraints and narrow seating:

- The present structure was never intended to accommodate a bicameral legislature for a fully fledged democracy. With 545 Lok Sabha seats determined by the 1971 Census, the seating arrangements are cramped and cumbersome, offering no desks beyond the second row.
- The Central Hall can seat only 440 individuals, causing severe limitations during Joint Sessions and posing security concerns due to restricted movement.

### Distressed infrastructure:

- Over time, essential services like water supply lines, sewer lines, air conditioning, fire-fighting systems, CCTV, and audio-video systems were added despite not being part of the original design. These changes have resulted in seepages, damaging the building's aesthetics.
- Additionally, the building's fire safety was a growing concern as it did not conform to modern fire norms. The introduction of numerous new electric cables also posed a potential fire hazard.

### Obsolete communication structures and workspaces:

- The communications infrastructure and technology within the Parliament House had become antiquated, necessitating dire upgrades. Acoustic improvements were also essential in the halls.
- Moreover, structural safety concerns arose as the building was originally constructed in a lower seismic zone than its current classification.

### The new design:

- To address the challenges of the old building, the new Parliamentary building has been constructed to be more modern, efficient, and earthquake-resistant. Moreover, it has been designed with a projected lifespan of over 150 years and incorporates diverse Indian architectural styles.
- Architecture firm, HCP Design, Planning and Management Pvt Ltd led the project with Bimal Patel as the architect.
- The Lok Sabha and Rajya Sabha chambers have been designed to accommodate potential increases in the number of members of Parliament (MPs).
- With 888 seats in the Lok Sabha chamber, 384 in the Rajya Sabha chamber, and four floors of offices for ministers and committees, the new complex promises to meet the demands of India's growing population and future delimitation.

### Construction of the new Parliament building

- While there were bids since 2012, to construct a new Parliament building, the foundation stone for the project was laid only in December 2020 with Tata Projects Ltd leading the construction.
- The total area for the new Parliament is 64,500 square metres. The building itself has eliminated the need for a central hall, allocating space more efficiently.
- It covers an area of 20,866 square metres, including a 2,000 square metre open-sky area for a magnificent banyan tree. This design is 10 per cent smaller in size than the existing circular building, divided into three sectors.
- Three entrances, known as Gyan Dwar (knowledge gate), Shakti Dwar (power gate), and Karma Dwar (karma gate), are guarded by six statues: Gaja, Ashwa, Garuda, Makar, Shardula, and Hams.

- The centrepiece, the Foucault pendulum, is suspended from the central foyer's ceiling. Standing at an impressive 22 meters and weighing 36 kilograms, it symbolises India's integration with the cosmos as it rotates on its axis.
- The construction used 26,045 MT steel, 63,807 MT cement, and around 9,689 cubic metres worth of fly ash. The construction of the Parliamentary building also reportedly generated 2.3 million man-days of employment.

### Installation of the Sengol

- The new Parliament building also houses the Sengol, a historical sceptre from Tamil Nadu, symbolising the transfer of power from the British to the Indians, following the Chola tradition.

## SALIENT FEATURES AND GUIDELINES OF PM VISHWAKARMA SCHEME



### Why in news?

- PM Vishwakarma, a Central Sector Scheme, was launched on 17th September, 2023 by the Prime Minister to provide end-to-end support to artisans and craftspeople who work with their hands and tools.
- The Scheme covers artisans and craftspeople engaged in 18 trades, viz. (i) Carpenter (Suthar/Badhai); (ii) Boat Maker; (iii) Armourer; (iv) Blacksmith (Lohar); (v) Hammer and Tool Kit Maker; (vi) Locksmith; (vii) Goldsmith (Sonar); (viii) Potter (Kumhaar); (ix) Sculptor (Moortikar, stone carver), Stone breaker; (x) Cobbler (Charmkar)/Shoemsmith/Footwear artisan; (xi) Mason (Rajmistri); (xii) Basket/Mat/Broom Maker/Coir Weaver; (xiii) Doll & Toy Maker (Traditional); (xiv) Barber (Naai); (xv) Garland maker (Malakaar); (xvi) Washerman (Dhobi); (xvii) Tailor (Darzi); and (xviii) Fishing Net Maker.

### The Scheme envisages provisioning of the following benefits to the artisans and crafts persons:

- Recognition: Recognition of artisans and craftspeople through PM Vishwakarma certificate and ID card.
- Skill Upgradation: Basic Training of 5-7 days and Advanced Training of 15 days or more, with a stipend of Rs. 500 per day;

- Toolkit Incentive: A toolkit incentive of upto Rs. 15,000 in the form of e-vouchers at the beginning of Basic Skill Training.
- Credit Support: Collateral free 'Enterprise Development Loans' of upto Rs. 3 lakh in two tranches of Rs. 1 lakh and Rs. 2 lakh with tenures of 18 months and 30 months, respectively, at a concessional rate of interest fixed at 5%, with Government of India subvention to the extent of 8%. Beneficiaries who have completed Basic Training will be eligible to avail the first tranche of credit support of upto Rs. 1 lakh. The second loan tranche will be available to beneficiaries who have availed the 1st tranche and maintained a standard loan account and have adopted digital transactions in their business or have undergone Advanced Training.
- Incentive for Digital Transaction: An amount of Re. 1 per digital transaction, upto maximum 100 transactions monthly will be credited to the beneficiary's account for each digital pay-out or receipt.
- Marketing Support: Marketing support will be provided to the artisans and craftspeople in the form of quality certification, branding, onboarding on e-commerce platforms such as GeM, advertising, publicity and other marketing activities to improve linkage to value chain.

#### Beneficiaries:

- In addition to the above-mentioned benefits, the Scheme will onboard the beneficiaries on Udyam Assist Platform as 'entrepreneurs' in the formal MSME ecosystem.
- Enrolment of beneficiaries shall be done through Common Service Centres with Aadhaar-based biometric authentication on PM Vishwakarma portal.
- The enrolment of beneficiaries will be followed by a three-step verification which will include
  - a) Verification at Gram Panchayat/ ULB level,
  - b) Vetting and Recommendation by the District Implementation Committee
- Approval by the Screening Committee.

### MULTIPLE ENTRY, EXIT OPTION IN HIGHER STUDIES MAY NOT SUIT INDIA, HOUSE PANEL

#### Why in news?

- Recently, the Parliamentary Standing Committee on Education submitted its report titled 'Implementation of the National Education Policy, 2020 in Higher Education'.

#### Details:

- After several organisations of students and teachers raised objections to the option of multiple entry and multiple exit (MEME) in the national education policy (NEP), it has advised the Centre to hold discussions with all stakeholders on it.
- The Kerala government has decided not to implement MEME in colleges and universities in the State. The

curriculum document of the State had said that the government would allow multiple entry, but exit will be allowed either after three years with a degree or after four years with honours degree.

### Not a viral MEME

The National Education Policy, 2020 promises multiple entry and multiple exit (MEME) for students, offering 'greater attention to life aspirations and greater flexibility' for students

<ul style="list-style-type: none"> <li>■ NEP says it removes 'rigid boundaries' and creates new possibilities for 'life-long learning'</li> <li>■ Students can opt for it at graduate, Master's and doctoral levels</li> <li>■ A certificate will be provided after completing one year of study, a diploma after two years, and a degree after a three-year programme</li> </ul>	<ul style="list-style-type: none"> <li>■ An academic bank of credit will digitally store the academic credits earned by a student</li> <li>■ Kerala government had decided not to implement MEME in the State</li> <li>■ State will allow multiple entry, but exit will be allowed either after three years with a degree or after four years with an Honour's degree</li> </ul>
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#### Concerns:

- The NEP proposes multiple entry and multiple exit options for the students in higher education. The panel said while MEME looked like a flexible system, which was being operated by western educational institutions effectively, it might not work well in the country.
- The panel, citing high population, said the estimated intake of students in higher education every year was high.
- The members in the panel also expressed concern that uneven geographical distribution of higher educational institutions would create hurdles in managing MEME in several areas, mostly countryside.

#### Recommendations:

- The panel, though noted that MEME will offer students greater flexibility and choice in their educational pathways, asked the Centre to develop comprehensive guidelines and a well-defined framework for MEME options, including specific eligibility criteria, credit transfer mechanisms providing clear road map for students pursuing different exit points.
- Also, implementation of a standardised Credit Accumulation and Transfer (CAT) system that allows students to earn and transfer credits seamlessly across institutions would facilitate smooth transitions between different levels of education, from certificate courses to doctoral programmes.

#### Way Forward:

- It recommended the Union Education Ministry to have wider consultations with various universities/ institutions, their regulatory bodies and other

stakeholders to devise ways in view of the difficulties being faced in implementing the MEME options and apprise the panel of it.

## THE CAUVERY WATER CONUNDRUM



### Why in news?

- Recently, the Supreme Court asked Karnataka to continue releasing 5,000 cubic feet per second (cusecs) of water from the Cauvery River to Tamil Nadu for 15 days, in line with decisions of the Cauvery Water Regulation Committee (CWRC) and the Cauvery Water Management Authority (CWMA).
- This has evoked a strong reaction from certain sections of Karnataka, an upper riparian State.

### How is the Cauvery water being shared?

- The Cauvery Water Disputes Tribunal (CWDT)'s final award of 2007 and the Supreme Court's judgment of February 2018 spell out the system for sharing the river water and the institutional mechanisms for ensuring implementation of the judicial verdicts.
- Pointing out that 740 thousand million cubic feet (tmc ft) of water would be available in the Cauvery basin in a normal year, the Court, which broadly adhered to the CWDT's award, made the allocation for constituents of the basin as follows: Karnataka (284.75 tmc ft); Tamil Nadu (404.25 tmc ft); Kerala (30 tmc ft) and Puducherry (7 tmc ft). Ten tmc ft and four tmc ft have been set apart for environmental protection and inevitable escapages into the sea.
- Of Tamil Nadu's overall allocated quantity, Karnataka is to ensure 177.25 tmc ft, as per a monthly schedule, at Biligundulu, located on the inter-State border.
- Of this quantity, 123.14 tmc ft is to be given during the period from June to September, also marking the season of the southwest monsoon. Invariably, it is during this period that the Cauvery issue gets flared up, as the monsoon sometimes yields lower rainfall than anticipated.
- The CWMA and its assisting body, CWRC, are in existence since June 2018 to oversee the implementation of the verdicts of the Tribunal and the Court.

### Why are Karnataka's farmers upset?

- In 2023, Southwest monsoon has played truant, especially in south interior Karnataka, the region where the Cauvery River originates. Between June 1 and September 23, the region suffered a deficit rainfall of 27%, according to the India Meteorological Department.
- Kodagu of Karnataka and Wayanad of Kerala, which form part of the catchment of the Cauvery and its tributary, Kabini, registered a deficit rainfall of 43% and 56% respectively.
- Karnataka, in its application before Court, had stated that "...at the reservoir level, which covers a part of the catchment, the shortfall is 53.42%," given the fact that the State has four reservoirs in the Cauvery basin.
- The State, especially in urban areas like Bengaluru, was on "the brink of a drinking water crisis" whereas Tamil Nadu was in need of water for irrigation. It also added that the distress in Karnataka had increased in the past 15 days.

### How serious is the situation in T.N.?

- Being the lower-riparian State in the Cauvery basin, Tamil Nadu is mainly dependent on releases by Karnataka, particularly during the southwest monsoon, as it falls under the rain shadow region in the season.
- As per the data of the Central Water Commission available up to September 21, the State received 40.76 tmc ft, whereas it should have got 112.11 tmc ft in a normal year.
- Even after giving allowance for the failure of the monsoon and the quantum of shortfall as quoted by Karnataka, Tamil Nadu contends that it should have got at least 7.8 tmc ft more (as on September 12).
- It is in need of water for at least three lakh acres over which a short-term crop (kuruva) has been raised. Already, there are reports of the crop being at risk of withering in many places.
- However, the State will require, in the coming weeks, much more water for its long-term crop of 125-135 days (samba), which is normally raised over 15 lakh acres, providing livelihood opportunities to lakhs of landless labour.
- A substantial portion of the farming activity under the samba crop takes place during the northeast monsoon (October-December), which is much more unpredictable than the southwest.
- In addition to serving irrigation, the Cauvery is the main source of drinking water for several districts in the State.

### What is the way forward?

- It is time that the CWMA along with the constituents finalised a distress-sharing formula. There have been differences over the choice of parameters that determine such a formula.

- ⇒ Making use of the present crisis, the Authority should take the initiative in convincing all the stakeholders in evolving the proposed formula.

### PARLIAMENT PANEL ON NEP



#### Why in news?

- ⇒ The Parliament Standing Committee on Education, headed by Bharatiya Janata Party (BJP) MP Vivek Thakur, tabled a report during the special session of Parliament on the "Implementation of the National Education Policy (NEP), 2020 in Higher Education."

#### What did the report say?

- ⇒ The report looked at the salient features of the NEP's implementation in the higher education sector and the progress made so far.
- ⇒ The report noted that of the 1,043 universities functioning in the country, 70% are under the State Act and that 94% of students are in State or private institutions with just 6% of students in Central higher educational institutions, stressing the importance of States in providing higher education.

#### What were the issues discussed?

- ⇒ The 31-member panel tried to discuss issues such as the rigid separation of disciplines, limited access to higher education in socio-economically disadvantaged areas, lack of higher education institutes (HEIs) that teach in local languages, the limited number of faculty, lack of institutional autonomy, lesser emphasis on research, ineffective regulatory system and low standards of undergraduate education.
- ⇒ The panel said that by 2030, every district in the country should have at least one multidisciplinary HEI and that the Gross Enrolment Ratio in higher education, including vocational education, should be increased from 26.3% in 2018 to 50% by 2035.

#### What were the recommendations?

- ⇒ The panel asked the Union Government and the State Governments to take actions such as
  - a) earmarking suitable funds for the education of Socially and Economically Disadvantaged Groups (SEDGs),

- b) setting clear targets for higher Gross Enrolment Ratio for SEDGs, enhancing gender balance in admissions to HEIs,
  - c) providing more financial assistance and scholarships to SEDGs in both public and private HEIs,
  - d) making admission processes and curriculum more inclusive, increasing employability potential of higher education programmes and for developing more degree courses taught in regional languages and bilingually.
- ⇒ The panel also recommended specific infrastructural steps to help physically challenged students and a strict enforcement of all no-discrimination and anti-harassment rules.
  - ⇒ The Committee appreciated the manner in which the NEP was implemented in Jammu and Kashmir. It said that the Union Territory was among the first in the country to implement NEP from the academic session 2022 in all its higher educational institutions.
  - ⇒ The panel witnessed a paradigm shift in the methods of teaching, leading to lifelong learning opportunities to students.

#### What about funding?

- ⇒ The Committee suggested improving the effectiveness and impact of the Higher Education Financing Agency (HEFA) in funding HEIs.
- ⇒ It asked the HEFA to diversify its funding sources beyond government allocations and explore partnerships with private sector organisations, philanthropic foundations, and international financial institutions.
- ⇒ It recommended reviewing and adjusting the interest rates on loans provided by HEFA "to make them more competitive and affordable" for HEIs.

#### What about the multiple entry multiple exit programme?

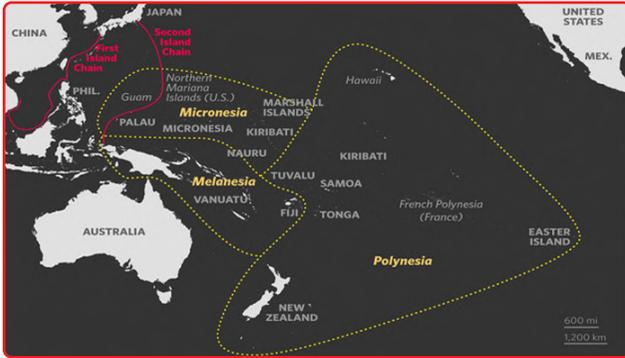
- ⇒ The panel said that Indian institutions were likely to face several issues in implementing the multiple entry and multiple exit (MEME) system.
- ⇒ While the MEME looked like a flexible system, which was being operated by Western educational institutions effectively, it might not work well in the country.

## INTERNATIONAL RELATIONS

### WHY PALAU, A PACIFIC ISLAND, HAS EMERGED AS A BATTLEGROUND IN US-CHINA STRATEGIC CONTEST

#### Why in news?

- ⇒ Lying 3,815 miles southeast of India, the Republic of Palau, made up of approximately 340 islands, islets, and atolls, is the latest Pacific Island country to be drawn onto the emerging battleground between the US and China.



### Palau EEZ:

- The Palau EEZ is an area adjacent to the territorial sea.
- The coastal state has sovereign rights within the exclusive economic zone to explore and utilize the natural resources of the waters adjacent to the seabed and of the seabed, as well as to engage in other economic exploitation and exploration activities within the zone, such as the generation of energy from the water, currents, and winds.

### US and Palau

- The US and Palau signed a bilateral law enforcement agreement recently allowing the US Coast Guard to enforce regulations at sea in Palau's Exclusive Economic Zone (EEZ) on behalf of Palau, in the absence of a Palauan officer.
- The signing of the agreement with the US, on the sidelines of the fifth annual Joint Heads of Pacific Security meeting held on 23-24 August in Palau, comes at a time when China is trying to increase its footprint in the Pacific Island countries (PIC), which includes Palau, because of its geostrategic importance.

### China's activities:

- China has also been flexing its muscles against Palau in recent months.
- In May, a Chinese research vessel reportedly showed an apparent interest in Palau's underwater fiber optic connection during a journey into the Palau waters, slowing down as it passed the area.
- The research vessel reportedly entered Palau's EEZ without providing any notification.
- While China is reportedly seeking a permanent military presence in the Pacific Islands, Chinese mining and construction firms are said to have increased operations in several Pacific island countries.
- In 2014 and 2018, President Xi Jinping reportedly made two visits to the South Pacific region and held meetings with leaders of PICs having diplomatic ties with China.

### Taiwan factor:

- In June, Palau's President Surangel S. Whipps Jr., accused China of undertaking surveying operations

in the waters off Palau, claiming that perhaps China was punishing his nation for its position on Taiwan, which China sees as a breakaway province to be brought under Chinese control.

- Palau, located less than 2,000 miles south of Japan, 3,815 miles southeast of India, and about 950 miles southeast of the Philippines, is one of the countries that recognises Taiwan and maintains diplomatic relations with the island.

### Strategic importance of Pacific Islands for US:

- The Pacific Islands are geostrategically significant, particularly owing to their importance for maintaining critical logistical supply lines and projection of military force.
- The logistics for maintaining crucial supply routes for the US and its allies in the region would be significantly affected, if China is able to entrench a military presence in the Pacific Islands.
- The Brookings Institution analysis calls this possibility a "high-impact risk" for Australia specifically, given that it has defence capabilities to support US-led coalitions.
- In June 2023, the US in an effort to boost ties with the PIC, renewed its economic assistance to Palau and the Federated States of Micronesia for the next 20 years. The US also reportedly hopes to renew the agreement with the Republic of Marshall Island as well. These three countries lie in a militarily strategic northwestern Pacific.
- In May, the United States and Papua New Guinea too reportedly signed a defence and maritime cooperation pact, and conducted their first combined marine operations in July.

### Compact of Free Association (CFA):

- Palau's Compact of Free Association (CFA) with the United States, a financial assistance commitment by the US was first agreed in 1986 and came into effect in 1994.
- While the terms of the CFA are indefinite, the economic elements of the agreement are for a 50-year term, with periodic reviews. Negotiations for the latest review began last year.
- Under the CFA, the US in exchange for exclusive military operating rights, provides Palau with financial assistance.
- The US has similar CFAs with two other PIC nations; the Federated States of Micronesia and the Republic of the Marshall Islands (RMI).

## FOR 1ST CRITICAL MINERALS POLICY, INDIA PROPOSES POOLING WITH FRIENDLY NATIONS

### Why in news?

- India first critical minerals policy, proposes to create a common pool for stockpiling these essential resources with friendly countries or groupings of

which India is a part, like the Quadrilateral Alliance, or Quad, comprising Australia, Japan, and the US.

- In addition, the policy also proposes identifying critical mineral blocks in other countries by India for investment.



### Ongoing initiatives:

- India is already in talks with countries such as Argentina, Australia, Chile, and Mongolia, which are endowed with critical mineral assets such as lithium and cobalt.
- The Ministry of Mines and Minerals is also going to Mongolia in October to participate in a mining expo and discuss possibilities of investing in potential mineral blocks of copper.
- The critical minerals policy also proposes creation of a knowledge network for research in the sector.

### What's the need for critical minerals policy?

- All the moves in the proposed policy are aimed at addressing the supply chain vulnerabilities of critical minerals, which are vital to technology and industry. Critical minerals, including rare earth elements (REE), are used in numerous industries, from aerospace and defence to renewable energy, telecommunications, and semiconductors.
- Presently, India is dependent on China and other countries to meet its requirement of critical minerals and REE such as lithium, which are the building blocks of modern-day technology.
- Over the last year, however, India has undertaken a slew of initiatives in the critical minerals sector. It also underscored the importance of critical mineral supply chains in the G20 Energy Transition Ministers' meeting in Goa in June 2023.

### India's critical minerals push:

- India took several significant steps in the critical mineral sector in 2023. This included the release in June of a comprehensive list of 30 critical minerals necessary for economic development and national security.
- India also joined the Minerals Security Partnership, a US-led alliance of 14 developed countries in June to "ensure that critical minerals are produced, processed, and recycled in a manner that supports the ability of countries to realize the full economic development benefit of their geological endowments".

- In August, Parliament cleared amendments to the Mines and Minerals (Development and Regulation) Act, 1957, paving the way for commercial mining of six critical minerals; lithium, beryllium, niobium, tantalum, titanium and zirconium and deep-seated minerals like gold, silver, and copper. Currently, only government agencies are allowed to explore and mine these minerals.
- Parliament also cleared amendments to the Offshore Areas Mineral (Development and Regulation) Act, 2002, which seek to allow commercial mining of mineral resources in offshore areas.

### G20 focus area too

- The outcome document of the G20 Energy Transition Ministers' meeting held in Goa on July 22 emphasised the "need to maintain reliable, responsible, and sustainable supply chains of such critical minerals and materials".
- This, significantly, was the first time that a G20 meeting on energy transition focused on the supply chain vulnerabilities of critical minerals.
- The Indian presidency of the G20 also proposed high-level guiding principles on a voluntary basis for accelerating the development of the global value chain of critical minerals required for sustainable energy transitions. These principles take into account national circumstances, needs, and priorities.

### WHO RELEASES FIRST-OF-ITS-KIND PATIENT SAFETY RIGHTS CHARTER



### Why in news?

- The World Health Organization (WHO) released the first-ever patient safety rights charter outlining the core rights of all patients in the context of safety of health care recently.
- The charter also sought to assist governments and other stakeholders to ensure the voices of patients are heard and their right to safe health care is protected.

### Patient safety:

- Patient safety is the avoidance of unintended or unexpected harm to people during the provision of health care.
- Around 1 in every 10 patients is harmed in health care and more than 3 million deaths occur annually due to

unsafe care, according to Organisation for Economic Co-operation and Development (OECD).

- In low-to-middle income countries, as many as 4 in 100 people die from unsafe care.

#### Patient harm:

- Some of the most common sources of patient harm are medication errors, surgical errors, health care-associated infections, sepsis, diagnostic errors and patient falls.
- There are several factors leading to patient harm: System and organisational factors; technological factors; human factors and behaviour; patient-related factors and others.
- According to the WHO, there are multiple and interrelated factors that can lead to patient harm and more than one factor is usually involved in any single patient safety incident.

#### New resources:

- The WHO unveiled two new resources at the conference for patient safety; a storytelling toolkit to guide patients and families in sharing their experience related to harmful events within health care and Global Knowledge Sharing Platform that will support the exchange of global resources, best practices, tools and resources related to patient safety.
- The upcoming World Patient Safety Day on September 17, 2023, aims to emphasise the crucial role of listening to patients, families and caregivers.

#### Concerns:

- A 2023 survey of WHO Member States on the implementation of the Global Patient Safety Action Plan 2021-2030 showed the poor state of its execution. The action plan was released August 2021.
- Interim results of the survey showed only 13 per cent of responding countries have a patient representative on the governing board or an equivalent mechanism in the majority of their hospitals.
- Income-based implementation gap was also pointed out by the survey as good practices were largely concentrated in higher-income countries.

#### Way Forward:

- According to the OECD, investing in patient safety positively impacts health outcomes, reduces costs related to patient harm, improves system efficiency, and helps in reassuring communities and restoring their trust in health care systems.

### 95 MILLION PAKISTANIS UNDER POVERTY, WORLD BANK

#### Why in news?

- Poverty in Pakistan shot up to 39.4 per cent as of last fiscal year, with 12.5 million more people falling into the trap due to poor economic conditions, the World Bank has said, as it urged Pakistan to take urgent steps to achieve financial stability.

- It unveiled draft policy notes that it prepared with the help of all stakeholders for Pakistan's next government ahead of the new election cycle.



#### Key Highlights:

- Poverty in Pakistan rose within one year from 34.2 per cent to 39.4 per cent, with 12.5 million more people falling below the poverty line of the USD 3.65 per day income level. About 95 million Pakistanis now live in poverty

#### Policy guidelines:

- It urged Pakistan to take urgent steps to tax its 'sacred cows'; agriculture and real estate and cut wasteful expenditures in an effort to achieve economic stability through steep fiscal adjustment of over 7 per cent of the economy.
- Pointing out that the increase in poverty was consistent with ground realities, the World Bank identified low human development, unsustainable fiscal situation, over-regulated private sector, agriculture and energy sectors as the priority areas for reforms for the next government.

#### Tax to GDP ratio:

- It proposed measures; immediately increase the tax-to-GDP ratio by 5 per cent and cut expenditures by about 2.7 per cent of GDP, aimed to put the unsustainable economy back on a prudent fiscal path.
- Pakistan has the capacity to collect taxes equal to 22 per cent of the GDP, but its current ratio is only 10.2 per cent showing a gap of more than half.
- It proposed reducing distortive exemptions to generate taxes equal to 2 per cent of the GDP. It wanted an increase in taxes on land and property to collect another 2 per cent of GDP in revenues and generate another 1 per cent of the GDP from the agriculture sector.

#### Other recommendations:

- The World Bank proposed a mandatory use of CNIC (Computerised National Identity Card) for transactions, particularly of assets.
- It also proposed reducing energy and commodity subsidies, implementing a single treasury account, and imposing temporary austerity measures in the short term to save about 1 per cent of the GDP equivalent expenditures.

- In 2022, the government's deposits in commercial banks amounted to over Rs 2 trillion, and due to its sovereign borrowings in the absence of use of this idle cash, an amount of Rs 424 billion was paid in interest.
- For the medium term, it proposed reducing federal development and current expenditures on provincial nature projects, reducing spending on loss-making entities, and improving the quality of development spending to save about Rs 1.4 trillion. The cumulative impact of these short- to medium-term savings is 2.7 per cent of the GDP.

### Conclusion:

- Pakistan's economic model is no longer reducing poverty, and the living standards have fallen behind peer countries.

## AADHAAR UNRELIABLE IN 'HOT, HUMID' INDIA, RATING AGENCY

**Low rating**

Moody's Investors Service has cautioned against centralised digital ID systems such as Aadhaar as they pose security and privacy vulnerabilities. Here are a few warnings from the firm which offers credit ratings, research, and risk analysis:

- A single entity controlling users' ID credentials can dispose of user data for internal or third-party profiling purposes
- Aadhaar system faces hurdles, including the burden of establishing authorisation
- Reliability of biometric technologies, especially for manual labourers, in hot, humid climates is questionable
- All digital IDs can have negative social repercussions



### Why in news?

- Global rating major Moody's Investors Service has flagged concerns about security and privacy vulnerabilities in centralised identification systems like India's Aadhaar programme.

### Details:

- The Aadhaar system enables access to public and private services, with verification via fingerprint or iris scans and alternatives like One-Time Passcodes (OTPs).
- The Unique Identification Authority of India (UIDAI) administers Aadhaar, aiming to integrate marginalized groups and expand welfare benefits access. The system often results in service denials, and the reliability of biometric technologies, especially for manual laborers in hot, humid climates, is questionable.

### Significant for DBT:

- The remarks assume significance in view of the government's adoption of Aadhaar for routing direct benefit transfers to beneficiaries of official welfare schemes, and in particular, the diktat to mandate Aadhaar-based payments for labourers under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) scheme.

- In August, the government extended its deadline for switching to Aadhaar-based payment system (ABPS) for MGNREGA beneficiaries for the fifth time, pushing it to December 31, 2023.

### Privacy, security concerns:

- In a report on "Decentralized Finance and Digital Assets", Moody's acknowledged Aadhaar as "the world's largest digital ID program" that assigns unique numbers to over 1.2 billion Indian residents using biometric and demographic data.
- It termed Aadhaar, and a new crypto-based digital identity token called Worldline, as two digital ID systems in the world that stand out due to their scale and extent of innovation. However, they have "drawn scrutiny, especially concerning privacy and security".
- Stressing that ID systems like Aadhaar lead to the concentration of sensitive information with specific entities and increase the risks of data breaches, Moody's made a pitch for decentralised ID (DID) systems such as digital wallets, based on blockchain capabilities that give users more control of their private data and can reduce online fraud.

### Decentralised systems in practice globally:

- In recent years, the spotlight has shifted toward DID as a strategic response to the security and privacy vulnerabilities posed by centralized ID systems like Aadhaar.
- Catalonia, Azerbaijan and Estonia have used blockchain-based systems to issue digital identities.
- Estonia, known for its fully digitalized public services, has embraced SSI (Self-Sovereign Identity) to grant citizens complete control over their digital identities.

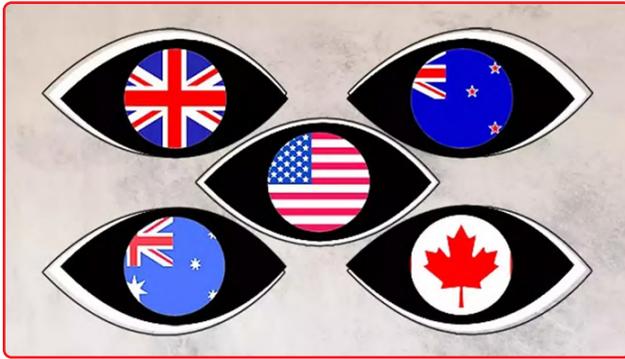
### Why DID systems?

- The adoption of DID, where personal data is saved in a user's digital wallet and identity verification takes place not via a single, centralised institution but on a decentralised digital ledger such as a blockchain, increases privacy and reduces the amount of personal information held by intermediaries.
- The DID can be stored and managed in a user's portable and reusable digital wallet, rather than by a government, business, employer, or other entity.

### Challenges:

- At a broader level, it warned that digital IDs, centralised or not, can have negative social repercussions, since they may strengthen group identities and political divides, particularly if offered by technology and social media companies with significant monopolistic influence.
- Consolidation of control within these entities could lead to a concentration of power over individual identities, shaping perceptions and interactions in the digital realm.
- Further polarization of group identities and political affiliations would undermine the goal of a united and diverse digital space.

## WHAT IS THE FIVE EYES INTELLIGENCE ALLIANCE



### Why in news?

- The recent allegations by Canadian Prime Minister linking the killing of Khalistani leader Hardeep Singh Nijjar on Canadian soil to the Indian government have put the spotlight on the intelligence-sharing alliance 'Five Eyes', which is believed to have provided the information that "helped" Canada.

### Who are the 'Five Eyes'?

- The 'Five Eyes' is a multilateral intelligence-sharing network of five countries, Australia, Canada, New Zealand, the U.K. and the U.S. It is both surveillance-based and tracks signals intelligence (SIGINT).
- Intelligence documents shared between the member countries are classified 'Secret–AUS/CAN/NZ/UK/US Eyes Only,' which gave the group its title 'Five Eyes.'
- The alliance between the U.S. and the U.K. evolved around the Second World War to counter the Cold War Soviet threat.
- The two countries, which had successfully deciphered German and Japanese codes during the war, forged a collaboration to share intelligence related to signals such as radio, satellite and internet communications.

### Establishment:

- In 1946, the alliance was formalised through an agreement for cooperation in signals intelligence.
- The treaty called the British-U.S. Communication Intelligence Agreement, or BRUSA (now known as the UKUSA Agreement), was signed between the State-Army-Navy Communication Intelligence Board (STANCIB) of the U.S. and the London Signal Intelligence Board (SIGINT) of Britain.
- Its scope was limited to "communication intelligence matters only" related to the "unrestricted" exchange of intelligence products in six areas:
  - a) a collection of traffic;
  - b) acquisition of communication documents and equipment;
  - c) traffic analysis;
  - d) cryptanalysis;
  - e) decryption and translation; and

f) acquisition of information regarding communication organisations, practices, procedures, and equipment.

- The arrangement was later extended to 'second party' countries –Canada joined in 1948, while Australia and New Zealand became part of the alliance in 1956.
- Though the intelligence alliance came together in the 1940s, it remained a top secret for long. The then Australian PM Gough Whitlam did not know about the existence of BRUSA, regarded as one of the most secret agreements, until 1973.
- In fact the text of the agreement was first officially released in public after over 60 years in 2010.

### How does the network work?

- Initially, the partners are assigned respective SIGINT mandates.
- The U.S. is responsible for Russia, northern China, most of Asia and Latin America;
- Australia covers southern China, Indo-China and its close neighbours, such as Indonesia;
- the U.K. is in charge in Africa and west of the Urals within the former Soviet Union; and
- New Zealand is responsible for the Western Pacific, while Canada handles the polar regions of Russia.
- The goalpost of the Five Eyes, however, has shifted following the collapse of the Soviet Union and the emergence of new global challenges like terrorism and the growing influence of China.
- The Five Eyes have become involved in ocean and maritime surveillance, scientific and defence intelligence analysis, medical intelligence, geospatial intelligence, counterintelligence, counterterrorism, and the continuous sharing of intelligence products via a secret collective database known as 'Stone Ghost'.

### What are the concerns?

- There have been several concerns regarding the privacy, security and methods of working of the intelligence alliance, which remained shrouded in mystery for long.
- The alliance was embroiled in a major controversy in 2013 following the disclosure of classified documents by Edward Snowden, a former National Security Agency (NSA) contractor.

## ECONOMY

### STANDARD CHARTERED GIVES 20-WEEK PATERNITY, ADOPTION LEAVE TO ALL EMPLOYEES

#### Why in news?

- The Standard Chartered Bank recently announced that a 20-week paternity and adoption leave will be given to employees globally as part of its inclusion drive.



### Inclusive culture:

- The leave will be made available irrespective of gender, relationship status, or how a child comes to permanently join an employee's family.
- Effective September 1, the new HR policy was part of the company's commitment to fostering an inclusive culture where employees are supported in balancing their personal lives with building successful careers.
- Maternity benefits will continue to be at 26 weeks, in line with the statutory requirements.

### What is the law on maternity leave?

- The Indian Maternity Benefit Act, 1961, provided maternity benefits, which included paid leave, medical bonuses, and nursing breaks.
- The 1961 legislation lacked specific provisions extending maternity benefits to adoptive mothers, and this change was brought about through a 2017 amendment.
- The Maternity Benefits (Amendment) Act, 2017, not only extended the period of maternity leave for biological mothers but also inserted a provision extending maternity leave to adoptive mothers.
- The amendment revised Section 5 of the Act to allow 26 weeks of paid leave after childbirth to biological mothers previously entitled to 12 weeks.
- It also inserted Section 5(4), stipulating that surrogate or adoptive mothers legally adopting a child below three months would be entitled to a maternity benefit of 12 weeks from the date the child is handed over to the mother.
- However, a woman adopting a child older than three months is not entitled to any maternity leave.

### What is the law on paternity leave?

- Rule 43-A provides paternity leave for a period of 15 days to a male employee with less than two surviving children.
- Paternity leave can be availed of during his wife's confinement for childbirth or up to six months from the date of delivery of the child.
- Under the Paternity Benefit Bill, 2017, fathers working in all sectors, including private and unorganised, are entitled to paternity leave.
- The bill made 15 days of fully paid leave available to fathers, out of which up to seven days can be availed

preceding the expected date of pregnancy. The leave can be taken within three months from the child's delivery date.

- The bill proposed to extend similar benefits to adoptive parents.

### RELIANCE ANNOUNCES JIO AIRFIBRE



### Why in news?

- Recently, Reliance Jio has announced the launch of its fixed wireless broadband solution, which will leverage the telco's 5G network.
- The offering, called Jio AirFibre, is expected to bring in close to 200 million paying users to the network over the next three years.
- Earlier Bharti Airtel had launched a similar product based on 5G technology in Delhi and Mumbai, called Xstream AirFiber.

### Why could this be the beginning of a new market?

- In 2016, as Jio launched its 4G services, it also disrupted the Indian telecom market forever; bringing down the cost of mobile data significantly and leading to a boom in data consumption across the country.
- While the effects of that were largely felt for mobile users, with AirFibre, Jio is looking to replicate some of that success in India's dwindling and minuscule home broadband market.
- JioAirFiber will use the company's 5G network coverage and advanced wireless technologies to bypass the need for last-mile fibre. The result could increase daily connections by nearly ten times.

### What is the broadband market in India like?

- Even as India has seen a significant uptake in mobile Internet users, home broadband coverage remains patchy.
- According to data released by the Telecom Regulatory Authority of India (TRAI), there were a little over 35 million wired broadband subscribers in the country as of June 2023. The fixed wireless broadband market is tinier, around 950,000 subscribers as of June end.
- The current wired broadband companies are Reliance Jio (9.17 million), Bharti Airtel (6.54 million), BSNL (3.66 million), Atria Convergence (2.16 million) and Hathway (1.12 million).

### What could be the AirFibre impact?

- Currently, Jio Fibre reaches 10 million homes and its optical fibre cable spans over 1.5 million kilometres. With Jio AirFiber, it has the potential to connect up to 150,000 homes every day.
- The company has increased its addressable market guidance for home broadband to 200 million homes versus 100 million homes earlier.

### THREE-FOURTHS OF INDIA'S IRRIGATION SOURCES RUN ON ELECTRICITY: STUDY



#### Why in news?

- The latest edition of the Minor Irrigation Census (MIC), a compendium of borewells, tubewells, and other privately owned irrigation sources by farmer was conducted by the Union Jal Shakthi Ministry.
- It finds that electricity is the dominant source of power to extract water, over diesel and wind and solar energy.
- While the use of electricity showed a quantum jump from powering only 56% of sources in 2011 to 70% in 2017, the latest report, shows it as powering 76% of the sources, a slower growth rate.

#### Past trends:

- The data in the latest, sixth edition of the report reflect irrigation trends in 2017-18. Similarly, the report released in 2017, or the fifth edition, reflect data in 2013-14 and the report of 2011, the situation in 2006-07.
- Collecting granular data down to the block level and making it public takes a few years.

#### Sources of groundwater extraction:

- This electrification of groundwater withdrawal corresponds to a rise in the use of tubewells and borewells that are capable of extracting water at greater depths.
- While 'dugwells' or ponds that can draw water from a maximum depth of 15 metres remain the dominant source of groundwater, their number has declined from 87 lakh to 82 lakh between the fifth and sixth editions.
- The number of 'shallow' tubewells, capable of drawing water from up to 35 metres, too have declined from 59 lakh to 55 lakh.

- However 'medium-sized' wells grew from 31 lakh to 43 lakh and 'deep' wells (beyond 70 m) rose from 26 lakh to 37 lakh.

#### Causes for the increase of more powerful and deep-reaching tubewells:

- While excessive groundwater withdrawal has been a matter of long-standing concern, the report doesn't discuss the causes for such increase.
- State governments announce schemes where farmers are incentivised or get access to loans to buy such tubewells, could be an explanation.
- However, the lower growth in electrification is also likely to be a result of greater emphasis on energy efficient water extraction.

#### Minor Irrigation (MI) schemes:

- Overall, 23.14 million minor irrigation (MI) schemes were reported in the country from 695 districts and 6,47,394 villages. Out of all MI schemes, 21.93 million (94.8%) were for groundwater and 1.21 million (5.2%) for surface-water extraction.
- Uttar Pradesh had the largest number of MI schemes in the country (17.2%) followed by Maharashtra (15.4%), Madhya Pradesh (9.9%) and Tamil Nadu (9.1%).
- Leading States in groundwater schemes are Uttar Pradesh, Maharashtra, Madhya Pradesh, Tamil Nadu, and Telangana. Maharashtra, Karnataka, Telangana, Odisha and Jharkhand have the highest share in surface-water schemes.
- The number of MI schemes increased by about 1.42 million between the fifth and sixth editions.
- Most of the schemes (96.6%) were privately owned and small and marginal farmers having less than two hectares of land owned the majority of them.

### OVER HALF OF SRI LANKAN PEOPLE 'VULNERABLE', UNDP



#### Why in news?

- The crushing economic crisis in Sri Lanka in 2022 has left more than half of the island's population "multi-dimensionally vulnerable", according to a national citizens' survey led by the United Nations Development Programme (UNDP).

**Dimensions:**

- The study spanning the years 2022 and 2023, and covering 25,000 households across the country, found 55.7 % of the population to be vulnerable across three dimensions; education, health and disaster, living standards and 12 indicators, including school attendance, physical condition, unemployment and indebtedness.
- In effect, the survey showed that 12.34 million people out of Sri Lanka's 22.16 million-strong population have been badly affected by the crisis and remain vulnerable, amid claims of a recovering economy.
- The findings are in line with earlier research by UN agencies on food insecurity levels, and reaffirm anecdotal accounts of poor families cutting down their food intake and pulling their children out of school to cope with the high living costs.

**Key Highlights:**

- It said a majority or 82%, of those found to be "multidimensionally vulnerable" lived in rural Sri Lanka and underscored the need for "more policy focus" in those areas.
- Further, a third of the country's population getting into debt for essential needs like food, medical care, and education, as well as pawning jewellery or selling items.
- Several districts exhibit notable multidimensional vulnerability values, with over 65 % of their populations identified as vulnerable.
- The people living in the island's Tamil-majority north and east, impacted by the civil war, and the economically-marginalised Malaiyaha Tamil community, are among those facing the highest levels of economic deprivation.

**IMF package:**

- The 2022 financial meltdown pushed Sri Lanka to bankruptcy and brought its citizens to the streets, as they contended with acute shortages, long power cuts, and a dramatic increase in prices.
- A year after defaulting on its foreign debt in the wake of a stifling balance of payments problem, the government obtained International Monetary Fund (IMF) support in March 2023, by way of a \$3 billion package.
- While President Ranil Wickremesinghe has pledged to set the country's economy on a path of recovery, his government is struggling to reach an agreement with its external creditors.
- It must finalise a debt treatment plan before the IMF's scheduled review this month, as the second tranche of the IMF loan is contingent on it.

**Social security programme:**

- The government recently began making cash transfers to 1.5 million families out of the 2 million

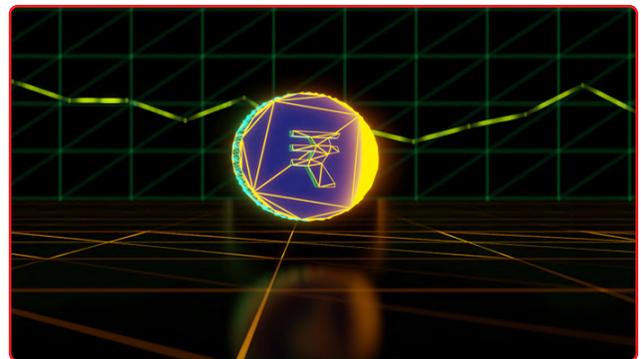
it has identified as poor and eligible. Many more families are protesting, asking to be included on the list.

- However, women's groups and government critics argue that a targeted social security programme, amounting to 0.6% of the GDP, will prove grossly inadequate to combat the economic strain.

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### UPI QR CODE-CENTRAL BANK DIGITAL CURRENCY INTEROPERABILITY

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**Why in news?**

- With banks enabling the interoperability of Unified Payments Interface's (UPI) Quick Response (QR) code with their central bank digital currency (CBDC) or e₹ application, users of retail digital rupee will be able to make transactions by scanning any UPI QR at a merchant outlet.
- Merchants can also accept digital rupee payments through their existing UPI QR codes.
- This integration of UPI and CBDC is part of the Reserve Bank of India's (RBI) ongoing pilot project on pushing the retail digital rupee (e₹-R).

**What is interoperability?**

- Interoperability is the technical compatibility that enables a payment system to be used in conjunction with other payment systems, according to the RBI.
- It allows system providers and participants in different systems to undertake, clear and settle payment transactions across systems without participating in multiple systems.
- Interoperability between payment systems contributes to achieving adoption, co-existence, innovation, and efficiency for end users.

**What is UPI QR code-CBDC interoperability?**

- Interoperability of UPI with the digital rupee means all UPI QR codes are compatible with CBDC apps. Initially, when the pilot for the retail digital rupee was launched, the e₹-R users had to scan a specific QR code to undertake transactions.
- However, with the interoperability of the two, payments can be made using a single QR code.
- The digital rupee issued by the RBI, or the CBDC, is a tokenised digital version of the rupee. The e₹ is held

in a digital wallet, which is linked to a customer's existing savings bank account. UPI is directly linked to a customer's account.

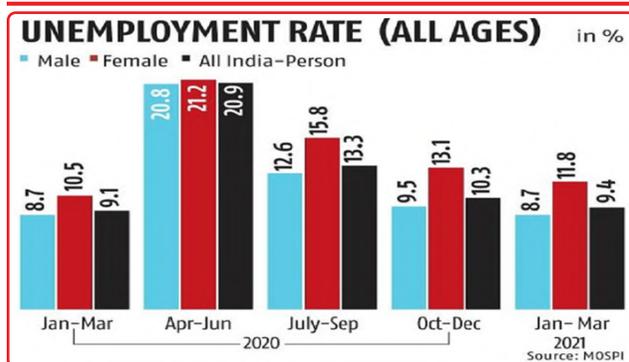
### How will it benefit customers and merchants?

- The interoperability of UPI and CBDC will ensure seamless transactions between a customer and merchant without having the need to switch between multiple digital platforms.
- It will allow a digital rupee user to make payments for their daily needs, such as groceries and medicines, by scanning any UPI QR codes at any merchant outlet.
- Even merchants are not required to keep a separate QR code to accept the digital rupee payments. They can accept CBDC payments on their existing QR code.

### What is a QR code?

- A Quick Response (QR) code consists of black squares arranged in a square grid on a white background, which can be read by an imaging device such as a camera.
- It contains information about the item to which it is attached, according to the National Payments Corporation of India (NPCI). QR code is an alternate contactless channel of payments.
- It allows merchants or businesses to accept payments from their customers directly into their bank accounts.

## HOW UNEMPLOYMENT IS MEASURED



### Context:

- When the Periodic Labour Force Survey (PLFS) was released in 2017, it revealed the unemployment rate of India to be 6.1%, the highest ever recorded in India.
- The PLFS of 2021-22 showed unemployment reducing to 4.1%, much lower than before, but higher than some developed economies. The U.S unemployment rate fluctuated between 3.5% in July 2022 to 3.7% in July 2023.

### Defining unemployment:

- Unemployment is not synonymous with joblessness.
- The International Labour Organization (ILO) defines unemployment as being out of a job; being available to take a job; and actively engaged in searching for work. Therefore, an individual who has lost work but does not look for another job is not unemployed.

- The labour force is defined as the sum of the employed and the unemployed. Those neither employed nor unemployed are considered out of the labour force. The unemployment rate is measured as the ratio of the unemployed to the labour force.
- The unemployment rate could also fall if an economy is not generating enough jobs, or if people decide not to search for work.
- In the U.S., the employment-to-population ratio (EPR) in 2019 was 60.8, while the unemployment rate was 3.7%. In 2022, the EPR was 60, but the unemployment rate had fallen to 3.6%.
- Even though there were fewer jobs (as a proportion of the total population), the unemployment rate was lower because many individuals had exited the labour force.

### Measuring unemployment in India:

- The situation is complicated in a developing economy, because decisions to search for work are constrained by social norms.
- According to a 2009-10 survey undertaken by the National Sample Survey Organisation (NSSO), 33.3% of rural women and 27.2% of urban women aged 15 and above who were engaged in domestic work reported willingness to work if it were made available within the premises of the household.
- This represents 18.8% of the rural female population aged 15 and up; the labour force participation rate (LFPR) for rural women that year was 26.5%. These women would not be counted among the unemployed because they are not actively looking for work.

### Challenges in India:

- A definition of unemployment that focuses on actively searching for a job may underestimate the true picture in a developing economy.
- Measuring unemployment in India is difficult due to the informal nature of jobs. Unlike developed economies, individuals do not hold one job year-round.

### Measures in India:

- The NSSO adopts two major measures for classifying the working status of individuals in India – the Usual Principal and Subsidiary Status (UPSS) and the Current Weekly Status (CWS).

### Usual Principal and Subsidiary Status (UPSS):

- An individual's principal status, whether employed, unemployed or out of the labour force, is based on the activity in which they "...spent relatively long time..." in the previous year.
- A person who is not a worker, according to the principal status, would still be counted as employed according to the UPSS if they were engaged in some economic activity in a subsidiary role for a period "...not less than 30 days".

- Thus, an individual unemployed for five months and working for seven months in the previous year would be considered a worker according to the principal status, while an individual unemployed for nine months but working for three months would be counted as employed as per the UPSS.

### Current Weekly Status (CWS):

- The CWS adopts a shorter reference period of a week. An individual is counted as being employed if they have worked for "...at least one hour on at least one day during the seven days preceding the date of survey."
- UPSS unemployment rates will always be lower than CWS rates because there is a greater probability that an individual would find work over a year as compared to a week.

### Why unemployment rates are lower in rural areas than urban?

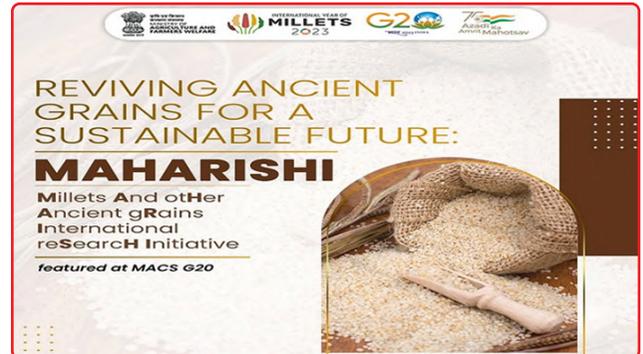
- In agrarian economies, where individuals have access to family farms or some form of casual agrarian work, there is greater probability of finding some kind of work when compared to urban areas. These definitions may 'underestimate' unemployment, but they were largely designed to capture the extent of the informal economy.
- The Centre for Monitoring Indian Economy classifies individuals based on their activity in the day preceding the interview. They, therefore, estimate a higher unemployment rate, but lower labour force participation rates.
- This is because in an informal economy, there is a lower chance of an individual having work on any given day as compared to longer periods of a week or a year.

### The lockdown effect:

- The lockdown announced in March 2020 was a profound disruption to the Indian economy. But this wasn't reflected in the PLFS unemployment rates, which covers a period between July of one year to June of the next.
- The lockdown would have been covered in the last quarter of the 2019-20 PLFS, its after-effects seen in the 2020-21 PLFS. However, unemployment rates fell in 2019-20 and 2020-21.
- Consider an individual with regular employment who loses work in March 2020. According to the UPSS status, this individual would be considered employed, since they spent most of the previous year employed.
- If those individuals who lost jobs during the lockdown find employment in a time less than six months, they would never be counted as unemployed by the UPSS.
- The CWS criterion, with a shorter reference period, would record higher unemployment rates. However, the measures presented in the PLFS report are an aggregation of interviews conducted across the year.
- If those rendered jobless by the lockdown were able to find employment relatively quickly, the CWS

unemployment rate for the lockdown period would show high unemployment, but not so for subsequent periods. When averaging across these different periods, the CWS rate for the entire year would show a lower measure.

## MAHARISHI INITIATIVE



### Context:

- During the 100th G20 meeting under India's presidency, the meeting of agricultural chief scientists (MACS), reached the unanimous decision to launch an initiative named MAHARISHI.
- This stands for 'Millets And Other Ancient Grains International Research Initiative'.

### Aim:

- This initiative is aimed to bolster research and awareness concerning agro-biodiversity, food security, and nutrition, aligning with the International Year of Millets 2023 (IYoM 2023) programme initiated by the United Nations General Assembly (UNGA).
- MAHARISHI is a Sanskrit acronym for an initiative proposed by India towards advancing research in the field of millets and other ancient grains.

### Details:

- The initiative's secretariat is based at the Indian Institute of Millets Research (IIMR) in Hyderabad, with crucial technical support from the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), One CGIAR Centres, and other international organisations.
- This was decided in April during the 12th MACS meeting. The theme of the meeting was 'Sustainable Agriculture and Food Systems for Healthy People and Planet'.

### What is the purpose of the initiative?

- India's MAHARISHI Initiative was conceived to address the challenges of dispersed efforts in research across various grains. It aims to focus on millets and other underutilised grains.

### Its goals include:

- Enhance food security and nutrition: MAHARISHI aims to facilitate research collaboration on climate-resilient and nutritious grains, including millets

- and other ancient grains. This effort complements the ongoing International Year of Millets 2023 programme.
- Strengthen agricultural resilience: Through approaches like climate-resilient agriculture and "One Health", the initiative aims to build resilience in agriculture systems which can contribute to sustainable food production.
  - Digital transformation: It promotes digitalisation in agriculture, embracing technology to modernise and transform agricultural practices.
  - Public-private partnerships: MAHARISHI fosters collaboration between public and private organisations to advance research on these grains, identifying research gaps and needs.

### The Chinese roadblock:

- Although the MAHARISHI acronym was included in the outcome document released after the G20 Meeting of Agricultural Chief Scientists (MACS) in April, China raised objections to using a Sanskrit acronym in international documents.
- China did not object to the proposal itself, instead, it highlighted a broader linguistic and cultural challenge.
- As a result of this objection, the acronym MAHARISHI was omitted from the chair's summary released after the G20 Agriculture Ministers' meeting in June. It remains to be seen whether it will return to the joint declaration.
- China had also previously raised objections to using the Sanskrit phrase "Vasudhaiva Kutumbakam" in G20 ministerial outcome documents, a Sanskrit is "not recognised as an official language by the UN."

### Collaboration and knowledge sharing:

- The MAHARISHI initiative also seeks collaboration with various organisations and institutions to disseminate research findings and identify gaps and needs.
- A web platform is also in the works to facilitate communication and information sharing among researchers in an open and accessible manner.
- Additionally, India has proposed knowledge transfer activities on millets, including capacity-building initiatives and international research workshops and conferences, to encourage researchers to work on these grains.

### Way Forward:

- India's MAHARISHI Initiative is a significant step toward addressing global food security, nutrition, and sustainable agriculture challenges.

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## IMPACT OF RBI'S LENDING GUIDELINES

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### Why in news?

- Recently, the Reserve Bank of India (RBI) issued guidelines enabling a borrower to transition from a

floating interest rate-based loan to one with a fixed interest rate.

- The endeavour was to address borrowers' grievances pertaining to the elongation of loan tenure and/or an increase in the EMI amount in the event of an increase in the benchmark interest rate.
- A lack of proper communication along with the absence of consent formed part of the concerns. The provisions would be extended to existing as well as new loans by the end of the current calendar year.



### What exactly has the RBI instructed?

- It has given borrowers the option to switch over to a fixed (interest) rate mechanism for their loans from floating rates. This would be based on a board-approved policy drafted by the lending entity. The policy must also specify the number of times such a switch would be allowed during the tenure.
- The lender must also transparently communicate to the borrower all relevant charges alongside service charges or administrative costs associated with the transition.
- The borrower would now also have the option to choose between enhancement of the EMI or elongation of the tenure or a combination of both. S/he might also opt to prepay the loan, either in part or full, at any point during the tenure. This would, however, still invite foreclosure charges or pre-payment penalty.
- RBI has sought that lending entities provide borrowers, through appropriate channels, a statement at the end of each quarter enumerating the principal and interest recovered till date, EMI amount, number of EMIs left and annualised rate of interest/ Annual Percentage Rate (APR) – for the entire tenure of the loan. RBI has asked for the statement to be "simple and easily understood by the borrower".
- The instructions would apply to all equated instalment-based loans of different periodicities albeit with certain changes based on the nature of the loan.

### What is the difference between a fixed and floating interest rate?

- Fixed interest rates are those that do not change during the tenure of the loan. On the other hand, floating interest rates are subject to market dynamics and the base rate, therefore, the risk differentiation.

- The floating interest rates are generally lower than fixed interest rates. For example, if the floating interest rate for home loans is 10.5%, the fixed interest rate would be 12%.
- Lenders argue that even if the floating interest rate were to rise by up to 2.5 percentage points, the borrower would be able to save more money when it is below the fixed rate. It has been widely argued that their preference for the floating rate-based regime is to better adjust their positions as per the evolving market dynamics.
- The advantages are transmitted onto the borrower's savings pool, but the opposite also holds true in a rising benchmark rate regime. The floating interest rate loans do not draw any prepayment penalty unlike fixed rate loans.
- However, the fixed rate-based regime endows a borrower with greater certainty and security. This also helps in better planning and structuring of individual budgets. Thus, prospective borrowers should note broader evolving economic dynamics and accordingly decide the tenure they seek.

### What is RBI's stance on assessing repayment capacity?

- RBI stated in the circular that lending entities are required to consider the repayment capacity of the prospective borrower. This is to allow borrowers adequate (or optimum) headroom/margin for elongation of tenure and/or increase in EMI.
- About parameters for assessment, the banks would have to consider the payment capacity of the borrower and how longpayment capacity would last (the age factor).

### G20 LEADERS ENDORSES GOA ROADMAP AND 'TRAVEL FOR LIFE' PROGRAM TO PROVIDE BIG BOOST TO TOURISM SECTOR



### Why in news?

- A significant milestone achieved during the G20 Leaders' Summit in Delhi was the unanimous endorsement of tourism and culture's pivotal role in sustainable socio-economic development and prosperity.

### Details:

- The 'G20 Leaders Declaration' adopted during the summit underlined the significance of the 'Goa Roadmap' for Tourism as a vehicle for achieving SDGs.
- Delhi Declaration provides a new direction for tourism sector with G20 Goa Roadmap outlining the challenges, objectives, opportunities and recommendations for tourism sector to achieve sustainable development goals.

### Goa Roadmap

- 'GOA Roadmap', the key deliverable of India's G20 Tourism Track, is a pioneering initiative that provides a blueprint for sustainable global tourism.
- Goa roadmap, aligned with the theme of India's G20 Presidency, underscores the role of tourism in society, the economy, and environmental stewardship.
- By focusing on the five interconnected priorities identified and endorsed by the G20 Tourism Working Group - Green Tourism, Digitalization, Skills, Tourism MSMEs, and Destination Management - the roadmap offers a comprehensive strategy for nations to align their tourism policies with the United Nations Sustainable Development Goals 2030.

### G20 Tourism and SDG Dashboard:

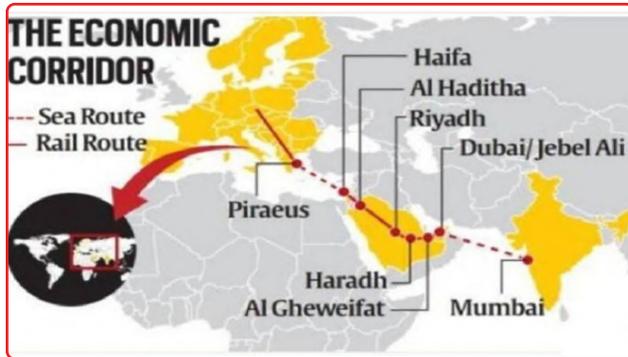
- The Ministry of Tourism, in collaboration with the United Nations World Tourism Organization (UNWTO), has launched the G20 Tourism and SDG Dashboard.
- This pioneering initiative will serve as a global repository, showcasing the best practices and case studies of sustainable tourism practices and policies from G20 nations.
- It aims to be a comprehensive resource, aiding nations and industry stakeholders in their journey towards achieving the SDGs through tourism.

### "Travel for LiFE" initiative:

- In another significant development, the G20 leaders' declaration has further noted the launch of the "Travel for LiFE" initiative, emphasizing its transformative potential in promoting responsible and sustainable tourism.
- Travel for LiFE program has been inspired by the Prime Minister's vision of LiFE (Lifestyle for Environment), which is extremely relevant for tourism sector.
- Travel for LiFE nudges all tourists and tourist businesses to take simple actions, which have tremendous significance for environment protection and climate action.
- Ministry of Tourism has aligned its programs and initiatives for promoting sustainable tourism under 'Travel for LiFE' program and the campaign will cover the entire tourism ecosystem, motivating and inspiring all actors to contribute in making tourism sector sustainable and responsible.

- ⇒ While recognizing the LiFE actions by tourists, the Ministry will also recognize the tourism businesses as TFL certified based on STCI criteria of the Ministry. It will also encourage the tourists and tourism businesses to take a "Travel for LiFE" pledge, which will reflect their commitment for sustainable practices.

### INDIA-MIDDLE EAST-EUROPE MEGA ECONOMIC CORRIDOR



#### Why in news?

- ⇒ On the sidelines of the G20 Summit in New Delhi, a Memorandum of Understanding (MoU) was signed between the Governments of India, the US, Saudi Arabia, the European Union, the UAE, France, Germany and Italy to establish the India-Middle East-Europe Economic Corridor (IMEC).
- ⇒ The IMEC is being envisioned as a network of transport corridors, including railway lines and sea lanes that is expected to aid economic growth through integration between Asia, the Arabian Gulf, and Europe.

#### What is the Partnership for Global Infrastructure Investment (PGII)?

- ⇒ The project is a part of the Partnership for Global Infrastructure Investment (PGII), a West-led initiative for funding infrastructure projects across the world, seen as a counter to China's Belt and Road Initiative (BRI).
- ⇒ The infrastructure plan was first announced in June 2021 during the G7 (or Group of Seven) summit in the UK.
- ⇒ The G7 countries include the United Kingdom, the United States, Canada, France, Germany, Italy, Japan, and the European Union (EU). US President Joe Biden had called it the Build Back Better World (B3W) framework. However, it did not register much progress.
- ⇒ In 2022, during the G7 summit in Germany, the PGII was officially launched as a joint initiative to help fund infrastructure projects in developing countries through public and private investments.
- ⇒ The stated purpose of both the PGII and the BRI is to help secure funding for countries to build

critical infrastructure such as roads, ports, bridges, communication setups, etc. to enhance global trade and cooperation.

#### What was the need for an alternative?

##### BRI:

- ⇒ China began the Belt and Road Initiative in 2013 under its President Xi Jinping. It aims to revive the ancient trade routes crossing to and from China—from Rome in Europe to East Asia.
- ⇒ Under this, the Chinese government helped in providing loans for infrastructure projects to various countries, and in many cases, Chinese companies were awarded contracts for carrying out the work. This helped China mark its footprints at a global level.
- ⇒ However, China was criticised in the West and by some other countries for providing unsustainable debts to countries that will be unable to repay them.
- ⇒ According to a 2019 World Bank report, among the 43 corridor economies for which detailed data was available, 12 could face a situation where debts were not sustainable, which could lead to public assets being handed over to foreign contractors or China itself.

##### Concerns:

- ⇒ India, however, opposed the BRI as it included the China-Pakistan Economic Corridor, which connected Kashgar in China with the Gwadar port in Pakistan via Pakistan-occupied Kashmir.
- ⇒ Others are wary of the benefits they might reap from enhanced trade connectivity. Italy, the only G7 member that was part of the BRI, has also expressed its concerns in this regard.

#### What has been announced so far as part of PGII initiatives?

- ⇒ The US government's agency, its International Development Finance Corporation (DFC) would invest over \$15 billion in India's health infrastructure, "including support for the expansion of a chain of eye clinics for conducting corrective surgery for underserved individuals, and an India-based social enterprise that manufactures safe and affordable women's hygiene products for underserved women in non-metro areas."
- ⇒ The EU, through its Global Gateway programme, has now said it will "activate 300 billion of investments in critical connectivity projects during the period 2021-2027, half of which is destined for Africa."
- ⇒ Over 90 projects have been identified in Africa, Latin America and the Caribbean, Asia and the Pacific, and in the Western Balkans.

##### Way Forward:

- ⇒ China is in the process of modifying BRI to address its criticisms.
- ⇒ Further, the scale of investments that can be raised by China is higher than that of the G7, who will have to

look for political consensus within their countries for pledging to such projects. They also have no control over assured private-sector participation.

- But if PGII succeeds to a certain extent and with BRI addressing its own issues given this competition of sorts, it could actually help diversify the options available to the countries who have infra requirements.

### ECONOMIC ISSUES THAT G20 LEADERS AGREED ON



#### Why in news?

- Recently, the G20 countries arrived at a consensus on the language of the New Delhi Declaration, and also adopted it.
- The G20 New Delhi Leaders' Declaration laid out measures by which the countries involved would help the private sector accelerate growth, help MSMEs in developing countries to integrate better in global trade, and support skill development and financial inclusion across countries.
- The G20 countries noted that global economic growth was below its long-run average, and that it remained uneven.

#### Key Highlights:

- The declaration also took note of the swift actions taken by some developed economies in light of the banking turmoil in the recent past, and welcomed the steps taken by the Financial Stability Board (FSB), the Standard Setting Bodies (SSBs), and certain jurisdictions to examine what can be learnt from these episodes.
- Significantly for India, which has used its G20 presidency to push for the wider adoption of Digital Public Infrastructure (DPI) to enhance financial inclusion and service delivery, the declaration also made mention of New Delhi's plans to make available DPI technology for countries that want to adopt such platforms.

#### Debt issue:

- Further, the G20 countries resolved to ensure that the multilateral development banks (MDBs), including the International Monetary Fund (IMF) and the World

Bank, were adequately capitalised and ready to help the countries in need. The steps already taken towards this would ensure an additional \$200 billion of loans would be available over the next decade.

- It called for the faster resolution of debt distress among the smaller economies that were suffering from high-levels of indebtedness following the COVID-19 pandemic, another item on the G20's agenda that India was prioritising.

#### Cryptocurrencies:

- On the regulation of cryptocurrencies, they welcomed the synthesis paper by the IMF and the FSB that outlined the risks associated with cryptocurrencies and also laid out a roadmap for the adoption of crypto-related regulations by the member countries.
- They added that the recommendations of the paper would be discussed in the meeting of the G20 Finance Ministers and Central Bank Governors (FMCBG) in October. One of the key recommendations in the paper was that governments should not give cryptocurrencies the status of official currencies or legal tender.

#### Enhancing digital public infrastructure:

- The G20 leaders recognised that digital public infrastructure, "respectful of human rights, personal data, privacy and intellectual property rights" can strengthen service delivery and innovation.
- This emphasis on personal data and privacy is of particular importance because, while a lot of developing countries have some keenness to work with India's DPI portals like the Unified Payments Interface (UPI), Aadhaar, and CoWin, advanced economies have been wary, citing privacy and security concerns.
- The leaders welcomed the G20 Framework for Systems of Digital Public Infrastructure, a voluntary and suggested framework for the development, deployment and governance of DPI.
- It also took note of India's proposal of a 'One Future Alliance (OFA)', which it said was a voluntary initiative aimed to build capacity, and provide technical assistance and adequate funding support for implementing DPI in low- and middle-income countries.

#### Strengthening multilateral development banks:

- The 21st century also requires an international development finance system that is fit for purpose, including for the scale of need and depth of the shocks facing developing countries, in particular the poorest and most vulnerable.
- The leaders endorsed the roadmap for the implementation of the recommendations of the G20 Independent Review of MDBs Capital Adequacy Frameworks (CAFs) and called for its implementation, keeping in mind the MDBs' own governance frameworks.

⇒ The initial CAF measures, including those under implementation and consideration, could potentially yield additional lending headroom of approximately \$200 billion over the next decade, as estimated in the G20 CAF Roadmap.

### GRESHAM'S LAW, WHAT HAPPENS WHEN GOVERNMENTS FIX CURRENCY EXCHANGE RATES



#### Why in news?

- ⇒ Gresham's law was in news during the economic crisis in Sri Lanka last year.
- ⇒ The Central Bank of Sri Lanka has fixed the exchange rate between the Sri Lankan rupee and the U.S. dollar.

#### Application of Gresham's law:

- ⇒ Gresham's law refers to the dictum that "bad money drives out good." Gresham's law comes into play when the exchange rate between two currencies is fixed by the government at a certain ratio that is different from the market exchange rate.
- ⇒ Such price fixing causes the undervalued currency to go out of circulation. The overvalued currency, on the other hand, remains in circulation but it does not find enough buyers.
- ⇒ The market exchange rate is essentially an equilibrium price at which the supply of a currency is equal to the demand for the currency.
- ⇒ Also, the supply of a currency in the market rises as its price rises and falls as its price falls; while, on the other hand, the demand for a currency falls as its price rises and rises as its price falls.
- ⇒ So, when the price of a currency is fixed by the government at a level below the market exchange rate, the currency's supply drops while demand for the currency rises. Thus a price cap can lead to a currency shortage with demand for the currency outpacing supply.

#### Origins of the term:

- ⇒ Gresham's law is named after English financier Thomas Gresham who advised the English monarchy on financial matters. It applies not just to paper currencies but also to commodity currencies and other goods.

- ⇒ In fact, whenever the price of any commodity is fixed arbitrarily such that it becomes undervalued when compared to the market exchange rate, this causes the commodity to disappear from the formal market.
- ⇒ The only way to get hold of an undervalued commodity in such cases would be through the black market. Sometimes, countries can even witness the outflow of certain goods through their borders when they are forcibly undervalued by governments.
- ⇒ Gresham's law can be seen at play whenever a government fixes the exchange rate (or price) of a commodity money (such as gold and silver coins) far below than the market price of the commodity backing them.
- ⇒ In such cases, people who hold the commodity money would stop offering the money at the price fixed by the government. They may even melt such commodity money to derive pure gold and silver that they can sell at the market price, which is higher than the rate fixed by the government.

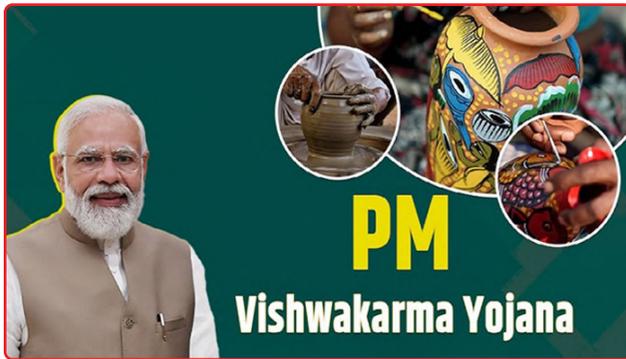
#### Case of Sri Lanka:

- ⇒ The Central Bank of Sri Lanka, at a certain point, mandated that the price of the U.S. dollar in terms of the Sri Lankan rupee should not rise beyond 200 rupees per dollar even though rates in the black market suggested that the U.S. dollar should sell for far more than 200 rupees.
- ⇒ In effect, people were banned from paying more than 200 Sri Lankan rupees for a dollar, thus causing the rupee to be overvalued and the U.S. dollar to be undervalued when compared to the market exchange rate.
- ⇒ This caused the supply of dollars in the market to fall and the U.S. dollar to be gradually driven out of the formal foreign exchange market. People who wanted U.S. dollars to purchase foreign goods then had to purchase dollars from the black market by paying far more than 200 Sri Lankan rupees for each U.S. dollar.

#### Thiers' law:

- ⇒ In the absence of any government decree fixing the exchange rate between currencies, it is good money that eventually drives bad money out of the market and not the other way round.
- ⇒ When the exchange rate between currencies is not fixed and people have the choice to freely choose between currencies, people gradually stop using currencies that they consider to be of poor quality and adopt currencies that are found to be of better quality.
- ⇒ This phenomenon wherein "good money drives out bad" is called Thiers' law (named after French politician Adolphe Thiers) and it is seen as a complement to Gresham's law.
- ⇒ The rise of private cryptocurrencies in recent years has been cited by many analysts as an example of good money issued by private money producers driving out bad money issued by governments.

## PRIME MINISTER LAUNCHES PM VISHWAKARMA SCHEME



### Why in news?

- Recently, the Prime Minister officially launched the Central Sector Scheme PM Vishwakarma at New Delhi.

### Background:

- On the 16th of August 2023, the Union Cabinet of India gave its nod to implement PM Vishwakarma Yojana throughout India for end-to-end support to traditional artisans & craftsmen or 'Vishwakarmas' to grow their business.
- Provisions have been made under the scheme for training, technology, credit and market support for the traditional artisans and craftsmen to give impetus to their endeavour.

### Key Highlights:

- The PM Vishwakarma Scheme will allow artisans to attend a five-day skilling workshop, a voucher to buy toolkits, and the provision for guarantee-free loans of up to Rs 3 lakh.
- Under the MSME Ministry, the PM Vishwakarma scheme is aimed at 18 categories of artisans and craftspeople like carpenters, boat makers, blacksmiths, potters, stone sculptors, weavers, and garland makers.

### Skill development:

- For the skills development component, the scheme will host a 5-day training workshop for beneficiaries with a daily stipend of Rs 500.
- It will also provide them with a voucher of Rs 15,000 to buy toolkits necessary for their craft.

### Financial assistance:

- Under the financial assistance component of the scheme, beneficiaries would first be eligible for an interest-free loan of Rs 1 lakh, which they would have to repay within 18 months. Upon repayment, they would qualify for a second tranche of loan worth Rs 2 lakh at an interest rate of 5 per cent.
- The beneficiaries would also get a subsidy of up to 8 per cent of the interest amount. The verification of beneficiaries would be done at three levels, which

are the gram panchayat, district collector, and state levels.

- Furthermore, the financial assistance component of the PM Vishwakarma scheme is guarantee-free.
- Under the scheme, a concessional rate of interest of 5 per cent will be charged from the beneficiary with an interest subvention cap of 8 per cent to be paid by the Ministry of Micro Small and Medium Enterprises. The credit guarantee fees will be borne by the Centre.

### Significance:

- The scheme is expected to benefit about 30 lakh families of traditional artisans and craftsmen, including weavers, goldsmiths, blacksmiths, laundry workers, and barbers.
- The scheme will further provide skill upgradation, toolkit incentives, digital transactions and marketing support.

## WHY IS THE GOVERNMENT PUSHING FOR REGULATORY MECHANISMS FOR OTT SERVICES?



### Why in news?

- On July 7, the Telecom Regulatory Authority of India (TRAI) invited responses to a consultation paper it released on a regulatory mechanism for over-the-top (OTT) communication services.
- It is likely to issue guidelines in the coming days on whether OTT services should be regulated or be let to continue to operate as it is.

### What happened?

- The discussion on the selective banning of OTT services came after a Parliamentary Standing Committee issued a notice to the Department of Telecom (DoT) to explore this option due to the unrest caused by these platforms which have mass reach and impact.
- Only OTT communication services like WhatsApp, Signal, Meta, Google Meet, Zoom, X, etc. were discussed in the consultation paper and not the 'content' OTTs such as Netflix, Amazon Prime etc. Content regulation is an altogether different subject and it comes under the ambit of the Ministry of Information and Broadcasting (MIB) and not the TRAI.

- The TRAI has also asked stake holders to define OTT, and a proposal on cost-sharing mechanisms between Telecom Service Providers (TSPs) and OTT services.

### What is the conflict between TSPs and OTTs?

- Telecom Service Providers are of the opinion that OTTs should be regulated and charged because they use and thrive on the infrastructure built by operators over the years. Currently, they aren't.
- OTT communications services have led to erosion of revenues for the telcos. These platforms offer users an array of services, sending of Multimedia Messaging Services (MMS), instant messaging to voice and video calls, delivered over the internet.
- This circumvents the need for traditional telecom services, particularly voice calls and text messages, leading to a significant reduction in the revenue streams of telecom companies.
- OTT communication service providers neither contribute to the exchequer nor make investments like the TSPs in spread of network infrastructure in the country. The OTT communication service providers take a free ride on TSP funded networks without contributing to the setting up and maintaining digital infrastructure for access networks.

### What is the demand?

- There should be a policy framework to enable fair share contribution from large OTT service providers to telecommunication network operators based on assessable criteria like number of subscribers or data usage. To ensure fairness and compensate for the increased data demands, it is justifiable for OTTs to pay a fair and reasonable fair share charge to TSPs.
- If OTT services are a substitutable service offered by licenced service providers, then such OTT services should be considered as the same services offered under the telecom licence granted by the Government.
- That is, all such OTT services should be governed by the same set of rules irrespective of whether they are provided by an operator on its own network or through the internet.

### What do others say?

- The Internet and Mobile Association of India (IAMAI) submitted that cost-sharing demands are often articulated through a model where the sending party network pays (SPNP) the network operator.
- It would essentially mean charging twice for the same service as consumers already pay TSPs for the data they consume. It would add a cost to accessing free or cheap content, a part of which will eventually be passed on to consumers, thus raising the cost of internet usage.
- It also goes against the principle of net neutrality that states networks should be neutral to all the information being transmitted through it.

### What is the argument for banning OTT services?

- Government should consider source-level blocking so that the desired outcome may be achieved without any significant difficulties, the COAI added.
- The IAMAI believes that there is no need to implement additional regulations governing OTT services, or even a regulatory framework for the selective banning of OTT services.
- Similarly, the Broadband India Forum (BIF) firmly opposed any selective ban on OTT services as they are adequately regulated under the existing IT Act, 2000, Consumer Protection Act, 2019, and other associated Acts and Rules.

## DEPARTMENT OF FISHERIES IS PROMOTING ARTIFICIAL REEF (AR) UNDER PMMSY



### Why in news?

- To promote sustainable practices, Department of Fisheries has sanctioned 732 artificial reef units for 10 coastal states with a total investment of Rs 126 crore as a sub-activity under "Integrated Modern Coastal Fishing Villages" of the Centrally Sponsored Scheme (CSS) of Pradhan Mantri Matsya Sampada Yojana (PMMSY).

### Implementation:

- The projects are being implemented with the technical support of Fishery Survey of India (FSI) and ICAR-Central Marine Fisheries Research Institute (CMFRI).
- All the states have completed their site selection process while states of Kerala and Maharashtra have completed the tendering process for execution of work. Thus all projects are expected to be completed by January 2024.

### What are artificial reefs?

- Artificial reefs are engineering technology interventions used to rehabilitate and/or improve natural habitats, increase productivity and manage aquatic resources including habitat enhancement.

### Advantages:

- Similar to natural reefs, ARs used for aggregating fish and provide a home for fish to live and grow, reduce wave damage on coasts, helps regeneration

of marine ecosystem and act as a carbon sink. As per CMFRI, two to three-fold increase in catch rates and efficiency can be realized. Thus saving fuel and energy costs leading to increased income.

- Provide a firm substrate for marine life such as corals, algae and plankton to attach to and grow. They provide favorable conditions for sea ranching and serve as spawning and nursery grounds for fish.
- Enhance recreational fisheries, snorkeling, eco-tourism, creating suitable areas for diving and reducing conflicts.
- Artificial reef structures restrict bottom trawling in the near shore areas thus helping the marine environment to regenerate and small-scale fishers get higher catch.
- One artificial reef of 300m<sup>3</sup> is expected to support 25-30 non-mechanized boats (CMFRI).

#### About PMMSY:

- PMMSY was launched in May 2020 with the highest ever investment of Rs. 20,050 crore to bring about Blue Revolution through sustainable and responsible development of the fisheries sector.
- Over the years, increased fishing activities has reduced per capita yield from coastal fisheries, to led to heavy fishing pressure, loss of fishing grounds due to bottom trawling, coastal development etc. This has also resulted in reduced income and forcing the fishers to go to deeper waters.

### WHAT ARE THE REASONS FOR RISE IN GLOBAL DEBT?



#### Why in news?

- Global debt rose to an all-time high of \$307 trillion in the second quarter, by the end of June 2023, the Institute of International Finance (IIF) said in a recent report.
- The global debt has risen by about \$100 trillion over the last decade. Further, global debt as a share of gross domestic product (GDP) has started to increase once again to hit 336% after dropping quite steeply for seven consecutive quarters.

#### What is global debt?

- Global debt refers to the borrowings of governments as well as private businesses and individuals.

Governments borrow to meet various expenditures that they are unable to meet through tax and other revenues.

- Governments may also borrow to pay interest on the money that they have already borrowed to fund past expenditures. The private sector borrows predominantly to make investments.

#### Why is it rising?

- Both global debt in nominal terms and global debt as a share of GDP have been rising steadily over the decades. The rise came to a halt during the pandemic as economic activity turned sluggish and lending slowed down. But global debt levels, it seems, have started to rise again in the last few quarters.
- Most (over 80%) of the rise in global debt in the first half of the year has come from advanced economies such as the U.S., the U.K., Japan, and France. Among emerging market economies, China, India and Brazil have seen the most growth in debt.
- During the first half of 2023, total global debt rose by \$10 trillion. This has happened amid rising interest rates, which was expected to adversely affect demand for loans. But a rise in debt levels over time is to be expected since the total money supply usually steadily rises each year in countries across the globe.

#### Global debt as a share of GDP:

- There is drop in global debt as a share of GDP over seven consecutive quarters prior to 2023.
- The IIF attributes the decline in global debt as a share of GDP to the rise in price inflation, which it claims has helped governments to inflate away the debts denominated in their local currencies. Inflating away of debt refers to the phenomenon wherein the central bank of a country either directly or indirectly uses freshly created currency to effectively pay off outstanding government debt by, for example, purchasing government bonds in the market.
- But the creation of fresh money causes prices to rise, thus imposing an indirect tax on the wider economy to pay the government's debt.

#### Is it a cause for worry?

- Rising global debt levels usually leads to concerns about the sustainability of such debt. This is particularly so in the case of government debt which is prone to rise rapidly due to reckless borrowing by politicians to fund populist programmes.
- And when central banks raise interest rates, servicing outstanding debt becomes a challenge for governments with a heavy debt burden.
- Despite rising debt levels over the last decade, the interest that governments had to pay lenders largely remained manageable due to extremely low interest rates, particularly in western economies. This is set to change now as central banks have let interest rates rise in order to fight high price inflation since the pandemic.

- ⇒ Rising interest rates can increase pressure on governments and force them to either default outright or inflate away their debt. Many analysts believe that several governments will never be able to pay their debt in full and that inflating away debt is the only way for such governments to avoid an outright default on their debt.

#### Caution:

- ⇒ In its report, the IIF has also warned that the international financial infrastructure is not equipped to handle unsustainable domestic debt levels. Generally, rapidly rising private debt levels also lead to worries among analysts about their sustainability.
- ⇒ This is because such a rise is linked to unsustainable booms that end in economic crises when such lending is not backed by genuine savings.
- ⇒ The most recent example of the same was the 2008 global financial crisis. The crisis was immediately preceded by an economic boom fuelled by the U.S. Federal Reserve's easy credit policy.

### MINISTRY OF TOURISM, ORGANISED THE GLOBAL LAUNCH OF TRAVEL FOR LIFE



#### Why in news?

- ⇒ On the occasion of World Tourism Day 2023, Ministry of Tourism, organised the Global Launch of 'Travel for LiFE', a sectoral program under Mission LiFE, targeted towards the tourism sector.
- ⇒ It was launched in partnership with the Ministry of Environment, Forest and Climate Change (MoEFCC), United Nations World Tourism Organisation (UNWTO), and the United Nations Environment Programme (UNEP) at Bharat Mandapam, New Delhi.

#### Verticals:

- ⇒ The event saw the launch of the Travel for LiFE program for two different verticals viz.
  - a) Travel for LiFE for Cleanliness – a national TFL campaign for cleaning tourist sites and monuments in convergence with the Swachhata campaign and
  - b) Travel for LiFE for Rural Tourism encouraging tourists to explore the rural and lesser-known hinterland promoting sustainable rural tourism thereby empowering rural communities.

#### SDGs:

- ⇒ The 'Travel for LiFE' program actions promotes sustainable economic development, encourages sustainable consumption and production and thereby contributes to the SDGs focused on Decent Work and Economic Growth (SDG 8), Sustainable Cities and Communities (SDG 11), Responsible Consumption and Production (SDG 12), Climate Action (SDG 13) and Life Below Water (SDG 14). Given the wide range of actions, Travel for LiFE contributes directly and indirectly to almost all the SDGs.

#### Tourism for Tomorrow:

- ⇒ A national Travel for LiFE competition titled as 'Tourism for Tomorrow' for case studies and best practices was also launched during the event, in alignment with the key priorities of Goa Roadmap.
- ⇒ The 'Tourism for Tomorrow' Competition builds upon the five key priorities of G20 GOA Roadmap for Tourism that are Green Tourism, Digitalization, Skills, Tourism MSMEs, and Destination Management. The Ministry of Tourism will recognize and support SDG-driven Tourism Best Practices in India through the facilitation of this competition.
- ⇒ A Design challenge competition for Institutes of Hotel Management affiliated to NCHMCT (National Council for Hotel Management and Catering Technology) under Ministry of Tourism, Government of India has been planned to develop innovative solutions in the field of edible cutlery.

#### Swachhta campaign:

- ⇒ In line with the Swachhta campaign activities, a massive cleanliness drive has been planned by the Ministry of Tourism, Govt. of India at identified 108 tourist locations for the launch of the Swachhata Campaign.
- ⇒ This campaign will be carried out at these 108 sites as well as other places of tourist importance.
- ⇒ The objective of the whole drive is to ensure garbage cleaning, sanitation and banning Single Use Plastic (SUP) and promoting use of eco-friendly substances.
- ⇒ For a wider reach, the students of schools and colleges and members of Yuva Tourism Clubs (YTC) have also been involved.

#### Best Rural Tourism Village Awards:

- ⇒ On the occasion Best Rural Tourism Village Awards were given for promotion and preservation of their cultural heritage and sustainable development through tourism.
- ⇒ 35 Rural Tourism Villages were with 5, 10, and 20 villages in Gold, Silver, and Bronze Categories respectively.

## INDIA RETAINED THE 40TH POSITION IN GLOBAL INNOVATION INDEX 2023



### Why in news?

- The NITI Aayog, in collaboration with the Confederation of Indian Industry (CII) and the World Intellectual Property Organization (WIPO), Geneva celebrated the unveiling of the Global Innovation Index (GII) 2023 in India.
- India retained the 40th position out of 132 economies, from its 81st rank in 2015.

### GII:

- It was released by the World Intellectual Property Organisation (WIPO).
- The index tracks the innovation ecosystem performance of 132 global economies and the most recent global innovation trends.

### Global Highlights:

- Switzerland, for a 13th year ranks first in the index. Sweden is now second and the United States on third, followed by the United Kingdom (4th) and Singapore (5th), which enters the top 5.
- China, the sole middle-income economy within the top 30 is now ranked 12th while Japan is 13th.
- The GII listed India as among the 21 economies that outperformed for a 13th consecutive year on innovation relative to level of development. The other countries who achieved the feat included Republic of Moldova and Vietnam.
- The market share of electric vehicle sales across the globe surged from four per cent in 2012 to 14 per cent in 2022.
- The GII report states that India, Iran, Philippines, Turkiye, Vietnam and Indonesia are among the economies within the GII top 65 that climbed fastest in the ranking over the last decade.
- As per CBInsights' Tracker of Unicorn companies, as of April 2023, there were 1,206 unicorn companies located in 50 different countries globally. Only five economies host 80 per cent of all the world's unicorns, namely, the United States (54 per cent), China (14 per cent), India (6 per cent), the United Kingdom (4 per cent) and Germany (2 per cent).
- Out of a total unicorn valuation of USD 3.8 trillion in 2023, US unicorns account of USD 2 trillion – a huge lead – followed by China at USD 736 billion and India at USD 193 billion.

### Key Highlights about India from GII 2023:

- India's Consistent Rise: India's continued ascent in the GII, from its 81st rank in 2015 to retaining the current 40th position, underscores the nation's unwavering commitment to innovation. This upward trajectory aligns with the vision of Atma Nirbhar Bharat, championed by the Prime Minister Narendra Modi, emphasizing self-reliance and resilience through innovation.
- Leadership Among Peers: India emerges as the numero uno among 37 lower-middle-income group economies and stands tall as the number one innovation performer among the 10 economies in Central and Southern Asia.
- Consistent Innovation Excellence: India continues to impress by surpassing expectations in relation to its level of development, maintaining its position as an "innovation achiever" for the 13th consecutive year.
- Strengths and Focus Areas: India ranks highest in the Market Sophistication (input pillar) and Knowledge and Technology Outputs (output pillar) categories. It ranks amongst the top 10 in the Infrastructure and Institutions pillars (input pillars).
- Top-Ranked Indicator: India secures the top spot in the "Domestic market scale, bn PPP\$" indicator. Furthermore, India is ranked in the top 10 in six additional indicators: "ICT Services exports, % total trade," "Venture capital received, value, % GDP," "Finance for startups and scaleups," "Domestic industry diversification," "Unicorn valuation, % GDP," and "Intangible asset intensity, top 15, %."
- Innovation Outputs: India proudly ranks 35th in innovation outputs, marking an improvement from the previous year.
- Higher Graduates in Science and Engineering: India records 34% of total tertiary graduates in science and engineering in 2021, ranking 11th in this indicator.
- Startup Finance Recognition: India's finance for startups and scaleups earns it the 9th position in this category, while the Venture Capital Performance, though slightly lower than the previous year, secures the 6th position.
- Diverse Domestic Industries: India demonstrates growth in domestic industry diversification, reflecting a 0.46% increase from the prior year, and ranks 10th in this indicator.
- Patents and Citable Documents: India shows a substantial growth in patents by origin, ranking 28th globally. Additionally, it achieved the 20th rank in the citable documents H-index in 2022.
- Unicorn Valuation: India's unicorn valuation stands at 5.04% of GDP in 2023, securing the 9th position in this indicator.

- High-Tech Manufacturing: High-tech manufacturing contributed to 34.23% of the total manufacturing output in 2019, with India ranking 35th in this category.
- Intangible Asset Intensity: India achieved an impressive 8th position in intangible asset intensity, and maintains a Global Brand Value of 210.907 billion USD in 2023, ranking 31st globally.
- Cultural and Creative Exports: India's cultural and creative services exports soared in 2021, up by a substantial 21.4% from the prior year, securing the 18th position in this thriving sector.

#### Way Forward:

- As India consistently outperforms expectations and excels in various indicators, it stands poised to drive economic growth, foster resilience and embrace self-reliance through innovation.

## SECURITY

### IAF CHIEF TAKES DELIVERY OF FIRST C-295 TRANSPORT AIRCRAFT IN SPAIN



#### Why in news?

- Recently, India got its first C-295 transport aircraft providing a crucial boost to the nation's defence capabilities.
- Indian Air Force (IAF) chief Air Chief Marshal VR Chaudhari was in Spain's Seville city to receive the first plane from aircraft manufacturer Airbus' facility.

#### Background:

- In 2021, the defence ministry signed a Rs 21,935 crore deal with Airbus and Space SA, Spain, to procure 56 C-295MW transport aircraft to replace IAF's Avro fleet.
- The 56 C-295 aircraft will replace the ageing Avro aircraft.

#### Joint venture:

- Under the contract, 16 aircraft will come in fly-away condition from Seville while 40 will be manufactured by Airbus jointly with Tata Advanced Systems Ltd. (TASL).
- Work is under way to set up the final assembly line (FAL) at Vadodara in Gujarat and the first aircraft

manufactured in India will be delivered in September 2026.

#### How it will be manufactured in India?

- The first made-in-India aircraft will be delivered in 2026, while the rest 39 by 2031.
- This is the first time that a military aircraft will be produced by a private Indian company.
- TASL, which set up a factory in Telangana's Hyderabad in 2022, will produce major components such as fuselage at this facility. All parts produced in Hyderabad will be shifted to the factory in Gujarat's Vadodara in 2023.
- The FAL (Final Assembly Line) in Vadodara will be ready by mid-2024 and start production by November 2024.
- Six IAF pilots have already received training at the Airbus facility in Seville. In May, the first C295 developed for India successfully took its maiden flight from the Spanish city.

#### Features of C-295 aircraft:

- Airbus' C-295 aircraft can carry up to nine tonnes of cargo. The military plane, with the capacity to transport 71 troops, has a cruising speed of 260 knots or around 481 kilometres per hour.
- The C295 is powered by two Pratt & Whitney Canada PW127G turboprop engines that provide excellent manoeuvrability, outstanding hot-and-high performance, with fuel consumption for a very long endurance of up to 13 hours aloft.
- It has a ramp door in the rear for para-dropping of troops and cargo. In case of a medical evacuation, the aircraft can accommodate 24 stretchers and seven medical attendants.
- The aircraft acquired by India will be equipped with indigenous radar warning receivers and missile approach warning systems developed by Bharat Electronics Limited (BEL). The Bharat Dynamics Limited (BDL) will provide a countermeasure dispensing system for the military planes, reported Indian Express.

#### How C-295 aircraft will benefit India?

- This deal is a crucial push for the Centre's Make-in-India initiative, making the IAF the largest operator of the C-295 aircraft.
- The project will strengthen India's aerospace ecosystem, wherein several MSMEs spread across the country will produce components of the aircraft. This will reportedly generate 15,000 high-skilled jobs and 10,000 indirect jobs in the next decade.
- It is also expected to reduce import dependency by enhancing domestic aviation manufacturing.
- Amid potential threats from China and Pakistan, the multi-role tactical airlifter will play a significant role in keeping India's defences strong.

## FINANCE & LANGUAGE VERTICALS ON ANVIL, ARMY EDUCATION CORPS SET FOR REVAMP



### Why in news?

- As part of its restructuring efforts to meet the modern needs and to cut down flab, the Army Education Corps (AEC) is undergoing a revamp with two new verticals being raised to cater to a key demand, and is likely to be renamed 'Army Empowerment Corps'.
- While the education vertical will be retained, two new verticals; language and finance are likely to be added into the AEC.

### Current status:

- Currently, the AEC educates army personnel in skills such as map reading, three stages of which are a prerequisite for promotions for non-commissioned officers (NCOs).
- It also extends academic training at pre-commission training academies, capability development in foreign languages, military music, and handling of RTI cases, among others.

### Strength:

- While the Shekatkar Committee in 2016 recommended that the Corps should be shut down, the Army has decided to retain some strength of the AEC.
- The adding of two new verticals will be done within the sanctioned strength and no new recruiting will take place.
- The 4,500-personnel strong AEC comprises officers, junior commissioner officers (JCOs) and NCOs.

### Language:

- The Indian Army currently needs translators and interpreters in thousands just for Mandarin.
- Training for other languages such as Burmese and Urdu, extensively spoken on the border with Myanmar and Pakistan will also be given to personnel.
- At present, with units undergoing routine turnovers on the borders, the unit facing China may go to a peace posting to a completely different state, where the Mandarin language skills are no longer used after nearly 10-12 months' training.

### Finance:

- The raising of a finance vertical becomes critical because, as there is no such specialised branch in any of the headquarters.

- Staff officers posted in corps, command and army headquarters do not have specialised knowledge regarding finance.
- The colonels, posted at different headquarters, come from different branches including the fighting arms – infantry, artillery, army aviation corps and armoured corps.
- So far, the norm has been to draw colonel and Lt colonel-level officers and give them finance duties in different headquarters across the country.

### About AEC:

- The AEC, which came into being in June 1921, was initially known as the Royal Army Education Corps.
- Its name later changed to the Indian Army Education Corps in 1947 and then the Army Education Corps in 1950.
- Currently, the AEC is headed by a Major General, who is posted at Army Headquarters.
- The Corps was formed to address the widespread illiteracy among the Indian soldiers in the initial years. With the rise in education levels, the AEC no longer needs to give out basic education to personnel, prompting the Army to open new avenues suitable for present times.

## ENVIRONMENT

### INDIA WILL BE LOSING GROUNDWATER THREE TIMES FASTER IN 2041-2080, FINDS STUDY



### Why in news?

- The rate of depletion of groundwater in India during 2041-2080 will be thrice the current rate with global warming, according to a new report.
- As the country becomes warmer, people will draw more water from underground, leading to faster depletion.
- The situation can occur despite the projected increases in precipitation and possible decreases in irrigation use as groundwater table fall.

### Key observation:

- Across climate change scenarios, the researchers found that their estimate of groundwater level (GWL) declines from 2041 to 2080 is 3.26 times current

depletion rates on average (from 1.62-4.45 times) depending on the climate model and Representative Concentration Pathway (RCP) scenario.

- ⇒ RCPs are a method for capturing those assumptions within a set of scenarios. The conditions of each scenario are used in the process of modelling possible future climate evolution.

#### Impact of warming temperatures:

- ⇒ Using historical data on groundwater levels, climate and crop water stress, the study researchers found that farmers have adapted to warming temperatures by intensifying groundwater withdrawals, substantially accelerating groundwater depletion rates in India.
- ⇒ The study findings revealed that warming temperatures have accelerated groundwater depletion as farmers have increased the amount of irrigation used to meet growing crop water demand.
- ⇒ While increasing irrigation use successfully minimises the negative impacts of warming temperatures on crop water stress, the resulting groundwater depletion can reduce farmers' abilities to irrigate over decadal time scales.
- ⇒ This previously unquantified cost of adapting to warming temperatures will likely further threaten India's food and water security over the coming decades.

#### Expansion of area:

- ⇒ Warming-induced groundwater pumping will also likely increase the area facing groundwater overexploitation in the future. Currently, most overexploitation of aquifers is concentrated in the northwest and south India, but the study results further suggest overexploitation may expand to include aquifers in the southwest, the southern peninsula, and central India by 2050.
- ⇒ Such an expansion, is of concern because south and central India have hard rock aquifers that are more difficult to recharge and have less storage capacity against the alluvial aquifers found in northwest India.

#### Recommendations:

- ⇒ To reduce groundwater overexploitation, they recommended that effective policies are needed for rationing the power supply, metering electricity usage, regional water resource development and allocation, rewarding farmers that invest in groundwater recharge and reducing or removing energy subsidies.
- ⇒ In addition, groundwater-saving interventions such as the use of efficient irrigation technologies (drip or sprinkler irrigation), cultivation of less water-intensive crops and supplemental irrigation through canals may also be needed.
- ⇒ While challenges remain in implementing new regulations and interventions across the hundreds of millions of households that face groundwater depletion, without such measures, the study results

suggest that groundwater depletion rates will likely accelerate under climate change.

- ⇒ Targeting water-saving policies and interventions to these regions before substantial groundwater depletion occurs could help farmers maintain their ability to irrigate and cope with warming temperatures over the coming decades.

#### BIODIVERSITY LOSS, 37,000 'ALIEN SPECIES' INTRODUCED BY HUMAN ACTIVITIES



#### Why in news?

- ⇒ Recently, the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) released a report titled the "Assessment Report on Invasive Alien Species and their Control".
- ⇒ It has found that there are 37,000 alien species, including plants and animals, that have been introduced by many human activities to regions and biomes around the world, including more than 3,500 invasive alien species.

#### About IPBES:

- ⇒ The IPBES released its report following a week-long plenary from August 28th, with representatives of the 143 member States which have approved the report.
- ⇒ IPBES is an independent intergovernmental body established to strengthen the science-policy interface for biodiversity and ecosystem services, working in a similar way to the IPCC, which is the UN's climate science body.
- ⇒ The study, which has taken place over a period of four years, has been by 86 leading experts from 49 countries, drawing on more than 13,000 references.

#### Impact of alien species:

- ⇒ The number of alien species (species introduced to new regions through human activities) has been rising continuously for centuries in all regions, but are now increasing at unprecedented rates, with increased human travel, trade and the expansion of the global economy.
- ⇒ Not all alien species establish and spread with negative impacts on biodiversity, local ecosystems and species, but a significant proportion do – then becoming known as invasive alien species.

- About 6% of alien plants; 22% of alien invertebrates; 14% of alien vertebrates; and 11% of alien microbes are known to be invasive, posing major risks to nature and to people.
- Many invasive alien species have been intentionally introduced for their perceived benefits, "without consideration or knowledge of their negative impacts" in forestry, agriculture, horticulture, aquaculture, or as pets.

#### Facts:

- The water hyacinth is the world's most widespread invasive alien species on land. Lantana, a flowering shrub, and the black rat are the second and third most widespread globally. The brown rat and the house mouse are also widespread invasive alien species.
- The annual costs of invasive alien species have at least quadrupled every decade since 1970, as global trade and human travel increased. In 2019, the global economic cost of invasive alien species exceeded \$423 billion annually.

#### Factors responsible

##### Reduction of food supply:

- The reduction of food supply, has been cited by the report as the most common impact of alien invasive species.
- For example the European shore crab impacting commercial shellfish beds in New England or the Caribbean false mussel damaging locally important fishery resources in Kerala, by wiping out native clams and oysters.
- The Caribbean false mussel was originally from the Atlantic and Pacific coast of South and Central America, but are believed to have travelled to India via ships, later spreading to estuaries through smaller fishing vessels.
- Invasive alien species like *Aedes albopictus* and *Aedes aegyptii* spread diseases such as malaria, Zika and West Nile Fever, while others also have an impact on livelihood such as the water hyacinth in Lake Victoria in East Africa led to the depletion of tilapia, impacting local fisheries.

##### Climate change:

- The IPBES report has further warned that warming temperatures and climate change could favour the "expansion of invasive species".
- Climate change is also predicted to increase the competitive ability of some invasive alien species, extending the area suitable for them and offering new opportunities for introductions and establishment. Invasive alien species can also amplify the impacts of climate change.

##### Global scenario:

- The report found that 34% of the impacts of biological invasions were reported from the Americas, 31% from Europe and Central Asia, 25% from Asia and the Pacific and about 7% from Africa.

- Most negative impacts are reported on land (about 75%) with considerably fewer reported in freshwater (14%) and marine (10%) habitats.
- Invasive alien species are most damaging on islands, with numbers of alien plants now exceeding the number of native plants on more than 25% of all islands.
- Most countries (80%) have included targets related to managing invasive alien species in their national biodiversity plans.
- Only 17% specifically address the issue in national legislation, although more (69%) include it as a part of legislation in other areas. Nearly half of all countries (45%) do not invest in management of biological invasions.

##### Global Biodiversity Framework:

- In December 2022, governments agreed to reduce the rate of introduction and establishment of invasive alien species by at least 50% by 2030 under target 6 of the Kunming-Montreal Global Biodiversity Framework.

## ZERO DRAFT OF GLOBAL TREATY TO END PLASTIC POLLUTION RELEASED



##### Why in news?

- The Intergovernmental Negotiating Committee (INC) to develop an international legally binding instrument on plastic pollution released a zero draft recently, ahead of its third session in Nairobi from November 13-19.

##### Details:

- The text of the draft, prepared by the INC Chair, is guided by the views expressed at the INC's first and second sessions.
- It also reflects the objective and mandate of United Nations Environment Assembly (UNEA) resolution 5/14.

##### The text is divided into four parts:

- Part I covers the objectives of the instrument and leaves placeholders.
- Elements in Part II are broadly structured around the life cycle of plastics and plastic products with the aim of addressing plastic pollution.

- The options in Part II aim to collectively promote the sustainable production and consumption of plastics through product design and environmentally sound waste management, including through resource efficiency and circular economy approaches.
- This is consistent with paragraph 3(b) of the UNEA resolution 5/14.
- The third and fourth parts outline different options of measures aimed at collectively addressing the implementation of the instrument. This is consistent with paragraphs 3(c) through (p) of UNEA resolution 5/14.

#### About INC:

- The INC was established in February 2022, at the 5th session of the United Nations Environment Assembly (UNEA-5.2).
- A historic resolution (5/14) was adopted to develop an international legally binding instrument on plastic pollution, including in the marine environment with the ambition to complete the negotiations by the end of 2024.
- INC-2 had ended on June 2 in Paris after several delays and an agreement to develop a zero draft text.
- INC-1 was held last year in Uruguay's Punta Del Este. It ended on December 2, 2022.
- The first session implicitly endorsed the Centre for Science and Environment (CSE)'s position that plastic pollution is rooted in the material's lifecycle.

#### Way Forward:

- Member States will be invited to start INC-3 negotiations in Nairobi on the basis of the zero draft text.
- The INC Secretariat will also prepare a synthesis report of the submissions received on elements not discussed at INC-2, such as principles and scope of the instrument, to be released in October.

### 11 RICH COUNTRIES LIKE GERMANY, UK WILL NEED 2 CENTURIES TO MEET PARIS GOALS



#### Why in news?

- It could take 11 high-income countries over 200 years to reduce their 2022 greenhouse gas emissions by 95 per cent, according to a new analysis.

- These 11 high-income countries are: Australia, Austria, Belgium, Canada, Denmark, France, Germany, Luxembourg, the Netherlands, Sweden and the United Kingdom.

#### Fair share:

- If current trends continue, these countries would emit 27 times their fair share of the 1.5 degrees Celsius carbon budget.
- Fair share in carbon budgets are the amount of carbon dioxide (CO<sub>2</sub>) that can still be emitted for a 50 per cent chance of warming staying below 1.5°C.

#### Paris Agreement:

- The Paris Agreement is a treaty signed by 196 countries to limit "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels."
- Scientists have warned that green growth can only occur if decoupling is fast enough to reduce emissions consistent with the Paris Agreement.
- Decoupling is a decrease in CO<sub>2</sub> emissions per unit of gross domestic product (GDP).

#### Basis of analysis:

- The researchers first identified 11 countries that achieved "absolute decoupling", which means those that decreased their CO<sub>2</sub> emissions alongside increasing GDP between 2013 and 2019. To do this, they collected GDP data from the World Bank and CO<sub>2</sub> emissions data from the Global Carbon Project.
- They compared each country's 'business-as-usual' emission cut rates in the future to the "Paris-compliant" rates needed to comply with their "fair share" of the respective global carbon budget.

#### Key findings:

- The analysis suggested that none of the 11 high-income countries that have "decoupled" emissions from growth have achieved emission reductions that are consistent with the Paris Agreement goals.
- Further, these 11 countries are likely to take between 73 years and 369 years (223 years, on average) to reduce their respective 2022 emissions by 95 per cent.
- They would use up to five times and 162 times (on average, 27 times) of their respective remaining post-2022 fair shares of the 1.5°C global carbon budget.
- These developed countries achieved emission reductions of an average of 1.6 per cent per year between 2013 and 2019, against a required reduction rate of 30 per cent per year by 2025 to not overshoot their fair share of the 1.5°C global carbon budget.

#### Recommendations:

- The researchers recommend that rich countries follow a "post-growth" approach to meet their climate targets and fairness principles of the Paris Agreement.
- Post-growth means equitably reducing carbon or energy-intensive and less-necessary forms of

production and consumption, improving provisioning systems and shifting to low-carbon, low-energy alternatives for necessary goods and services.

**Way Forward:**

- Post-growth can secure and improve livelihoods and well-being without economic growth through policies such as a public job guarantee, worktime reduction, living wages, a minimum income guarantee, and universal access to affordable housing and quality public services.

**WHAT IS HEAT INDEX AND WHY IS IT IMPORTANT TO MEASURE?**

NWS Heat Index		Temperature (°F)															
		80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
Relative Humidity (%)	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
	45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
	55	81	84	86	89	93	97	101	106	112	117	124	130	137			
	60	82	84	88	91	95	100	105	110	116	123	129	137				
	65	82	85	89	93	98	103	108	114	121	128	136					
	70	83	86	90	95	100	105	112	119	126	134						
	75	84	88	92	97	103	109	116	124	132							
	80	84	89	94	100	106	113	121	129								
	85	85	90	96	102	110	117	126	135								
	90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127											
100	87	95	103	112	121	132											

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

  Caution    
   Extreme Caution    
   Danger    
   Extreme Danger

**Why in news?**

- Earlier in August, Iran recorded a scorching heat index of 70 degrees Celsius (°C) in the coastal part of the country, a metric at which survival of life is unfathomable, if not impossible.
- In July, U.S.-based weather observer Colin McCarthy reported that the Persian Gulf Airport recorded a heat index of 66.7 °C.

**What is heat index?**

- Heat index, also known as apparent temperature, is a measure of how the temperature feels to humans.
- Relative humidity is an important factor that determines heat index, along with air temperature.

**How is the heat index calculated?**

- A complex formula to calculate heat index was published by Dr. Robert Steadman, a professor in the textiles and clothing department of Colorado State University, in 1979.
- His study considers a “typical adult human of either sex, with a height of 1.7 metres and a weight of 67 kg.”
- Dew point, which is the temperature at which gas is transformed into a liquid state, is an important factor in the calculation of heat index. In terms of atmospheric moisture, it’s the temperature at which air cannot hold any more water vapour, and droplets of water begin to form.
- He used 14 °C as the dew point in his calculations. Some countries have developed their own corresponding indices to measure heat index instead of using the one developed by Dr. Steadman.

**Is it important to measure the heat index?**

- Hot air can hold more moisture than cold air. Therefore, when temperature rises, the air’s capacity to hold moisture also increases, thus affecting the apparent temperature or heat index.
- Humidity is typically higher during heat waves, which is why the heat index at the time is usually higher than just the temperature because humid air can feel hotter to humans.

**How does high humidity impact the human body?**

- High humidity can lead to heat stress, meaning the body is unable to get rid of excess heat. Humans usually maintain a core temperature in the range of 36.1 to 37.2 °C.
- When the body is unable to get rid of excess heat, the heart rate increases due to a rise in core temperature, leading to heat-related exhaustion and rashes, among other symptoms. It can also be fatal if not addressed promptly.
- At high temperatures, the human body can lose excess heat through perspiration and cool itself. But when humidity is high as well, it is difficult to sweat and then for that sweat to evaporate because the air around is already saturated with moisture. This makes it difficult for the body to lose heat.
- On the other hand, if the humidity is low, evaporation of sweat is easier, thus making the apparent temperature feel close to the actual air temperature.
- This is why a measure of heat index is more useful than just the temperature to gauge the impact of heat on humans.

**What measures can we take to adapt?**

- A heat index value of 67°C or above can be extremely dangerous for people and animals who have direct and prolonged exposure.
- There is need to prepare and adapt to such extreme conditions by investing in early warning, making changes to work timings, and finding sustainable cooling solutions.

**AFRICA CLIMATE SUMMIT 2023 ENDS WITH ‘NAIROBI DECLARATION’**



**Why in news?**

- The inaugural Africa Climate Summit (ACS23) in Nairobi culminated in the 'Nairobi Declaration', giving the continent a common voice ahead of upcoming key global engagements.
- The declaration has a raft of recommendations, pledges and demands believed to have boosted Africa's bargaining power on international platforms.

**Key highlights:**

- It calls on the global community to act to reduce emissions.
- The declaration also calls for reforms to multilateral financial systems, with concerted appeals for debt relief and restructuring existing debts.
- Besides making tough calls to secure funding for climate mitigation and adaptation, the document's final version highlights green investment opportunities in Africa's emerging blue and green economies. It also urges world leaders to back a proposed "carbon tax on fossil fuel trade, maritime transport and aviation".
- While calling the international community to order, the declaration wants them to honour the annual climate finance pledge of \$100bn they made, as a matter of urgency.
- With many African countries having defaulted on loans from developed countries, the declaration proposes debt relief interventions. It recommends extending the debt repayment period and instituting a 10-year grace period to allow the borrowed funds to serve intended development goals.

**Multi-billion dollar pledges at summit**

- The Nairobi summit largely focused on calls to unlock investment in clean energy.
- The pledges, some directly to Kenya like the €12 million in grants from the European Union (EU) for investment in the green hydrogen industry, are expected to accelerate the continent's green agenda.
- One of the big pledges at the summit was a \$4.5 billion finance initiative announced by COP28 president-designate Sultan Al Jaber towards unlocking Africa's clean energy.

**Several other pledges at the meeting included:**

- Britain's £49 million for UK-backed projects to help Africa achieve its growth agenda in renewable sectors.
- The African Development Bank (AfDB) and Global Center on Adaptation's \$1 billion initiative launched to finance youth-led businesses and startups across Africa. And an additional \$25 million from AfDB towards climate finance by 2025.
- \$30 million grant for food security and climate resilience efforts across the continent from the US.
- The United Arab Emirates investors pledge to buy \$450 million of carbon credits generated in Africa by 2030.

- \$200 million investment in green projects across Africa by Climate Asset Management, a specialist climate change investment and advisory firm.
- Germany's €60 million debt swaps with Kenya to free up money for green projects nationwide.
- \$22.8 million grant pledged by the Bezos Earth Fund to accelerate the restoration of 600,000 hectares of degraded lands in East and Central Africa.
- Camco's \$25 million commitment to deepen solar initiatives in Sub-Saharan Africa.

**Significance:**

- The summit addressed both the need for financing and Africa's role as part of the solution.

**WHAT SHOULD BE DONE WITH ELECTRONIC WASTE?****Why in news?**

- The Indian Cellular and Electronics Association (ICEA) recently released a report on 'Pathways to Circular Economy in Indian Electronics Sector,' following a government effort with NITI Aayog to explore opportunities to harness e-waste.
- The report talks about changing the outlook on e-waste management to build a system where discarded electronics can have a new life, either by themselves, or by reintroducing components and precious metals into new hardware.
- There could be an additional \$7 billion market opportunity in harnessing e-waste.

**Does India have e-waste management?**

- E-waste management is largely informal in India, as in the case of recycling. "Roughly 90% of collection and 70% of the recycling are managed by a very competitive informal sector".
- The informal sector is good at salvaging older devices for parts and profiting from repairs with them. Then there are almost industrial hubs like Moradabad, where printed circuit boards (PCBs) arrive in the tonnes to have gold and silver melted out of them and sold.
- The Union Government notified the E-Waste (Management) Rules, 2022 in order to digitise the process and provide more visibility to the movement

of e-waste in the economy. The level of e-waste may grow, too, as phones get cheaper and people use them more on the back of cheaper data plans.

### Why is a circular economy important?

- Demand for electronics is growing across all price segments, even as the production of these devices entails the use of scarce elements and high emissions. Instead of merely salvaging these parts, a circular economy seeks to bring them back into the electronics ecosystem.
- There needed to be a policy push to encourage manufacturers to reuse old components.
- By 2019, China ensured that 5% of their secondary raw material went into manufacturing of new products. By 2030, they are targeting 35%.

### How can e-waste be recycled?

- The ICEA report suggests public-private partnerships to distribute the costs of setting up a sprawling "reverse supply chain," an expensive prospect that envisages collecting devices from users, wiping them clean of personal data, and passing them along for further processing and recycling.
- It also suggests launching an auditable database of materials collected through this process, and creating geographical clusters where these devices come together and are broken apart.
- A key recommendation is to incentivise so-called 'high yield' recycling centres. Facilities that recycle are generally not equipped to extract the full potential value of the products they handle, for instance extracting minute but precious amounts of rare earth metals in semiconductors.
- The IT Ministry launched a scheme in April 2022 to cover 25% of the capital expenditure on such facilities.

### What are the challenges?

- Beyond the large informal sector that is hard to track or hold to environmental norms, there are basic challenges.
- For instance, a whopping 200 million devices are estimated to be lying at consumers' homes, who don't hand them in for recycling after they stop using them.
- Building recycling plants on a large scale also requires more than the initial capital costs.
- Extracting the full value of electronics is capital intensive, and will require better clustering of materials, and a viable business model. The challenge is to be able to replicate the success of the informal sector in a formalised and reliable way.

## GLOBAL BIOFUELS ALLIANCE (GBA) ANNOUNCED AT G20 EVENT

### Why in news?

- Global energy sector has witnessed a historic moment with announcement of the Global Biofuels Alliance (GBA) by Indian Prime Minister on the sidelines of the G20 Summit.



### What is GBA?

- GBA is an India-led Initiative to develop an alliance of Governments, International organizations and Industry to facilitate adoption of biofuels.
- Bringing together the biggest consumers and producers of biofuels to drive biofuels development and deployment, the initiative aims to position biofuels as a key to energy transition and contribute to jobs and economic growth.
- Announcement of the GBA showcases the action oriented nature of India's positive agenda as G20 President and representing the "Voice of the Global South".

### How it will be beneficial for India at multiple fronts?

- GBA as a tangible outcome of the G20 presidency, will help strengthen India's position globally.
- It will focus on collaboration and will provide additional opportunities to Indian industries in the form of exporting technology and exporting equipment.
- It will help accelerate India's existing biofuels programs such as PM-JIVANYojna, SATAT, and GOBARDhan scheme, thereby contributing to increased farmers' income, creating jobs and overall development of the Indian ecosystem.
- The global ethanol market was valued at USD 99.06 billion in 2022 and is predicted to grow at a CAGR of 5.1% by 2032 and surpass USD 162.12 billion by 2032.
- As per IEA, there will be 3.5-5x biofuels growth potential by 2050 due to Net Zero targets, creating a huge opportunity for India.

### Countries and organizations which have already joined GBA

- 19 countries and 12 international organisations have already agreed to join.
- G20 countries (07) supporting GBA: 1. Argentina, 2. Brazil, 3. Canada, 4. India 5. Italy, 6. South Africa, 7. USA
- G20 Invitee Countries (04) supporting GBA: 1. Bangladesh, 2. Singapore, 3. Mauritius, 4. UAE
- Non G20 (08) supporting GBA: 1. Iceland, 2. Kenya, 3. Guyana, 4. Paraguay, 5. Seychelles, 6. Sri Lanka, and 7.

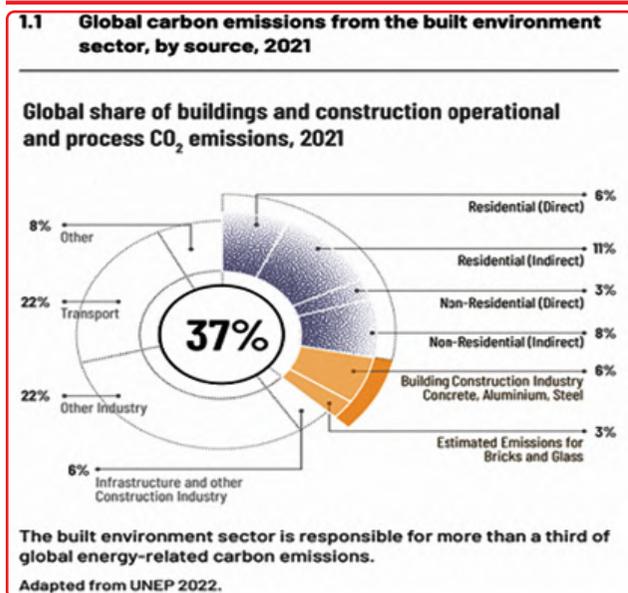
Uganda have agreed to be initiating members of GBA, and 8. Finland

- International organizations (12): World Bank, Asian Development Bank, World Economic Forum, World LPG Organization, UN Energy for All, UNIDO, Biofutures Platform, International Civil Aviation Organization, International Energy Agency, International Energy Forum, International Renewable Energy Agency, World Biogas Association.
- GBA Members constitute major producers and consumers of biofuels. USA (52%), Brazil (30%) and India (3%), contribute about 85% share in production and about 81% in consumption of ethanol.

### Future Prospects:

- GBA will support worldwide development and deployment of sustainable biofuels by offering capacity-building exercises across the value chain, technical support for national programs and promoting policy lessons-sharing.
- It will facilitate mobilizing a virtual marketplace to assist industries, countries, ecosystem players and key stakeholders in mapping demand and supply, as well as connecting technology providers to end users.
- It will also facilitate development, adoption and implementation of internationally recognized standards, codes, sustainability principles and regulations to incentivize biofuels adoption and trade.

## UN REPORT OUTLINES HOW DEVELOPING, DEVELOPED COUNTRIES CAN REDUCE EMISSIONS FROM CONSTRUCTIONS



### Why in news?

- Recently, a report titled, 'Building Materials and The Climate: Constructing a New Future' was released by the United Nations Environment Programme (UNEP), and the Yale Center for Ecosystems and Architecture.

### Key Highlights:

- Developing countries should switch from unsustainable building practices to using alternative low-carbon building materials to reduce greenhouse gas emissions.
- About 37 per cent of global greenhouse gas emissions can be traced back to the built environment sector, which includes buildings, the distribution systems that supply water and electricity, and the roads, bridges, and transportation systems.
- The UNEP report makes a case for "Avoid-Shift-Improve" strategies to reduce emissions.
- "Avoiding" emissions through circularity to ensure waste is eliminated while extending a building's life, "Shifting" to sustainable materials, and
- "Improving" the production of conventional materials such as concrete, steel, aluminium, plastics, glass and bricks.

### Types of emissions:

- Greenhouse gas emissions from the built environment are categorised into two groups: embodied emissions and operational emissions.
- Embodied emissions are all the emissions associated with the construction and demolishing of a building. They also include emissions from extraction, manufacturing, transport and on-site construction of building materials and "end-of-life" demolition or reuse.
- Operational emissions are the emissions generated while maintaining the building's indoor "comfort levels," including by heating, cooling, lighting and electrical appliances.
- Indirect operational emissions from residential buildings make up a majority of emissions (11 per cent), while embodied emissions from the use of concrete, steel and aluminium account for at least six per cent.

### Solutions:

- The UNEP, warns that embodied carbon (the amount of carbon dioxide across the life cycle of the built environment process) is projected to surge from 25 per cent to nearly half (49 per cent) by 2050, whereas the share of operational carbon emissions will shrink due to increased adoption of renewable energy and improvement of energy-efficient buildings.
- Developed countries should focus on renovating existing and ageing building stock. Renovating a building generates 50-75 per cent fewer emissions than new construction.
- For new buildings, the experts call for incorporating circular design strategies such as the design for disassembly. It is a design process that enables the recovery of products, parts and materials when a building is disassembled or renovated. This can reduce greenhouse emissions by 10-50 per cent.

**New supply-and-demand model:**

- A new supply-and-demand model should be developed. Tasks such as carefully dismantling buildings for storing, preparation and maintenance of second-cycle materials for resale will enable circular economies while providing job opportunities.
- If G7 countries and China use recycled materials, they could reduce emissions in the material cycle of residential buildings by 80 to 100 per cent by 2050. In India, the reductions could reach 50-70 per cent, the report quotes the International Resource Panel (a scientific panel of experts that aims to help nations use natural resources sustainably).
- They also state that increasing the lifetime of buildings creates significant opportunities to reduce aggregate embodied carbon.

**Bio-based materials:**

- The second principle is to switch towards properly managed bio-based materials.
- Of the available options, mass timber has emerged as an attractive alternative to carbon-intensive concrete and steel due to its potential for scalability, sustainability, strength and flexibility in mid-rise urban buildings.
- Bamboo can be processed and manufactured into a variety of composite materials called engineered bamboo. This version has demonstrated structural performance similar to that of cross-laminated timber and steel.

**Improve:**

- As for the third principle "improve", UNEP recommended electrifying and decarbonising the energy that is supplied to the production and maintenance of materials, buildings and urban infrastructure across their life cycle.
- Processing of cement, the binding agent in concrete, contributes 7 per cent of global carbon emissions. Solutions such as reducing the clinker (produced from limestone and chalk)-to-cement ratio and increasing the share of cement alternatives, among others, could help in decarbonising the sector.
- Another technology that could potentially be used is Carbon capture and utilisation for concrete production (CCU concrete). It is a process of removing carbon from the atmosphere and storing it within the building material itself over time
- It is estimated that CCU concrete can remove 0.1 to 1.4 gigatonnes of CO<sub>2</sub> by 2050.
- Avoiding raw material extraction by promoting steel reuse and producing steel from scrap (discarded steel or steel product) can save around 60-80 per cent of energy.
- It also helps to reduce steel demand by extending building lifetimes, and switching to circular bio-based materials such as engineered timber and bamboo, it added.

- Using renewable energy for aluminium production is important and producing aluminium from scrap can reduce the energy demand by 70-90 per cent.

**ANALYSING THE GLOBAL STOCKTAKE REPORT****Why in news?**

- Ahead of the just concluded G-20 summit, the United Nations climate secretariat made public a 'synthesis report' on the results of three meetings held so far to discuss progress achieved by countries in achieving the goals of the Paris Agreement of 2015.

**Why is it called the 'global stocktake' report?**

- The synthesis report ties into a larger exercise called the 'global stocktake,' that is expected to take place once in five years.
- In 2015, when countries committed in Paris to keep global temperatures from rising beyond 2 degrees Celsius by the end of the century and "as far as possible" below 1.5 degrees Celsius, they also agreed to periodically review, or take stock of efforts, made by individual countries in containing greenhouse gases and transitioning their fossil-fuel dependent energy systems to renewable sources.
- The first report is expected to significantly influence discussions in November when country representatives converge in Dubai for the 28th edition of the UN climate Conference of Parties (COP) in November.
- While countries have laid out their Nationally Determined Contributions (NDC), they are expected to increase their ambitions every five years.

**What does the report say?**

- It lays out 17 'key findings' that overall suggests that the world is not on track to achieve Paris Agreement targets, though there was still a "rapidly narrowing" window for countries to get their act together.
- The synthesis report isn't a significant update on the UN synthesis report of 2022, released ahead of COP 27 in Egypt, where the NDCs of 166 countries were analysed to conclude that they were inadequate to meet Paris-agreed targets.
- The United Nations Emissions Gap Report, also released in 2022, reported that 23 billion tonnes of CO<sub>2</sub> were required to be cut to keep emissions in line

with Paris agreements, whereas current pledges by countries even if fully implemented would only cut 2-3 billion tonnes, leaving an emissions gap of around 20 billion tonnes.

### What are the 'key findings'?

- These 17 headline statements say that the Paris Agreement has galvanised countries into setting goals and signalling the urgency of the climate crisis.
- Governments need to support ways to transition their economies away from fossil fuel businesses and that states and communities must strengthen efforts. While rapid change could be "disruptive," countries should work on ensuring that the economic transition be equitable and inclusive.
- It stated that much more ambition was needed to reduce global greenhouse gas emissions by 43% by 2030 and further by 60% in 2035 and reach net zero CO<sub>2</sub> emissions by 2050 globally.
- Renewable energy has to be scaled up and all 'unabated fossil fuels' (for example, coal plants without carbon capture and storage mechanisms) were to be rapidly eliminated.
- Deforestation and land-degradation have to be halted and reversed and agricultural practices critical to reducing emissions and conserving and enhancing carbon sinks have to be encouraged.
- Transparent reporting on adaptation could facilitate and enhance understanding, implementation and international cooperation.
- Averting, minimising and addressing 'loss and damage,' requires urgent action across climate and development policies to manage risks comprehensively and provide support to impacted communities.
- Support for adaptation and funding arrangements for averting, minimising and addressing loss and damage, from the impact of climate change, needed to be rapidly scaled up from expanded and innovative sources. Financial flows needed to be made consistent with climate-resilient development to meet urgent and increasing needs.
- Access to climate finance in developing countries needed to be enhanced. It was "essential" to unlock and redeploy trillions of dollars to meet global investment needs, including by rapidly shifting finance flows globally to support a pathway towards low GHG emissions and climate-resilient development.

## DELHI HAS JOINED SEVERAL INDIAN STATES IN BANNING GLUE PADS FOR RODENT CONTROL

### Why in news?

- The Delhi government announced directives to ban the manufacture, sale and use of glue pads that are common but one of the most cruel methods to kill rodents.

- It joined states like Andhra Pradesh, Telangana, Madhya Pradesh, West Bengal, Arunachal Pradesh, Himachal Pradesh, Uttarakhand and some others where the method is already banned following an advisory of the Animal Welfare Board of India (AWBI) in 2011.



### Glue pads:

- The products use strong glue that traps small animals running over it. These animals are unable to free themselves, attempt to chew off body parts that are stuck and die slowly due to starvation and extreme pain.
- Apart from pests like rats, mice and some insects, other small animals like squirrels and frogs also accidentally get stuck in these glue pads and die, noted the order by the director of the state's animal husbandry unit.

### Issues:

- But, as with the unfolding debate on human-wildlife conflict in the country, it has raised some questions.
- A small section of the healthcare and hospitality industries, for instance, has complained that glue traps are more effective than alternatives like rat poison, traps and cages, at least for their purpose.
- The ban has disrupted their operations and made maintaining hygiene a challenge in hospitals, restaurants and hotels, they complained.
- In AIIMS Bhopal, for instance, the glue strips were used to protect dead bodies in the mortuary from rats.

### Rat poison:

- Rat poison, a commonly used alternative to glue pads, is also one of the most inhuman ways of dealing with rodent infestation. The ban on glue pads serve as a reminder that poisoning rats threatens predators who feed on their carcass but isn't regulated.
- Rat poison, along with glue strips, was observed to be the worst for 'rat welfare' in a January 2023 Oxford University study.
- Anticoagulant poisons, which interfere with blood clotting and kill rats through haemorrhaging, can lead to extreme suffering.
- Animals that feed on rats; cats, snakes, mongoose and predatory birds like hawks and owls are also harmed by the toxins.

**SGAR:**

- Second-generation AR (SGAR) can be lethal for raptors in high doses, studies have shown. But they can also accumulate in the livers of animals and remain in the foodchain for months, thus contaminating the ecosystem.
- It is difficult to ascertain the actual number of birds of prey that die of secondary poisoning due to AR but a 2020 study found that all the red-tail hawks in their sample size "tested positive for exposure to anticoagulant rodenticides".
- Certain SGARs are banned in the US, British Columbia in Canada and partially in the United Kingdom (effective from July 2024).

**Suicide by humans:**

- Moreover, this class of rodenticides are also toxic for humans. Poisoning is second-most common means adopted by people dying of suicide. In India, some 29,408 people died of suicide by consuming poison in 2021, according to the National Crime Records Bureau.
- The problem is so prevalent in Tamil Nadu, where 7,041 people died consuming poison the same year, that the government ordered a blanket ban on rodenticides.

**Loss to farmers:**

- At the same time, the damage caused by rats, especially in an agrarian country like India, cannot be overlooked.
- In 2022, more than 100 farmers in Mizoram reported that hundreds of thousands of rats ate away 524 hectares of their paddy fields from August-September. They resorted to dealing with the menace by mass poisoning of the rats, with support from the state government.
- The Jagannath Temple in Puri, Odisha was infested by an unusually large number of rats following the COVID-19 pandemic lockdowns, posing a threat to its wooden idols and structures.
- But poisoning wasn't an option for the authorities not only because of religious reasons but also to protect the other wildlife like monkeys and pigeons found on the premises.

**Way Forward:**

- Experts feel there is a need to check the indiscriminate use of rat poison in India. More humane and safer methods may be time-consuming but have been successfully adopted to control rat populations.

## WHAT IS DRIVING THE GLOBAL BIOFUELS ALLIANCE?

**Why in news?**

- Recently, on the sidelines of the annual G-20 summit, an India-led grouping came together to give impetus to the production and use of biofuels, an alternative to fossil fuels like petroleum and diesel.



- The grouping, called the Global Biofuels Alliance (GBA) would attempt to bring countries together to co-develop, accelerate technological advances in production processes, and advocate for the use of biofuels particularly in the transport sector.
- The three founding members, India, the U.S. and Brazil, were joined by Argentina, Canada, Italy and South Africa, who are also G-20 member countries.

**What are biofuels?**

- The International Energy Agency (IEA) defines biofuels as "liquid fuels derived from biomass and used as an alternative to fossil fuel based liquid transportation fuels such as gasoline, diesel and aviation fuels."

**Are biofuels an alternative to fossil fuels?**

- Experts in the field make a distinction between biofuels and sustainable biofuels. The former is derived from crops grown specifically to produce biofuels such as sugarcane, corn, or soybean, and the latter is from agricultural waste, used cooking oil and processed animal residues like fats.
- The former is colloquially referred to as 1G ethanol, or first-generation biofuel, and the latter as 2G, that is second-generation.
- This distinction has now come into sharp focus as climate change accelerates, with fears of threat to food security and increased loss of forests and biodiversity due to greater land required for farming.
- Estimates suggest that well over half of all vegetated land is under cultivation today, and that agriculture is one of the world's largest carbon emitters.
- The GBA has emphasised that its focus would be to develop 2G ethanol.

**Why is there a renewed focus on biofuels?**

- With severe disruptions to global crude oil supplies following the Ukraine war, several countries have been scrambling to find alternatives to the import dependence on petrol and diesel.
- India, for instance, imports 87% of its crude oil, and it is the main reserve currency expenditure for the country.
- With transport accounting for about one-quarter of global carbon emissions, there have been renewed attempts to accelerate the decarbonising of this

sector, with several countries announcing battery production and electric vehicle (EV) policies and legacy automakers entering the now thriving EV sector.

- But some modes of transport like aviation, shipping and long-haul trucking will find it harder to reduce carbon emissions. It is here that 2G ethanol could be a valuable substitute.

### Do biofuels aid energy transition?

- Most biofuels today are blended with petrol or diesel at varying degrees. For instance, India blends about 10% of biofuels and has plans to double this in the coming years.
- While some experts feel that accelerating EV adoption and developing alternatives like green hydrogen must be the focus of the ongoing energy transition, others argue that 2G ethanol would soften the impending disruption.
- It would do so by allowing to reduce greenhouse gas (GHG) emissions even while stretching the life of internal combustion engines, giving time for automakers to develop robust alternatives, while increasing farmers' incomes and providing jobs.

### What happens next?

- The three founding members of the GBA produce 85% of global biofuels and consume about 81% of it.
- In line with the renewed push to enhance biofuel use and production, the U.S. announced its latest amended "Renewable Fuel Standard" to substantially increase the production of biofuels and substitute about 1,40,000 barrels per day of crude oil imports by 2025.
- Similarly, India had announced the setting up of 12 new refineries as early as 2018 with the aim to meet 20% ethanol blending by 2025. This becomes even more significant following India's announcement to become net zero (removing as much carbon from the atmosphere as human activity emits) by 2070.
- The IEA predicts that about two-thirds of the global biofuel demand will come from three emerging economies; India, Brazil and Indonesia, and that they have "ample domestic feedstocks, additional production capacity, relatively low production costs and a package of policies they can leverage to increase demand."
- However, it remains to be seen if this would indeed hasten decarbonising of the energy sector.

## INDIAN COAST GUARD SHIP SAMUDRA PRAHARI ON AN OVERSEAS DEPLOYMENT TO ASEAN COUNTRIES

### Why in news?

- The Indian Coast Guard Ship Samudra Prahari, a specialized Pollution Control Vessel, is currently on an overseas deployment to ASEAN countries.

## INDIAN Coast Guard Ship Deployed To ASEAN Countries



### Marine Pollution Response:

- This deployment is part of India's ASEAN initiatives for Marine Pollution Response, showcasing the Pollution Response capabilities of the Indian Coast Guard (ICG) and its commitment to addressing marine pollution issues and enhancing capacity in the region.
- The ship is equipped with a Chetak Helicopter in Pollution Response configuration, enhancing its capabilities in this area.

### Background:

- This initiative was announced by Raksha Mantri during the ASEAN Defence Minister Meeting Plus meeting in Cambodia in November 2022.

### Key Highlights:

- During this deployment, the ship is scheduled to make port calls in Bangkok, Ho Chi Minh, and Jakarta.
- It will demonstrate the ICG's pollution response capabilities and its dedication to collaborative efforts for marine pollution response.
- As part of an overseas exchange program, the ship has embarked 13 NCC cadets to participate in "Puneet Sagar Abhiyan," an international outreach program focused on beach clean-ups and similar activities in coordination with partner nations.

### Way Forward:

- This visit holds significant importance in strengthening bilateral relationships with key maritime agencies, including the Thai Maritime Enforcement Command Centre and BAKAMLA (Indonesia Maritime Security Agency).
- The visit's agenda includes professional exchanges, cross-deck visits, planning and tabletop exercises, joint exercises, as well as official and social engagements including visits to capacity-building facilities.

## SIKKIM BANKS ON GREEN HYDROGEN FOR FUTURE URBANISATION

### Why in news?

- Sikkim is jointly exploring the feasibility of developing a hydrogen smart city in the state, with the Korea Research Institute of Human Settlement

(KRIHS) and the Construction Industry Development Council (CIDC).

- As the state rapidly urbanises, the government is trying to develop the Greater Gangtok area as a pilot green hydrogen smart city.



### Why it matters for Sikkim?

- Though less affected than other Himalayan states such as Uttarakhand and Himachal Pradesh, Sikkim, home to the mighty Kanchenjunga, is also facing the adverse effects of climate change.
- This includes retreating glaciers, changing precipitation patterns, increased temperature, shifts in the habitats of plants and animals, water scarcity, impact on agriculture, increased soil erosion and landslides, bio-diversity loss, health impact and effects on the tourism sector of the state.
- By experimenting with green hydrogen cities, it is preparing a blueprint for its own new urban agglomerations. This could serve other hill cities as well in the future.
- To protect tourism, Sikkim is banking on its strengths – hydel power to prepare green hydrogen. This makes it self-reliant.

### Why South Korean?

- South Korea has perfected many technologies to produce hydrogen in the country and also created very visible proofs of concept in municipal uses, but it lacks either wind, solar or hydel power enough to keep its hydrogen production green.
- India, with an abundance of all three renewable energy sources, is a perfect partner to scale up the production of green hydrogen and its derivatives. Sikkim's proactive stance makes it one of the early beneficiaries of Korean expertise and funds.

### G20 Declaration:

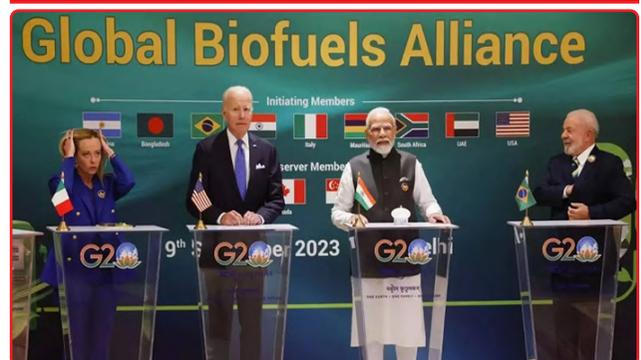
- At the Green Hydrogen Cities conference, Sikkim was working in the spirit of the G20 New Delhi Leaders' Declaration, for implementing clean, sustainable, just, affordable and inclusive energy transitions.
- The G20 committed to supporting the acceleration of production, utilisation and development of transparent and resilient global markets for hydrogen produced from zero and low-emission technologies and its derivatives such as ammonia.

- The G20 high-level voluntary principles on hydrogen aimed at developing voluntary and mutually agreed harmonising standards and mutually recognised and inter-operable certification schemes to build a sustainable and equitable global hydrogen ecosystem that benefits all nations.
- India has taken the initiative to establish the Green Hydrogen Innovation Centre steered by the International Solar Alliance (ISA). Similarly, Sikkim has taken the lead on hill states in India.

### Way Forward:

- Sikkim has plugged in early to benefit from these global alliances. It estimates that in Amrit Kaal by 2047, at least 50 percent of the population will be staying in urban centres.
- By planning for green industries to provide jobs in these centres, Sikkim is estimating the employment potential of each growing urban centre and imparting relevant skills training for these future citizens.
- Unless that is done, it will be impossible to estimate the resources required to be invested there and the requirements of water, power, housing and other basic amenities in a sustainable manner.

## INDIAN STANDARDS ON BIOFUEL TO AID GBA CLEAN ENERGY GOALS



### Why in news?

- The Bureau of Indian Standards (BIS), commits to complement the green initiatives of the country through development of relevant standards.
- The Indian Standards will significantly complement the objectives of Global Biofuel Alliance (GBA), the multilateral forum announced by Prime Minister during G20 leaders' summit held recently in New Delhi.

### BIS has developed the following nine Indian standards on biofuels:

- **IS 15464** : 2022 Anhydrous Ethanol for Use as Blending Component in Motor Gasoline - Specification
- **IS 15607** : 2022 Biodiesel B-100 - Fatty Acid Methyl Esters FAME – Specification
- **IS 16087** : 2016 Biogas (Biomethane) - Specification (First Revision)

- **IS 16531** : 2022 Biodiesel Diesel Fuel Blend B8 to B20 Specification
- **IS 16629** : 2017 Hydrous ethanol for use in ED95 automotive fuel – Specification
- **IS 16634** : 2017 E85 fuel (Blend Of Anhydrous Ethanol And Gasoline) – Specification
- **IS 17021** : 2018 E 20 fuel - Admixture of anhydrous ethanol and gasoline - As fuel for spark ignited engine powered vehicles – Specification
- **IS 17081**: 2019 Aviation turbine fuel (Kerosene Type, Jet A - 1) containing synthesized hydrocarbons - Specification
- **IS 17821**: 2022 Ethanol as a Fuel for Use in Positive Ignition Engine Powered Vehicles - Specification

#### Significance:

- The development of standard on paraffinic (green) diesel, that is derived from 2G feedstock, is also under progress. With the help of these set of standards, BIS believed, increased capacity of biofuel production can be achieved and will provide multipronged benefits.
- It will not only help in meeting the target of net zero by 2070 and 50% energy through renewable sources, but will also contribute in achieving several other objectives such as Make in India, Atmanirbhar Bharat, Waste to Wealth, and increasing farmers' income to name a few.

#### Global Biofuel Alliance (GBA):

- During the 18th G20 Summit under the presidency of India at New Delhi, the G20 leaders launched the Global Biofuel Alliance (GBA), a forum of 30 countries and international institutions to facilitate the adoption of biofuels.
- GBA is an India-led initiative towards the goal of sustainability and clean energy.
- It aims at achieving worldwide development and deployment of sustainable biofuels through formulation of national policy, development of marketplace, evolution of technological competency, and adoption and implementation of internationally recognized standards and codes of practice.

#### Biofuel trends:

- USA, Brazil, and India are the major producers and consumers of biofuels. These three countries collectively contribute to 85% production and 81% consumption of ethanol globally.
- The global ethanol market was valued at 99 billion USD in 2022 and is expected to grow at a compounded annual growth rate of 5% by 2032, creating a huge opportunity for Indian industries and contributing to farmers' income, job creation and overall development of the Indian ecosystem.

#### Prospects in India:

- It was estimated that currently, about 98% of the fuel requirement in India for transportation sector is met by fossil fuels and the remaining 2% by biofuels.

India's import of petroleum in 2020-2021 costed about 55 billion dollars to the exchequer.

- More recently, the Russia-Ukraine war has spiked global oil prices and import of oil and gas with inflated prices has further burdened the Indian economy. Blending of ethanol up to 20% with gasoline will lead to savings of around 4 billion dollars.
- Hence, Indian Oil Manufacturing Companies (OMCs) are working towards provisioning new distilleries for production of 1G and 2G ethanol and Indian vehicle manufacturers are developing engines compliant with ethanol blended fuel.
- Government has also started an interest subvention scheme for molasses and grain based distilleries to promote ethanol production.
- It is also foreseen that flex fuel vehicles, which are capable of utilising ethanol blended gasoline up to 85%, and are already operational in the USA and Brazil, are soon to make an entry in India.

### INDIA EYES CARBON TRADING, EMISSION REDUCTION TARGETS FOR 4 KEY SECTORS, REPORT



#### Why in news?

- In a significant move towards achieving its climate goals, India is looking to establish carbon emission reduction targets for four key sectors heavily dependent on fossil fuels.
- The sectors include petrochemicals, iron and steel, cement, and pulp and paper.

#### Aim:

- This initiative aims to align the country's industrial sector with its broader greenhouse emissions reduction target.

#### Key Highlights:

- The government will establish carbon emission intensity benchmarks and reduction targets for these sectors over the next three years.
- The market trading cycle will be annual, allowing companies to buy and sell carbon credits to meet their respective goals.
- Companies that exceed their targets will earn carbon credits, which can then be sold to firms falling short of their goals.

- The mandates will be applicable from 2024-25, and the carbon trade will commence in 2025-26. These targets will align with the country's emission intensity reduction goals submitted to the United Nations.

### Indian carbon market:

- India has committed to reducing its ratio of greenhouse emissions to gross domestic product by 2030 to 45% of its 2005 level and achieving net zero emissions by 2070.
- The carbon credits will be traded on the proposed carbon market, a provision provided under legislation cleared by the Indian Parliament in December 2022.
- The proposed Indian carbon market differs from those in developed countries, which set an emissions limit and allocate tradable permits or credits to emitter industries.
- In contrast, a committee comprising key ministries such as environment, power, and renewable energy is setting the targets for reducing each sector's emissions in India.

### Way Forward:

- The rules and targets for the industries are expected to be announced before December. India already has a market for trading certificates in above-target energy savings for entities in 13 sectors.
- In October, green energy companies, including Adani Green, Hero Future Energies, Ayana Renewable Power, and global private equity major KKR's Virescent Infra, formed a group to mediate between the government and industry.

## TIGERS DYING IN NILGIRIS DISTRICT



### Why in news?

- A total of 10 tigers (six cubs and four adults) have died in the Nilgiris since the middle of August.
- The inability of the state forest department to trace the whereabouts of the two mother tigresses has raised concerns among conservationists about the welfare of the animals.

### How did the tigers die?

- The first reported tiger deaths occurred in the buffer zone of the Mudumalai Tiger Reserve (MTR) in Siriyur.

After conducting a postmortem on the remains, it was believed to be died due to starvation or umbilical infection.

- The second death was of an adult tigress in the Naduvattam Range in the Nilgiris forest division with officials suspecting that the tigress died due to injuries after fighting with another animal.
- Another suspected incident of fighting is believed to have caused the death of the fourth tiger, the second adult, in the Kargudi forest range of MTR.
- In September, two more tigers were found dead in Udhagai South Range near Avalanche in the Nilgiris Forest Division.
- In a final incident, four tiger cubs were found dead over the course of three days in Kadanad in the Nilgiris North Range.

### Why are conservationists concerned?

- In February 2023, the forest department arrested four poachers from Rajasthan who had allegedly poached a tiger in the areas surrounding Emerald Dam near Avalanche, a few kilometres away from where the two tigers were found dead.
- In addition, the inability of the forest department to track down the two mothers of the six tiger cubs that died in Siriyur and Kadanad has raised concerns over their well-being.

### What are the reasons for the deaths?

- One of the theories put forward by forest department is that the high density of tigers in the Mudumalai-Bandipur-Nagarhole complex of the Nilgiri Biosphere Reserve is pushing populations into the surrounding habitats in the Mukurthi National Park, Nilgiris and Gudalur forest divisions.
- This leads to increased competition between animals and more fighting, resulting in more deaths.
- The Nilgiris Division is now home to 54 tigers, a significant population. In fact, tigers have been frequently recorded in the outskirts of the Udhagamandalam town multiple times over the last few years.
- Conservationists worry that this increase in population could lead to more negative human-animal interactions in the near future.
- They emphasise the need to regenerate degraded habitats that can be re-colonised by the tigers' prey such as Sambar, spotted deer and the Indian gaur.

### Way Forward:

- To allay fears that poachers could be targeting tigers, the forest department plans to set up anti-poaching camps in six forest ranges surrounding the Mukurthi National Park.
- There are also plans to begin annual monitoring of tiger populations in the Nilgiris Forest Division, with the population size, range of each individual animal and other parameters to be recorded for better management.

- ⇒ They have also increased perambulation of areas surrounding key tiger habitats in Mukurthi and Mudumalai.

### TWO INDIAN RHINOCEROS FIND SANCTUARY IN CHENNAI'S ARIGNAR ANNA ZOOLOGICAL PARK



#### Why in news?

- ⇒ A pair of Greater One-Horned Indian Rhinoceros have found a safe haven in the Arignar Anna Zoological Park in Vandaloor.
- ⇒ It is one of the five existing rhino species worldwide, including the African White Rhino, African Black Rhino, Javan Rhino, and Sumatran Rhino.

#### Five existing rhino species:

- ⇒ Belonging to the family Rhinocerotidae, these animals have a rich evolutionary history spanning over 50 million years from the Cenozoic era.
- ⇒ They share the Order Perissodactyla with horses, zebras, and tapirs, characterized by their unique ability to carry weight on an uneven number of toes, primarily using the middle digit.
- ⇒ The African White and Black Rhinos, both bearing two horns, lack the lower jaw tusks seen in their Asian counterparts—an adaptation for combating predators like tigers.
- ⇒ The White Rhino, the largest of the species, stands at a height of up to 2 meters and weighs more than 3.5 tonnes. However, it is functionally extinct with only two females surviving.
- ⇒ The Black Rhino, measuring 1.7 meters and weighing 1.4 tonnes, boasts the longest horn among the surviving rhino species, measuring up to 130cm.
- ⇒ The Javan or Lesser One-Horned Rhino, found only in Ujung Kulon, Indonesia, measures 1.6 meters and weighs 1.2 tonnes. With a mere 74 individuals left in the wild, their survival hangs in the balance.
- ⇒ The Sumatran Rhino, hypothesized to be the oldest rhino species, measures 1.5 meters and weighs 1.05 tonnes. It has two small horns akin to the African species and is critically endangered with around 80 individuals remaining in the wild.

#### Indian Rhino:

- ⇒ The Indian Rhino, or Rhinoceros unicornis, is the second-largest rhino species, measuring 2 meters and weighing 3 tonnes.
- ⇒ The Indian Rhino's population has seen a significant increase from 1500 in the 1980s to over 4000 in 2023 due to extensive conservation efforts.
- ⇒ The Indian Rhino is an open grassland species living in swampy areas.
- ⇒ It is facing a lot of threat just like African Rhino species due to poaching for their horns which are nothing but made of Keratin, the same protein found in human hair and nails.

## SCIENCE & TECHNOLOGY

### ADITYA L-1 LAUNCHED



#### Why in news?

- ⇒ The Indian Space Research Organisation (ISRO) launched its first space mission to study the sun, Aditya-L1, on September 2.
- ⇒ The spacecraft lifted off from the Satish Dhawan Space Centre in Sriharikota following a textbook launch aboard the PSLV-XL rocket at 11:50 am IST.
- ⇒ It has now embarked on a journey that will last approximately four months before it reaches its destination, the Lagrange point 1 (L1).

#### How did the Aditya L-1 go into space?

- ⇒ The solar probe was carried into space by the Polar Satellite Launch Vehicle (PSLV) in 'XL' configuration. PSLV is one of the most reliable and versatile workhorse rockets of ISRO.
- ⇒ Previous missions like Chandrayaan-1 in 2008 and Mangalyaan in 2013 were also launched using PSLV. The rocket is most powerful in the 'XL' configuration as it is equipped with six extended strap-on boosters therefore, can carry heavier payloads.
- ⇒ PSLV-XL can lift 1,750 kg of payloads to the sun-synchronous polar orbit and much more, 3,800 kg to a lower Earth orbit (normally located at an altitude of less than 1,000 km but could be as low as 160 km above the planet). As Aditya L-1 weighs 1,472 kg, it was launched aboard PSLV.

- ⇒ Chandrayaan-3 took off aboard LVM3, the most powerful rocket of ISRO, because it was more than two times heavier than the solar probe.

### What is the Aditya L-1 mission?

- ⇒ The PSLV will initially place the Aditya L-1 in a lower Earth orbit. Subsequently, the spacecraft's orbit around the Earth will be raised multiple times before it is put on a path to a halo orbit around the L1 Lagrange point.
- ⇒ The spacecraft will finally be stationed in a halo orbit around the Lagrange point 1 (L1) of the Sun-Earth system, which is about 1.5 million km from the Earth.

### What are the objectives of the Aditya L-1?

- ⇒ To study the upper atmospheric layers of the Sun called chromosphere and corona. While the corona is the outermost layer, the chromosphere is just below it.
- ⇒ To examine coronal mass ejections (CMEs), which are large expulsions of plasma and magnetic fields from the Sun's corona.
- ⇒ To analyse the corona's magnetic field and the driver of the space weather.
- ⇒ To understand why the Sun's not-so-bright corona is a million degree Celsius hot when the temperature on the surface of the Sun is just about 5,500 degree Celsius.
- ⇒ To help scientists know the reasons behind the acceleration of particles on the Sun, which leads to the solar wind, the constant flow of particles from the Sun.

### What is space weather?

- ⇒ Space weather refers to changing environmental conditions in space. It is mainly influenced by activity on the Sun's surface.
- ⇒ The solar wind, magnetic field, as well as solar events like CME affect the nature of space.

### What are the payloads?

- ⇒ There are essentially seven payloads on the Aditya L-1.
- ⇒ The main one is the Visible Emission Line Coronagraph (VLEC) to study the solar corona from the lowermost part upwards.
- ⇒ The Solar Ultraviolet Imaging Telescope (SUIT) will capture the UV image of the solar photosphere and chromosphere. It will examine the variation in light energy emitted.
- ⇒ Meanwhile, the Solar Low Energy X-ray Spectrometer (SoLEXS) and High Energy L1 Orbiting X-ray Spectrometer (HEL1OS) will analyse X-ray flares.
- ⇒ The Aditya Solar wind Particle Experiment (ASPEX) and Plasma Analyser Package for Aditya (PAPA) have been built to study the solar wind and energetic ions.

### What are the Lagrange points?

- ⇒ There are five Lagrange points, L1 to L5, between any two-celestial body systems.

- ⇒ At these positions, the gravitational pull of the celestial bodies equals the centripetal force required to keep a smaller third body in orbit.
- ⇒ The points can be used as 'parking spots' for spacecraft in space to remain in a fixed position with minimal fuel consumption. They have been named after Italian-French mathematician Joseph-Louis Lagrange (1736-1813), who was the first one to find the positions.
- ⇒ So, between the Earth and the Sun, a satellite can occupy any of five Lagrangian points.
- ⇒ Of the five Lagrange points, three are unstable and two are stable.
- ⇒ The unstable Lagrange points; labelled L1, L2, and L3 lie along the line connecting the two large masses. The stable Lagrange points labelled L4 and L5 form the apex of two equilateral triangles.
- ⇒ The L4 and L5 are also called Trojan points and celestial bodies like asteroids are found here.

### Why will the probe go around L1?

- ⇒ It's because L1 gets a continuous and unhindered view of the Sun.
- ⇒ L2 is located behind the Earth, and thus obstructs the view of the Sun, while L3 is behind the Sun which is not a great position to communicate with Earth.
- ⇒ L4 and L5 are good and stable locations but are much farther from Earth compared to L1, which is directly between the Sun and the Earth.
- ⇒ The European Space Agency's (ESA) Solar and Heliospheric Observatory spacecraft (SOHO) is also stationed at a halo orbit around the L1 point of the Earth-Sun system.
- ⇒ The spacecraft has been operational since 1996 and has discovered more than 400 comets, studied the outer layers of the Sun and examined solar winds.

### Why study the Sun from space?

- ⇒ The Sun "emits radiation/light in nearly all wavelengths along with various energetic particles and magnetic fields. The atmosphere of the Earth as well as its magnetic field acts as a protective shield and blocks a number of harmful wavelength radiations including particles and fields.
- ⇒ This means studying the Sun from Earth can't provide a complete picture and it becomes crucial to observations from outside the planet's atmosphere i.e., from space.

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## ADITYA L1, ITS FUNCTIONING AND PURPOSE

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### Why in news?

- ⇒ The L1 is currently home to the European Space Agency (ESA), National Aeronautics and Space Administration (NASA) Solar and Heliospheric Observatory (SOHO) observing the Sun and its dynamics.
- ⇒ Aditya L1 will join this observatory to unravel the mysteries of the dynamics of the Sun.



### Aditya L1:

- Launched on September 2, the craft will undergo five orbit-raising manoeuvres before being slingshot to the L1 point. The ship will coast for about four months before it reaches L1.
- At that stage, the thrusters will be fired to make the craft circle around the L1, placing it in what is known as a halo orbit around L1. From this vantage point, Aditya L1 can observe the Sun 24X7 using its four remote sensing payloads, and measure in-situ the various parameters of space weather.

### Background:

- Discovered by mathematician Joseph Louis Lagrange, L1 is one of the five points located approximately 1.5 million kilometres away, where the gravitational forces of the Sun and the Earth are in equilibrium.
- Hence, a spacecraft placed at L1 orbits the Sun at the same rate as Earth and affords an uninterrupted view of the Sun, making it an ideal observation post for space-based solar observatories.

### Climate variability:

- The solar activity is measured in terms of the number of sunspots. Sunspots are cooler regions on the Sun's surface which increase and decrease in a cycle of 11 years.
- When the Sun is active, the number of sunspots is in the hundreds, and at solar minimum, the numbers are nearly zero.
- The Earth's upper atmosphere absorbs most of the solar UV rays. The absorbed energy affects the atmosphere's composition, temperature and other parameters. It is imperative to know how far variation in the UV rays emitted by the Sun contributes to climate variability on Earth.

### Onboard instruments:

- The Solar Ultraviolet Imaging Telescope (SUIT) developed by the Inter-University Centre for Astronomy & Astrophysics, in close collaboration with the ISRO, the Center of Excellence in Space Sciences India, Mohanpur, the Manipal Academy of Higher Education etc, will observe the UV radiation from different zones of the solar atmosphere.
- The onboard intelligence system will detect any sudden appearance of bright spots, such as solar

flares (a sudden burst of high energy visible light, UV rays, X rays and Gamma rays) on the disc.

- Combining the data from the Solar Low Energy X-ray Spectrometer (SoLEXS) and the High Energy L1 Orbiting X-ray Spectrometer (HEL1OS) developed by the ISRO's Bengaluru based U. R. Rao Satellite Centre with SUIT, "can gain insights into the emergence, progression and energetics of transient events on the surface of the Sun in the UV region.

### Coronal Mass ejection (CME):

- Coronal Mass ejection (CME) is cloud consisting of billion tonnes of energetic plasma mixed with a solar magnetic field is hurled at 250 kilometres per second to 3,000 km/s.
- Usually, the corona is not visible in the glare of the radiant Sun, except during the brief moment of a total solar eclipse.
- However, solar physicists can create artificial eclipses in the solar telescope, called coronagraph, to observe the corona. Hitherto, no space telescope could peer at the inner corona, closer to the Sun.
- The Visible Emission Line Coronagraph (VELC) can peek as close as 1.05 solar radii, a region never imaged by any solar telescope. From 1.05, it can scan upto three solar radii.

### Solar storms:

- Along with sunlight and electromagnetic radiation, such as ultraviolet rays, the Sun emits a constant stream of charged particles and a mixture of solar magnetic fields that travel throughout interplanetary space.
- Called a solar wind, the average speed of the flow near the Earth is about 300 kilometres per second. The solar wind constantly rams the Earth's magnetosphere, which functions like a shield and deflects most of it.
- Nevertheless, the energetic particles from the solar wind sneak through the weak magnetic regions of the Earth, the north and south poles and interact with the molecules in the atmosphere, creating the dazzling display of aurora.
- Violent eruptions like solar flares and CMEs trigger a strong wind or solar storm. A geomagnetic storm occurs when the solar storm bashes the Earth's magnetosphere.
- While brilliant, beautiful auroras appear as more energetic particles flow through the north and south poles, GPS and short-wave communication are disrupted, and the electronics in the satellite are in danger.
- Intense geomagnetic storms can induce magnetic-induced currents in the power grid and pipelines, resulting in power outages and fire. The energy from the charged particles heats the upper atmosphere, increasing the density and causing extra drag on satellites in low-earth orbit.

**Space weather:**

- ⇒ The changes in the solar wind's density, speed and direction is called space weather. Solar storms result in inclement space weather.
- ⇒ Aditya L1 will function as a space weather station. The Aditya Solar Wind Particle Experiment (ASPEX), the Plasma Analyser Package For Aditya (PAPA) and the advanced Tri-axial High-Resolution Digital Magnetometers keep a constant watch over the parameters of space weather near Aditya L1.
- ⇒ Using the data from these instruments, scientists can predict probable geomagnetic storms and better understand space weather dynamics.

**Way Forward:**

- ⇒ Understanding space weather is an international issue, and the data from Aditya L1 will aid in making models and predicting storms in advance.

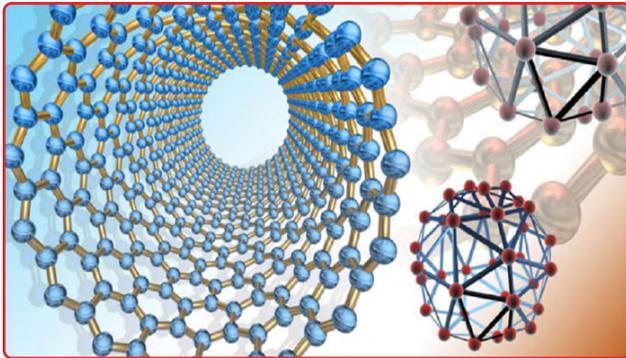
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### SCIENTISTS FABRICATED OPTICALLY ACTIVE FLEXIBLE BIODEGRADABLE POLYMER-NANOCOMPOSITE FILMS

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**Why in news?**

- ⇒ Researchers have fabricated an optically active biodegradable nanocomposite film with excellent mechanical properties that can be used as a stretchable optical devices like flexible display, flexible organic LED, etc.

**Why it matters?**

- ⇒ Polymers have become an indispensable part of our daily life. However, different engineering applications demand highly flexible and optically active polymers.
- ⇒ The nanomaterials are known to enhance the properties of the polymers keeping the inherent properties of the polymers intact.
- ⇒ Scientists have reported that polyvinyl alcohol (PVA) is one of the most widely studied synthetic biodegradable polymers having good film-forming and excellent mechanical properties. Moreover, its optical and mechanical properties can be tuned by incorporating suitable nanomaterials.

**Details:**

- ⇒ A research group from the Institute of Advanced Study in Science and Technology (IASST), Guwahati,

fabricated a biodegradable PVA-CuO nanocomposite film using a facile solution casting technique, where Cu salt used as a precursor for the in-situ CuO nanoparticles formation under different heat treatment.

**Outcome:**

- ⇒ Their tests have proved superior optical, mechanical, and antimicrobial properties of the nanocomposite films under different heat treatments.
- ⇒ The formation of the CuO nanoparticles inside the polymer matrix under heat treatment is confirmed by different spectroscopic and microscopic techniques.
- ⇒ The evaluation of mechanical properties validated the formation of a highly flexible and robust nanocomposite film with tensile strength as high as 39 MPa and flexibility of 169% with copper chloride loading.

**Applications:**

- ⇒ The PVA-CuO nanocomposite film fabricated by the simple solution casting technique followed by the heat treatment method can be used as a stretchable optical device.

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### JAPAN LAUNCHES LUNAR EXPLORATION SPACECRAFT 'SLIM'

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**Why in news?**

- ⇒ Japan launched its lunar exploration spacecraft aboard H-IIA rocket, clearing a path to become the world's fifth country to land on the moon early next year.
- ⇒ Japan Aerospace Exploration Agency (JAXA) said the rocket took off from Tanegashima Space Center in southern Japan as planned and successfully released the Smart Lander for Investigating Moon (SLIM).

**Details:**

- ⇒ Dubbed the 'moon sniper', Japan aims to land SLIM within 100 metres of its target site on the lunar surface. The \$100-million mission is expected to reach the moon by February.

**H-IIA rocket:**

- ⇒ H-IIA rocket also carries the X-Ray Imaging and Spectroscopy Mission (XRISM) satellite, a joint project of JAXA, NASA and the European Space Agency.

- ⇒ Mitsubishi Heavy Industries 7011.T manufactured the rocket and operated the launch, which marked the 47th H-IIA rocket Japan has launched since 2001, bringing the vehicle's success rate close to 98 per cent.

### Background:

- ⇒ The launch comes after India became the fourth nation to successfully land a spacecraft on the moon with its Chandrayaan-3 mission to the unexplored lunar South Pole.
- ⇒ Two earlier lunar landing attempts by Japan failed in 2022. JAXA lost contact with the OMOTENASHI lander and scrubbed an attempted landing in November.
- ⇒ The Hakuto-R Mission 1 lander, made by Japanese startup ispace 9348.T, crashed in April as it attempted to descend to the lunar surface.
- ⇒ Japan's space missions have faced other recent setbacks, with the launch failure of the Epsilon small rocket in October 2022, followed by an engine explosion during a test in July.
- ⇒ The country plans to send astronauts to the moon in the late 2020s.

## INSTRUMENT ABOARD NASA ROVER PRODUCES OXYGEN ON MARS, COMPLETES MISSION



### Why in news?

- ⇒ A unique instrument developed by NASA has shown making oxygen on Mars is possible.
- ⇒ Mars Oxygen In-Situ Resource Utilisation Experiment (MOXIE) has successfully concluded its operations after proving to be a viable technology for future astronauts on the Red Planet.

### Details:

- ⇒ The device has been generating oxygen aboard NASA's Perseverance rover since its landing in 2021.
- ⇒ MOXIE has exceeded expectations by producing a total of 122 grams of oxygen, twice as much as NASA's original goals for the instrument.
- ⇒ The oxygen produced is of 98% purity or better, making it suitable for both fuel and breathing purposes.

### How it works?

- ⇒ The device works by using an electrochemical process to separate one oxygen atom from each molecule of carbon dioxide in Mars' thin atmosphere.
- ⇒ The gases are then analyzed to check the purity and quantity of the oxygen produced.

### Significance:

- ⇒ MOXIE's success marks a significant step towards future human exploration of Mars.
- ⇒ The technology could enable astronauts to 'live off the land', using materials found on the planet's surface to survive.
- ⇒ This concept, known as in-situ resource utilization (ISRU), has become a growing area of research.

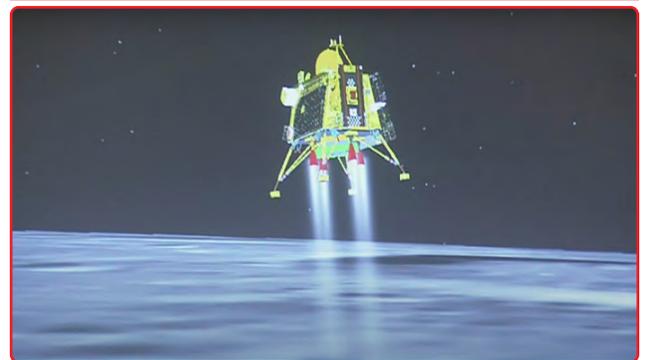
### What's next?

- ⇒ The next step would be to create a full-scale system that includes an oxygen generator like MOXIE and a way to liquefy and store that oxygen. However, the focus is also on validating other technologies on Mars.

### About Perseverance rover:

- ⇒ It is a robotic explorer to land on Mars as part of NASA's ongoing Mars 2020 Mission.
- ⇒ It was launched on July 30, 2020 from Cape Canaveral, Florida.
- ⇒ It successfully landed on the surface of Mar's Jezero Crater on Feb. 18, 2021.
- ⇒ It seek signs of ancient life and collect samples of rock and regolith (broken rock and soil) for possible return to Earth.
- ⇒ The rover will collect samples of rock and soil, encase them in tubes, and leave them on the planet's surface to be returned to Earth at a future date.

## WHAT HELPED VIKRAM LANDER TO SOFT-LAND ON THE MOON



### Why in news?

- ⇒ Chandrayaan-3 has created history by landing near the little-explored south pole of the Moon on August 23, 2023.

### Chandrayaan-2:

- ⇒ On July 22, 2019, India successfully launched Chandrayaan-2, the second mission to the moon.

Twenty-two days later (August 14), after a series of orbit raising manoeuvres, the spacecraft finally escaped the earth's gravity and followed a path towards the moon. Six days later, Chandrayaan-2 was successfully inserted into lunar orbit.

- Finally, on September 2, the Vikram lander separated from the Orbiter, performed two de-orbit manoeuvres and on September 6, began its descent to the moon's surface.
- The descent went as planned up to an altitude of 2.1 km from the moon's surface before communication from the lander to the ground stations was lost. The Vikram lander had apparently crash-landed on the moon.

#### Dr. V. Narayanan Committee:

- Soon a national-level failure analysis committee headed by Dr. V. Narayanan, Director of the Liquid Propulsion Systems Centre (LPSC), was formed with experts drawn from national institutes and ISRO to study the cause of failure and to propose necessary corrections.
- The committee pinpointed three crucial mistakes that had happened in succession resulting in the crash.

#### There are four important phases before the touchdown on the moon:

- a) the rough braking phase,
  - b) the attitude-hold (orientation) phase,
  - c) the fine braking phase, and
  - d) the landing phase.
- During the rough braking phase, the velocity of the lander was successfully reduced to a maximum.

#### Issues with Vikram lander:

- The problem with the touchdown began when the Vikram lander entered the second phase, the attitude-hold (orientation) phase. During this phase, the thrust had to be maintained at half the level.
- The guidance system was supposed to have halved the thrust but it malfunctioned. At the end of the attitude-hold phase, the altitude and velocity were very different from the expected values. The guidance-system malfunction was the second crucial error.
- During the fine braking phase, the system was trying to correct the large errors. The large-scale corrections to velocity and altitude demanded large orientation manoeuvres.
- Changes to orientation are carried out by the control system, but unfortunately the control system was not designed to produce large changes.

#### The crash was caused by three mistakes;

- a) the thrust (dispersion level) was more than assumed for design,
- b) the flaw in the guidance system resulted in more thrust being given, and
- c) the rate restriction in the control system failed to make large-scale changes in the orientation.

#### Lesson for Chandrayaan-3 mission:

- Taking the learnings from Chandrayaan-2 failure, ISRO corrected for all the three major mistakes in the latest mission; the system was corrected to ensure extra dispersion does not happen, the guidance system was corrected, and the restriction in the control system was removed.
- In addition, other improvements suggested by the failure analysis committee were also incorporated in the Chandrayaan-3 mission. Extra fuel, sensors and stronger lander legs designed for higher landing velocity led to a net increase in the weight (about 250 kg) of the lander.
- Since Chandrayaan-3 was not carrying an orbiter like its predecessor, it became possible to accommodate the increased weight.

#### HOW DID A CHINA-BASED HACKING GROUP COMPROMISE MICROSOFT'S CLOUD SECURITY?



#### Why in news?

- In July, Microsoft said that a China-based hacking group breached U.S. government-linked email accounts.

#### Details:

- The group identified as Storm-0558, gained access to email accounts of 25 organisations, including Western European government agencies, email accounts from top American officials such as Commerce Secretary Gina Raimondo, U.S. Ambassador to China Nicholas Burns, and Assistant Secretary of State for East Asia Daniel Kritenbrink.
- The attacks stemmed from the compromise of a Microsoft engineer's corporate account. The company further explained that hackers were able to extract a cryptographic key from the engineer's account to access into email accounts.

#### What is Storm-0558?

- Microsoft Threat Intelligence "with moderate confidence" assessed that Storm-0558 is a China-based threat actor with activities and methods consistent with espionage objectives.
- The group is thought to operate as its own distinct group and its core working hours are consistent with working hours in China, Microsoft said in a blog post.

- In the past, the group has been seen to have primarily targeted U.S. and European diplomatic, economic, and legislative governing bodies, and individuals connected to Taiwan and Uyghur geopolitical interests.
- The group has been targeting Microsoft accounts since August 2021 and had reportedly obtained credentials for initial access through phishing campaigns and exploited vulnerabilities in public-facing applications to gain access to victims' networks.

### How did the threat actors breach Microsoft's security?

- The China-based threat actor was able to compromise Microsoft's cloud security systems by using an acquired MSA key to forge tokens to access Outlook Web Access (OWA).
- MSA keys are token signing keys used by a service to validate authentication tokens for the service.
- Hackers then used the acquired key to forge a token that was used for validation issues to impersonate Azure AD users and gain access to enterprise email.

### What is a cryptographic key?

- A cryptographic key is a string of characters used within an encryption algorithm to alter data making it illegible to someone without the correct key. Like a physical key, a cryptographic key encrypts data and is used to decrypt the encased data by the holder of the key.
- In the case of SSL encryption (HTTPS), two types of encryptions are used. They can be symmetric and asymmetric encryptions.
- In symmetric encryption, both sides of a conversation use the same key for turning plain text into cyphers (encrypted) text.
- However, in asymmetric or public key encryption, the two sides of the conversation use a different key.
- A public key and a private key, the private key is never shared by the party with anyone. When plaintext is encrypted with the public key, only the private key can decrypt it, not the public key.

### How did hackers acquire MSA keys?

- Microsoft, after its technical investigation into the attack, revealed that the key was stolen from its corporate environment due to a series of errors.
- Threat actors compromised a Microsoft engineer's account gaining access to the company's network and debugging environment.
- A debugging environment is used by companies to test their products during production and fix errors and bugs in the source code before they are released to the public.

### Why was a consumer key accessible to the engineer's account?

- Microsoft introduced a common key metadata publishing endpoint in September 2018. Microsoft says it provided an API to help "validate the signatures

cryptographically but did not update their libraries to perform this scope validation automatically".

- The developers in the mail system incorrectly assumed libraries performed complete validation and did not add the required issuer/scope validation.
- This allowed the mail system to accept or request enterprise email using a security token signed with the consumer key. Microsoft says the issue has been corrected.

## CHANDRAYAAN-1 DATA SUGGESTS ELECTRONS FROM EARTH FORMING WATER ON MOON



### Why in news?

- Scientists analysing the remote sensing data from India's Chandrayaan-1 lunar mission have found that high energy electrons from the Earth may be forming water on the Moon.
- The team led by researchers from the University of Hawai'i (UH) at Manoa in the US discovered that these electrons in Earth's plasma sheet are contributing to weathering processes, breaking down or dissolving of rocks and minerals on the Moon's surface.

### Why it matters?

- Knowing the concentrations and distributions of water on the Moon is critical to understanding its formation and evolution, and to providing water resources for future human exploration.
- The new finding may also help explain the origin of the water ice previously discovered in the permanently shaded regions of the Moon.

### Basis of study:

- They analysed the remote sensing data that were collected by the Moon Mineralogy Mapper instrument, an imaging spectrometer, onboard India's Chandrayaan 1 mission between 2008 and 2009.
- They, specifically, assessed the changes in water formation as the Moon traversed through Earth's magnetotail, which includes the plasma sheet.

### Key Highlights:

- Solar wind, which is composed of high energy particles such as protons, bombards the lunar surface and is thought to be one of the primary ways in which water has been formed on the Moon.

- The team investigated the changes in surface weathering as the Moon passes through Earth's magnetotail, an area that almost completely shields the lunar body from solar wind but not the Sun's light photons.
- This indicates that, in the magnetotail, there may be additional formation processes or new sources of water not directly associated with the implantation of solar wind protons. In particular, radiation by high energy electrons exhibits similar effects as the solar wind protons.
- This finding and the team's previous study of rusty lunar poles indicate that the Earth is strongly tied with its Moon in many unrecognised aspects.

#### Facts:

- Chandrayaan 1 was launched by the Indian Space Research Organisation (ISRO) in October 2008, and operated until August 2009. The mission included an orbiter and an impactor.
- India successfully landed Chandrayaan-3 mission, with a rover and a lander, near the Moon's enigmatic south pole last month, becoming the first country to do so.

### CENTRE FLOATS NEW SCIENCE AWARDS



#### Why in news?

- The Union government is set to institute the Rashtriya Vigyan Puraskar – 56 prizes to felicitate scientists, technologists and innovators.
- Akin to the prestigious Padma awards, these awards will not include any cash component; instead, they will likely bestow a certificate and a medallion on the awardee.

#### Details:

- The RVP will comprise three Vigyan Ratna, 25 Vigyan Shri, 25 Vigyan Yuva-Shanti Swarup Bhatnagar and three Vigyan Team awards.
- These prizes will be awarded annually for physics, chemistry, biological sciences, mathematics and computer science, earth science, medicine, engineering science, agricultural science, environmental science, technology and innovation,

atomic energy, space science and technology, and a 13th category, simply called "others".

- The 56 proposed awards are a stark reduction from the almost 300 science prizes that used to be given by Union Ministries.

#### Vigyan Ratna:

- The new awards will also be open to persons of Indian origin (PIOs), though a maximum of one such may be awarded the Vigyan Ratna, while three PIOs each can be selected for the Vigyan Shri and the VY-SSB. However, PIOs will not be eligible for the Vigyan Team awards.
- The Vigyan Ratna awards shall be for "lifetime contributions along with excellence made in any field of science", the Vigyan Shri for "distinguished contribution to any field", and the SSB for "exceptional contribution by young scientists".
- The team awards shall be for three or more researchers who have made an "exceptional contribution as a team".
- There are no age limits for any prizes except the SSB, for which recipients must be 45 years or younger.

#### Starting in 2024:

- The awards will be announced annually on May 11, which is National Technology Day, and will be awarded on National Space Day, August 23.
- These are the days on which India successfully conducted its second nuclear test in 1998, and then catapulted the Chandrayaan-3's Vikram lander on the moon.
- The RVP awards, which will commence from 2024, will be given by the President or the Vice President, according to the proposal.

#### Selection Committee:

- A committee will be constituted every year, comprising the Secretaries of six Science Ministries, up to four presidents of science and engineering academies, and six distinguished scientists and technologists from various fields.
- The CSIR will coordinate the administration of the awards process for two years, after which it will be taken over by the proposed National Research Foundation.

#### Other science awards in India:

- The Shanti Swarup Bhatnagar (SSB) awards, given by the Council of Scientific and Industrial Research (CSIR) since 1958, now includes ₹5 lakh per winner, as well as a salary perk.
- In fact, the government announced the names of 12 winners of the SSB awards recently, after a year's delay.
- The National Technology Awards, given to teams by the Technology Development Board (a DST entity), also include cash prizes worth ₹25 lakh.

## OLDEST YET FOSSILS OF A PLANT-EATING DINOSAUR FOUND IN RAJASTHAN



### Why in news?

- Recently the scientists from IIT Roorkee have characterised dinosaur fossils from the Middle Jurassic period, found in the Thar desert near the Jaisalmer Basin by the Geological Survey of India.
- They discovered that they had uncovered remains of a sauropod dinosaur, which is the same clade as the long-necked herbivores in Jurassic Park.

### Genus:

- Belonging to the family Dicraeosauridae and from the superfamily Diplodocoidea, these fossils are the first dicraeosaurid sauropods to have been found in India. And at 167 million years old, they are the oldest known diplodocoid fossils in the world.
- The scientists named the dinosaur *Tharasaurus indicus*, with *Tharo* deriving from the Thar desert; *saurus* from the Greek 'sauros', or lizard; and *indicus* from its Indian origin.

### Characteristic features:

- The most fascinating feature about sauropods is their size. They can grow more than a hundred feet. There are many sauropod groups that are even longer than the blue whale.
- However, members of the Dicraeosauridae family of sauropods, to which *Tharasaurus* belongs were not nearly as large. This family was unique: its members were smaller and had shorter necks and tails compared to the other long-necked sauropods.
- Sauropods first appeared on the earth during the Jurassic period, about 200 million years ago. They were one of the most dominant clades of dinosaurs, surviving until the late Cretaceous period 65 million years ago, when dinosaurs went extinct.

### Importance of Indian landmass:

- Some 167 million years ago when *Tharasaurus* lived, India was not where it is now; it was part of a group of continents in the southern hemisphere with Africa, South America, Madagascar, and Antarctica, together called Gondwanaland.
- The scientists reasoned that these diplodocoid sauropods could have originated in India during the

Middle Jurassic period and used the land connections at the time to migrate to Madagascar, Africa, and South America. After that they could have made their way to North America and the rest of the world.

- Another piece of evidence that supports their theory was that diplodocoid fossils in other continents like Africa, the Americas, and Asia come from a younger geological interval. This increases the possibility that the Indian landmass was the site for the *Tharasaurus*' early radiation.
- That along with the fact that archaic sauropod fossils from during the start of the Jurassic period –like of *Kotasaurus* and *Barapasaurus* – were also found in India suggests that this diplodocoid group of sauropods could have evolved and originated in India.

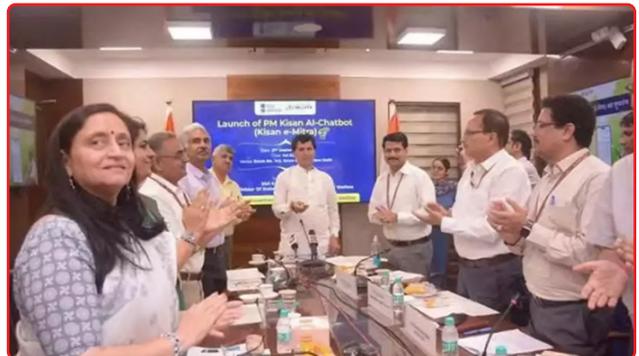
### More fossils needed:

- In 2006, an Indo-German team found another middle Jurassic sauropod dinosaur fossil in the Kutch basin of Gujarat, named *Camarasaurus supremus*, which was also the oldest fossil of that group found at the time.
- There have been subsequent finds of extremely old sauropod fossils in the region by the same team since.

### Way Forward:

- Scientists believe that more work and more expeditions will need to be undertaken in the Jaisalmer area. This is a potentially important area for the Middle Jurassic dinosaurs in India.

## AI CHATBOT FOR PM-KISAN SCHEME LAUNCHED



### Why in news?

- Recently, the Union Ministry of Agriculture & Farmers Welfare, launched AI Chatbot for the Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) Scheme at New Delhi.
- The AI Chatbot launch marks a significant step towards enhancing the efficiency and reach of the PM-KISAN scheme, and also providing farmers prompt, clear, and accurate responses to their queries.

### Details:

- The AI Chatbot acts as a comprehensive guide for the beneficiaries, providing them with timely and

accurate responses to their queries related to the scheme.

- This is the first AI Chatbot integrated with a major flagship scheme of the Union government.
- It has been developed and improved with the support of EKstep foundation and Bhashini.

#### Key Highlights:

- The introduction of the AI chatbot in the PM-KISAN grievance management system is aimed at empowering farmers with a user-friendly and accessible platform.
- In its first phase of development, the AI chatbot will assist farmers in seeking information related to their application status, payment details, ineligibility status, and other scheme-related updates.
- The AI Chatbot, accessible through the PM KISAN mobile app, is integrated with Bhashini, which offers multilingual support, catering to the linguistic and regional diversity of the PM KISAN beneficiaries.
- This integration of advanced technology will not only enhance transparency but will also empower farmers to make informed decisions.
- Currently, the Chatbot is available in English, Hindi, Bengali, Odia and Tamil. In a short period, it will be available in all 22 languages of the country.

#### Background

- The Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) is a central sector scheme launched in February 2019 to support the financial needs of land-holding farmers in India.
- The scheme offers an annual financial benefit of Rs 6,000/- in three equal instalments to eligible farmers' families through Direct Benefit Transfer (DBT) mode.
- Since its inception, over Rs. 2.61 Lakhs Crores disbursed to more than 11 Crore farmers so far, it stands as one of the largest DBT schemes globally.

#### e-KYC feature:

- Government of India has also developed a mobile app with the feature of face authentication-based e-KYC. This app is first mobile app that use face authentication-based e-KYC feature in any benefit scheme of the Government.
- Not only this, but they can also assist 100 other farmers in their neighbourhood to complete e-KYC at their doorstep.
- In addition, the Government of India has also extended the facility for completing e-KYC of farmers to State Government officials, allowing each official to do e-KYC for 500 farmers.

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### RASHTRIYA VIGYAN PURASKAR

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#### Why in news?

- The Government of India has come out with a new set of National Awards in the field of Science, Technology and Innovation known as "Rashtriya Vigyan Puraskar".



#### Objective:

- The objective of the Rashtriya Vigyan Puraskar (RVP) is to recognize the notable and inspiring contribution made by the scientists, technologists, and innovators individually or in teams in various fields of science, technology and technology- led innovation.

#### Eligibility criteria:

- The Rashtriya Vigyan Puraskar shall be one of the highest recognitions in the field of science, technology, and innovation in India.
- Scientists/ technologists/innovators working in government, private sector organizations or any individual working outside any organization, who have made distinguished contributions in terms of path-breaking research or innovation or discovery in any field of science, technology, or technology- led innovation shall be eligible for the awards.
- People of Indian Origin staying abroad with exceptional contributions benefiting the Indian communities or society shall also be eligible for the awards.

#### Categories:

- The awards shall be given in following four categories:
  - a) Vigyan Ratna (VR) award will recognize lifetime achievements & contributions made in any field of science and technology.
  - b) Vigyan Shri (VS) award will recognize distinguished contributions in any field of science and technology.
  - c) Vigyan Yuva-Shanti Swarup Bhatnagar (VY-SSB) award will recognize & encourage young scientists up to the age of 45 years who made an exceptional contribution in any field of science and technology.
  - d) Vigyan Team (VT) award to be given to a team comprising of three or more scientists/researchers/innovators who have made an exceptional contribution working in a team in any field of science and technology.

#### Domains:

- The Rashtriya Vigyan Puraskar shall be given in the 13 domains, namely Physics, Chemistry, Biological Sciences, Mathematics & Computer Science, Earth Science, Medicine, Engineering Sciences, Agricultural Science, Environmental Science, Technology &

Innovation, Atomic Energy, Space Science and Technology, and Others.

- The representation from each domain/field, including gender parity will be ensured.

#### Selection procedure:

- All nominations received for the Rashtriya Vigyan Puraskar awards shall be placed before the Rashtriya Vigyan Puraskar Committee (RVPC) to be headed by the Principal Scientific Adviser (PSA) to Government of India and comprising Secretaries of Science Departments, members of Science and Engineering Academies and some distinguished scientists and technologists from different fields of science and technology.
- The nominations for this bouquet of awards will be invited every year on 14th January which would remain open till 28th February (National Science Day) every year. These awards shall be announced on 11th May (National Technology Day) every year.
- The Award Ceremony for all categories of awards will be held on 23rd August (National Space Day). All Awards will have a Sanad & a medal.

#### Significance:

- These new National Awards is a transformative step in recognizing achievements of Scientific community at the highest level by the Government of India.
- With transparency and fairness in the entire selection process, work done by all sections of Scientific Innovators and Technologists will be awarded providing at par status with other National Awards.

### 80 PERCENTAGE CYBERCRIMES FROM 10 DISTRICTS, BHARATPUR NEW JAMTARA, RESEARCH



#### Why in news?

- Rajasthan's Bharatpur and Uttar Pradesh's Mathura have replaced Jharkhand's Jamtara and Haryana's Nuh as the infamous hotspots of cybercrime in India.
- The findings have been mentioned by the Future Crime Research Foundation (FCRF), a non-profit start-up incubated at the Indian Institute of Technology (IIT)-Kanpur.

#### Top 10 districts:

- The study also revealed that just the top 10 districts collectively contribute to 80 per cent of cybercrimes in the country.
- Bharatpur (18 per cent), Mathura (12 per cent), Nuh (11 per cent), Deoghar (10 per cent), Jamtara (9.6 per cent), Gurugram (8.1 per cent), Alwar (5.1 per cent), Bokaro (2.4 per cent), Karma Tand (2.4 per cent) and Giridih (2.3 per cent) are the top contributors to cybercrime cases in India, collectively accounting for 80 per cent of reported incidence.

#### Key Highlights:

- The analysis of the top 10 cybercrime hubs (districts) in India reveals several common factors contributing to their vulnerability and these include geographical proximity to major urban centres, limited cyber security infrastructure, economic challenges and low digital literacy.
- While established cybercrime hubs continue to pose significant threats, the emerging new hotspots demand attention and proactive measures by people and authorities.
- These represent regions where various forms of digital criminal activity are on the rise, often catching both law-enforcement agencies and the public off guard.

#### Factors responsible:

- The surge in such cases can be attributed to a complex interplay of various factors such as low technical barriers allowing individuals with limited expertise to engage in such activities using readily available hacking tools and malware.
- Inadequate Know Your Customer (KYC) and verification processes on online platforms enable criminals to create fake identities, making it challenging for law-enforcement to trace them, while easy access to fake accounts and rented SIM cards on the black market allow thugs to operate anonymously, complicating the efforts to track and prosecute them, it stated.
- Furthermore, the affordability of AI-driven cyberattack tools empowers criminals to automate and scale their attacks, increasing their efficiency while virtual private networks (VPNs) provide anonymity for cybercriminals, making it difficult for authorities to trace their online presence and location.
- The FCRF also flagged that unemployed or underemployed individuals are recruited and trained by cybercrime syndicates, creating a growing pool of potential criminals.

### INSIDE THE DIGITAL WORLD OF COOKIES

#### Why in news?

- The digital world of cookies plays a significant role in any online experience. In the digital realm, cookies help in personalisation and user convenience.

- These unassuming bits of code, stored on a device when one visits websites, play a pivotal role in shaping any online experience.



### How do cookies work?

- On websites like Amazon, cookies remember customer's previous interactions; from products they have browsed to purchases they have made.
- Armed with this knowledge, Amazon serves up tailored product recommendations and content, making the online shopping feel like a personalised boutique experience.
- Platforms like Facebook and Google use cookies to track online behaviour, ensuring the ads you encounter align with your preferences.
- While cookies offer undeniable advantages, there is a flip side to considering privacy concerns and the potential for data misuse.

### What are the types of cookies?

- Session cookies are temporary cookies like post-it notes for websites. They are stored in the computer's memory only during the browsing session. Once you close the browser, they vanish. Session cookies help websites remember the actions as you navigate, like items in a shopping cart.
- Persistent cookies are the digital equivalent of bookmarks. They stay on the device after your browsing session ends. Persistent cookies remember the login information, language preferences, and even the ads you have interacted with.
- Secure cookies are only sent over encrypted connections, making them safer from prying eyes. Secure cookies are often used for sensitive data like login credentials.
- Third-party cookies are similar—they come from a domain other than the one you are visiting. They are often used for tracking and advertising purposes, which can be both useful and, at times, intrusive.

### What are the uses of cookies?

- They act as digital ID cards, aiding in user authentication by allowing websites to recognise and keep you logged in during the visit.
- They foster a sense of personalisation, recalling your preferences such as language choice or website theme. They function as the digital equivalent of a

persistent shopping cart, ensuring that items you have added online remain there when you return.

- Additionally, cookies facilitate website owners in gathering invaluable analytics data about user interactions, enabling them to make enhancements and customise content.
- Finally, cookies play a pivotal role in targeted advertising, as advertisers use them to display ads that align with a person's interest and browsing history, making online shopping more enticing.

### What are the challenges associated?

- Firstly, privacy concerns arise as cookies could track your online behaviour, which, while often harmless, can sometimes encroach upon your digital privacy.
- Secondly, security risks loom when cookies are inadequately secured, opening doors for cybercriminals to pilfer the personal information.
- Thirdly, the era of user consent has dawned, thanks to privacy regulations like the General Data Protection Regulation and The California Consumer Privacy Act, necessitating websites to seek your approval before deploying certain cookie types, resulting in those somewhat irksome pop-ups and prompts.
- India's newly enacted Digital Personal Data Protection Act 2023 now necessitates websites to acquire explicit consent from users prior to collecting or processing their personal data via cookies. In contrast to earlier regulations that often accepted implied consent as satisfactory, the updated law highlights the significance of transparent and well-informed consent.
- Fourthly, third-party cookies have sparked debates, prompting many web browsers to curb their usage to safeguard user privacy.
- Lastly, the data deluge generated by the multitude of cookies can potentially clog the browser, leading to a sluggish web experience.

## OSIRIS REX AND BENNU, SAMPLE RETURN MISSIONS EXPLAINED



### Why in news?

- NASA's OSIRIS-REx is a robotic spacecraft that has been on a seven-year mission to collect and return samples from an asteroid called Bennu.

- It took more than two years to reach Bennu after OSIRIS-REx launched in 2016.
- It then spent almost as much time mapping the asteroid, finding a site to scrape and collecting about 250 grams (8.8 ounces) of the rock. Then it began its journey back toward Earth.

### How will the OSIRIS-REx samples return to Earth?

- At an altitude of about 250 kilometers (155 miles) from the surface of Earth, OSIRIS-REx will release a capsule carrying the samples over the Great Salt Lake Desert in Utah, US.
- Scientists have been training to recover the capsule and securely transfer the samples to NASA's Johnson Space Center in Houston, Texas.
- Having released its capsule, it will travel on toward a new destination: Apophis, an asteroid once thought to pose a hazardous impact threat to Earth, but not anymore, at least not for the next 100 years.

### What is a sample return mission?

- These days, sample return missions tend to be robotic. In the past humans were sent to collect rocks and soil from space, NASA's Apollo missions did that between 1969 and 1972.
- Sample return missions send spacecraft to land on a celestial body and collect samples of soil, minerals and rock.
- The samples are analyzed in laboratories on Earth. But some get stored, too, a lot of the Apollo samples were left sealed and untouched because scientists and engineers figured technology would improve over time, allowing them to conduct different or better experiments in the future.

### Why do scientists collect samples from space and what do we learn?

- Samples from space tell about life elsewhere in our solar system and early Earth history.
- The samples can include atoms, molecules and complex compounds, evidence of water, and particles of solar wind or cometary debris.

### Who will analyze the samples from Bennu?

- NASA has said its samples from the asteroid Bennu "will give generations of scientists a window into the time when the sun and planets were forming about 4.5 billion years ago" and the beginnings of life as known today. Bennu is thought to be rich in carbon, a chemical that is essential to life.
- While NASA plans to keep 25% of the samples for its own research, it has said it will distribute the rest among 200 mission members at 35 institutions around the world.
- That includes 4% of the samples going to the Canadian Space Agency, because it provided an instrument for the OSIRIS-REx mission.
- And 0.5% of the samples will go to the Japanese space agency, the Japan Aerospace Exploration Agency (JAXA) as part of a partnership.

### How often have samples been collected from asteroids?

- Aside from the Apollo era moon landings, during which NASA collected about 382 kilograms (842 pounds) of rock and moon soil, Soviet-era Russia conducted three successful robotic missions between 1969 and 1976 to procure about 326 grams of samples (11 ounces).
- More recently, JAXA's Hayabusa mission from 2003 to 2010 was the first time humans had brought back samples from a near-Earth object: the asteroid Itokawa.
- Japan followed that with Hayabusa2, which returned samples from an asteroid called Ryugu in 2020.
- And, also in 2020, China's Chang'e 5 mission returned samples from the moon.

### Are any sample return missions planned for the future?

- Japan's Martian Moons eXploration (MMX) aims to be the first sample return mission to bring back rocks from the Mars region.
- Scheduled to launch in 2024, MMX aims to investigate the moons of Mars, Phobos and Deimos, and gather information on how they formed.
- MMX also aims to collect samples from Phobos, the larger of the two moons, and then return to Earth in 2029.
- Meanwhile, the European Space Agency and NASA are engaged in a sample return mission from the surface of Mars, which will return to Earth in 2033.

## INDIA NAVIC WILL NOW BE SUPPORTED BY MADE IN INDIA CHIPSETS



### Why in news?

- For the first time the chipsets or microchips which are capable of receiving and processing the signals of the indigenous navigational system NavIC will be designed and manufactured in India by an Indian company.

### About NavIC:

- NavIC is a satellite based navigational system, developed by Indian Space Research Organization (ISRO), which enables users to determine their precise

geographic location and track their movements anywhere in India and 1500 kms beyond India's territorial boundary.

- It comprises a constellation of seven satellites orbiting high above, weaving a celestial tapestry of signals that empower navigation, positioning and timing across the vast Indian subcontinent and beyond.
- NavIC system primarily uses IRNSS (Indian Regional Navigation Satellite System) signals for navigation and positioning.
- These signals are transmitted by a constellation of satellites in geostationary and geosynchronous orbits. NavIC is like GPS in its functioning and operational principles.
- The only difference being GPS is owned and operated by United States government while NavIC is owned and operated by India. NavIC covers all of Indian subcontinent and offers a positional accuracy of 5 mtrs compared to 15-20 mtrs of GPS.

#### Role of chipsets:

- Not all smartphones and navigational gadgets (or navigators) are compatible with NavIC. To use and decode NavIC signals, a navigating gadget should have a NavIC compatible chipset or microchip incorporated inside it.
- The receivers of NavIC signals such as NavIC compatible smartphones and other navigators, typically incorporate these chipsets or microchips which are designed to decode and process the signals coming from the seven Indian satellites.
- Currently, they have been using chipsets made by foreign companies such as Qualcomm Technologies of USA and Mediatek Inc. of Taiwan.

#### Indigenous product:

- Ministry of Science & Technology and Ministry of Electronics & Information Technology, the two ministries of the Government of India, are jointly collaborating with a Hyderabad based firm, - Manjeera Digital Systems Private Limited, to facilitate the designing and commercial production of these chips in India.
- The company has designed baseband processor chip that uses indigenously developed Universal Multifunctional Accelerator (UMA) processor IP, which has ability to receive, read and process the NavIC signals. These chipsets will soon go into large-scale commercial production.
- Manjeera Digital Systems is a fabless semiconductor company with a patented High Performance Computing (HPC) processor called UMA.
- It enables navigation as well as tracking and can be used for both commercial and civilian purposes.

#### Way Forward:

- NavIC is India's beacon of self-reliance, shining brightly in the world of satellite navigation, and now the indigenously built NavIC enabled chipsets will make it a truly 'Made in India' marvel.

## DNA TRACES FOUND IN SIX-MILLION-YEAR-OLD FOSSIL OF SEA TURTLE



#### Why in news?

- Researchers have found remnants of DNA in the fossilised remains of a sea turtle dating back six million years.
- This marks one of the rare instances where genetic material has been identified in such ancient vertebrate fossils.

#### Details:

- The fossil, excavated along Panama's Caribbean coast in 2015, contained well-preserved bone cells, known as osteocytes.
- Although the fossil is partial, it includes a relatively complete carapace - the turtle's shell. The turtle would have been about a foot long when alive.

#### DNA remnants:

- DNA is highly perishable, but under certain conditions, it can be preserved in ancient remains. Previous discoveries include DNA from animals, plants, and microbes dating back about two million years, found in sediment at Greenland's remote northernmost point.
- The only older vertebrate fossils found with similar DNA remnants belonged to two dinosaurs - Tyrannosaurus, which lived about 66 million years ago, and Brachylophosaurus, which lived about 78 million years ago.
- DNA remnants have also been reported in insects dating back tens of millions of years.

#### Turtle fossil:

- The turtle fossil belongs to the same genus, Lepidochelys, as two of the world's seven living species of sea turtles, the Kemp's ridley, the world's smallest sea turtle, and the olive ridley.
- The fossil represents the oldest-known member of Lepidochelys, shedding light on the poorly understood evolutionary history of this genus.

#### Way Forward:

- The future studies might enable sequencing of very small pieces of DNA to infer things about their close relatives or involve that information in a broader molecular evolutionary study.

## SOCIAL ISSUE

WOMEN RESERVATION BILL  
2023 & DELIMITATION**Why in news?**

- Recently, the government introduced the women's reservation bill renamed 'Nari Shakti Vandan' in the ongoing special session in the new Parliament.
- The Constitution (One Hundred and Twenty-Eighth Amendment) Bill, 2023, introduced in the Lok Sabha by Union law minister Arjun Ram Meghwal, proposes reserving one-third of the total number of seats for women in the Lok Sabha, state legislative assemblies and the legislative assembly of the National Capital Territory of Delhi.

**Key Highlights:**

- Within the proposed 33 percent reservation, one-third of the seats will be reserved for women belonging to Scheduled Castes and Scheduled Tribes. However, there is no sub-quota for Other Backward Class (OBC) women.
- According to the bill, the reservation will be for a period of 15 years from the commencement of the act. The seats reserved for women will be rotated after each delimitation exercise.
- There will be no reservation in the Rajya Sabha or the state legislative councils.
- Currently, 14.36 percent of the total MPs in Lok Sabha are women while in legislative assemblies, it varies from state to state.

**Article 334A:**

- The bill inserts Article 334A, a new provision that says the reservation will come into effect only after a delimitation exercise is undertaken for this purpose, which in turn can take place only after the census.
- This means that till the time the redrawing of constituencies happens, the new law won't be implemented. And although the census was supposed to be conducted in 2021, it was put off because of the COVID-19 pandemic.

**Background:**

- It was first brought in the Lok Sabha by the H.D. Deve Gowda-led United Front government in 1996 but lapsed after the House was dissolved.

- It was introduced again in 1998 and 1999 but stalled both times. In 2010, the then United Progressive Alliance government got the bill passed in the Rajya Sabha again amidst huge backlash from across the political spectrum, but it lapsed before being tabled in the Lok Sabha.

**What is delimitation?**

- Delimitation "literally means the act or process of fixing limits or boundaries of territorial constituencies in a country or a province having a legislative body".
- Delimitation is a constitutional exercise and is conducted as per the procedure prescribed in Article 82 of the Constitution.
- This article finds a mention in Chapter 2 of the Constitution that outlines the constitution and composition of Parliament, qualification of its membership and its session, among other things.
- Article 82 talks about readjustment of Lok Sabha and state assembly seats after each census. For this, the Parliament has to frame a law that would authorise a Delimitation Commission to take up the exercise of redrawing the territorial constituencies.
- Promulgation of such a law is as per the requirement under Article 327 which says Parliament may from time to time, by law, make provision with respect to all matters in connection with the elections, including delimitation of constituencies. Article 329 bars a challenge to the validity of such a law before any court.

**How is delimitation done?**

- Once Parliament enacts a Delimitation Act, the Centre constitutes a Delimitation Commission headed by a retired Supreme Court judge. The orders of this high-powered body are legally binding and not subject to scrutiny of any court of law.
- Even Parliament cannot suggest modifications to an order issued by the commission, which also constitutes the Chief Election Commissioner or any of the two Election Commissioners. In case the exercise is specifically for a state, the election commissioner of that state is also a member of the commission.
- Since the commission is a temporary body, without any permanent staff, it takes the assistance of EC employees to carry out the long-drawn exercise. Census data for each district, tehsil and gram panchayat is collected, and the new boundaries are demarcated.
- The exercise can take up to five years, which concludes after the commission examines population data, existing constituencies, the number of seats to be analysed, as well as holds meetings with all the stakeholders and submits its recommendation to the government.
- The commission's draft report is published in the Gazette of India for seeking feedback from the general

public. The feedback is studied and required changes are made in the final report.

- The commission's recommendation comes into force on a date specified by the President. The copies of its orders are laid before the Lok Sabha and the legislative assembly concerned, but no modifications are permissible.

#### Delimitation in the past:

- The Delimitation Commissions were set up in 1952, 1963, 1972 and 2002. However, the number of Lok Sabha constituencies were not revised since 1972, which was based on the 1971 Census. At present, there are 543 Lok Sabha seats.
- Though a Delimitation Commission was set up in 2002 under Justice (retired) Kuldeep Singh, after the 2001 Census, its recommendations remained on paper due to the 84th constitutional amendment that froze delimitation exercise or readjustment of Parliamentary constituencies till 2026.
- The exercise was kept on hold for 25 years so as to allow states to check their population. The tenure of this commission was extended twice, and it gave its report in December 2007.

#### Next delimitation exercise:

- The decennial census exercise that was to be conducted in 2021 was postponed indefinitely due to the Covid pandemic. In June, the Registrar General of India issued an order, saying the census was extended and would be frozen with effect from 1 January, 2024.
- The next census is expected to be the first digital census, giving the citizens an opportunity to self-enumerate.

### BIHANA DIDI WINS NORMAN BORLAUG AWARD FOR INTRODUCING RICE VARIETY



#### Why in news?

- Fondly called Bihana Didi (Seed Lady) by local communities in Odisha, agriculture scientist Swati Nayak recently won the prestigious Norman E. Borlaug Award for 2023.
- She became only the third Indian agriculture scientist to win the prestigious Norman E. Borlaug Award for 2023.

#### Her contribution:

- Now with the International Rice Research Institute (IRRI), she won the Borlaug Award for "Field Research and Application", a unique distinction when usually breeders walk away with such awards.
- Before joining IRRI in 2013, she is credited with the successful dissemination and adoption of more than 20 climate-resilient and bio-fortified rice varieties.
- Among these are 'Sahbhagi Dhan', a drought-tolerant variety suitable for hilly uplands, and 'BINA Dhan-11', which is flood-tolerant.
- Nayak and her team formulated a strategy for introducing 'Sahbhagi Dhan' in the tribal belt of Odisha's Mayurbhanj district, encompassing setting up demonstration plots, on-farm evaluation and seed production by women farmers. The cascading effect was borne out by 'Sahbhagi Dhan' becoming a much in-demand variety throughout Odisha.
- 'BINA-Dhan-11', which contains a submergence-tolerant Sub1 gene identified from an indigenous land race of Odisha, was a similar success story of adoption.
- She and her team formulated a strategy for introducing the drought-tolerant Shahabhagi Dhan rice variety in Odisha. It brought about a major change in rain-fed areas. The variety became an integral element of every farmer family's diet and crop rotation.

#### About Norman E. Borlaug Award:

- The award recognises exceptional scientists under 40 and someone who works in the field of food and nutrition security and hunger eradication.
- It is given in memory of the Nobel awardee and Green Revolution's chief architect Dr Norman Borlaug.
- The award was created in 1972 and named in honour of Nobel Laureate Norman E. Borlaug.

### INDIA AGEING, ELDERLY TO MAKE UP 20 PERCENTAGE OF POPULATION BY 2050, UNFPA REPORT



#### Why in news?

- Recently, the United Nations Population Fund (UNFPA), India, released its 2023 India Ageing Report.

**Details:**

- With the decadal growth rate of the elderly population of India estimated at 41% and its share of the total population projected to double to over 20% by 2050, the UNFPA has said that by 2046, it is likely that the elderly population will have surpassed the population of children (aged up to 15) in the country.
- More than 40% of the elderly in India are in the poorest wealth quintile, with about 18.7% of them living without an income, such levels of poverty may affect their quality of life and healthcare utilisation.
- The report projected that the population of people aged 80 and above will grow at a rate of around 279% between 2022 and 2050 with a “predominance of widowed and highly dependent very old women”, a finding in line with the pattern across several nations.

**Life expectancy:**

- The data showed that women, on an average, had a higher life expectancy at the age of 60 and 80 when compared with men, with variations across the States and Union Territories.
- For instance, in Himachal Pradesh and Kerala, women at 60 have a life expectancy of 23 and 22 years, respectively, which is four years more than that of men at 60 in these States, as compared with the national average differential of only a year and a half.
- Life expectancy of women at 60 is greater than 20 years in States such as Rajasthan, Haryana, Gujarat, Uttarakhand, Kerala, Himachal Pradesh, and the Union Territory of Jammu & Kashmir, raising concerns about their social and economic well-being.

**Sex Ratio:**

- Further, the sex ratio (number of females per 1,000 males) among the elderly has been climbing steadily since 1991, while the ratio in the general population has been stagnating.
- Between 2011 and 2021, the ratio increased in India as a whole and across all regions, barring the Union Territories and western India.
- In the northeast and the east, while the sex ratio of the elderly increased, it remained below 1,000 in both years, indicating that men still outnumber women in these regions even at 60-plus years. This, however, is not true for the other regions (which has a bearing on the country's average).

**Major challenges:**

- Poverty is inherently gendered in old age when older women are more likely to be widowed, living alone, with no income and with fewer assets of their own, and fully dependent on family for support.
- The major challenges facing India's ageing population are the feminisation and 'ruralisation' of this older population and that policies must be designed to suit their specific needs.

**Inter-State variation:**

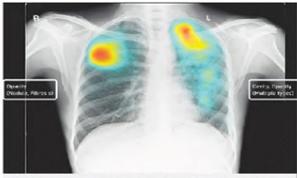
- There was a significant inter-State variation in absolute levels and growth (and hence, share) of the elderly population as well, reflecting the different stages and pace of demographic transition across States.
- Most States in the southern region and select northern States such as Himachal Pradesh and Punjab reported a higher share of the elderly population than the national average in 2021, a gap that is expected to widen by 2036.
- While the States reporting higher fertility rates and lagging in demographic transition, including Bihar and Uttar Pradesh, expect to see an increase in the share of the elderly population between 2021 and 2036, the level will remain lower than the Indian average.
- Compared with southern and western India, central and northeastern regions have States with younger groups as indicated by the ageing index.

**Old-age dependency ratio:**

- In the southern region, the old-age dependency ratio (elderly people per 100 people between 15 and 59 years) was higher than the national average at around 20 as is true of western India at 17.
- Overall, Union Territories (13) and the north-eastern region (13) reflected lower old age dependency ratios.

**HEALTH****USING AI ON X-RAYS CAN DETECT MORE TB CASES**

Automating chest X-ray interpretation for TB screening  
The qXR AI algorithm developed by Mumbai-based Qure.ai can help in early detection of TB disease even in subclinical cases



- The qXR algorithm was one of the three referenced by the WHO to recommend the use of AI to automate digital X-ray interpretation for TB screening
- Population-based screening using AI-assisted chest X-rays in combination with molecular tests can vastly increase detection rates
- The qXR algorithm is being used in over 50 countries. In India, 24 States are using it in about 150 sites
- Besides improving accuracy of diagnosis, AI-assisted chest X-rays can be used even to rural areas as it is radiologist-independent
- In Mumbai, 30% additional TB cases were detected from routine X-rays taken for purposes other than TB diagnosis
- The Central TB Division is yet to issue any policy guidance for AI-assisted X-rays for TB screening as it is waiting for approval from the Health Technology Assessment

**Makes the cut:** The qXR algorithm meets the WHO requirement with >90% sensitivity and >70% specificity in people older than 15 years.  
SPECIAL ARRANGEMENT

■ Qure.ai's AI algorithm has received the European CE certification, and approved by the Indian regulator

**Why in news?**

- In AI-assisted chest X-rays, India has a powerful technology to screen for presumptive TB.
- The AI algorithm qXR, developed by Mumbai-based Qure.ai, can help detect people with presumptive TB early and in less than a minute.

**Potential:**

- The 2019-2021 National TB prevalence survey in India report said nearly 43% of TB cases would have been missed without a chest X-ray.

- When used at scale for population-based screening or for targeted screening, qXR plus molecular tests for TB confirmation can increase detection rates.

#### qXR:

- Systematic screening for TB for early diagnosis is an important 'End TB' strategy. The Indian drug regulator cleared qXR a few months ago. qXR also meets the WHO requirement with >90% sensitivity and >70% specificity in people older than 15 years.
- States are currently waiting on a Central TB Division directive to adopt qXR, which could encourage widespread adoption. The absence of policy guidance has kept adoption thus far.
- India's ambitious goal of "eliminating" TB by 2025 will remain possible only if early diagnosis and initiation of care for millions of people with TB becomes a reality. Large-scale use of AI-assisted chest X-rays for screening is the first step to achieve this goal.

#### Global experience:

- In Vietnam, a community-wide screening of people older than 15 years using a molecular test in 2014-2017 resulted in lower prevalence of pulmonary TB in 2018 than standard passive case-detection alone.
- Unlike in Vietnam, the use of qXR to read digital X-rays before molecular testing as part of community screening will reduce TB prevalence and minimise the number of molecular tests required to detect TB.
- The qXR algorithm is already being used in over 50 countries.

#### Adoption in India:

- In India, 24 States are using qXR at about 150 sites.
- Qure.ai partnered with Mylab Discovery Solutions to use qXR in Mylab's portable chest X-ray device, MyBeam. This will help screen for presumptive TB cases in rural areas.
- The portable device cuts the amount of X-ray exposure to 1/20th to 1/30th of a normal X-ray even while capturing all the details.

### DEADLY NIPAH VIRUS STRIKES INDIA



#### Why in news?

- India is currently grappling with a rare outbreak of the Nipah virus, a dangerous disease that has high mortality rate.

- Taking pre-emptive action against the threat, authorities in the Southern state of Kerala have shut down some schools and offices to halt the spread of the virus.

#### What is the Nipah virus?

- The virus is zoonotic in nature, which means it can be transmitted from animals to humans.
- Nipah usually spreads to humans from bodily fluids of animals; infected bats and pigs, or through contaminated food, but it can also be transmitted directly between people.
- The virus triggers severe fever, often leading to a high mortality rate. It is named after the village where it was discovered.
- Nipah Ebola, Zika and COVID-19 has been listed by the World Health Organization (WHO) as one of the diseases deserving of priority research for the potential to lead to a global epidemic.

#### Symptoms and treatment of Nipah:

- Symptoms of Nipah virus include high fever, headache, vomiting, and respiratory issues.
- In severe cases, seizures and brain inflammation can lead to a coma.
- Regrettably, no vaccine is currently available for Nipah, and the WHO reports that the virus has a mortality rate ranging from 40 to 75 per cent.

#### Monoclonal antibodies:

- To combat the current outbreak, India has taken a significant step by procuring 20 doses of monoclonal antibodies from Australia.
- These antibodies are vital for the treatment of Nipah virus infections, a disease with a high mortality rate. Monoclonal antibodies are synthetic proteins that mimic the immune system's ability to fight harmful pathogens.
- Globally, monoclonal antibodies have been used to successfully treat 14 patients infected with the Nipah virus outside India.

#### Previous outbreaks:

- The first Nipah outbreak in Malaysia resulted in over 100 fatalities. It also spread to Singapore, causing illness.
- Subsequently, the majority of cases have been documented in Bangladesh and India, with both countries experiencing their initial outbreaks in 2001.
- Bangladesh has borne the brunt of Nipah in recent years, with over 100 fatalities since 2001.
- India grappled with two initial outbreaks that claimed over 50 lives before they were contained.
- Most recently, the state of Kerala in India has reported two fatalities and four confirmed cases within the past month, marking its fourth outbreak in five years.
- In 2018, Nipah claimed 17 lives in Kerala, reports AFP. Previous outbreaks there were successfully quelled within a matter of weeks through extensive testing

and the strict isolation of individuals in contact with patients.

#### Zoonotic virus:

- Scientists suspect that the Nipah virus has existed among flying foxes for close to a millennium. They also fear that a highly transmissible, mutated strain may emerge from bats.
- The first Nipah outbreak was recorded in 1998 after the virus spread among pig farmers in Malaysia.
- Fruit bats are the natural carriers of the virus. These bats have been identified as the most likely cause of subsequent outbreaks.

#### Animal-to-human viruses:

- Zoonotic diseases, which are diseases capable of jumping from animals to humans, have seen a notable increase over the past few decades, the last 20 to 30 years in particular.
- The increase of international travel has accelerated their spread. Furthermore, human encroachment into natural habitats has led to a disruption of ecosystems, which in turn has caused an elevation in the likelihood of random virus mutations that can be transmitted to humans.
- Industrial-scale farming too heightens the risk of pathogens spreading among animals, while deforestation intensifies interactions between wildlife, domestic animals, and humans.

### WHO RELEASES ITS FIRST EVER REPORT ON GLOBAL IMPACT OF HIGH BP



#### Why in news?

- Recently, the World Health Organization (WHO) released its first-ever report on the global impact of high blood pressure.
- Approximately four out of every five people with hypertension are not adequately treated, but if countries can scale up coverage, 76 million deaths could be averted between 2023 and 2050.

#### Burden in India:

- Hypertension is the most important risk factor for death and disability in India.
- It adds that less than one-fourth of hypertensive patients in India had their blood pressure under

control during 2016–2020, though this rate has improved compared to previous years, substantial differences exist across regions.

- It also states that the 2019–2020 National Family Health Survey (NFHS-5) reported a hypertension prevalence of 24% in men and 21% among women, an increase from 19% and 17% respectively from the previous round (2015–16).
- India runs the India Hypertension Control Initiative programme which is a large-scale hypertension intervention under the National Health Mission and has been recognised for its positive work done within the country's existing primary healthcare system.

#### Key Highlights:

- The WHO report states that hypertension affects one in three adults worldwide. This common, deadly condition leads to stroke, heart attack, heart failure, kidney damage and many other health problems.
- The number of people living with hypertension (blood pressure of 140/90 mmHg or higher or taking medication for hypertension) doubled between 1990 and 2019, from 650 million to 1.3 billion.
- Nearly half of people with hypertension globally are currently unaware of their condition. More than three-quarters of adults with hypertension live in low- and middle-income countries.
- Recommending ways to win the race against this silent killer, the world organisation states that lifestyle changes such as eating a healthier diet, quitting tobacco and being more active can help lower blood pressure.
- Some people may need medicines that can control hypertension effectively and prevent related complications.

#### Early detection, effective management:

- Prevention, early detection and effective management of hypertension are among the most cost-effective interventions in health care and should be prioritised by countries as part of their national health benefit package offered at a primary care level.
- The economic benefits of improved hypertension treatment programmes outweigh the costs by about 18 to 1.

#### Way Forward:

- Strengthening hypertension control must be part of every country's journey towards universal health coverage, based on well-functioning, equitable and resilient health systems, built on a foundation of primary health care.

### LURKING BLOOD PRESSURE POSES A HUGE HEALTH RISK IN INDIA

#### Why in news?

- The World Health Organization (WHO) released its first-ever report on the global impact of hypertension

Recently, highlighting the devastating consequences of this widespread, yet often neglected condition.

- The WHO report reveals that hypertension affects one in three adults worldwide, making it a significant global health concern. It is a condition that knows no boundaries, affecting people across age groups and geographical regions.



#### Details:

- The number of people living with hypertension has doubled from 650 million in 1990 to a staggering 1.3 billion in 2019, with nearly half of these unaware of their condition.
- According to the WHO report, nearly four out of five people with hypertension are inadequately treated. Scaling up coverage could avert 76 million deaths between 2023 and 2050.
- The report reveals a doubling of hypertension cases from 1990 to 2019, with over three-quarters of affected adults in low- and middle-income countries.

#### India's BP performance:

- A recent systematic review highlights the growing prevalence of hypertension in the country, particularly among younger adults and those from lower socioeconomic backgrounds.
- The research papers emphasise that a significant portion of hypertensive individuals in India remain undiagnosed. Lack of awareness about the condition and limited access to healthcare services are critical factors.
- The review examined how well hypertension is managed in India from 2001 to 2020. They found that only about 22.5% of people with high blood pressure had it under control in the most recent period from 2016 to 2020.
- The Cureus study showed that the number of people with high blood pressure in India increased from 20.4% to 22.8%, especially among those aged 15-49.
- While more cases are being found through screening, many people (around 58%) with high blood pressure don't know they have it, especially men, those with less education and money, tribal communities, and people living in rural areas.
- Even when people know they have high blood pressure, six out of ten do not start treatment, so there

is a need for interventions to change their health-seeking behaviour.

#### Lifestyle matters

- The WHO report underscores the role of modifiable risk factors in hypertension. Unhealthy lifestyle choices, such as a high-salt diet, lack of physical activity, and excessive alcohol consumption, increase hypertension risk.
- This echoes the findings of the Indian research, which also highlights the impact of lifestyle factors on hypertension prevalence. Sedentary lifestyles, poor dietary choices, and high stress levels contribute to the rising incidence of hypertension in India.
- The treatment gaps identified in the WHO report and the Indian studies have dire consequences, as uncontrolled hypertension can lead to life-threatening conditions.
- The WHO report emphasises the importance of lifestyle changes in lowering blood pressure, such as adopting a healthier diet, quitting tobacco, and increasing physical activity. It also highlights the role of affordable, widely available medications in effectively managing hypertension.

#### Way forward for India

- The Indian research papers complement these perspectives by stressing the need for improved hypertension control strategies.
- They reveal that despite awareness of their hypertension diagnosis, a significant portion of patients in India do not initiate treatment. This indicates challenges in treatment-seeking behaviour and need for educational and behavioural interventions.
- Despite a significant four-fold improvement in control rates over two decades, the rising prevalence of hypertension, especially among the poor and young adults, necessitates reevaluating national strategies.
- Southern States such as Kerala and Tamil Nadu show better control than the western and north/northeastern - States in India.
- The economic aspect of hypertension management is a vital focus area of the WHO report. It underscores that prevention, early detection, and effective management of hypertension are among the most cost-effective interventions.

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### LONG LOST WILD RELATIVE OF AYURVEDIC THERAPEUTIC PLANT CHOPCHINI REDISCOVERED IN ARUNACHAL PRADESH

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#### Why in news?

- The long-lost plant species, Smilax turbans, a wild counterpart of a plant that possesses anti-inflammatory properties and enhances the functioning of the immune system, has been rediscovered during a search in the pristine forests of Arunachal Pradesh.



### Chopchini:

- The discovery which was made almost a century after its first collection, represents a wild counterpart of the renowned Ayurvedic therapeutic plant Chopchini (*Smilax china*).
- Chopchini belonging to the family Smilacaceae is recognised for its capacity to purify the bloodstream, eliminate harmful substances, treat inflammatory diseases and enhance overall well-being.
- All these characteristics along with beneficial effects on reproductive health and the gastrointestinal system render Chopchini a highly valuable botanical resource for traditional Ayurvedic therapy.
- Across the globe, there exists a total of approximately 262 distinct species, whereas, in India, they are represented by 39 species.

### Smilax turbans:

- Among the 39 species, *Smilax turbans*, first came to light in the early 20th century when it was described by the scientists F.T. Wang & Tang, based on the specimens collected during 1911–1928 by the botanists I. H. Burkill, and F. Kingdon-Ward, during their explorations in Arunachal Pradesh.
- After its initial identification, the plant seemingly vanished from the scientific records and remained hidden from the world for an astonishing 95 years.
- Recently, this species blooming in the secluded regions of Kurung Kumey District in Arunachal Pradesh. This discovery occurred approximately 500 km from its previously documented habitat.

### Significance:

- The rediscovery of *Smilax turbans* is not only a scientific milestone but also holds immense ecological importance. The researchers will now explore the role of this native species, in the local ecosystem, its interaction with other flora and fauna.
- Furthermore, the findings could potentially have implications for medicinal research, as various *Smilax* species have been known for their therapeutic properties in traditional medicine.

### Way Forward:

- To protect the recently discovered plant from any risks and assure its long-term survival, a comprehensive

report is being compiled for the forest department of Arunachal Pradesh.

- The report suggests ways of examining and preserving *Smilax turbans* within their indigenous environment while also conducting rigorous surveillance of its population dynamics and ecological interrelationships.

## RICHNESS OF HUMAN MILK



### Why in news?

- A new finding about the carefully tailored richness of human milk has shed light on the importance of myo-inositol, a cyclic sugar alcohol.

### Details:

- The levels of myo-inositol are high over the first two weeks of lactation and gradually taper off over a period of a few months. In the early stages, the brain of the newborn is a site of rapid 'wiring', as synapses (or connections between nerve cells) are formed in profusion.
- Proper synapse formation during early development lays the foundation for cognitive development; inadequate synapse formation leads to development difficulties in the brain.
- The researchers also matched their findings on myo-inositol induced synapse abundance in cultured rat neurons in test tubes. Here too, myo-inositol promoted the formation of synapses between neurons.

### Myo-inositol:

- Myo-inositol is a cyclic sugar-alcohol, about half as sweet as sugar. It is abundant in the brain, where it mediates the response to several hormones.
- The body needs inositol to form cell membranes.

### Sources:

- The body makes myo-inositol from glucose, mostly in the kidneys. However, our body's requirements go up along with the intake of coffee and sugar, and in conditions such as diabetes.
- The bran of grains and seeds contains a precursor of inositol, phytic acid. Almonds, peas and cantaloupes are also rich sources.
- In animal models of diabetes, adding myo-inositol back to the diet of inositol-deprived mice helps

prevent cataract formation and other complications associated with diabetes.

#### Other constituents of human milk:

- An essential nutrient, an Omega-3 fatty acid called docosahexaenoic acid (or DHA), varies depending on the food the pregnant mother has been eating.
- The DHA levels vary in the lactating mother's milk across nations—2.8% in mainland China, 1% in Japan, around 0.4-0.2% in Europe and the U.S., and only 0.1% or so in several developing countries.

#### Necrotizing enterocolitis (NEC):

- Necrotizing enterocolitis (NEC) is a severe gastrointestinal condition that impacts premature or extremely low birth weight infants.
- Symptoms include inadequate feeding, abdominal bloating, multiorgan failure, and can be fatal. Risk factors consist of bottle-feeding, prematurity, and low birth weight (1.5 kg or less).
- The condition arises from a combination of compromised blood flow and intestinal infection. The NEC can be prevented by the utilisation of breast milk and probiotics. Nearly 10% of premature babies develop NEC, with a quarter of affected infants succumbing to the disease.
- The intestines of premature babies do not produce enough IL-22, which is involved in protecting us from microbial infections.

### INDIANS EAT MORE SALT THAN WHO RECOMMENDATION



#### Why in news?

- The estimated mean daily salt intake in India stands at 8 g (8.9 g a day for men and 7.1 g a day for women) against the World Health Organization (WHO) recommendation of up to 5 g daily, according to a recent survey by the Indian Council of Medical Research (ICMR).

#### Details:

- The salt intake was significantly higher among men, those in rural areas and overweight and obese respondents.
- The study, carried out as part of the National Non-communicable Disease Monitoring Survey in India,

noted that the sample population had a low perception of the harmful effects of high salt intake and practices to limit consumption.

#### Key Highlights:

- The salt intake was higher in employed people (8.6 g) and tobacco users (8.3 g) and those with high blood pressure (8.5 g).
- It specifies that reducing the intake is a beneficial and cost-effective way to bring down elevated blood pressure by 25% and advocates a 30% reduction in mean population salt intake by 2025.
- It found that less than half of the participants practised measures to control dietary salt intake and the most commonly adopted step to prevent salt overdose was avoiding meals outside home.

#### Cardiovascular disease:

- Cardiovascular diseases account for an estimated 28.1% of the total deaths in India. In 2016, 1.63 million deaths were attributable to hypertension as against 0.78 million deaths in 1990, the study said.

#### Dietary sodium intake:

- The study was conducted in a nationally representative sample wherein dietary sodium intake was estimated from spot urine samples, a validated method used to assess dietary sodium intake.
- The population mean was calculated using sampling weights; thus, the study findings could be generalised at a population level and used to plan and implement dietary salt control measures.

### CULTURE

#### KARNATAKA SACRED ENSEMBLES OF HOYSALAS INSCRIBED ON UNESCO WORLD HERITAGE LIST



#### Why in news?

- Recently, the Sacred Ensembles of the Hoysalas, which includes three temples in Karnataka, has been inscribed on the UNESCO's World Heritage List.
- Earlier, Rabindranath Tagore's Santiniketan, the university town in West Bengal, was also included as a world heritage site.

**Sacred Ensembles of Hoysala at Belur:**

- Located in the Hassan district of Karnataka, the Hoysala temples of Belur are renowned for their exquisite architecture and intricate stone carvings.
- The temples depict the architectural prowess of the Hoysala dynasty, which ruled over the region between the 10th and 14th centuries. Chennakesava Temple which is one of the most significant temples was constructed by King Vishnuvardhana of the Hoysala dynasty in the 12th century to commemorate his victory over the Cholas.
- The other temples part of the Sacred Ensembles of Hoysala at Belur are Kappe Chennigaraya Temple, Veeranarayana Temple, and Ranganayaki Temple which are relatively smaller in size than Chennakesava Temple but are famous for their architectural marvel.

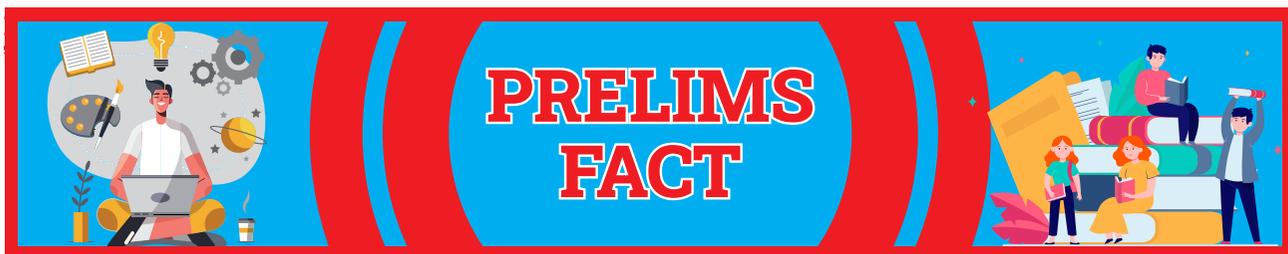
**Sacred Ensembles of Hoysala at Halebid:**

- Intricate carvings, finely detailed sculptures, and star-shaped architectural plans are the prime features of Sacred Ensembles of Hoysala at Halebid.
- The main Hoysaleswara temple was built in the 12th century during the reign of King Vishnuvardhana and is dedicated to Lord Shiva and the second Kedareshwara Temple showcases remarkable Hoysala architecture and stone carvings.

**41 UNESCO World Heritage Sites in India 2023:**

- **Ajanta Caves:** This is well-known for their Buddhist rock-cut cave art. It is lavishly brightened with artworks and frescoes like Sigiriya paintings.
- **Sun Temple:** This is well-known for its traditional Kalinga architecture.
- **Ellora Caves:** These are home to Hindu and Jain monasteries and temples. These caves were uncovered out of Hills, and it is a stone cut architecture.
- **Taj Mahal:** This is one of the Seven Wonders of the World. This structure was built in honour of King Shahjahan's third wife, Begum Mumtaz Mahal.
- **Agra Fort:** Another one of the Mughal empire's most notable monumental structures is Agra Fort, located in Agra, UP.
- **Mahabalipuram Monuments:** Built by the Pallava dynasty which ruled the region between 6th and 9th centuries CE, the group of monuments there consists of rock-cut cave temples, monolithic temples, bas-relief sculptures, and structural temples as well as the excavated remains of temples.
- **Kaziranga National Park:** This park has the world's two-third population of the rare one-horned rhinoceroses. It has the most dense population of tigers on the planet, swamp deer, wild water buffalo, elephants and the park is likewise regarded as the significant Bird region.
- **Keoladeo National Park:** This Park is a well-known hotspot for Ornithologists, man-made Wetland Bird Sanctuary and Siberian Cranes.
- **Manas Wildlife Sanctuary:** This sanctuary is renowned for Biosphere Reserve, Project Tiger Reserve and Elephant Reserve.
- **Churches and Convents of Goa:** It is well-known for Rome of the Orient, Mannerist and Baroque Art Forms in Asia, First Manueline, First Latin Rite Mass in Asia.
- **Khajuraho Monuments:** This landmark is famous for a gathering of Jain and Hindu Temples. It is located 175 km southeast of Jhansi. Notable for their Nagara style symbolism, figures and models.
- **Hampi Monuments:** Prosperous realm of Vijayanagar. The ruins at Hampi portray the fine Dravidian style of art and architecture. The main legacy monument in this site is the Virupaksha Temple.
- **Fatehpur Sikri:** Its structure is of four fundamental monuments – the Jama Masjid, Panch Mahal of Jada Baai ka Mahal, The Buland Darwaza, Diwane:Khas, and Diwan:eaam.
- **Pattadakal Monuments:** The Chalukya style of architecture, which originated in Aihole and merged with Nagara and Dravidian styles, is what makes Pattadakal Monuments so popular.
- **Elephanta Caves:** It is well known for Buddhist and Hindu caves. It is located on an island in the Arabian Sea. It has Shiva Temples and Rock Caves.
- **Great Living Chola Temples:** This temple is famous for Painting, Chola Architecture, Sculpture, and Bronze Casting.
- **Sundarbans National Park:** This Park is well known as Bengal Tiger, Biosphere Reserve, Largest Estuarine Mangrove Forest and Salt:Water Crocodile.
- **Humayun's Tomb:** First substantial example of Mughal architecture in India, tomb of Humayun, second Mughal Emperor of India, was built by his widow, Biga Begum (Hajji Begum), in 1569:70, 14 years after his death
- **Nanda Devi & Valley of Flowers National Park:** It is well known for Asiatic Black Bear, Brown Bear, Snow Leopard, Blue Sheep, and Himalayan Monal, World Network of Biosphere.
- **Monuments of Buddha:** It is famous for Palaces, Monasteries, Temples, Mauryan Architecture, Monolithic Pillars, Ye Dharma Hetu Inscriptions.
- **Qutub Minar and others:** Alai Darwaza, the Qutub Minar, the Alai Minar, the Qubbat:ul:Islam Mosque, the Tomb of Iltutmish, and the Iron Pillar are all included in the Qutub Minar and its Monuments.
- **Bhimbetka:** It is popular for Rock Paintings within Stone Age Inscriptions, Natural Rock Shelters, Sitting Place of Bhima (Mahabharata).
- **Mountain Railways of Darjeeling, Kalka Shimla & Nilgiri:** The mountain railways of India involve the Nilgiri Mountain Railway, Darjeeling Himalayan Railway, and the Kalka:Shimla.
- **Mahabodhi Temple:** A significant religious center for the Buddhists as here Mahatma Buddha accomplished

- edification. Bodh Gaya is considered as the holiest journey spot for the Buddhists.
- ⇒ **Chhatrapati Shivaji Terminus:** Became popular after the terror attacks on Mumbai in 2008, central Railways Headquarters, Gothic Style Architecture.
  - ⇒ **Champaner Pavagadh Archaeological Park:** This spot is the only complete and unaltered Islamic pre-Mughal city. The recreation area also houses a portion of the old Chalcolithic Indian Sites from the Stone Age era.
  - ⇒ **Red Fort:** It is well known for Shahjahanabad, Red Sandstone Architecture, Persian, Timuri and Indian Architectural Styles, Moti Masjid.
  - ⇒ **Jantar Mantar:** Renowned for Architectural Astronomical Instruments, Largest of its kind Observatory, Maharaja Jai Singh II.
  - ⇒ **The Western Ghats:** Well known among world's ten "Hottest Biodiversity Hotspots". It involves numerous Reserve Forests, Wildlife Sanctuary, and National Parks.
  - ⇒ **Great Himalayan National Park:** It is home to around 375 fauna species and a few floral species, including some very interesting types of plants and creatures like blue sheep, snow leopard, Himalayan brown bear, Himalayan Tahr, musk deer spruces, horse chestnuts, and huge alpine meadows. It is a part of the Himalayan Biodiversity Hotspots.
  - ⇒ **Hill Forts:** This location is well-known for the distinctive Rajput military defense architecture that it has. It consists of six magnificent posts for Kumbhalgarh, Ranthambore Fort, Gagron Fort, Chittorgarh, Amber Fort, and Jaisalmer Fort.
  - ⇒ **Rani Ki Vav:** It is a unique example of fine Old Indian architecture which was developed during the Solanki dynasty.
  - ⇒ **Nalanda:** A centre of training and a Buddhist monastery from the 3rd century BCE to the 13th century CE.
  - ⇒ **The Historic City:** It is a walled city on the Sabarmati River where Hindu, Muslim, and Jain communities have coexisted for centuries.
  - ⇒ **Khangchendzonga National Park:** This is famous for its fauna and flora and snow leopards are sometimes seen there.
  - ⇒ **Architectural Work of Le Corbusier (Capitol Complex):** Perceived as a World Heritage Site as a component of an exceptional commitment to Modern Development.
  - ⇒ **Victorian Gothic and Art Deco Ensembles:** It is an assortment of 94 structures of extraordinary cultural importance, located in the Fort Area of Mumbai.
  - ⇒ **Dholavira:** Dholavira is an architectural site arranged in the Kutch area of Gujarat. It is one of the most noticeable Indus Valley Civilisation sites.
  - ⇒ **The Pink City:** Jaipur is home to numerous wonderful palaces, temples, forts, and museums and furthermore filled to the edge with local handicrafts and trinkets.
  - ⇒ **Kakatiya Rudreshwara (Ramappa) Temple:** The Ramappa Temple is arranged in Palampet Town, Telangana. The temple is assessed to be no less than 800 to 900 years old. The temple is particularly known for lightweight porous bricks which are known as floating blocks.
  - ⇒ **Santiniketan:** It is the cultural and educational center established by Nobel laureate Rabindranath Tagore that has procured a prestigious spot on UNESCO's World Heritage List.



## POLITY & GOVERNANCE

### GOVT CALLS SPECIAL FIVE-DAY SESSION OF PARLIAMENT FROM SEPTEMBER 18



#### Why in news?

- ⇒ The government will convene a special session of Parliament for five days between September 18 and 22.
- ⇒ The special session, the 13th of the 17th Lok Sabha and 261st of the Rajya Sabha, would have five sittings.

#### Parliamentary sessions:

- ⇒ Three parliamentary sessions are usually held annually; the Budget, monsoon, and winter sessions.
- ⇒ The 17th Lok Sabha is left with only the winter session and a truncated Budget session in February for a vote on accounts.
- ⇒ According to the Constitution, Parliament should have a minimum of two sessions in a year, and the gap between two sessions should not be more than six months.
- ⇒ A special session until September 22 would allow the government the option of skipping the winter session and holding a truncated session in the latter half of February, the last session of the 17th Lok Sabha before it gets dissolved.

#### Earlier Special sessions:

- ⇒ There have been several special sessions, but mostly to do with the Rajya Sabha, such as its 33rd Session (1961) of Rajya Sabha for passing the Budget of Orissa, which was under the President's Rule, or 99th Session on February 28-March 1, 1977, at the time the Lok Sabha stood dissolved, for extension of the President's Rule in Tamil Nadu and Nagaland.
- ⇒ The Rajya Sabha's 158th session on June 3-4 1991 was held to approve the President's Rule in Haryana since the country had the Lok Sabha elections at the time.

- ⇒ In August 1997, a six-day special session to commemorate the 50th anniversary of India's independence was held.

#### Assembly polls:

- ⇒ The special session will be held barely a fortnight before the Election Commission is likely to announce the poll dates for Telangana, Mizoram, Rajasthan, Madhya Pradesh, and Chhattisgarh Assembly polls.
- ⇒ The terms of these Assemblies end in January 2024; Chhattisgarh on January 3, MP on January 6, Rajasthan on January 14, and Telangana on January 16. The term of the Mizoram Assembly ends on December 17.

### CABINET APPROVES THE SCHEME TITLED VIABILITY GAP FUNDING FOR DEVELOPMENT OF BATTERY ENERGY STORAGE SYSTEMS (BESS)



#### Why in news?

- ⇒ Recently, the Union Cabinet, approved the Scheme for Viability Gap Funding (VGF) for development of Battery Energy Storage Systems (BESS).
- ⇒ The approved scheme envisages development of 4,000 MWh of BESS projects by 2030-31, with a financial support of up to 40% of the capital cost as budgetary support in the form of Viability Gap Funding (VGF).

#### Aim:

- ⇒ Designed to harness the potential of renewable energy sources such as solar and wind power, the scheme aims to provide clean, reliable, and affordable electricity to the citizens.

#### Key Highlights:

- ⇒ The VGF for development of BESS Scheme, with an initial outlay of Rs.9,400 crore, including a budgetary support of Rs.3,760 crore, signifies the government's commitment to sustainable energy solutions.

- By offering VGF support, the scheme targets achieving a Levelized Cost of Storage (LCoS) ranging from Rs. 5.50-6.60 per kilowatt-hour (kWh), making stored renewable energy a viable option for managing peak power demand across the country.
- The VGF shall be disbursed in five tranches linked with the various stages of implementation of BESS projects.
- To ensure that the benefits of the scheme reach the consumers, a minimum of 85% of the BESS project capacity will be made available to Distribution Companies (Discoms).
- This will not only enhance the integration of renewable energy into the electricity grid but also minimize wastage while optimizing the utilization of transmission networks. Consequently, this will reduce the need for costly infrastructure upgrades.

#### Transparency:

- The selection of BESS developers for VGF grants will be carried out through a transparent competitive bidding process, promoting a level playing field for both public and private sector entities.
- This approach will foster healthy competition and encourage the growth of a robust ecosystem for BESS, attracting significant investments and generating opportunities for associated industries.

#### Way Forward:

- The move is expected to bring down the cost of battery storage systems increasing their viability.

### PANCHAYATS IN RAJASTHAN TO TAKE UP LIVELIHOOD PROGRAMMES IN VILLAGES



#### Why in news?

- The empowerment of Panchayati Raj Institutions in Rajasthan has enabled the village panchayats to take up livelihood programmes, in addition to their routine works for sanitation and creation of infrastructure.
- The three-tier Panchayati Raj structure in the State will also ensure an active participation of the public at large.

#### Mission Rajasthan-2030:

- The state government's vision document would add diverse functions to village panchayats and enable

them to play a meaningful role in the development of rural areas.

- The vision document forms part of 'Mission Rajasthan-2030' aiming to establish Rajasthan as the country's top State by 2030.

#### Recommendations for vision document:

- Each village panchayat would be equipped to launch poverty alleviation programmes and take new initiatives for health, education, women's security, children's growth and environment protection.
- The panchayats will also assist the women's self-help groups in their operations.
- A recommendation was made for linking women's self-help groups with the private industries to enable their products to compete in the market on their own on the basis of their quality.
- Other suggestions received for the vision document pertained to rain water harvesting, development of pasture land in each village panchayat area, superimposing hydrology and meteorology data on the revenue maps, selection of specific industries for entrepreneurs in villages and connecting the rural livelihood programmes with nutrition and school uniforms.

### WEST BENGAL UNVEILS EDUCATION POLICY, STRESSES ON THREE-LANGUAGE FORMULA



#### Why in news?

- The West Bengal government has come up with a State Education Policy, 2023, recommending Bangla as a subject along with a three-language formula for Classes V to VIII.
- The policy takes note of the federal spirit of the country's Constitution and seeks to "avoid over-centralisation in education."

#### Three-language formula:

- The three-language formula for Classes V to VIII lays stress on the mother tongue of the students.
- It is suggested that the first language (mother tongue) would be the medium of instruction of the school e.g. Nepali in Nepali-medium school, Santhali in Santhali-medium school, Rajbanshi in Rajbanshi-medium school, Bengali in Bangla-medium school.

**Key Highlights:**

- The State's Education Policy has rejected changing the school structure to a 5+3+3+4 system from the existing model because it advocates abolishing the Class X board examination.
- The present structure of school education in West Bengal follows a 5+4+2+2 pattern. It is proposed that the same structure should continue to be followed in the State.
- Another key recommendation is to introduce the semester system from Class VIII in a phased manner over the next three years.
- On higher education, the new policy recommends increasing gross enrolment ratio and sharing of resources between universities and colleges.
- Recommending earmarking 6% of the GDP for education, the policy document urges the Centre to "help the State governments allocate a relative share of State GDP for education since education is in the concurrent list of the Constitution".
- The State's education policy is being envisaged for the next 13 years.

**Background:**

- The panel consulted various education policies, including reports on the National Education Policy (NEP), 2020, and the recently published report of the task force for NEP implementation in Maharashtra, and the report on NEP by Kerala.
- West Bengal on May 31, 2023 had announced that it will accept NEP, particularly in colleges and universities run and aided by the State government.
- However, in school education, the government differed on various fronts, including the necessity of having a Class X board examination (Madhyamik examination). The three-language policy is in tune with the NEP.

### NEVA DIGITAL HOUSE PROJECT OF GUJ LEGISLATIVE ASSEMBLY

**Why in news?**

- Recently, the President of India launched the National e-Vidhan Application (NeVA) Digital House project of the Gujarat legislative assembly in Gandhinagar.

**Details:**

- The NeVA project, inspired by Prime Minister's visionary concept of 'One Nation, One Application,' is a significant step towards making the Assembly proceedings entirely paperless.

**About NeVA:**

- The National e-Vidhan Application (NeVA) is a Unicode-compliant software developed to make all legislative body work and data available online for usage by both citizens and Assembly members. NeVA also includes a website and a mobile app.
- This software allows for simple access to many documents such as the list of questions, list of businesses, and reports, among others.
- NeVA also embodies the concept of 'One Nation, One Application' with the objective of Cloud First and Mobile First to serve Members FIRST.

**Background:**

- Prime Minister proposed a 'One Nation, One Legislative Platform' in November 2021.
- Till now, 21 State legislatures have signed a Memorandum of Understanding for the implementation of the NeVA and the project has been sanctioned for 17 Legislatures and funds have been released to them for implementation of the project.
- Among them, 9 Legislatures have already become fully digital and are live on the NeVA platform. They are conducting all their business end to end in a digital and paperless manner.

### WHAT IS THE NATIONAL JUDICIAL DATA GRID AND HOW IT COULD HELP COURTS

**Why in news?**

- The Supreme Court recently onboarded its case data on the National Judicial Data Grid.
- The NJDG portal is a national repository of data relating to cases instituted, pending and disposed of by the courts across the country.

**What is the National Judicial Data Grid?**

- NJDG is a database of orders, judgments and case details of 18,735 District and subordinate Courts and High Courts created as an online platform under the eCourts Project.

- Its key feature is that the data is updated in real-time and has granular data up to the Taluka level.

### Who runs the NJDG?

- The NJDG was built as part of Phase II of the e-Courts project, which is a Centrally Sponsored Scheme. With over 18,735 courts computerised across the country, the data is integrated with the NJDG.
- The platform has been developed by the National Informatics Centre (NIC) in close coordination with the in-house software development team of the Computer Cell, Registry of the Supreme Court with an interactive interface and analytics dashboard.
- Currently, litigants can access case status information of 23.81 crore cases and more than 23.02 crore orders/judgments.

### How does the data help?

- NJDG works as a monitoring tool to identify, manage & reduce pendency of cases. Take, for instance, the Supreme Court data.
- For the year 2023, the total pendency of registered cases in SC is 64,854. But the Cases instituted last month were 5,412 while cases disposed of in the last month were 5,033. This shows that the pendency in SC is largely due to legacy cases since the Court is currently disposing of approximately the same number of cases filed on an annual basis.
- It also helps identify specific bottlenecks in judicial processes. For example, if the number of land disputes in a particular state shoots up, it helps policymakers look into whether the law needs to be strengthened.
- The apex court has less than a hundred cases pending before 2000 and it gives data tools to the Chief Justice to re-organise work and dispose of the oldest cases.
- It also helps generate inputs related to particular areas of law. For example, to track cases related to land disputes, Land Records data of 26 States have been linked with NJDG.

## MAHARASHTRA CABINET ANNOUNCES RS. 45,000 CR. FOR DEVELOPMENT OF DROUGHT-HIT MARATHWADA

**Hefty package**  
Allocations and projects in the comprehensive package for the development of Marathwada region, comprising eight districts

**₹14,000 crore** revised administrative sanctions for irrigation projects; 8 lakh hectares to be brought under irrigation

**₹1,076 crore** for works associated with empowerment of women; 12 lakh women expected to benefit

**₹485 crore** fund sanctioned to set up a medical college in Hingoli

**₹10 crore** allocation for a new ITI incubation centre in Jalna district

**New agricultural colleges** in Nanded, Soyegaon, and Parli

**Conservation project** for 'Red Kandhari' and 'Devni' cows at Ambajogai in Beed

**Civil court** at Sillod in Chhatrapati Sambhajnagar

**Soybean research centre** at Parli in Beed district



MAHARASHTRA  
Marathwada region

### Why in news?

- Maharashtra Chief Minister announced a ₹45,000-crore package for the development of the drought-hit Marathwada region in the State.

### Key Highlights:

- A package of ₹45,000 crore will be given for the development of Marathwada. Revised administrative sanctions worth ₹14,000 crore will be given for irrigation projects. This paves the way for bringing eight lakh hectares under irrigation.
- Earlier, the Chief Minister reiterated his ambition to achieve a \$1-trillion State economy, with the country aiming to achieve a \$5-trillion economy.

### Marathwada:

- The decision to implement various projects was taken during the first Cabinet meeting held in Marathwada's Chhatrapati Sambhajnagar, formerly known as Aurangabad, after a gap of seven years to commemorate the 75th anniversary of Marathwada Mukti Sangram (Marathwada freedom struggle).
- The region, consisting of Chhatrapati Sambhajnagar, Nanded, Latur, Jalna, Beed, Parbhani, Dharashiv (formerly known as Osmanabad), and Hingoli districts, had been liberated from Nizam rule by Indian forces on September 17, 1948. The last such meeting was organised in the region in 2016.

## 'SKILLS ON WHEELS' INITIATIVE LAUNCHED



### Why in news?

- Recently, the Union Minister for Education and Skill Development & Entrepreneurship, launched 'Skills on Wheels' initiative with NSDC and IndusInd Bank with a flagging off ceremony.

### Objective:

- The objective of Skills on Wheels is to enable a large number of youth to take up industry-relevant skill training that will improve their theoretical as well as practical knowledge and help them in securing a better livelihood by bringing necessary synergy, oversight, and effective coordination.
- It aims to bridge the gap between the skilled people required in the industry and the unemployed youth by ensuring that the right candidate with a passion for a particular job chooses the right course according to his/her academic background, aptitude, and skill set.

**Key Highlights:**

- Under the collaboration, a customized bus with retrofitted tools will promote the 'Skill India Mission' initiative through 'Skills on Wheels' and will travel across the length and breadth of aspirational and backward districts.
- The initiative is aimed at spreading awareness at grass root level about free skill training programs enabling youth to profoundly change the trajectory of their lives through robust skill training.
- Aligned with this mission, this partnership with IndusInd Bank is aimed at empowering the youth of the nation through the 'Skills on Wheels' project.

**Way Forward:**

- Under the partnership, 60,000 youth will be empowered over a period of five years with the objective of improving livelihood of rural households by providing relevant skills training to its youth population.

### PANEL SUGGESTS GPS TRACKERS TO REDUCE OVERCROWDING IN PRISONS

**Why in news?**

- Recently, Parliamentary Committee on Home Affairs released a report titled 'Prison-Conditions, Infrastructure and Reforms'.
- A parliamentary panel has recommended ankle trackers or bracelets on prison inmates to reduce overcrowding in prisons.

**Details:**

- The Parliamentary Committee on Home Affairs, said that technology can be explored to produce cost-effective bracelets or anklet trackers that can be worn by the prisoners who have procured bail and are out of prison on bail.
- It said mostly bail is denied on three counts; the undertrial prisoner may influence or intimidate the witness or will try to leave the country or commit another crime.

**Overcrowding and delayed justice:**

- The panel noted that overcrowding and delayed justice has become a pressing concern, leading to a series of consequences for both the prisoners and the criminal justice system as a whole.

- It recommended that prisoners from overcrowded jails may be transferred to other jails with vacant cells in the same State or other States.

**Mobile phones:**

- Many State Prisons Departments had no jammers installed or they were capable of blocking only 2G and 3G network signals.
- The committee was informed that mobile phones are one of the major contraband articles that is most frequently smuggled into the prisons.

**NCRB data:**

- According to the prison statistics published by the National Crime Record Bureau for 2021, there are 1,319 prisons in India, with a total capacity of 4,25,609 prisoners.
- The actual inmates are 5,54,034 which shows that the occupancy capacity rate is 130.2%.
- Of the total inmates, the number of undertrial prisoners is 4,27,165 and the number of convicted prisoners is 1,22,852.
- The occupancy of women prisoners has been increased and the prisons are understaffed by approximately 30% of the required strength.

### HOUSE PANEL ASKS GOVT. TO MONITOR ACTIVITIES OF ESIC

**Why in news?**

- The Parliamentary Standing Committee (PSC) on Labour, has asked the Union government to strictly monitor the activities of the Employees State Insurance Corporation (ESIC), so that social security benefits reach more workers.

**Details:**

- In a report submitted in Parliament during the Special Session, the panel reviewed the ESIC's applicability and benefits under the Employees State Insurance Scheme (ESIS), functioning of ESI Hospitals, management of the corpus, and recommended guidelines for organising special awareness campaigns about the scheme.

**Key Highlights:**

- The panel said there is a need for reviewing the provisions relating to coverage, contribution,

- entitlement of wages, and the wage limit for coverage under the ESIS.
- ⇒ With the passage of time, wages have increased and the last revision of the wage ceiling was effected from January 1, 2017. The prevailing wage limit of ₹176 per day for exemption from paying contribution was effected from September 6, 2019.
  - ⇒ The panel recommended the setting up of an expert committee for suggesting the changes required in the provisions so that the coverage and the number of insured persons could be increased.
  - ⇒ The panel expressed concern that both the Labour Ministry and the ESIC are not fully geared to provide extended coverage as envisaged under the Code on Social Security.
  - ⇒ The Committee are of the considered view that preparatory work for implementation of the plan of action already identified by ESIC viz. conduct of extensive surveys; collection of data from Government Departments; identification of common business identifiers for establishments by the ESIC in consultation with EPFO; use of Aadhaar for identification of members/insured persons, etc. need to be undertaken in right earnest.

#### Gaps:

- ⇒ Considering the shortage of manpower and lack of proper infrastructure in the ESIC, the panel asked the Centre to fill up the vacancies in hospitals and dispensaries.
- ⇒ The ESIC had accorded approval for initial investment starting at 5%, and gradual increase up to 15% in Exchange Traded Funds (ETF). The expansion of the ESIC requires a substantial amount of funds.

### MINISTRY OF I&B INTRODUCES KEY AMENDMENTS TO CABLE TELEVISION NETWORK RULES, 1994



#### Why in news?

- ⇒ Recently, The Ministry of Information and Broadcasting issued a notification amending the Cable Television Network Rules, 1994, thereby introducing a procedure for the renewal of Multi-System Operator (MSO) Registrations.

- ⇒ In addition, an enabling provision has been inserted in the Rules for the sharing of infrastructure by the Cable Operators with Broadband Service providers to promote internet penetration to the last mile.

#### Salient features:

- ⇒ MSOs shall apply for the registration or renewal of registration online at the Broadcast Seva Portal of MIB.
- ⇒ MSO registrations shall be granted or renewed for a period of ten years;
- ⇒ The processing fee of Rs. One lakh is kept for the renewal of registration also;
- ⇒ The application for renewal of registration shall be within a window of seven to two months before the expiry of the registration.

#### Renewal procedure:

- ⇒ The renewal procedure is in line with the Government's commitment to ease of doing business as it will provide certainty to cable operators to continue their services without interruption and therefore make the sector attractive for foreign investment.
- ⇒ The MSOs whose registration is expiring within 7 months are required to apply online through the BroadcastSeva Portal.
- ⇒ Earlier, only fresh MSO registrations were granted under the Cable Television Networks Rules, 1994.

#### Way Forward:

- ⇒ The inclusion of a provision related to the sharing of infrastructure by Cable Operators with broadband service providers will provide the twin benefit of enhanced internet penetration and efficient utilization of resources.
- ⇒ It will also reduce the need for additional infrastructure for broadband services.

### LAW PANEL WORKING ON MECHANISM FOR SIMULTANEOUS POLLS



#### Why in news?

- ⇒ The Law Commission is working on a formula to synchronise all Assembly polls by extending or reducing the tenure so that all State elections can be held along with Lok Sabha polls from 2029 onwards.

➤ As the government has already set up a high-level panel to explore simultaneous polls for Lok Sabha, State Assemblies and local bodies, the Law Commission may also be asked to include the third tier of elections along with its current mandate for national and State-level polls.

#### Common electoral roll:

- The panel is devising a mechanism to ensure a common electoral roll for Lok Sabha, Assemblies and local bodies to reduce cost and use of manpower for undertaking an almost identical exercise which is carried out now by the Election Commission and various State Election Commissions.
- The Commission under Justice Ritu Raj Awasthi may suggest reducing or enhancing the tenure of Legislative Assemblies.
- A mechanism is being devised to ensure that once Lok Sabha and Assembly polls are synchronised, voters go to the polling booth only once to cast their ballot for both elections.
- As of now, the mandate of the Commission is to suggest ways to hold Assembly and Lok Sabha polls together.

#### Committee under former President:

- The high-level committee under former President Ram Nath Kovind has been tasked with recommending how Lok Sabha, Assembly and local body polls (panchayat, municipalities, zila parishad) can be held together.
- A suggestion the law panel can make is to hold the three-tier polls in two phases in one year. In the first phase, Lok Sabha and Assembly polls can be held; in the second phase, local body polls can be organised.

## INTERNATIONAL RELATIONS

### MODI PRESENTS A 12-POINT PROPOSAL TO EXPAND INDIA-ASEAN RELATIONS



#### Why in news?

- Envisaging an expansion in cooperation between India and 10-nation ASEAN, Indian Prime Minister presented an extensive 12-point proposal at the 20th ASEAN-India Summit in Indonesia.

➤ From connectivity and trade to digital transformation, the roadmap encompassed a slew of diverse areas.

#### Connectivity:

- Indian Prime Minister unveiled an ambitious multi-modal connectivity initiative at the just-concluded 20th ASEAN-India Summit in Indonesia.
- The initiative aims to link Southeast Asia, India, West Asia and Europe, which experts suggest could be an alternative to China's One Belt, One Road programme.

#### About the 12-point proposal by PM Modi:

- Establishing multi-modal connectivity and economic corridor that links South-East Asia-India-West Asia-Europe.
- Offer to share India's Digital Public Infrastructure Stack with ASEAN partners.
- ASEAN-India fund for Digital Future focusing on cooperation in digital transformation and financial connectivity.
- Renewal of support to Economic and Research Institute of ASEAN and East Asia (ERIA) to act as knowledge partner for enhancing engagement.
- Call for collectively raising issues being faced by Global South in multilateral for a.
- An invitation to ASEAN countries to join Global Centre for Traditional Medicine being established by WHO in India.
- Call for working together on Mission LiFE.
- Offer to share India's experience in providing affordable and quality medicines to people through Jan-Aushadhi Kendras.
- A call for collective fight against terrorism, terror financing and cyber-disinformation.
- Invitation to ASEAN countries to join Coalition for Disaster Resilient Infrastructure.
- Call for cooperation in disaster management.
- Call for enhanced cooperation on maritime safety, security and domain awareness.

#### East Asia Summit:

- Also addressing the East Asia Summit, a forum in the Asia-Pacific region to deal with issues relating to security and defence, he called for joint efforts to strengthen sovereignty and territorial integrity of all nations.
- He said India believes a code of conduct for South China Sea should be effective and compliant with the UN Convention on the Law of the Sea (UNCLOS).

#### What is ASEAN?

- On 8 August 1967, five leaders; the Foreign Ministers of Indonesia, Malaysia, the Philippines, Singapore and Thailand came together in Bangkok.
- Over the next few decades, five other countries joined them – Brunei Darussalam, Lao PDR, Cambodia, Myanmar and Vietnam.
- They have an anthem, a flag and biannual summits (twice a year) with a rotating chairmanship. An

example of the focus on unity, its official motto is "One Vision, One Identity, One Community".

- The ASEAN Declaration signed by the five leaders conveyed the aspiration to further regional cooperation. These were about cooperation in the economic, social, cultural, technical, educational and other fields, and in the promotion of regional peace and stability and adherence to the principles of the United Nations Charter. It stipulated that the Association would be open for participation by all States in the Southeast Asian region subscribing to its aims, principles and purposes.
- Its major pillars that help lay out a blueprint for cooperation are Political-Security Community (APSC), Economic Community (AEC) and Socio-Cultural Community (ASCC).

### What is India's link with ASEAN?

- ASEAN (Association of Southeast Asian Nations) is the "central pillar" of India's Act East Policy and the country fully supports the group's centrality and outlook on the Indo-Pacific.
- India is part of the ASEAN Plus Six grouping, which includes China, Japan, South Korea, New Zealand and Australia as well.
- In 2010, a Free Trade Agreement was also signed and entered into force between India and ASEAN.
- While India was part of negotiations to join the Regional Comprehensive Economic Partnership (RCEP) in 2020, it ultimately decided not to do so. However, in the past eight years, trade has grown in terms of value, barring the pandemic years of 2020 and 2021.
- ASEAN itself has recently faced issues that complicate coordination, such as the rise of China and its claims over the South China Sea (many of which compete with claims of ASEAN members like the Philippines) and the issue of military conflict in Myanmar.

## INDIA URGES SRI LANKA GOVERNMENT TO KEEP ITS PROMISES ON THE TAMIL ISSUE



### Why in news?

- India said the progress made by Sri Lanka, on its commitment to fulfill the Tamils' aspirations, was

"inadequate" and urged the island nation to "work meaningfully" to keep its promises.

### Details:

- The remark was made by India at the UN Human Rights Council in Geneva at its ongoing 54th session.
- The position was consistent with India's remarks in 2022 that voiced concern over the "lack of measurable progress".
- India's intervention at the 'Interactive Dialogue', comes in the wake of the latest report of the Office of the UN High Commissioner for Human Rights on 'Promoting reconciliation, accountability, and human rights in Sri Lanka'.

### Economic challenges:

- If the country's past is troubled, its present is marred by recent devastating financial meltdown that has left over half its population vulnerable.
- With soaring poverty levels and the enduring impact of the crisis, it has an estimated 37% of households faced acute food insecurity.
- Further, there are limits placed on citizen's political participation and free expression, owing to the delays in holding local government elections, and in reconstituting Provincial Councils under the 13th amendment to the Sri Lankan Constitution.
- There are escalating tensions in the island's north and east, due to land acquisition "for expansion of military installations, Buddhist heritage conservation at Hindu or Muslim sites, and forestry protection.

### India's stand:

- India reiterated its position on power devolution, citing its "two guiding principles" of support for the aspirations of Tamils for equality, justice, dignity, and peace; and for the unity, territorial integrity and sovereignty of Sri Lanka.
- India hoped that the Government of Sri Lanka will fulfil the aspirations of Tamils for equality, justice and peace and its commitment to implement the 13th Amendment and conduct Provincial Council elections to ensure a life of respect and dignity for Tamils in Sri Lanka.

## INDIA CAN NOW ISSUE OIML CERTIFICATES



**Why in news?**

- India has become an OIML certificate-issuing authority.
- The Legal Metrology Division, Department of Consumer Affairs, is now authorised to issue OIML certificates.

**What is the OIML?**

- The OIML stands for International Organisation of Legal Metrology.
- Established in 1955 and headquartered in Paris, the OIML is an international standard-setting body. It develops model regulations, standards and related documents for use by legal metrology authorities and industry.
- It plays a crucial role in harmonising national laws and regulations on the performance of measuring instruments like clinical thermometers, alcohol breath analysers, radar speed measuring instruments, ship tanks found at ports, and petrol dispensing units.

**When did India become a member of the OIML?**

- India became a member of the OIML in 1956. In the same year, India signed the metric convention.

**What is the OIML certificate?**

- The OIML-CS is a system for issuing, registering and using OIML certificates, and their associated OIML type evaluation/test reports, for instruments like digital balance, clinical thermometers, etc.
- With the addition of India, the number of countries authorised to issue OIML certificates has increased to 13.

**When did India apply to become an issuing authority?**

- India applied to become an OIML certificate-issuing authority in March 2023.

**How will this help the Indian economy?**

- The move is expected to help the Indian economy in several ways, including an increase in exports, earning of foreign exchange, and generation of employment.
- Besides, it will help in reducing redundancy and saving resources.

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### FRANCE AND GERMANY BACK EU ENLARGEMENT PROPOSAL

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**Why in news?**

- France and Germany, the two largest economies in the European Union, pushed new proposals for the enlargement of the 27-member bloc recently.
- The policy paper, put together by a group of 12 experts commissioned by the Europe Ministers of France and Germany was presented along the fringes of a European ministerial meeting.

**Details:**

- The paper, is in response to growing calls for expanding the EU, partly in response to Russia's invasion of Ukraine.



- It also looks at strengthening the rule of law and increasing the EU's capacity to act, proposing four different tiers of participation in the union.
- While Ukraine, the Western Balkans and Moldova are frontrunners for membership, a total of 10 countries are in the process of integrating EU law into their own laws, according to an EU website.

**Amendments to treaty:**

- The report also looks at how the EU can function more effectively with 30 plus members.
- Its proposals include capping the number of EU legislators, changing the voting mechanism by expanding majority voting (as opposed to unanimity) and enhancing the bloc's budget.
- In the absence of unanimous support to change the EU Treaty (which is needed for enlargement), the paper suggests a supplementary treaty among a willing subset of members, which would permit for differentiation across the EU.

**Differentiation:**

- Differentiation could lead to four different tiers, as per the document.
- The first would be an inner circle with membership of the Eurozone and Schengen Area, then the EU itself, then Associate Members (participating in the single market and adhering to common principles) and a finally, the European Political Community, a group cooperating with the EU but not bound by its law.

**Way Forward:**

- The proposals are expected to be discussed formally at a meeting of EU heads of state in Spain in October 2023.

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### I2U2 GROUP ANNOUNCES JOINT SPACE VENTURE

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**Why in news?**

- The I2U2 group of India, Israel, the United Arab Emirates and the United States have announced a new joint space venture which aims to create a 'unique space-based tool' for policymakers, institutions, and entrepreneurs.
- They announced a new joint space venture on the margins of the United Nations General Assembly in New York.



### Artemis Accords:

- Primarily using the space-based observation data and capabilities of the four I2U2 partner countries, this project aims to create a unique space-based tool for policymakers, institutions, and entrepreneurs, enabling their work on environmental and climate change challenges and furthering our cooperation in the applications of space data for the greater good of humanity.
- Grounded in the Outer Space Treaty of 1967 (OST), the Artemis Accords are a non-binding set of principles designed to guide civil space exploration and use in the 21st century.
- It is an American-led effort to return humans to the moon by 2025, with the ultimate goal of expanding space exploration to Mars and beyond.

### I2U2 Private Enterprise Partnership:

- On September 21, US signed a Memorandum of Understanding with the US-UAE Business Council, the UAE-India Business Council, and the UAE-Israel Business Council to create the I2U2 Private Enterprise Partnership.
- The new public-private partnership will 'work to increase awareness of the I2U2 initiative in business communities and support projects and other efforts that further the goals of the initiative'.

### Website:

- They also launched its website to enhance cooperation between the member countries and partnerships across the globe.

### About I2U2:

- I2U2 initiative is a new grouping of India, Israel, USA and UAE.
- In the grouping's name, 'I2' stands for India and Israel, whereas 'U2' stands for USA and the UAE.
- This is a great achievement which tells the geopolitical changes that happen in the region.
- This will not only revitalize and re-energize the system of alliances and partnerships around the world, but also stitch together partnerships that did not exist previously or were not utilized to their full extent.

## ECONOMY

### CENTRE ANNOUNCES 3 QUALITY CONTROL ORDERS FOR 7 NON-FERROUS REFINED METAL ITEMS



### Why in news?

- Recently, the Ministry of Mines has notified three Quality Control Orders (QCOs) for seven items.
- These QCOs mark the first technical regulations from Ministry of Mines under the BIS Act.

### Details:

- The QCO for Aluminium and Aluminium Alloys mandates compulsory certification under the appropriate Indian Standards (IS) for the domestic production and import of aluminium and aluminium alloy (ingots and casting); high purity primary aluminium ingot; aluminium alloy ingots for bearings; primary aluminium ingots for remelting; and aluminium ingots, billets and wire bars (EC grade).
- The remaining two QCOs provide appropriate IS standards for copper and for nickel powder.

### Significance:

- The development of mandatory QCOs help curb the import of sub-standard products, prevent unfair trade practices, and ensure supply of quality products to the domestic consumers including industrial users.
- The notified QCOs will ensure the standard and quality of aluminium metal and alloys, copper and nickel to the benefit of the user industry.
- The QCOs will ensure Indian product quality in these items akin to global standards, and enhance the brand value of 'Make in India' in the international market.

### DRAFT GUIDELINES FOR PREVENTION AND REGULATION OF DARK PATTERNS

### Why in news?

- The Department of Consumer Affairs has sought public comments on Draft Guidelines for Prevention and Regulation of Dark Patterns.



### Objective:

- The objective of the Guidelines is to identify and regulate such practices which tend to manipulate or alter consumer choices, often by using deceptive or misleading techniques or manipulated user interfaces/web designs.

### Details:

- The draft Guidelines for Prevention and Regulation of Dark Patterns have been framed after detailed deliberations with all stakeholders including e-commerce platforms, law firms, Government and Voluntary Consumer Organizations (VCO's).
- Based on these deliberations and draft Guidelines submitted by the Task force to the Department of Consumer Affairs, present Draft Guidelines for prevention and regulation of dark patterns have been drafted and are now being put up for public consultation.
- Proposed Guidelines shall be issued under section 18 (2) (1) of the Consumer Protection Act 2019.

### What is dark patterns?

- The draft guidelines define dark patterns as
  - a) any practices or deceptive design patterns using UI/UX (user interface/user experience) interactions on any platform;
  - b) designed to mislead or trick users to do something they originally did not intend or want to do;
  - c) by subverting or impairing the consumer autonomy, decision making or choice;
  - d) amounting to misleading advertisement or unfair trade practice or violation of consumer rights.

### Under the Guidelines, following Dark patterns have been specified:

- False Urgency means falsely stating or implying the sense of urgency or scarcity so as to mislead a user into making an immediate purchase or take an immediate action, which may lead to a purchase.
- Basket sneaking means inclusion of additional items such as products, services, payments to charity/donation at the time of checkout from a platform, without the consent of the user, such that the total amount payable by the user is more than the amount payable for the product(s) and/or service(s) chosen by the user.

- Confirm shaming means using a phrase, video, audio or any other means to create a sense of fear or shame or ridicule or guilt in the mind of the user, so as to nudge the user to act in a certain way that results in the user purchasing a product or service from the platform or continuing a subscription of a service.
- Forced action shall mean forcing a user into taking an action that would require the user to buy any additional good(s) or subscribe or sign up for an unrelated service, in order to buy or subscribe to the product/service originally intended by the user.
- Subscription trap means the process of making cancellation of a paid subscription impossible or a complex and lengthy process including similar other practices.
- Interface interference means a design element that manipulates the user interface in ways that (a) highlights certain specific information; and (b) obscures other relevant information relative to the other information; to misdirect a user from taking an action desired by her.
- Bait and switch means the practice of advertising a particular outcome based on the user's action but deceptively serving an alternate outcome.
- Drip pricing means a practice whereby elements of prices are not revealed upfront or are revealed surreptitiously within the user experience; and/or other such practices
- Disguised advertisement means a practice of posing, masking advertisements as other types of content such as user generated content or new articles or false advertisements.
- Nagging shall mean a dark pattern due to which users face an overload of requests, information, options, or interruptions; unrelated to the intended purchase of goods or services, which disrupts the intended transaction.

### Way Forward:

- The proposed Guidelines seek to oversee such practices which are prejudicial to the consumer interests.
- The proposed guidelines will further strengthen the industry and protect consumer interests.

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## NPCI LAUNCHES VOICE-ENABLED UPI PAYMENTS

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### Why in news?

- Recently, the National Payments Corporation of India (NPCI) launched a slew of new payment features to enable more digital inclusivity.

### New products:

- The new products include a credit line on UPI, UPI Lite X for offline payments and a near field communication (NFC)-enabled Tap & Pay feature, conversational payments through Hello! UPI and conversational bill payments with BillPay Connect.



- ⇒ UPI will allow users to pay for transactions through credit through its new credit line service by connecting pre-sanctioned digital credit lines from banks. Also, the payment flow will be the same as the existing UPI transactions.
- ⇒ Third-party payment providers HDFC PayZapp, Paytm, and Google Pay will be the first to launch the 'credit line on UPI' service.

#### UPI Lite X and Tap & Pay:

- ⇒ UPI Lite X for offline payment will let users send and receive money while being completely offline. This will allow UPI transactions in flights, underground metro stations, and other merchant locations.
- ⇒ UPI Lite X is an extension of UPI Lite, which allows users to make small-ticket transactions without entering a pin.
- ⇒ The UPI Tap & Pay feature allows users to make near-field communication (NFC)-based payments. This follows the launch of new variants of Pine Labs and Paytm's point-of-sale (PoS) devices that allow merchants to accept NFC-based merchants.

#### Conversational Payments – Hello! UPI & BillPay Connect:

- ⇒ Through the launch of Hello! UPI and BillPay Connect, NPCI will allow users to make voice-enabled UPI payments via UPI Apps, telecom calls, and IoT (Internet of things) devices in Hindi and English. NPCI is also looking to launch the service in regional languages as well.
- ⇒ Users will be able to fetch and pay their bills on a messaging app through the BillPay Connect feature. Also, users without smartphones or immediate mobile data access will be able to pay bills by giving a missed call.

### REVAMP MODE, RAILWAYS TO MAXIMISE UTILITY OF ITS PRIME LAND NEAR MAJOR STATIONS

#### Why in news?

- ⇒ The Indian Railways has decided to maximise the utility of its prime lands abutting railway stations by replacing decades-old sparsely distributed buildings with multi-storey structures.

- ⇒ The initiative is part of the mission to develop major railway stations and surrounding areas as city centres.



#### Key Highlights:

- ⇒ The circulating area and parking would be designed in such a manner that the valuation of commercial space in the station building does not get adversely affected on account of access and parking of vehicles.
- ⇒ The development plan would include an adequate number of elevators/escalators, electric vehicle charging points and other infrastructure keeping in view future growth and expansion.
- ⇒ Entire master plan should be well-designed for utilities and inter-connectivity between different components so that the station becomes the 'City Centre'.

#### Way Forward:

- ⇒ In view of the prime location of the station with respect to the city, it provides an opportunity to go for dense utilisation and redevelop the entire area in such a manner that the whole place becomes much more useful for the citizens and in turn brings value to railways.

### INDIA AND SAUDI ARABIA SIGN AGREEMENT ON COOPERATION IN ENERGY SECTOR



#### Why in news?

- ⇒ India and Saudi Arabia have signed a Memorandum of Understanding on cooperation in the field of energy.

**Areas of cooperation:**

- Renewable Energy, Energy Efficiency, Hydrogen, Electricity and Grid Interconnection between the two countries, Petroleum, Natural Gas, Strategic Petroleum Reserves and Energy Security.
- Encouraging bilateral investment in the field of Renewable Energy, Electricity, Hydrogen and Storage; and Oil & Gas.
- Circular Economy and its technologies to reduce the effects of climate change, such as: carbon capture, utilization and storage.
- Promoting digital transformation, innovation and cyber-security and artificial intelligence in the field of Energy.
- Working on developing qualitative partnerships between the two countries to localize materials, products and services related to all sectors of energy, supply chains and its technologies.
- Strengthening the cooperation with companies specialized in the field of energy.
- Any other fields related to the energy field that the two countries agree upon.

**Way Forward:**

- The MoU will develop a stronger partnership between India and Saudi Arabia in the field of energy.
- The MoU will support India's efforts for energy transition and transformation of global energy system towards combating climate change.

### NABARD PARTNERS WITH UNDP INDIA FOR DATA-DRIVEN INNOVATIONS IN AGRICULTURE

**Why in news?**

- Recently, the United Nations Development Programme (UNDP) India and the National Bank for Agriculture and Rural Development (NABARD) signed a Memorandum of Understanding to co-create data-driven innovations in agriculture and food systems to support smallholder farmers.
- Under the MoU, the organisations will work to improve lives and livelihoods of smallholder farmers by sharing open-source data for product development, transfer of technology and supporting the framing of agrarian policies.

**DiCRA:**

- The partnership aims at enhancing and disseminating collaborative digital public goods like DiCRA (Data in Climate Resilient Agriculture).
- DiCRA provides open access to key geospatial datasets pertinent to climate resilient agriculture.
- DiCRA, which is curated by UNDP and partner organisations to inform public about investments in agriculture, already provides intelligence on climate resilience for 50 million hectares of farmland across the country.
- NABARD will host and maintain the DiCRA platform and use its key geospatial datasets for policy making, research and development activities, with UNDP's technical support.

**Way Forward:**

- Such open data innovations can highlight best practices, optimise agriculture investments and shelter populations from various risks.
- The collaboration will strengthen support to build sustainable agricultural practices and secure livelihoods, reducing the vulnerability of small farm holders, especially women.

### SKILL INDIA DIGITAL LAUNCHED

**Why in news?**

- Recently, the Union Minister for Education and Skill Development and Entrepreneurship launched Skill India Digital (SID), a comprehensive digital platform aimed at synergizing and transforming the skills, education, employment, and entrepreneurship landscape of India.
- The platform embodies the aspirations and dreams of millions of Indians who seek better opportunities and a brighter future as it extends industry-relevant skill courses, job opportunities, and entrepreneurship support.

**Key Highlights:**

- SID is the Digital Public Infrastructure (DPI) for skilling, education, employment, and entrepreneurship ecosystem of India.
- Driven by the vision to make skill development more innovative, accessible, and personalized in

its embodiment, focusing on digital technology and Industry 4.0 skills, the state-of-the-art platform will be a breakthrough in accelerating skilled talent hiring, facilitating lifelong learning and career advancement.

- ➔ The platform aligns perfectly with the vision articulated in the G20 framework for building DPI and the digital economy to promote digital skills and digital literacy.
- ➔ It is also a comprehensive information gateway for all government skilling and entrepreneurship initiatives, a go-to hub for citizens in pursuit of career advancement and lifelong learning.

### Following elements will enhance SID platform and provide numerous benefits:

- ➔ Aadhaar/ AI based Facial Authentication
- ➔ Digital Verifiable Credentials (DVC)
- ➔ Artificial Intelligence (AI) and Machine Learning (ML) Recommendations
- ➔ Aadhaar based eKYC
- ➔ Digital Learning
- ➔ Citizen-Centric Approach
- ➔ Mobile-First Approach
- ➔ Scale and Speed
- ➔ Security Measures
- ➔ Interoperability
- ➔ WhatsApp Chatbot
- ➔ Ease of Doing Business

### Way Forward:

- ➔ The implementation of these features within a Skill India Digital skilling platform will revolutionize the skilling landscape in India, offering enhanced accessibility, personalized learning experiences, streamlined verification processes, and improved career guidance.
- ➔ It will enable learners to acquire relevant skills, stay updated with industry trends, and contribute to India's workforce development effectively.

## CABINET APPROVES EXPANSION OF UJJWALA YOJANA

**CABINET DECISIONS: 12 SEPTEMBER 2023**

### Extension of Pradhan Mantri Ujjwala Yojana

Cabinet approves extension of Pradhan Mantri Ujjwala Yojana

- 75 lakh LPG connections to be releases over three years
- Total financial implication of Rs.1650 crore
- Connections to be provided at following rates:
 

14.2 kg Single Bottle Connection	Rs.2200 per connection
5 kg Double Bottle Connection	Rs.2200 per connection
5 kg Single Bottle Connection	Rs.1300 per connection

### Why in news?

- ➔ The Union Cabinet has approved the extension of Pradhan Mantri Ujjwala Yojana (PMUY) for release

of 75 lakh LPG connections over three years from Financial Year 2023-24 to 2025-26.

### Details:

- ➔ Provisioning of 75 lakh additional Ujjwala connections will take total number of PMUY beneficiaries to 10.35 crore.
- ➔ As per the existing modalities of Ujjawala 2.0, the first refill and stove will also be provided free of cost to Ujjwala beneficiaries.
- ➔ A targeted subsidy of Rs.200 per 14.2 kg LPG cylinder for upto 12 refills per year is being provided to PMUY consumers. Without continuation of PMUY, eligible poor households may not be able to get their due benefit under the scheme.

### Women's ease of living through clean cooking

- ➔ According to the World Health Organization (WHO), approximately 2.4 billion people worldwide (which is around one-third of the global population), rely on open fires or inefficient stoves fuelled by kerosene, biomass (such as wood, animal dung, and crop waste), and coal for cooking.
- ➔ This leads to harmful household air pollution, contributing to an estimated 3.2 million deaths annually in 2020, with over 237,000 deaths being children under the age of 5.
- ➔ Achieving a sustainable and pollution-free future requires addressing the issue of household air pollution, especially to prevent suffering among women and children.
- ➔ Non-renewable wood fuels for cooking cause a gigaton of CO2 emissions, and burning residential solid fuels comprise 58 percent of black carbon emissions. They are also a significant contributor to household air pollution (HAP) due to incomplete combustion of solid biomass.

### Initiatives to expand LPG coverage:

- ➔ **PAHAL (Pratyaksh Hastantarit Labh):** Instead of providing LPG cylinders at subsidized price, those were sold at market price, and applicable subsidy was directly transferred to individual's bank account electronically.
- ➔ **GIVE IT UP:** Instead of removing subsidies forcefully, people were encouraged to voluntarily surrender their subsidies. Through extensive promotion, millions of people willingly gave up the subsidies, which helped redirect the funds to those who genuinely needed assistance in acquiring LPG cylinders.

## INDIAN GOVT LAUNCHES THE KISAN RIN PORTAL WITH THE WEATHER PORTAL WIND

### Why in news?

- ➔ Recently, Indian Finance Minister and Agriculture inaugurated the 'Kisan Rin Portal,' which aims to give farmers subsidised loans under the Kisan Credit Card (KCC) scheme to revolutionise the agriculture sector in the country.

- At the event at Pusa Complex, the government also launched the Weather Information Network Data Systems (WINDS) portal and a door to door KCC campaign.



**Kisan Rin digital platform:**

- It will offer a comprehensive view of farmer data, scheme utilisation progress, loan disbursement specifics, and interest subvention claims to increase seamless integration with banks for more effective and efficient agriculture credit.
- The door to door campaign will extend the benefits of KCC to non-KCC holders of beneficiaries of the central scheme PM-KISAN, under the scheme, the government will pay Rs 600 per annum to the beneficiary of the farmer's bank account.

**WINDS portal**

- The WIND portal was launched in July 2023 to leverage advanced weather data analytics to give stakeholders actionable insight to make informed weather decisions on agriculture.
- The portal also provides a comprehensive manual to stakeholders for an in-depth understanding of the portal functionalities, data interpretations and effective utilisation, empowering farmers, policymakers and various agricultural entities to make well informed decisions.
- The portal also shares the ministry's parametric crop insurance scheme, along with non-scheme parametric insurance programmes for crop risk mitigation and disaster risk reduction and mitigation being run by the insurance industry.

**WEB PORTAL FOR GENERAL CROP ESTIMATION SURVEY (GCES)**

**Why in news?**

- Recently, the Department of Agriculture and Farmers Welfare (DA&FW) launched the mobile application and the web portal for GCES (General Crop Estimation Survey).

**Key Highlights:**

- It has been developed by Department of Agriculture and Farmers' Welfare for leveraging technology to enhance the reach, scope, and outcome of government actions in the course of development.



- The automation of the GCES process will ensure on time reporting of crop statistics and accuracy of the data.
- The agencies involved in conducting CCE in different states are Revenue Department, Agriculture Department and Directorate of Economics & Statistics.

**Key Challenges Addressed:**

- Delay in Reporting: Till date data collection, compilation and yield estimation is completely manual process which cause delay in reporting by states. In the new process, the field data will be collected using GPS enabled mobile application and will be stored in the server which ensures on time reporting of crop statistics.
- Transparency: GPS enabled devices provide precise latitude and longitude coordinates for data collection points. This information ensures that data is linked to specific geographic locations, leaving no room for ambiguity or manipulation of data regarding where it was collected.

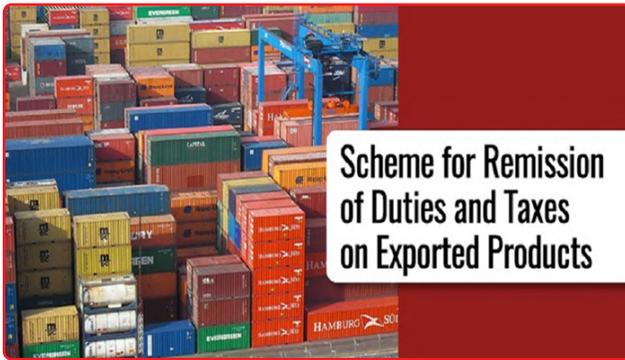
**Key Features:**

- Comprehensive Information: The portal and the app provide a comprehensive repository of yield estimation including village wise GCES plan and plot details where the crop cutting experiments are conducted, post harvesting crop weight and drriage weight of the crop.
- Geo-referencing: Geo-referencing is one of the key features of the mobile application, which enables the primary worker to draw the boundary of the experimental plot and upload photos of the plot as well as of the crops through it. This feature will ensure transparency and accuracy of the data as well.

**GOVERNMENT EXTENDS SUPPORT UNDER SCHEME FOR REMISSION OF DUTIES AND TAXES ON EXPORTED PRODUCTS (RODTEP)**

**Why in news?**

- The Scheme for Remission of Duties and Taxes on Exported Products (RoDTEP) support which was notified till 30th September 2023 is now being extended till 30th June 2024 at the same rates to the existing export items.



- ⇒ This will help exporting community to negotiate export contracts in the present international environment on better terms.
- ⇒ The Scheme is WTO compatible and is being implemented in an end-to-end IT environment.

#### **RoDTEP Committee:**

- ⇒ In line with the Scheme framework, the RoDTEP Committee has again been constituted in the Department of Revenue to review and recommend the ceiling rates under the RoDTEP Scheme for different export sectors.

#### **About RoDTEP Scheme:**

- ⇒ The RoDTEP Scheme was introduced by the Government as a duty remission scheme on exports and is being implemented from 1st January 2021.
- ⇒ The Scheme provides a mechanism for reimbursement of taxes, duties and levies, which are currently not being refunded under any other mechanism, at the central, state and local level, but which are incurred by the export entities in the process of manufacture and distribution of exported products.
- ⇒ Under the Scheme, a support of Rs. 27,018 crores has been extended for the 27 month period till 31.03.2023.
- ⇒ The RoDTEP scheme operates under a budgetary framework and for FY 23-24, a budget of Rs 15,070 crores is available to support 10610 HS lines at the 8 digit level.

### **MS SWAMINATHAN, FATHER OF INDIA GREEN REVOLUTION, DIES**



#### **Why in news?**

- ⇒ M.S. Swaminathan, the renowned Indian agricultural

scientist and the driving force behind India's Green Revolution, passed away recently.

- ⇒ Known as the "Father of Economic Ecology" by the United Nations Environment Programme, his groundbreaking work in the 1960s and 1970s revolutionised Indian agriculture, helping the country to stave off widespread famine and achieve self-sufficiency in food production.
- ⇒ His pioneering efforts involved the development and introduction of high-yielding varieties of wheat and rice, which significantly increased food grain production across India.

#### **Green Revolution:**

- ⇒ Revered as the "Father of India's Green Revolution," his visionary approach was instrumental in pioneering the Green Revolution in India at a time when the country was still grappling with poverty and lack of social security.
- ⇒ Recognising the need for a holistic approach, he worked tirelessly to develop wheat and rice varieties that were not only high-yielding but also disease-resistant and well-suited to Indian soil and climate conditions.

#### **Recognitions:**

- ⇒ In recognition of his monumental contributions, Swaminathan was awarded the first World Food Prize in 1987.
- ⇒ He used the prize money to establish the MS Swaminathan Research Foundation in Chennai, further cementing his commitment to sustainable and inclusive agricultural practices.
- ⇒ His other notable accolades include the Ramon Magsaysay Award in 1971 and the Albert Einstein World Science Award in 1986.
- ⇒ He was named one of the 20 most influential Asians of the 20th century by Time magazine, reflecting his far-reaching impact.

### **CHINA'S CROSS-SEA BULLET TRAINS WILL LINK FIVE CITIES IN FUJIAN**



#### **Why in news?**

- ⇒ China recently opened its first cross-sea bullet train, linking major cities in the southeastern Fujian province.

**Details:**

- The bullet trains or high-speed rail (HSR) as they are called in China will travel at the same 350 km/hr speed as other trains on the network.
- The new track, which links five cities in Fujian, including capital Fuzhou and business-hub Xiamen, includes portions along a cross-sea bridge, running right across the strait from Taiwan.
- The over-sea segment covers around 20 km of the total 277 km route.

**China's HSR network:**

- China's HSR network is already the world's largest. A further 2,500 km will be added to the network in 2023, taking the total length to 44,500 km, the Hong Kong-based South China Morning Post (SCMP) reported, with plans to reach 50,000 km of HSR by 2025. The first route, connecting Beijing and Tianjin, went online in 2008.
- The latest phase of expansion is covering China's remote and sprawling western regions, with new tracks being opened in Tibet, Xinjiang and Sichuan.

**SECURITY****IAF BEGINS WESTERN AIR COMMAND'S ANNUAL EXERCISE****Why in news?**

- The annual training exercise, Trishul, of the Western Air Command (WAC) of the Indian Air Force (IAF) began recently.
- The exercise will see activation of all air assets and force multipliers spread across the Line of Control (LoC) with Pakistan to the Line of Actual Control (LAC) with China.

**Stand-off with China:**

- Since the stand-off with China in eastern Ladakh in May 2020, the Indian military has seen a major reorientation from its focus from Pakistan to China and the IAF has maintained a high tempo of operations.
- As the Army mobilised in a big way, the IAF pressed in its entire transport fleet and airlifted over 68,000

troops, 330 infantry vehicles and over 90 tanks in addition to artillery guns.

- The two sides recently held the 19th round of Corps Commander talks towards disengagement and de-escalation on the Line of Actual Control to end the stand-off which was immediately followed by Major-General-level talks at Depsang and Demchok to find a way out. However, the two militaries continue to remain deployed with extensive build-up on both sides.
- Earlier, China released the "2023 edition of the standard map of China", which continues to show the entire State of Arunachal Pradesh and the Aksai Chin region within its borders. India had lodged a strong protest.

**Schedule of the exercise:**

- The exercise is scheduled from September 4 to 14 and will validate the command's operational preparedness and will see the employment of all the frontline assets from fighter jets, transport aircraft, helicopters and other force multipliers in high tempo.
- The exercise will be paused for a few days coinciding with the G-20 summit when the armed forces will be on high alert, coinciding with the high-profile event and the threat perception.

**BHARAT DRONE SHAKTI 2023****Why in news?**

- The IAF is partnering with the Drone Federation of India to co-host the 'Bharat Drone Shakti 2023'.
- The event to be held on 25th & 26th September 2023 will be hosted at the IAF's airbase in Hindan (Ghaziabad), where the Indian drone industry shall give live aerial demonstrations.

**Details:**

- 'Bharat Drone Shakti 2023' will present the prowess of the Indian drone industry at full capacity hosting over 50+ live aerial demonstrations showcasing survey drones, agriculture drones, fire suppression drones, tactical surveillance drones, heavy-lift logistics drones, loitering munition systems, drone swarms, and counter-drone solutions and witness participation from more than 75 drone start-ups and corporates.

- The event is expected to attract around 5,000 attendees, including representatives from central government, state departments, public and private industries, armed forces, paramilitary forces, representatives from friendly countries, academicians and students and drone enthusiasts.
- It will give a fillip to India's commitment to becoming a global drone hub by 2030.

#### Future prospects:

- Drone technology has revolutionised the civil and defence sectors by increasing efficiency, reducing exposure to risk as also by being a capability enhancer.
- The usage of drones in India is also seeing an increase - both, in the military, as well as in the civil domain.
- The IAF uses Remotely Piloted Aircraft extensively for Intelligence Surveillance & Reconnaissance operations.

### 21ST EDITION OF VARUNA (VARUNA-23)



#### Why in news?

- Recently, the Phase II of the 21st edition of Varuna (Varuna-23) bilateral exercise between Indian and French Navy was conducted in the Arabian Sea.
- The exercise witnessed participation of guided missile frigates, tanker, Maritime Patrol Aircraft and integral helicopters from the two sides.

#### Details:

- The exercise was conducted over three days and witnessed joint operations, underway replenishment and various tactical manoeuvres.
- Units of both navies endeavoured to enhance and hone their war fighting skills, improve interoperability and demonstrate their ability to promote, peace, security and stability in the region.
- The first phase of 'Varuna-2023' was conducted off India's Western Seaboard from 16 to 20 Jan 23

#### About Exercise Varuna:

- Indian & French Navy bilateral naval exercise was initiated in 1993.
- The exercise was later christened as 'Varuna' in 2001 and has since become a hallmark of robust India-France strategic bilateral relationship.

- Having grown in scope and complexity over the years, this exercise provides an opportunity to learn from each other's best practices and procedures.
- The exercise also facilitates operational level interaction between the two Navies to foster mutual cooperation for good order at sea, underscoring the shared commitment to ensuring security, safety and freedom of the global maritime commons.

### 600 VIBHAV ANTI TANK MINES WITH SAFETY MECHANISM INDUCTED INTO ARMY



#### Why in news?

- Recently, six hundred indigenously manufactured self neutralising anti-tank mines, known as 'Vibhav', have been inducted into the Army to provide mobility kill against all enemy armoured vehicles.

#### Details:

- The anti-tank mine is made of new age plastic, which gives it adequate strength and durability to withstand the requirements of storage, handling and operating in varying field conditions.
- Designed and developed completely indigenously in a joint venture with the Defence Research and Development Organisation (DRDO) in India, "Vibhav" is a point-attack anti-tank munition.

#### Salient features:

- The mines are designed to provide mobility kill against all enemy armoured vehicles.
- The munition can be laid both mechanically or manually.
- The integrated explosive, mechanical and electronic safety features ensure utmost operator safety.
- On the other hand, the lethality of the munition ensures effectiveness against all current and futuristic armoured vehicles.
- The munition also incorporates an electronic anti-handling and anti-lift device (EAHALD) that stays active for 120 days once armed.

### FIELD TRAINING EXERCISE 2023

#### Why in news?

- Indian Army Contingent consisting of 32 personnel from a Battalion affiliated to the Rajputana Rifles departed for ASEAN Defence Ministers Meeting

(ADMM) Plus Expert Working Group (EWG) on Counter Terrorism Field Training Exercise (FTX) 2023.

- It is scheduled to be conducted from 25th to 30th September 2023 in Russia.



#### FTX:

- It is a multinational joint military exercise being hosted by Russia as a co-chair of the EWG along with Myanmar.
- It was preceded by Table Top Exercise of the ADMM Plus EWG on Counter Terrorism at Nay Pyi Taw, Myanmar from 2nd to 4th August 2023.

#### ADMM Plus:

- Since 2017, the ADMM Plus meets annually to allow dialogue and cooperation among Association of Southeast Asian Nations (ASEAN) and Plus countries.
- The inaugural ADMM Plus was convened in Ha Noi, Vietnam on 12th October 2010. This year ASEAN member states along with Plus Group will be participating in the exercise.
- The exercise will comprise of a number of counter terrorism drills including destroying of terrorist groups in a fortified area.
- The main objective of the exercise is strengthening and promoting regional cooperation in the field of counter-terrorism.

#### Way Forward:

- ADMM Plus EWG on Counter-terrorism 2023 will provide Indian Army with a platform to share their expertise and best practices in counter-terrorism operations besides increasing cooperation between other 12 participating countries.

## ENVIRONMENT

### FUNGA, UN WANTS US ALL TO SAY IT ALONG WITH 'FLORA & FAUNA'

#### Why in news?

- Recently, the United Nations Biodiversity has urged people globally to use the word 'funga' whenever they say 'flora and fauna', in order to highlight the importance of fungi.
- Fungi, along with Animalia (animals), Plantae (plants), Protista, Archaea/Archaeobacteria, and Bacteria or Eubacteria form the six 'kingdoms' of biology.



#### Why fungi?

- There would be no life on Earth without fungi: the yeasts, molds and mushrooms that are critical to decomposition and forest regeneration, mammalian digestion, carbon sequestration, the global nutrient cycle, antibiotic medication, and the bread, beer and chocolate we consume.
- Trees would not be able to live on land without fungi.

#### Background:

- Two years ago, the Species Survival Commission (SSC) of the International Union for Conservation of Nature (IUCN) announced that it would use "mycologically inclusive" (referring to fungi) language in its internal and public-facing communications ("fauna, flora and funga" and "animals, fungi and plants") and to incorporate fungi in conservation strategies with rare and endangered plants and animals.

#### Inclusive language:

- Just like mycelium, mycologically-inclusive language will spread unseen but profound, permeating public consciousness (and policy) to acknowledge fungi's vital role in the grand web of life on and in Earth.
- Similar efforts are on to use more environmentally-conscious language in other spheres such as conservation, for instance.
- Survival International, the organisation that supports tribal and indigenous peoples, has produced a new Guide to decolonise language in conservation. It confronts many familiar terms, and explains the hidden histories behind others.

### CLIMATE CHANGE WILL MAKE TOP GLOBAL PORTS UNUSABLE BY 2050 AS SEA LEVELS RISE

#### Why in news?

- A recent study has revealed that some of the world's largest ports could become inoperable by 2050 due to rising sea levels caused by climate change.
- The study, titled 'Global Maritime Trends 2050', was commissioned by Lloyd's Register and Lloyd's Register Foundation, leading entities in the shipping services sector.



### Key Highlights:

- The study highlights that weather-related disruptions are already impacting global ports, including a drought affecting operations in the Panama Canal, a significant waterway.
- It further states that out of the world's 3,800 ports, a third are located in tropical regions highly susceptible to the severe effects of climate change.
- Among the most vulnerable are the ports of Shanghai, Houston, and Lazaro Cardenas in Mexico, which are among the world's largest.
- These ports could potentially be rendered inoperable by 2050 with a mere 40 cm rise in sea levels. Other key ports, including Rotterdam, are already under pressure.

### Recommendations:

- The study emphasises the need for countries to invest in enhancing the efficiency and resilience of their ports and logistics infrastructure to keep up with the growing demand for imports and consumption.
- For ports like Shanghai, which are highly susceptible to rising sea levels, the establishment of flood defense systems similar to Holland's Maeslant Barrier and London's Thames Barrier could be a viable solution.

### Way Forward:

- The findings underscore the urgent need for more robust climate action and the adoption of new technologies to decarbonise the maritime sector.

## 67 SPECIES OF REPTILES, 59 AMPHIBIANS RECORDED IN WAYANAD FOREST SURVEY



### Why in news?

- As many as 67 species of reptiles and 59 species of amphibians were identified in the first herpetofaunal survey that concluded recently in the South Wayanad Forest Division in Kerala.
- Of these, four amphibians and three reptiles were spotted for the first time in the forest division. Of the 126 species identified, 48 amphibians and 21 reptiles are endemic to the Western Ghats.

### Key discoveries:

- The important amphibian species recorded during the survey include Starry Night Frog, bearing a constellation of blue dots on its obsidian body; Miniature Night Frog, the tiniest frog in the country; and endangered species such as Malabar Torrent Toad and Red Stream Toad.
- The Naked Dancing Frog, previously associated only with areas in the Wayanad Wildlife Sanctuary, was also sighted during the survey.
- The survey commenced with the recording of the Green Tree Frog and culminated with a compendium of 59 amphibians, of which over 80% are uniquely found in the Western Ghats. Of the 67 reptile species sighted, 21 are unique to the Western Ghats.
- Species like the Wayanad Dravidogecko, Nilgiri Spiny Lizard, and the Nilgiri Forest Lizard added depth to the survey's significance. The presence of Shieldtail snake, predominantly from Wayanad, brought forth the region's crucial role in global conservation discussions.

### Way Forward:

- This study stressed the need for studies on these amphibian and reptilian species which are mostly neglected.

## LIGHT POLLUTION DISRUPTS MARINE ORGANISMS HORMONAL CYCLES, REPRODUCTION, STUDY



### Why in news?

- Land-based life, including humans, fireflies and birds, is significantly impacted by artificial light at night.
- Marine organisms that evolved over millions of years to adapt to natural light now face an ever-increasing

flood of light from anthropogenic sources along the coasts.

#### Details:

- Artificial light can easily wash out the glow of moonlight and starlight, which are important cues for marine organisms.
- This disrupts their hormonal cycles, inter-species behaviour and reproduction.

#### Impact on turtles:

- The author of the research, cited an example explaining how artificial light impacts sea turtles. Artificial light at night is harmful to sea turtles in two ways. Females trying to find a quiet, dark spot to lay their eggs avoid light and may end up not coming ashore at all.
- Moreover, "hatchlings head toward inland lights instead of moonlight on the water and then die of dehydration or starvation".

#### Impact of LED lighting:

- Furthermore, with the growing usage of LED lighting, the very nature of artificial light is also altering. Compared to prior technologies, LEDs often emit more short-wavelength light and can pierce deep into the water.
- Recommendations:
- The experts pointed out that the efforts to reduce the impact on migratory birds will also benefit marine species.
- They suggested measures such as using as much red light as possible and putting up barriers to shield the coastline from artificial light. Red light doesn't penetrate as far into the water.

### OVER 75 PERCENT OF EUROPEAN BUMBLEBEE SPECIES THREATENED



#### Why in news?

- More than 75% of European bumblebee species may be threatened in the next 40-60 years according to worst-case-scenario projections of bumblebee populations.
- Degradation of habitats and alterations of climate due to human activity are identified as key drivers of these estimated population declines.

- The findings underscore the importance of climate change mitigation policies to protect bumblebees.

#### Key observations:

- Observational data cover the periods 1901-1970 (past) and 2000-2014 ('present day'), and projections are made up to 2080.
- Around 38-76% of European bumblebee species currently considered as non-threatened are projected to see their ecologically suitable territory shrink by at least 30% by 2061-2080.
- In particular, species from Arctic and alpine environments may be at the verge of extinction in Europe, with an expected loss of at least 90% of their territory in the same period.
- The parts of Scandinavia may potentially become refuges for displaced or threatened species, although it remains unclear whether these regions may be affected by human activity-driven changes.

#### Role of bumblebees:

- The results underline the critical role of global change mitigation policies as effective levers to protect bumblebees from manmade transformation of the biosphere.
- Around 90% of all wild plants and most crop plants benefit from pollination by animals.
- The bumblebee (*Bombus*) is a genus of bees considered to be especially important for the pollination of crops in the cold and temperate regions of the northern hemisphere.

#### Threats:

- Human-generated transformations of natural habitats and increases in temperature are implicated as key drivers of wildlife collapse; understanding the trajectory of insect populations is important for devising conservation efforts.

### CENTRE IDENTIFIES 62 NEW ELEPHANT CORRIDORS, TOTAL NOW 150



#### Why in news?

- A new elephant corridor report released by the central government showed a 40 per cent increase in elephant corridors across 15 elephant range states in India.

- The number of elephant corridors have increased to 150 against 88 registered by the Government of India in 2010. The elephant population in the country is estimated to be over 30,000.

### What are Elephant corridors?

- Elephant corridors can be described as a strip of land that enables elephant movement between two or more friendly habitats.
- The corridors were reported by respective state governments and ground validation methods were used to verify them.

### Key Highlights:

- West Bengal has the most elephant corridors (26) amounting to 17 per cent of the total corridors. East central region contributed to 35 per cent that is 52 corridors, while North East region was second largest with 32 per cent number meaning 48 corridors in total.
- Southern India registered 32 that is 21 per cent of the elephant corridors, while northern India was lowest with 18 corridors or 12 per cent.
- Majority of the corridors were noted to be within state boundaries and the intensity of the use of corridors has increased by 40 per cent.

### Concerns:

- However, it showed that 19 per cent of the corridors, that is 29, showed a decrease in use while 10 others were seen impaired and demanding restoration for facilitating elephant movement.
- The decrease in corridor use is attributed to the habitat fragmentation, shrinkage and destruction.

### Increment in corridors:

- The increase in the elephant corridors also reflected that elephants have expanded their ranges in Vidarbha region of Maharashtra neighbouring Chhattisgarh and southern Maharashtra bordering Karnataka.
- Elephants have also seen increased presence in Madhya Pradesh found in Sanjay Tiger reserves and Bandhavgarh.
- Besides that, ranges have also increased in northern Andhra Pradesh where the elephants access movement from Odisha.

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## GLOBAL BODIES LAUNCH CAMPAIGN TO PROTECT FORESTS

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### Why in news?

- The Collaborative Partnership on Forests (CPF), a partnership of 16 global organisations chaired by the United Nations Food and Agriculture Organization (FAO), has launched the Joint Call to Action for Forests towards 2030.
- They aim to highlight the need for increased action and political commitment to implement forest solutions in pursuit of the United Nations-mandated Sustainable Development Goals (SDG).



### Focal areas:

- The Call to Action for Forests Towards 2030 has four focal areas:
  - a) Implementation and action;
  - b) data, science and innovation;
  - c) finance for forests; and
  - d) communication and awareness-raising.

### Concerns:

- The 2023 SDG Summit marks the halfway point in efforts to achieve the 2030 Agenda and SDGs, along with other internationally agreed-upon goals related to forests, such as the Global Forest Goals outlined in the UN Strategic Plan for Forests 2017-2030.
- The world has lost 420 million hectares of forest through deforestation since 1990, and deforestation continues, although the rate slowed from 12 million hectares per year during 2010-2015 to 10 million hectares per year during 2015-2020, according to FAO's Global Forest Resources Assessment.
- Progress towards reaching global goals on protecting forests is not advancing fast enough, as forests are still disappearing, climate-change impacts and biodiversity loss are increasing and malnutrition and hunger are rising, all undermined by social and economic instability.

### Way Forward:

- Under 'Collaborative Partnership on Forests', challenges and opportunities have been identified in protecting, restoring and sustainably managing forests, and action and ambition are needed.
- The CPF members committed to "reinforcing action to strengthen efforts at all levels to fully unlock the contributions of forests to sustainable development and achieve our joint vision for forests towards 2030".

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## AN ANCIENT LANDMASS BROKE-UP, GIVING US PINK DIAMONDS

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### Why in news?

- Scientists have found the "missing ingredient" for pink diamonds and the discovery could help find more.
- More than 90% of all the pink diamonds ever found were discovered at the recently closed Argyle mine in the remote northwest of Australia.

**Details:**

- In a new study, a team of Australia-based researchers said the pink diamonds were brought to the earth's surface by the break-up of the first supercontinent around 1.3 billion years ago.
- The two of the three ingredients for forming pink diamonds had already been known.
- The first ingredient is carbon, and it must be more than 150 km deep.
- The second is just the right amount of pressure, to damage the otherwise clear diamonds.
- The missing ingredient was the event that sent the diamonds shooting up to the surface.

**Basis of research:**

- The researchers used a laser thinner than a human hair to probe tiny crystals in an Argyle rock sample supplied by the mine's owner, Anglo-Australian mining giant Rio Tinto.
- By measuring the age of elements in the crystals, they determined that Argyle was 1.3 billion years old.
- The immense pressure that twisted colour into the diamonds occurred during collisions between western Australia and northern Australia 1.8 billion years ago.
- When Nuna started to break up 500 million years later, it re-aggravated the "scar" from that event.
- Magma shot up through this old scar taking the diamonds along for the ride.

**Potential reserves:**

- Over the last 200 years, people have mostly looked for diamonds in the centre of massive continents. But knowing the "missing ingredient" for pink diamonds could assist future efforts to find the rare stones.
- Old mountain belts marking Nuna's breakup near the edges of continents have the potential to be home to a new "pink diamond paradise", naming Canada, Russia, southern Africa and Australia as possible locations.

### NEW FISH SPECIES DISCOVERED IN BENGAL'S DIGHA HARBOUR

**Why in news?**

- The scientists of the Zoological Survey of India (ZSI) have discovered a new species of a vibrant orange

coloured deep water marine fish from Digha Mohana in West Bengal.

**Genus:**

- The new species, commonly known as gurnards or sea-robins, belongs to the family Triglidae. Named *Pterygotrigla intermedica*, it has characters quite similar to species like *Pterygotrigla hemisticta*.
- It is the fourth species of *Pterygotrigla* genus reported in India so far, he said, and there are a total 178 species of the Triglidae family worldwide.

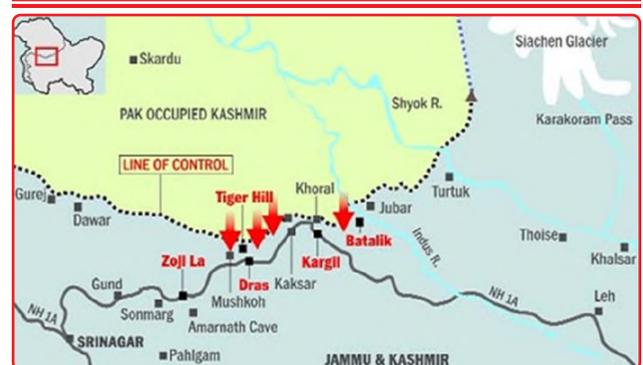
**Characteristic features:**

- The researchers collected a total of 24 specimens from the Digha Mohana fishing harbour during their study of by-catch components along the northern part of the east coast of India.
- After thorough examinations, the specimens of this fish were found to be very distinct from other gurnard species in various aspects such as snout length, shape of the internuchal space and size of the cleithral spine.
- The scientists found a distinct pectoral-fin with black membranes on the inner surface, white posterior margin and three small white spots basally in fin, each ray creamy white on the new species.
- It had a combination of characters like a long opercular spine and a very short cleithral spine; lateral-line, gill rakers on upper limb and 12–13 on lower limb of first gill arch and a large black blotch between the 4th and 6th spines of the first dorsal fin.

**Way Forward:**

- They have preserved 23 at the ZSI's Estuarine Biology Regional Center, Gopalpur and one specimen in the Marine Fish Section, Kolkata for further study.

### KAOBAL GALI MUSHKOH VALLEY OPENS UP FOR TOURISTS

**Why in news?**

- The high-altitude passes of the Gurez valley in north Kashmir, has been opened up for tourists.

**Details:**

- It was once prone to frequent shelling from Pakistan. Now, it is all set to connect with the Mushkoh valley, in Kargil's Drass Sector, Ladakh, the site of the war in 1999.

- ⇒ Kaobal Gali, the highest pass at a height of 4,166.9 metres in Gurez, connects the two valleys.

#### Characteristic features:

- ⇒ The Gurez valley is one of few habitations in Kashmir where villages with only log houses exist, with no intervention of urban concrete materials.
- ⇒ It is also home to ibex, musk deer and marmots.
- ⇒ The meadows of Mushkoh offer boisterous wild tulip flowers and views of breath-taking glaciers.
- ⇒ The valley is also home to the endangered Himalayan yew.

#### Potential:

- ⇒ As the ceasefire agreement between India and Pakistan continues to hold for the 43rd month, people are hopeful that with prevailing peace will come commerce from tourism.
- ⇒ The Gurez valley, with about 38,000 residents, is already setting a record by hosting 50,000 tourists in 2023. The administration sees huge tourist potential in opening the Gurez-Drass road to tourists.

### TAMIL NADU, KERALA TO JOIN HANDS TO COUNT ENDANGERED NILGIRI TAHR



#### Why in news?

- ⇒ After launching Project Nilgiri Tahr in 2022 for the conservation of the State animal, Tamil Nadu is now working on a standardised protocol to count the endangered population of southern India's only mountain ungulate.
- ⇒ The Tamil Nadu Forest Department will also propose to its Kerala counterpart to conduct a synchronised census, as the animal is only found in select habitats in the two States.

#### Details:

- ⇒ For the first time, drones may be used in the census, as the Nilgiri tahr prefers montane grasslands, with steep and rocky terrains at an altitude between 300 metres and 2,600 metres above sea level.
- ⇒ There are believed to be a little over 3,100 of the animals living in highly fragmented habitats in the Western Ghats in Tamil Nadu and Kerala, ranging between the Nilgiris in the north and the Kanniyakumari hills in the south.

#### Synchronised survey:

- ⇒ The Tamil Nadu Forest Department is proposing two censuses: one in November, after the southwest monsoon, and the other in March or April, after the calving season.
- ⇒ If Kerala agrees to the proposal, the second census is likely to be a synchronised count.
- ⇒ Experts felt that bounded count and double-observer survey methods could be priority models. Camera traps could also be used in difficult terrains.

#### Threats:

- ⇒ Besides anthropogenic pressures, Nilgiri tahr habitats face threats from invasive plants such as wattles, pines, and eucalyptus in the grasslands.
- ⇒ A component of the Project Nilgiri Tahrs aims to study the possible causes of the lumpy skin disease that has been observed in the animal, and suggest a remedy for it.

#### About Nilgiri Tahr:

- ⇒ Nilgiri Tahr is also known as Nilgiri Ibex.
- ⇒ It has been listed as "Endangered" by IUCN.
- ⇒ It has been listed under Schedule 1 of the Wildlife (Protection) Act, 1972 which provides absolute protection and offences under these are prescribed the highest penalties
- ⇒ The Adult males of Nilgiri Tahr species develop a light grey area or "saddle" on their backs and are hence called "Saddlebacks"
- ⇒ It is the state animal of Tamil Nadu.
- ⇒ It is found in open montane grassland habitat of rain forests ecoregion.
- ⇒ It is endemic to the Nilgiri Hills and the southern portion of the Western Ghats in Tamil Nad and Kerala

### SAHARA DESERT WAS ONCE GREEN, AND WET DUE TO EARTH'S ORBIT



#### Why in news?

- ⇒ A new study has unveiled insights into the periodic greening of the Sahara Desert over the past 8,00,000 years.
- ⇒ The research reveals that these North African humid periods were driven by changes in Earth's orbit around the Sun and were suppressed during ice ages.

**Climate modelling study:**

- The study simulated the historic intervals of 'greening' of the Sahara, providing evidence for how the timing and intensity of these humid events were influenced remotely by the effects of large, distant, high-latitude ice sheets in the Northern Hemisphere.
- Historically, the Sahara was periodically vegetated, with rivers, lakes, and water-dependent animals such as hippos thriving before it became the desert we know today. These North African Humid Periods may have been crucial in providing vegetated corridors out of Africa, allowing the dispersal of various species, including early humans, around the world.
- These 'greenings' are thought to have been driven by changes in Earth's orbital conditions, specifically Earth's orbital precession. This refers to how Earth wobbles on its axis, influencing seasonality over an approximate 21,000-year cycle.
- These changes determine the amount of energy received by the Earth in different seasons, which in turn controls the strength of the African Monsoon and the spread of vegetation across this vast region.

**Key observations:**

- The study used a recently-developed climate model to simulate the North African Humid periods, confirming they occurred every 21,000 years due to changes in Earth's orbital precession.
- This caused warmer summers in the Northern Hemisphere, intensifying the West African Monsoon system and increasing Saharan precipitation, resulting in the spread of savannah-type vegetation across the desert.
- The research also revealed that the humid periods did not occur during the ice ages, when large glacial ice sheets cooled the atmosphere and suppressed the African monsoon system.
- This highlights a major connection between these distant regions, which may have restricted the dispersal of species, including humans, out of Africa during the glacial periods of the last 800,000 years.

**Way Forward:**

- The revised model successfully represents past changes and also gives confidence in their ability to understand future change.

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### **EIGHT INSTITUTES GIVE AN ARRAY OF REASONS FOR JOSHIMATH SINKING**

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**Why in news?**

- Separate studies conducted by eight premier institutions of India to know the cause of land subsidence in Joshimath town of Uttarakhand attributed seismic activities, construction loopholes, population pressure, poor drainage system and others as the 'likely' reason for the sinking of the Himalayan town.

- With every study conducted with a different approach, these reports reaffirmed the sensitivity of the area but nothing concrete has come out on what exactly went wrong in January.

**Central Building Research Institute (CBRI) report**

- In its report, the CBRI stated that Joshimath town has 44%, 42%, 14% of masonry, RCC and other (traditional, hybrid) construction typologies, respectively, among which 99% are non-engineered. It means they are not in compliance with the National Building Code of India, 2016.
- Joshimath town is situated on Vaikrita groups of rocks overlain by morainic deposits which are composed of irregular boulders and clay of varying thicknesses. Such deposits are less cohesive and susceptible to slow subsidence and landslide subsidence.
- There is a history of creeping and occasional subsidence in the region and what happened in December 2022-January 2023 was another such event.

**National Institute of Hydrology (NIH):**

- The Roorkee-based NIH, said that maps of various springs, drainage network and areas of subsidence infer that land subsidence and subsurface water in Joshimath might have some connections.
- The isotopic and water quality signature of the samples taken from NTPC sites differs from the JP site as well as drains and springs in the nearby area of Joshimath.
- The bacteriological analysis also suggested that the gush water is fresh water and not contaminated by the local drains, giving a clean chit to the NTPC whose construction activities were being dubbed as one of the biggest reason for land subsidence.
- The institution hence recommended the safe disposal of the water coming from the upper reaches and waste disposal as the top priority.

**Wadia Institute of Himalayan Geology (WIHG):**

- The WIHG mentioned earthquakes as a reason for slow and gradual land subsidence.
- The main reason for the subsidence appears to be internal erosion caused by the subsurface drainage, which may be due to infiltration of rainwater/melting of ice/wastewater discharge from household and hotels.

⇒ Though subsidence is continuous phenomenon, it can be minimised by controlling infiltration of water, which helps in minimising the internal erosion.

#### ISRO:

- ⇒ After an analysis by the Small BAseline Subset Interferometry SAR Technique, the ISRO stated that the subsidence in the Joshimath region may be due to toe-cutting phenomenon, slope instability as a result of seepage of local drainage water in the soil, terrain and edaphic characteristics, loose and unconsolidated moraine materials of the slope (due to old landslide) and flash flood events in and around the area in the recent past.
- ⇒ This has resulted in development of cracks in the ground as well as houses in Joshimath town.

#### Conclusion:

- ⇒ In 2012 after the Ukhimath disaster, there was a clear recommendation by the State Disaster Management Department to stop blasting in the vicinity of Joshimath. The report had asked to regulate infrastructure development.
- ⇒ Geologist termed the reports of the eight institutions 'old wine in a new bottle'. These reports clearly said all that had been said 46 years ago in the M.C. Mishra Committee report.

### GUJARAT BANS CONOCARPUS PLANTS



#### Why in news?

- ⇒ The Gujarat government has banned the planting of ornamental Conocarpus trees "in forest or non-forest areas", citing their "adverse impacts on environment and human health".
- ⇒ Conocarpus, a fast-growing exotic mangrove species, had been a popular choice for increasing the green cover in Gujarat in recent years.
- ⇒ Earlier, Telangana too had banned the plant species.

#### What happened in Gujarat?

- ⇒ Research reports have highlighted adverse impacts/disadvantages of this species on environment and human health.
- ⇒ Trees of this species flower in winter and spread pollen in nearby areas. It is causing diseases like cold, cough, asthma, allergy etc.

- ⇒ Roots of this species go deep inside the soil and develop extensively, damaging telecommunication lines, drainage lines and freshwater systems.
- ⇒ Also, the leaves of Conocarpus are unpalatable to plant-eating animals.

#### What happened in Delhi with Vilayati Kikar?

- ⇒ In 2018, the Delhi government agreed to clear the capital's green lungs, the Central Ridge, of the Vilayati Kikar after years of appeals and court cases by activists.
- ⇒ The Vilayati Kikar (Prosopis juliflora) is not native to Delhi, and was brought to the city in the 1930s by the British.
- ⇒ As the tree grows fast even in arid conditions, it can quickly increase the green cover of an area, and be used as firewood. However, it also kills off competition. Thus, within a decade, it had taken over the Ridge, killing the native trees like acacia, dhak, kadamb, amaltas, flame-of-the-forest, etc.
- ⇒ Along with the trees disappeared the fauna – birds, butterflies, leopards, porcupines and jackals.
- ⇒ The tree also depletes the water table of the area it is planted in.
- ⇒ In Delhi, the canopy of the trees is being shortened, so it uses less water and allows sunlight to reach the ground. More native trees are being planted, so they can suppress the growth of the Kikar.

#### What was Kerala's experience with Eucalyptus?

- ⇒ In Kerala's case too, it was the British who introduced the Eucalyptus tree to Munnar, so its wood could be used as fuel in tea plantation boilers.
- ⇒ The state forest department stopped the cultivation of acacia and eucalyptus in forest tracts in 2018.
- ⇒ A study by The Wildlife Institute of India-Dehradun and Periyar Tiger Conservation Foundation in Kerala on man-animal conflict had found that foreign invasive plants had reduced the availability of fodder in forests, forcing animals to foray into settlements and farmlands.
- ⇒ The quality of forest habitats had been lost due to the cultivation of alien plants such as acacia, mangium and eucalyptus in forest tracts for commercial purposes.

### DAMSELFLY SPECIES FOUND IN WESTERN GHATS

#### Why in news?

- ⇒ A new damselfly species has been discovered in Kerala's southern Western Ghats.
- ⇒ Researchers from MIT-World Peace University in Pune named the insect 'Armageddon reedtail' or protosticta armageddonia, to draw attention to the global decline of insect populations due to rampant habitat loss and climate change.



**'Ecological armageddon'**

- The term 'ecological armageddon' is used to describe the devastating decline of insect populations around the world.
- This phenomenon, also called insect apocalypse, affects entire ecosystems because insects pollinate, cycle nutrients and provide food for other animals.

**Armageddon reedtail:**

- The species was discovered northeast of Thiruvananthapuram.
- It has a captivating dark brown to black body with vibrant greenish-blue eyes, and half of its eight abdominal segments are marked with delicate pale blue markings.
- Its only habitat is primary montane streams, where it thrives beneath dense canopy cover.
- The new species is distinct from other damselflies.

**Way Forward:**

- The forests of the Western Ghats are changing rapidly due to rampant development and habitat loss.
- Experts are using discovery of Armageddon Reedtail as a powerful call to action for world leaders, urging them to address the urgent issues of global warming and its catastrophic impact on biodiversity.

detection of pregnancies at risk of developing preeclampsia at early stages, a recent study shows.

**About Preeclampsia:**

- Preeclampsia is a major cause of morbidities during gestation. Early-onset preeclampsia, occurring before 34 weeks of gestation is associated with a higher risk of severe disease and foetal mortality.
- Among the few interventions available, low-dose aspirin at early stages of the disease (before 16 weeks of gestation) can reduce the risk of developing preeclampsia, but early identification of the disease is needed to initiate this intervention.
- Previous studies have shown that widespread methylation changes in the placenta occur at delivery.

**Recent research:**

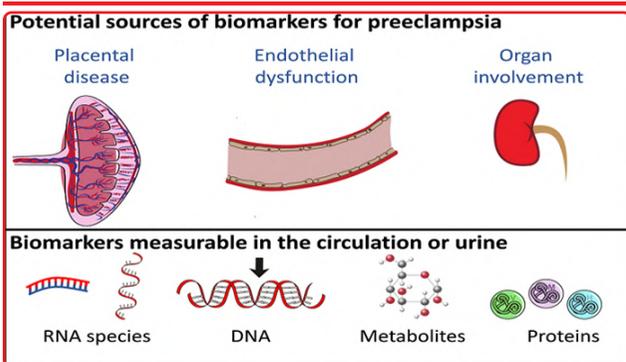
- Researchers profiled blood DNA-methylation data from 498 pregnant women, about one third of whom developed preeclampsia.
- They detected differences in DNA methylation in the control pregnancies versus the pregnancies that developed preeclampsia.
- Using these data, they developed a model that enabled risk stratification not only when preeclampsia was diagnosed but also presymptomatically, at around 12 weeks of gestation.
- In a further analysis involving 197 of these women, they showed that this model, in combination with clinical and demographic risk factors, generated a risk score that correctly predicted 72% of patients with early-onset preeclampsia.

**Way Forward:**

- The preliminary results suggest that cell-free DNA methylation profiling is a promising tool for presymptomatic PE risk assessment, and has the potential to improve treatment and follow-up in the obstetric clinic.

**SCIENCE & TECHNOLOGY**

**EARLY PREDICTION OF PREECLAMPSIA USING A BIOMARKER**



**Why in news?**

- A liquid-biopsy approach that measures DNA-methylation levels in the blood may improve the

**CHANDRAYAAN-3 LANDER GAUGES FIRST-EVER MEASUREMENTS OF NEAR-SURFACE PLASMA**



**Why in news?**

- The initial assessment of the first-ever measurements of the near-surface lunar plasma environment over the South Pole region by RAMBHA-LP payload onboard Chandrayaan-3 lander indicates that plasma there is relatively sparse.

➤ Meanwhile, the ILSA payload on Chandrayaan 3 lander to study lunar seismic activity has not only recorded the movements of rover and other payloads, but also has recorded an event, appearing to be a natural one.

#### RAMBHA-LP:

➤ Radio Anatomy of Moon Bound Hypersensitive Ionosphere and Atmosphere - Langmuir Probe (RAMBHA-LP) payload onboard Chandrayaan-3 Lander has made first-ever measurements of the near-surface Lunar plasma environment over the south polar region.

➤ The initial assessment indicates that the plasma near the lunar surface is relatively sparse.

➤ These quantitative measurements potentially assist in mitigating the noise that Lunar plasma introduces into radio wave communication. Also, they could contribute to the enhanced designs for upcoming lunar visitors.

#### Sulphur:

➤ Another instrument onboard the rover 'Pragyan' has confirmed the presence of Sulphur (S) in the Lunar region, through a different technique, ISRO said.

➤ The Alpha Particle X-ray Spectroscope (APXS) has detected S, as well as other minor elements.

#### How APXS instrument works?

➤ APXS instrument is best suited for in-situ analysis of the elemental composition of soil and rocks on the surface of planetary bodies having little atmosphere, such as the Moon.

➤ It carries radioactive sources that emit alpha particles and X-rays onto the surface sample. The atoms present in the sample in turn emit characteristic X-ray lines corresponding to the elements present.

➤ By measuring the energies and intensities of these characteristic X-rays, researchers can find the elements present and their abundances.

➤ APXS observations have discovered the presence of interesting minor elements, including Sulfur, apart from the major expected elements such as Aluminum, Silicon, Calcium and Iron.

#### LIBS instrument:

➤ The Laser Induced Breakdown Spectroscopy (LIBS) instrument onboard the rover has already confirmed the presence of Sulphur.

#### Way Forward:

➤ Detailed scientific analysis of these observations are in progress.

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### PRAGYAN ROVER COMPLETES ITS ASSIGNMENTS, SET INTO SLEEP MODE

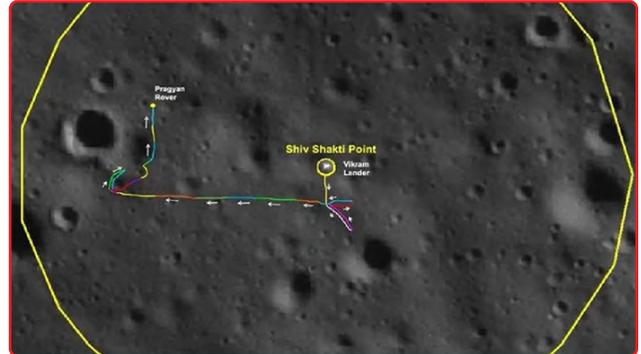
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#### Why in news?

➤ After transversing over 100 meters on the lunar surface from the Shiv Shakti Point, the touchdown

spot of the Vikram lander on the lunar surface, the Pragyan Rover has been safely parked and set into sleep mode.

➤ The next sunrise is expected on September 22, 2023, and hoped for a successful awakening for another set of assignments.



#### Natural event recorded:

➤ Earlier ISRO said that the Pragyan Rover module of the Vikram lander has recorded a natural event on the south pole of the moon.

➤ In-situ Scientific Experiments Instrument for the Lunar Seismic Activity (ILSA) payload on Chandrayaan 3 Lander, the first Micro Electro Mechanical Systems (MEMS) technology-based instrument on the moon has recorded the movements of Rover and other payloads.

#### Chandrayaan-3 mission has three components:

- The propulsion module, which transferred the lander and the rover module to 100 kilometres of lunar orbit,
- The Lander module, which was responsible for the soft landing of the lunar craft and
- The Rover module, which is for exploring components on the moon.

#### Background:

➤ India took a giant leap on August 23, as the Chandrayaan-3 lander module successfully landed on the moon's South Pole, making it the first country to have achieved the historic feat.

➤ The country became the fourth- after the US, China, and Russia - to have successfully landed on the moon's surface.

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### CELLS WITH MINIMAL GENOME CAN EVOLVE AS FAST AS NORMAL CELLS

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#### Context:

➤ Complex organisms like humans contain thousands of genes, most of which are not essential for survival. Mutations in these genes are not lethal. Evolutionary forces can act on these genes, and any beneficial mutation becomes more abundant over time.

➤ But what if a simple organism contained only those genes essential for its survival?



### Details:

- Researchers from Indiana University, Bloomington, used a synthetically designed minimal cell containing only genes essential for survival to answer this question. Their findings showed that even such a cell can evolve as fast as a normal cell.

### Basis of research:

- They used a synthetic version of *Mycoplasma mycoides*, a microbe commonly found in the guts of cattle.
- They created a stripped-down minimal cell (JCVI-syn3.B) with only 493 genes, down from the 901 genes in the non-minimal strain (JCVI-syn1.0). Although the minimal cells were alive and could reproduce, genome minimisation also reduced their fitness.
- To test whether these minimal cells responded differently to the forces of evolution compared to non-minimal cells, they grew them separately in a liquid medium, transferring a small, fixed amount of the population into fresh medium every day. They did this for 300 days, allowing the bacterial lineage to pass through 2,000 generations.
- In this time, the minimal cells' mutation rate was comparable to that of non-minimal cells. And *Mycoplasma mycoides* has the highest recorded mutation rate for any cellular organism.

### Observations made:

- Over 300 days, they found that the minimal cell also regained all the fitness it had lost due to genome minimisation and could perform as well as the non-minimised cell.
- But the minimal cell grew to be smaller than the non-minimal cell: the size of the non-minimal cell increased by 80% over 300 days whereas the minimal cell remained the same size.
- When they examined the genomes of the adapted cells, they found that the minimal and non-minimal cells improved their fitness and evolved via distinct genetic pathways.

### Significance:

- The finding that the evolutionary potential of organisms remains high despite their distinct evolutionary trajectories is a very significant contribution to understanding of microbial evolution.

- The study sheds some light on how synthetic organisms might change when confronted by the inevitable forces of evolution.

## HYDERABAD-BASED PVT SECTOR FIRM GRENE ROBOTICS UNVEILS INDRAJAAL



### Why in news?

- Hyderabad-based private sector firm, Grene Robotics, has demonstrated a weapons platform named Indrajaal, which it calls the world's only autonomous wide area, counter-unmanned aircraft system (C-UAS).
- Claimed to be the world's only anti-drone system capable of protecting against micro, mini, small, large and extra-large drones, this marks a breakthrough in Indian defence technology.

### Why it matters for national security?

- Over the past decade, and especially since the wars in Azerbaijan-Armenia and Ukraine-Russia, the world has encountered a significant surge in hostile UAS activity.
- India's defence forces have detected and foiled several attempts to drop weapons, money and narcotics into the country.
- Intelligence reports have indicated that Pakistan's spy agency, Inter-Services Intelligence (ISI) is actively planning to employ drones for smuggling weapons and narcotics into India's Jammu and Punjab regions.
- Pakistan's drone missions appear to have three primary objectives: Surveillance of Indian security forces, narcotics smuggling, and distributing weapons within Indian territory. There has been a steady increase in drone-based weapon deliveries, with 76 cases reported in 2020, 109 in 2021, 266 in 2022, and approximately 200 cases in 2023 alone.

### Indrajaal:

- Indrajaal's design principle leverages a combination of 12 unique layers of technology powered by artificial intelligence for the first time in the world. Using this, the system has the ability to detect, identify, classify, track, and swiftly neutralise threats in real time.
- Providing 360-degree protection, Indrajaal can defend areas of up to 4000 square kilometres against all

classifications and levels of unmanned autonomous threats.

- Indrajaaal is currently demonstrating the ability to provide protection against all categories of ariel threats, including low radar cross section (RCS) threats, medium altitude long endurance (MALE) and high-altitude long endurance (HALE) UAVs, loitering munitions, smart bombs, rocket showers, nano and micro drones, swarm drones and other contemporary threats.

#### Limitations to current counter-drone deployments:

- Airspace in the future will have more friendly drones than threats.
- Current stand-alone systems are not scalable and not even practical. Engaging the current systems through jammers can only delay, but not stop, an attack.
- Laser weapons are effective only against large, non-moving targets; while there are no effective countermeasures against swarm attacks.
- Existing "point defence-based" anti-UAV systems are inadequate against drone threats as they rely on physical sighting. They cannot protect large defence bases or vast areas like the National Capital Region which contains several critically important buildings.
- Indrajaaal mitigates these limitations by combining 12 proprietary technologies for the first time into a wide-area networked system.

#### Way Forward:

- Indrajaaal would reshape the security landscape for defence, public and private infrastructure.

### AFRICAN NATIONS ENDORSE REGIONAL STRATEGY TO ACCELERATE ACTION AGAINST ANTIMICROBIAL RESISTANCE



#### Why in news?

- African nations have endorsed a regional strategy to accelerate action against antimicrobial resistance (AMR).
- The strategy was adopted at the 73rd session of the World Health Organization (WHO) Regional Committee for Africa in Botswana's capital Gaborone.

#### Global Action Plan on AMR:

- WHO member states had adopted the Global Action Plan on AMR in 2015, and had committed to develop,

implement, and monitor antimicrobial resistance national action plans (AMR NAPs).

- The strategy endorsed in Gaborone aims to accelerate the implementation of AMR NAPs.

#### Why focus on AMR?

- Addressing AMR is integral to achieving the United Nations-mandated Sustainable Development Goals (SDGs) by 2030. For example, AMR increases treatment costs. This means attaining universal health coverage will become more challenging.
- Reducing child and infant mortality under SDG 3 calls for effective antibiotics, but antibiotic resistance is now one of the major threats to newborn health globally.
- Some 4.95 million people worldwide died of AMR-related diseases in 2019. Of these, 1.27 million were directly attributable to bacterial resistance in sub-Saharan Africa.
- AMR could kill 4.1 million people across Africa by 2050 unless serious actions to address the threat are taken.
- The continent's economic growth would also be impacted since African countries could lose up to five per cent of their gross domestic product as a result of AMR.

#### Gaps in implementation:

- According to WHO Africa, 45 of the 47 member countries have AMR action plans. Of these, 33 plans have been endorsed by national authorities. But the implementation of the action plans has been poor.
- Less than half of WHO Africa member nations have adopted the WHO Access, Watch, Reserve (AWaRe) classification of antibiotics in their national essential medicines lists (EML). This is vital for ensuring access and reducing AMR.
- Lack of political commitment, inadequate antimicrobial surveillance including insufficient laboratory capacity and limited capacity for the implementation of antimicrobial stewardship interventions are among the key factors behind poor implementation.
- Limited access to resources and erratic use of antimicrobials have magnified AMR infections in Africa.

#### One Health approach:

- The regional antimicrobial resistance strategy prescribes key interventions to enhance implementation in line with the "One Health" approach.
- AMR has been recognised as a One Health issue owing to its significant linkages with the health of humans, animals and environment.
- The strategy aims to strengthen coordination and governance of action against AMR, improve awareness and understanding, step up surveillance of

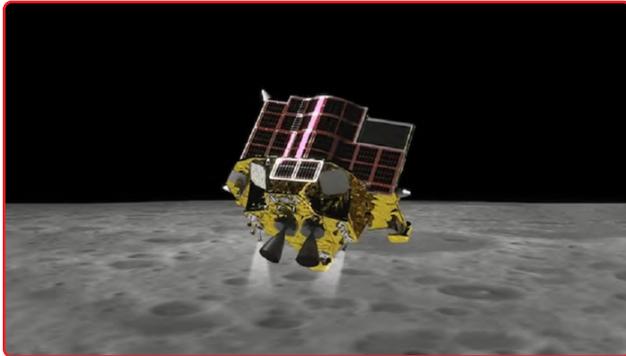
AMR and antimicrobial use, and reinforce applicable national regulations and laws.

- By endorsing the strategy, WHO member states have committed to work towards a target by 2030 to have functional "One Health AMR governance mechanisms". This includes defined roles and responsibilities across sectors and established accountability arrangements, thus achieving priority AMR interventions.

#### Way Forward:

- As priority, member states are now expected to ensure effective regional and national multi-sectoral coordination and partnership on AMR by engaging stakeholders from the human, animal and environmental sectors.
- Member states will also work towards ensuring effective enforcement of antimicrobial regulations and laws by 2030.
- These include those related to quality control, use and distribution of antimicrobial medicines. This is essential to address the emergence of substandard and falsified antimicrobials and inappropriate use of antimicrobials in the WHO Africa Region.

### JAPAN TO LAUNCH SLIM MOON LANDER ON SEPTEMBER 15



#### Why in news?

- Japan's Mitsubishi Heavy Industries (MHI) has confirmed plans to launch its H-IIA rocket carrying a Moon lander.

#### Details:

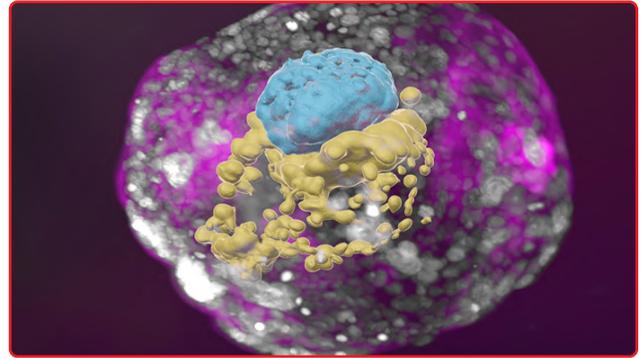
- The launch is set to take place from the Japan Aerospace Exploration Agency's (JAXA) Tanegashima Space Centre in southern Japan with a launch window open until September 15.
- The H-IIA rocket, jointly developed by JAXA and MHI, has been Japan's flagship space launch vehicle since 2001.
- It boasts an impressive track record, with 45 successful launches out of 46 attempts.

#### What it holds for Japan?

- This upcoming launch marks a significant milestone as it will carry Japan's first spacecraft destined to land on the Moon.

- The mission's success could potentially accelerate Japan's aerospace development initiatives.
- In support of these efforts, JAXA may receive a subsidy of about 10 billion yen (\$68.4 million) in fiscal 2024.
- This funding is expected to be used to compensate companies and universities involved in the development of satellites, rockets, and lunar-exploration technologies.

### SCIENTISTS GROW A MODEL OF HUMAN EMBRYO IN THE LAB



#### Why in news?

- Due to ethical reasons and technical challenges, studying human post-implantation development has been limited.
- The closest that scientists have come to understand intrauterine development after implantation is by using mouse naïve embryonic stem cells (ESCs) that gave rise to embryonic and extra-embryonic stem cells capable of self-assembling into mouse structured stem cell-based embryo models at the post-gastrulation stage.

#### Latest research:

- It is at this stage that the embryo differentiates into the three primary founding tissue types of the body.
- But for the first time, researchers were able to extend the findings from mouse to humans by using genetically unmodified human naïve embryonic stem cells.

#### Key Highlights:

- The researchers were able to develop a "complete" model of the human embryo in the lab from implantation into the uterus to 14 days after fertilization. The model mimics the 3D structure and key hallmarks of post-implantation human embryos up with all the known features found in normal embryos around two weeks old.
- Known as stem cell-based embryo-like structures, or SEMs, they were developed without using sperm, eggs or a womb.
- According to the researchers at the Weizmann Institute of Science in Israel, the models secreted a

hormone that turned a commercial pregnancy test to positive.

- The model recreates the organisation of all known lineages and compartments of early post-implantation human embryos, including the epiblast, hypoblast, extraembryonic mesoderm and trophoblast.
- Unlike previous models, this model shows defining hallmarks of integrated embryo models, including all lineages of the post-implantation embryo and structural organisation.

#### Way Forward:

- They observed proper spatial allocation of cell lineages into defined embryonic and extra-embryonic compartments in the complete absence of fertilisation or interaction with maternal tissues and without the need of providing external targeted signalling pathway induction during the self-organisation of the aggregated cells.
- This SEM platform may enable the experimental interrogation of previously inaccessible windows of human early post-implantation up to peri-gastrulation development.

### AUSTRALIA ANNOUNCES MOON MISSION, ROVER TO EXTRACT OXYGEN FROM LUNAR SOIL



#### Why in news?

- As India's Chandrayaan-3 goes into lunar sleep, the Australian Space Agency, in collaboration with NASA, is developing a rover under the Trailblazer program of the Moon to Mars initiative.

#### Key Highlights:

- The rover, leveraging Australia's expertise in remote operations, will collect lunar soil, or regolith, from which NASA aims to extract oxygen, a crucial move towards establishing a long-term human presence on the Moon.
- The rover is set to embark on its lunar journey as part of NASA's future Artemis mission, with a projected launch date as early as 2026.

#### Artemis mission:

- NASA has already launched one Artemis mission, Artemis 1, which sent an uncrewed Orion spacecraft

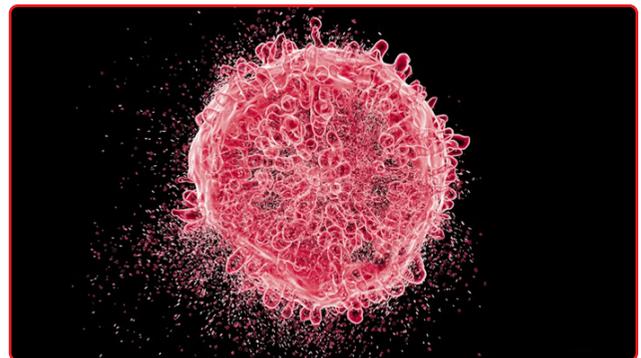
to lunar orbit and back last year. Preparations are underway for Artemis 2, scheduled for late 2024, which will send four astronauts around the Moon.

- Following that, Artemis 3, planned for late 2025 or 2026, will see astronauts landing near the lunar South Pole, marking another significant step in lunar exploration.

#### Significance:

- This marks a significant milestone for Australia's space industry, as it will be the country's first rover to land on the Moon.

### INDIAN SCIENTISTS DEVELOP UNIQUE WAY TO DETECT AND KILL CANCER CELLS



#### Why in news?

- Scientists at the Indian Institute of Science (IISc) have made a significant breakthrough in cancer research by developing a new method to detect and kill cancer cells.
- They have created hybrid nanoparticles, composed of gold and copper sulphide, which can destroy cancer cells through heat generation and enable their detection using sound waves.

#### Innovative approach:

- The hybrid nanoparticles exhibit photothermal, oxidative stress, and photoacoustic properties.
- When exposed to light, these particles absorb it and generate heat, effectively killing cancer cells. Additionally, they produce toxic singlet oxygen atoms that further contribute to the destruction of cancer cells.
- Beyond their therapeutic potential, these nanoparticles also offer diagnostic capabilities. They can absorb light and generate ultrasound waves, enabling the detection of cancer cells with high contrast.
- This property could enhance the accuracy of cancer diagnosis as sound waves scatter less than light when passing through tissues, providing clearer images and more precise measurements of oxygen saturation in tumors.

#### Potential:

- The IISc team's innovation addresses a key limitation of previously developed nanoparticles - their large size.

- By employing a unique reduction method, the researchers were able to deposit tiny seeds of gold onto the copper sulphide surface, creating hybrid nanoparticles less than 8 nm in size.
- These minuscule particles can potentially navigate through tissues easily and reach tumors, while also being small enough to leave the human body naturally without accumulating.

#### What's next?

- So far, the nanoparticles have been tested on lung and cervical cancer cell lines in laboratory settings.
- The next step for the IISc team is to advance these promising results towards clinical development, marking a significant stride in the fight against cancer.

### ISRO'S ADITYA-L1 MISSION COMMENCES DATA COLLECTION WITH STEPS INSTRUMENT



#### Why in news?

- The Indian Space Research Organisation (ISRO) announced recently that its Aditya-L1 mission has commenced collecting scientific data, marking a milestone in India's solar exploration efforts.

#### STEPS instrument:

- The Supra Thermal and Energetic Particle Spectrometer (STEPS) instrument, a part of the Aditya Solar Wind Particle EXperiment (ASPEX) payload, has started its data-gathering operations.
- STEPS, equipped with six sensors observing in various directions, is responsible for measuring supra-thermal and energetic ions ranging from 20 (kiloelectronvolt) keV/nucleon to 5 (mega electron volt) MeV/nucleon, as well as electrons exceeding 1 MeV.
- These measurements are essential for understanding the behaviour of particles around Earth, particularly in the presence of the Earth's magnetic field.
- These measurements will persist throughout the Aditya-L1 mission's cruise phase as it progresses toward the Sun-Earth L1 point, providing crucial insights into the origin, acceleration, and anisotropy of solar wind and space weather phenomena

#### Activations:

- The activation of STEPS took place on September 10, at a distance greater than 50,000 km from Earth, equivalent to over eight times the Earth's radius.
- After undergoing essential instrument health checks, data collection continued until the spacecraft moved beyond the 50,000 km mark from Earth.

#### Stakeholders:

- STEPS was developed by the Physical Research Laboratory (PRL) with support from the Space Application Centre (SAC) in Ahmedabad.

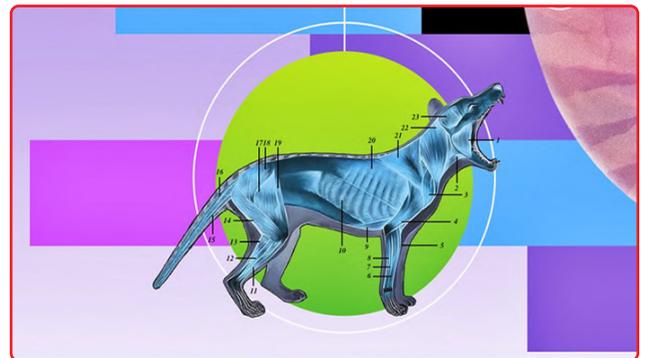
#### About Aditya-L1 spacecraft:

- The Aditya-L1 spacecraft, India's first mission dedicated to studying the Sun, has been making significant strides. It recently completed its fourth earth-bound manoeuvre, bringing it closer to its intended mission trajectory.
- The spacecraft lifted off successfully on September 2, carrying seven different payloads designed for a detailed study of the Sun.
- Four of these payloads will observe the Sun's light, while the other three will measure in-situ parameters related to plasma and magnetic fields.

#### What's next?

- The next manoeuvre for the Aditya-L1 mission is scheduled for September 19.

### SCIENTISTS RECOVER RNA FROM EXTINCT TASMANIAN TIGER THAT HUNTED KANGAROOS



#### Why in news?

- In a first-of-its-kind experiment, researchers have successfully extracted Ribonucleic Acid (RNA) from the preserved skin and muscle of an extinct Tasmanian tiger.

#### Why it matters?

- The specimen, stored since 1891 at a museum in Stockholm, has provided the first-ever recovery of RNA from an extinct species. This discovery could potentially boost efforts towards recreating extinct species and help decipher the cause of past pandemics.

### What is RNA?

- RNA, similar to Deoxyribonucleic Acid (DNA), carries genetic information and plays a crucial role in protein synthesis.
- While DNA contains an organism's genetic code, RNA carries genetic information it receives from the DNA, synthesizing proteins that an organism requires to live and regulating cell metabolism.

### Concerns:

- The research has raised questions about how long RNA can survive in conditions like room temperature in a cupboard, where these remains had been stored.
- The remains were in a state of semi-mummification, with skin, muscles, and bones preserved but internal organs lost.

### Tasmanian tiger:

- The Tasmanian tiger, also known as the thylacine, was a dog-sized striped carnivorous marsupial that once roamed the Australian continent and adjacent islands.
- The Tasmanian tiger resembled a wolf, aside from the tiger-like stripes on its back. The arrival of people in Australia roughly 50,000 years ago ushered in massive population losses.
- The 18th-century arrival of European colonisers spelled doom for the remaining populations concentrated on the island of Tasmania.
- The last-known Tasmanian tiger succumbed in a Tasmanian zoo in 1936.
- It was an apex predator that hunted kangaroos and other prey. However, due to human activities, the species is now extinct.

## CHINA PLANS TO SEND MISSION 15 CRORE KM AWAY FROM EARTH TO STUDY THE SUN



### Why in news?

- China is planning to launch a solar exploration mission to an unexplored orbit between Earth and the Sun, known as the Sun-Earth L5 Lagrangian Point.
- The mission, dubbed the Xihe-2 solar exploration mission, is expected to be launched in 2026.

### Aim:

- It aims to investigate the origin and evolution of the magnetic field in solar active regions and study

the three-dimensional structure and physical mechanism of solar bursts.

### Why Sun-Earth L5 Lagrangian Point?

- The Sun-Earth L5 Lagrangian Point, located about 150 million kilometers (15 crore km) from Earth, is an ideal location for studying space weather and monitoring solar activity.
- It offers a unique vantage point that allows for imaging of solar activity at least three days before it can be viewed from Earth and measures the solar wind conditions four to five days ahead of Earth impact.
- The Xihe-2 will be the world's first artificial probe to reach this point, marking a significant milestone in space exploration.
- In addition to providing crucial data for scientific research, the satellite will also enhance China's ability to forecast space weather.
- This could lead to more timely warnings and accurate predictions of space weather events, which have the potential to disrupt communication systems and power grids on Earth.

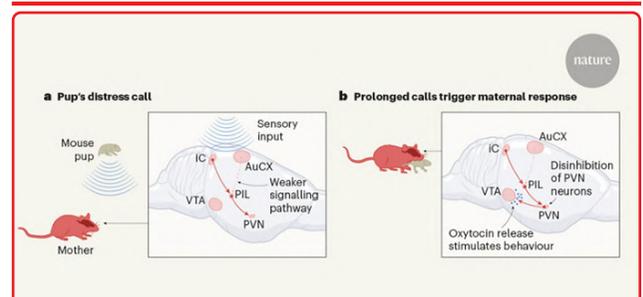
### Lunar projects:

- Alongside the solar probe mission, China's lunar exploration project is also making steady progress. Experts are currently discussing the construction of a long-term underground lunar research station.
- Despite the challenges posed by the moon's lack of atmosphere, researchers believe that underground caves in lunar lava tubes could provide shelter from temperature extremes, radiation, meteorite impacts, and lunar dust.

### Way Forward:

- These ambitious initiatives hold the promise of yielding valuable insights into the Sun's activities and enhancing ability to predict and prepare for space weather events.

## NEURAL CIRCUITRY OF MOUSE MOTHERS TO PUPS' CALLS DECIPHERED



### Why in news?

- The neural circuitry underlying the responses of mouse mothers to calls from their pups has now been studied by researchers. This mechanism may be important for sustaining mouse maternal care.

**Oxytocin neurons:**

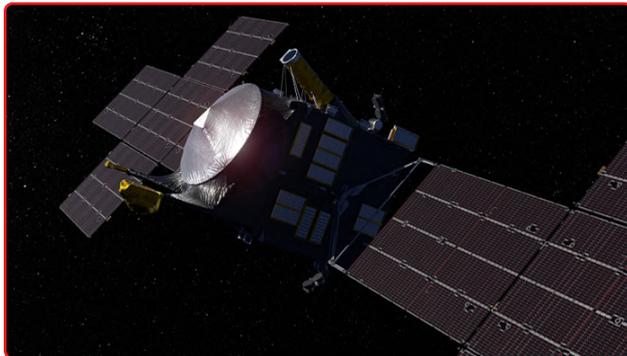
- The hormone oxytocin is known to be important for maternal physiology and behaviour; for example, it has roles in childbirth and in milk ejection during nursing.
- In humans, baby cries are a powerful signal of infant distress, and most nursing mothers respond to cries with oxytocin release, increased hypothalamic activity, comforting behaviours towards the infant and occasional milk ejection.
- The neural circuitry that routes auditory information about infant distress calls to oxytocin neurons is unclear.

**Highlights of the research:**

- Researchers recorded the neural activity of oxytocin neurons in maternal mice whilst their pups were calling.
- They found that these neurons responded via input from a region of the brain called the posterior intralaminar thalamus.
- This circuit was found to control oxytocin release and pup retrieval, providing a mechanism for the integration of sensory cues from the offspring into maternal hormone networks to promote efficient parenting.

**Way Forward:**

- The findings help to understand how sensory cues from offspring are processed by neural circuits to activate the release of neuromodulators such as oxytocin, which alter maternal behaviour.

**NASA TO LAUNCH PSYCHE MISSION****Why in news?**

- NASA's Psyche spacecraft is set to embark on a groundbreaking mission to explore a metal-rich asteroid, following the completion of fueling and testing procedures.
- The launch is scheduled for October 5, from Launch Complex 39A at NASA's Kennedy Space Center in Florida

**Where is Psyche mission going?**

- The journey to the asteroid, also named Psyche, will span nearly six years and cover approximately 3.6 billion kilometers.

- The asteroid orbits the Sun between Mars and Jupiter and is believed to be a remnant core of a planetesimal, composed primarily of iron-nickel metal.
- While there are no plans to mine the asteroid, studying it from orbit could provide invaluable insights into the composition of Earth's core.

**DSOC Experiment:**

- In addition to its primary mission, the Psyche spacecraft will also host a pioneering technology demonstration known as NASA's Deep Space Optical Communications (DSOC) experiment.
- This laser communications system aims to test high-bandwidth optical communications back to Earth during the first two years of Psyche's journey.
- This experiment could revolutionise how data is transmitted across vast distances in space, potentially enhancing our ability to explore the farthest reaches of the solar system.

**Way Forward:**

- This mission represents a significant step forward in our understanding of the early solar system and the formation of terrestrial planets.

**HUMANS HAVE BUILT WITH WOOD FOR 4.7L YEARS****Why in news?**

- Along the banks of the Kalambo River in Zambia near Africa's second-highest waterfall, archaeologists have excavated two logs of the large-fruited bushwillow tree that were notched, shaped and joined nearly half a million years ago.

**Details:**

- These artefacts represent the oldest-known example of humans, building wooden structures, a milestone in technological achievement that indicates that our forerunners displayed more ingenuity than previously thought.
- The overlying log at Kalambo Falls is about 1.4 metres long, with tapering ends. About 1.5 metres of the underlying log was excavated.
- The wood, found in a waterlogged condition, was preserved by a permanent high-water table at the site. Clay sediments surrounding it provided an oxygen-free environment preventing decay.

**Key Highlights:**

- The logs, modified using stone tools, appear to have been part of a framework for a structure, a conclusion that contradicts the notion humans at that time simply roamed the landscape hunting and gathering resources.
- The framework could have supported a walkway or platform raised above the seasonally wet surroundings. A platform could have multiple purposes including storage of firewood, tools, food and as a foundation on which to place a hut.
- While the vast majority of archaeological sites of this age preserve only the stone tools, Kalambo Falls provides us a unique insight into the wooden objects that these tools were being used to create, allowing a much richer and more complete picture of the lives of these people.

**Homo heidelbergensis:**

- The earliest-known Homo sapiens fossils date from roughly 300,000 years ago in Morocco. The Kalambo Falls logs were determined to be from about 476,000 years ago.
- No human remains were found there, but Barham suspects the artefacts were fashioned by a species called Homo heidelbergensis known from about 700,000 to 200,000 years ago.
- Homo heidelbergensis possessed a large brow ridge and a bigger braincase and flatter face than earlier hominins - species on the human evolutionary lineage.

**CHINA IS WORKING TO BUILD UNDERGROUND HOMES INSIDE MOON LAVA TUBES****Why in news?**

- Chinese researchers are exploring the possibility of establishing a long-term, safe, and stable shelter on the moon within lunar lava tubes.

**Lunar lava tubes:**

- These hollow, pipe-shaped tunnels were formed billions of years ago when molten rock flowed beneath the hardened upper layer of lava.
- Over time, geological activities, impact events, and moonquakes have caused some of these tubes to

collapse, forming accessible "skylights" that provide an entry point to the moon's underground world.

- These lava tubes offer protection from the harsh lunar surface conditions, including extreme temperatures, radiation, and micrometeorite impacts.

**How the experiment will be carried on?**

- Scientists have conducted fieldwork on several lava caves in China to enhance their understanding of lunar lava tubes.
- They found similarities between Earth's and the moon's lava tubes, which can be categorized into vertical entrance tubes and slope entrance tubes.
- The Chinese researchers have selected lunar lava tubes at Mare Tranquillitatis and Mare Fecunditatis as primary exploration targets. The main probe will use a robotic mobile system to navigate complex terrains and carry auxiliary detectors for relay communication and energy support.
- It will also carry scientific payloads to examine the external and entrance environment of the lava tube, terrain, and material composition.
- Auxiliary detectors will perform tasks such as bionic multi-legged crawling, bouncing, and employing rolling detectors. They will also carry payloads to detect temperature, radiation, lunar dust, soil composition, and water ice inside the lunar tube.

**What's next?**

- For future crewed lunar bases, they proposed constructing a long-term underground research base within a lunar lava tube. This would involve building a support center for energy and communication at the tube's entrance, landscaping the terrain, and deploying cabins inside the tube.
- The China Manned Space Agency announced plans to achieve a manned lunar landing by 2030, marking the initiation of the lunar landing phase of the program

**SOCIAL ISSUES****MINISTRY OF EDUCATION OBSERVES LITERACY WEEK UNDER ULLAS****Why in news?**

- The Government of India has decided to organise a literacy week from 1st September to 8th September

2023 to celebrate International Literacy Day for generating awareness among all the stakeholders/beneficiaries/ citizens about the ULLAS- Nav Bharat Saaksharta Karyakram.

#### Vision:

- The week-long literacy campaign shall enable mass participation to inculcate a sense of Kartavyabodh and Janbhagidari in each and every citizen of the nation.
- This vision would popularise the scheme and help attain the goal of making India fully literate.
- Another main objective will be to increase the number of registrations for learners and volunteers on the ULLAS mobile app.

#### About ULLAS:

- A Centrally Sponsored Scheme ULLAS (Understanding of Lifelong Learning for All in Society) - Nav Bharat Saaksharta Karyakram on Education for All (erstwhile termed as Adult Education), was approved by Government of India for implementation during FYs 2022-27 in alignment with National Education Policy (NEP) 2020.
- Its aim is to support the States and Union Territories in promoting literacy among non-literates in the age group of 15 and above, across the country covering 5 crore non-literates during the implementation period from 2022-23 to 2026-27.

#### The Scheme has five components, namely

- a) Foundational Literacy and Numeracy
- b) Critical Life Skills
- c) Basic Education
- d) Vocational Skills
- e) Continuing Education.

#### The salient features:

- involvement of school students, pre-service students of Higher Education Institutions (HEIs), school teachers, Anganwadi and ASHA workers, NYKS, NSS, NCC volunteers,
- school to be unit for implementation of the scheme
- use of ICT and online implementation of the scheme through 'Online Teaching Learning and Assessment System' (OTLAS)
- Material and resources through digital modes, viz, TV, radio, cell phone-based free/open-source Apps/portals, etc.
- Assessment tests to be conducted in schools by State/UTs and evaluation of learners by NIOS/SIOS; assessment on demand through OTLAS and generation of e-certificates,
- Sample achievement survey and
- Online MIS.
- The logo, slogan/tagline-Jan Jan Sakshar and popular name- ULLAS of Nav Bharat Saksharta Karyakram was launched in July 2023 during the celebration of 3rd anniversary of National Education Policy (NEP) 2020.

## CHILDREN FROM VOID MARRIAGES ENTITLED TO PARENTS' SHARE IN PROPERTY, SAYS SC



#### Why in news?

- The Supreme Court recently held that a child born of a void or voidable marriage can inherit their parents' share in a joint Hindu family property governed by the Mitakshara law.
- A three-judge Bench headed by Chief Justice of India D.Y. Chandrachud, however, clarified that such a child would not be entitled to rights in or to the property of any other person in the family.

#### Details:

- A voidable marriage is one that is made invalid by the husband or wife through a decree. A void marriage is invalid at its very inception.
- The Mitakshara law of succession governing Hindu undivided families applies to the whole of India, except West Bengal and Assam.

#### Notional partition:

- The first step to inheritance for a child from a void or voidable marriage would be to ascertain their parent's exact share in the ancestral property.
- This could be done by means of conducting a "notional partition" of the ancestral property and calculating how much of the property the parent would have got immediately before their death.
- For the purpose of ascertaining the interest of a deceased Hindu Mitakshara coparcener, the law mandates the assumption of a state of affairs immediately prior to the death of the coparcener, namely, a partition of the coparcenary property between the deceased and the other members of the coparcenary.
- When the share of the deceased in the property that would be allotted to him if a partition had taken place immediately before his death is ascertained, his heirs, including children who have been conferred with legitimacy, will be entitled to their shares in the property which would have been allotted to the deceased on the notional partition.

#### Legitimacy:

- Section 16 of the Hindu Marriage Act has statutorily conferred legitimacy to children born out of void or voidable marriages.

- ⇒ Section 16(3) of the Act stipulates that children from void and voidable marriages would have a right to their parents' property.
- ⇒ The court said that the intent of granting legitimacy to such children in the Hindu Marriage Act should also be reflected in the Hindu Succession Act, which governs inheritance.
- ⇒ Children from void or voidable marriages come within the ambit of "legitimate kinship", and cannot be regarded as illegitimate by the Hindu Succession Act when it comes to inheritance.

### Hindu Succession (Amendment) Act, 2005:

- ⇒ After the enactment of the Hindu Succession (Amendment) Act, 2005, the share of a deceased person in a joint Hindu family governed by Mitakshara law can be devolved to his heirs by testamentary or intestate succession.
- ⇒ Prior to the amendment, the devolution was only through survivorship. Besides, the amendment gave equal rights of succession to women as well as men.

### MALAVIYA MISSION, TEACHERS TRAINING PROGRAMME



#### Why in news?

- ⇒ Recently, the Union Minister for Education launched the Malaviya Mission - Teachers Training Programme by the University Grants Commission at Kaushal Bhawan, New Delhi.

#### Aim:

- ⇒ Organised by the University Grants Commission, in association with the Ministry of Education, the Malaviya Mission - Teacher Training Programme aims to provide tailored training programmes for teachers.
- ⇒ This programme will work for the capacity building of faculty members in higher educational institutions.

#### Key Highlights:

- ⇒ He emphasised improving the quality of education at all levels by infusing quality and excellence in teachers and teaching methods.
- ⇒ He also announced the renaming of Human Resource Development Centres (HRDCs) as Madan Mohan Malaviya Teachers' Training Centre.

- ⇒ This programme will ensure continuous professional development and help in building capacities of 15 lakh teachers of HEIs through 111 Malaviya Mission centres across India in a time-bound manner.
- ⇒ The capacity building under the Malaviya Mission will be mapped to the credit framework to ensure career progression pathways for educators.

#### Programme structure:

- ⇒ The two-week online programme shall focus on various themes identified for course curriculum/content for capacity building of faculty members at higher educational institutions.
- ⇒ The 8 themes include Holistic and Multidisciplinary Education, Indian Knowledge Systems (IKS), Academic Leadership, Governance and Management, Higher Education and Society, Research and Development, Skill Development, Student Diversity and Inclusive Education and Information and Communication Technology.

### CENTRE SIGNS MOU WITH ADOBE TO TRAIN CHILDREN IN CLASSROOM



#### Why in news?

- ⇒ The Union Education Ministry signed an agreement with global software major Adobe to help children develop creative expression in classrooms using the application Adobe Express.
- ⇒ Training and certification in creativity and digital literacy will be provided to about 20 million students and five lakh teachers by 2027 using Adobe Express-based curriculum.

#### Key Highlights:

- ⇒ Under the programme, Adobe will provide schools across the country with free access to Adobe Express Premium and professional development of educators.
- ⇒ Curriculum, training and certification based on Adobe Express tools and capabilities will be rolled out to empower students and educators with topics covering creativity, generative AI, design, video, animation and other emerging technologies.
- ⇒ 5,00,000 Educators will be up-skilled to use Express.

#### Way Forward:

- ⇒ In the time of digitisation, new ideas, new innovation and creativity, the partnership will create a new standard and benchmark for students.

## DEPWD LAUNCHES TRANSFORMATIVE PROGRAMS TO EMPOWER INDIVIDUALS WITH DISABILITIES



### Why in news?

- Recently, the Ministry of social Justice and Empowerment, unveiled five transformative initiatives at the Dr. Ambedkar International Centre (DAIC).

### Overview of DEPwD's five pioneering initiatives:

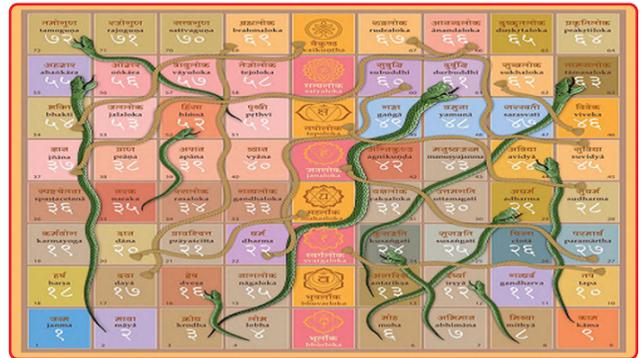
- MOU with Council of Architecture: DEPwD has joined hands with the Council of Architecture (COA) to introduce universal accessibility courses within Bachelor of Architecture programs. This collaboration extends to the development of a certified course for architects and civil engineers, equipping them with the skills to conduct accessibility audits in built environments, thereby ensuring compliance with accessibility standards.
- Releasing of Anonymous Data of UDID: DEPwD's release of anonymous data through the Unique Disability ID (UDID) portal for research purposes represents a significant leap in data-driven decision-making within the disability sector. This initiative provides invaluable insights at various levels, facilitating a deeper understanding and informing targeted interventions.
- PM Daksh Portal: DEPwD introduces the PM Daksh-DEPWD Portal, a comprehensive digital platform designed to empower Persons with Disabilities in their pursuit of skill training and employment opportunities. The portal offers seamless registration through UDID, access to location-based skill training options, a wide array of job listings from across India, and streamlined administrative processes.
- Pathways to Access: Courts on Disability Rights: DEPwD has compiled notable judgments from India's Supreme Court and High Courts concerning disability rights into a comprehensive booklet. This resource serves as a valuable reference guide for persons with disabilities and stakeholders in the disability sector.
- Online Case Monitoring Portal by CCPD: The Chief Commissioner for Persons with Disabilities (CCPD) has adopted a cutting-edge application for handling

grievances filed by persons with disabilities. This initiative streamlines the entire process, making it paperless and efficient. Key features include seamless online complaint filing, automated reminders, and simplified hearing scheduling.

### Way Forward:

- These initiatives underscore DEPwD's unwavering commitment to fostering inclusivity, advancing disability rights, and driving meaningful change in the lives of persons with disabilities throughout India. All officials were present at the Nalanda Hall of Dr. Ambedkar International Centre on this occasion.

## TO HEAVEN AND BACK AT THE ROLL OF A DICE



### Why in news?

- Sarp-Rajju and five other indoor games have been developed by Indian Knowledge Systems (IKS).
- The games have been divided into three segments: dice-based, strategic, and those based on engagement.
- IKS, an innovation cell was founded at the All India Council for Technical Education (AICTE) in 2020, under the Union Ministry of Education, to promote interdisciplinary research on aspects of indigenous knowledge.

### Sarp-Rajju:

- At a glance, the board game of Sarp-Rajju (Snakes and Ropes) looks like a regular set of snakes and ladders.
- A closer look reveals that there are ropes instead of ladders, with 72 (9x8), not 100 squares, with nine being the number of sensory windows and eight the parts of the body.
- Players start at cell 68, named vaikuntha (eternal bliss). The other cells too are named after elements from Hindu philosophy, like moha (delusion) and kaama (desire).
- Each throw of the dice indicates the number of cells the player must advance tracing their 'karmic path' back towards vaikuntha. If there are doubts about the rules, players can scan a QR code to access them.

### Introduction to schools:

- By the end of 2023, 15 games are likely to be launched.
- This is in keeping with the ministry's focus on the shift from rote-based to fun-filled learning that is one

of the themes of the National Education Policy (NEP) 2020. The aim is to promote creativity and a multi-faceted growth.

- These indoor games will be introduced to school children in the next academic year, under the Bhartiya Games programme that has already launched 75 outdoor games from different parts of the country in the current school year.
- Some popular ones are Langdi-Taang (hopscotch), javelin throw, Patang Uddayan (kite flying), Seeta Uddhar (prisoner's base), Mardani Khel (a form of martial arts).

#### Indoor games launched:

- Some indoor games have been included in the Jadui Pitara (magic box), a play-based learning programme tailored for children between 3 and 8 years.

#### Board Games:

- Among the board games which have been revived, reworked, and promoted are Bagh-Bakri (Tiger and Goats), Dash Ghuti (10 Pieces), and Chutaranga. Ninyaanave ka Pher (The Cycle of 99), a game from Rajasthan; and Golokdhaam, a game from West Bengal.

#### Bhartiya Games programme:

- The programme, available in 13 languages, was launched by Union Education Minister Dharmendra Pradhan in 2022, and has been developed under the National Curriculum Framework (NCF), one of the key components of the NEP.
- The Jadui Pitara comprises playbooks, toys, posters, flash cards, and indoor games.

### A NEW CHILD NEEDS TO BE ENROLLED IN SCHOOL EVERY 2 SECONDS TO MEET 2030 TARGET, UNESCO



#### Why in news?

- Slow progress on achieving the target of education for all set by the United Nations (UN), coupled with socio-economic pressures in many parts of the world, has widened the global educational gap in the last two years, according to UNESCO.
- There are now 250 million children not enrolled in school, up by six million since 2021 as per its new report.

- This increase is partly due to the mass exclusion of girls and young women from education in Afghanistan but also of slow progress across the world.

#### SDG Goal:

- Ensuring quality education for all is the fourth of the UN-mandated Sustainable Development Goals.
- A new child has to join school every two seconds from now to achieve the 2030 targets of this goal.
- This progress has to be supported by "58 million additional children, adolescents, and youth in school, and at least 1.7 million more primary school teachers trained to provide quality education", to attain SDG 4.

#### Progress on commitments:

- The UN organisation also analysed the progress on commitments made by 141 countries to upgrade their education systems to help meet SDG 4, a year ago at the UN Education Transformation Summit. They found that:
  - Four out of five countries have set a goal to advance teacher training and professional development.
  - Seven out of 10 have committed to increasing or improving their investment in education.
  - One out of four committed to increase financial support and school meal provision.

#### Education completion rate:

- The education completion rate is measured to calculate progress on global indicator 4.1.2 of SGD 4.
- An analysis of this parameter across countries revealed that completion rate for primary education increased to around 87 per cent in 2021 from 85 per cent in 2015.
- For secondary education, the rate grew by five percentage points, going from 53 per cent to 58 per cent during the study period.
- Sub-Saharan Africa remained well below the global average by more than 20 percentage points in primary education (64 per cent) and in upper secondary education (27 per cent).
- The COVID-19 pandemic, which caused to major economic disruptions and break in education globally, led to a 10 per cent drop in adult participation in formal and non-formal education in 57 mainly high-income countries.
- In the 31 low- and lower-middle-income countries that measure learning progress at the end of primary school, Vietnam is the only country where a majority of the children achieved minimum proficiency in both reading and mathematics.

#### Way Forward:

- UNESCO called for urgent action for achieving SDG 4 to protect the future of millions of children across the world.

## BIHAR GOVT ANNOUNCES NEW SCHEME FOR UNEMPLOYED MINORITY COMMUNITY YOUTHS



### Why in news?

- The Bihar government recently launched 'Mukhyamantri Alpsankhyak Udyami Yojna'(MAUY) for unemployed youths from the minority community.
- It was launched with an aim to promote industrial development and generate employment among unemployed minority youths.

### Implementation:

- The scheme will be implemented on almost similar lines of the existing Mukhyamantri SC/ST/EBC Udyami Yojana, Mukhyamantri Mahila Udyami Yojna (MMUY) and the Mukhyamantri Yuva Udyami Yojana (MYUY).
- Under this scheme, the Bihar government will provide Rs 10 lakh to an unemployed minority woman or man to start a new industry. Of Rs 10 lakh, Rs 5 lakh would be subsidy, while the rest would be loan, to be returned in installments.

### Free treatment:

- The cabinet also decided to make medical tests and treatment at the Indira Gandhi Institute of Medical Sciences (IGIMS, Patna), one of the main healthcare institutions in Bihar, free.
- Except registration and bed charges, everything will be free for patients at IGIMS.

### Traffic police stations:

- The cabinet also approved the proposal of the state home department to create 28 dedicated traffic police stations across Bihar, in addition to the existing 12.
- Traffic police stations will be set up in 23 towns that have a population of over 2 lakh, besides five in small towns.
- These new traffic police stations will come up in Kishanganj, Nawada, Siwan, Buxar, Madhubani, Jehanabad, Bhabhua, Supal, Saharsa, Jamui, Rohtas, Betiah, Vaishali, Aurangabad, Araria, etc. The cabinet also approved changes in the jurisdiction of existing traffic police stations of Patna and Gaya.
- Currently, traffic police stations are operational in 12 districts Patna, Bhagalpur, Gaya, Muzaffarpur,

Nalanda, Purnia, Saran, Darbhanga, Ara, Begusarai, Katihar and Munger.

## NHRC SEEKS ACTION TAKEN REPORT ON WELFARE OF TRANSPERSONS FROM GOVT



### Why in news?

- The National Human Rights Commission (NHRC) recently issued an advisory to the Centre, State governments and Union Territory administrations to ensure the welfare of transgender persons.
- The welfare measures include provision of separate toilets, free sex reassignment surgery, pension rights and inheritance rights.

### Key guidelines:

- A single transchild of a deceased government employee or pensioner may be treated as an unmarried daughter for the family pension and other benefits.
- It also recommended that transgender persons be allowed to inherit ancestral agricultural land.
- A multi-purpose identity card may be provided to the people of this community to help them access government schemes and other benefits.
- Insurance companies may be advised to consider and accept the Transgender Certificate issued by the appropriate authority for document verification purposes.

### Background:

- The commission has observed that one of the primary concerns of transpersons in the country is that despite legal reforms, they continue to grapple with discrimination, leading to employment disparities, limited access to healthcare, and exclusion from social circles.
- The Transgender Persons (Protection of Rights) Act, 2019, aims to safeguard and uphold their rights.

## CRIIO 4 GOOD MODULES TO ADVANCE GENDER EQUALITY

### Why in news?

- Recently, the Union Minister for Education launched 'CRIIO 4 GOOD', a new online, life skills learning

modules, to promote gender equality among girls and boys.

- The programme was launched in association with the International Cricket Council, UNICEF, and the Board of Control for Cricket in India at the Narendra Modi Stadium, Ahmedabad.



### Key Highlights:

- 'CRIIO 4 GOOD' is a series of 8 cricket-based animation films to promote gender parity, equip girls with life skills and encourage their participation in sports.
- Using the popularity and passion of cricket young audiences, ICC and UNICEF released these modules to inspire children and youth to adopt critical life skills and appreciate the importance of gender equality.
- The programme can be accessed free of cost in three languages: English, Hindi and Gujarati.
- The themes of the eight modules are: leadership, problem-solving, confidence, decision-making, negotiation, empathy, teamwork and goal setting and are visualized through state-of-the-art animation using cricketing examples. In-depth research into local nuances has made these films real and relatable.

### Way Forward:

- Through CRIIO 4 GOOD, the power of sports and the popularity of cricket can be used as a medium to empower the girl child and spread awareness about gender equity.

## HEALTH

### APPLE COUNTRY GETS GROUND READY FOR CANNABIS CULTIVATION



### Why in news?

- The Himachal Pradesh government is taking steps to legalise cannabis (hemp) cultivation in the State.

### Details:

- A committee comprising lawmakers that explored the possibility of legal cultivation of cannabis recently recommended cultivation of cannabis for "non-narcotic use of cannabis for medicinal, industrial, and scientific use".
- The State Cabinet approval is awaited after which a policy is expected to be framed soon by the State government on cannabis cultivation, keeping in view the provisions of the NDPS Act, 1985, and the NDPS Rules, 1989.

### Concerns:

- However, there are social concerns, especially of adolescents and youth being drawn towards the use and abuse of cannabis, the nexus between illegal producers and suppliers of cannabis getting stronger, the risk of pilferage, and the occurrence of amotivational syndrome.

### About Hemp:

- Hemp is a botanical class of Cannabis sativa cultivars grown specifically for industrial or medicinal use.
- It is produced in parts of Himachal Pradesh, though it is illegal under the Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985.

### Revenue for farmers:

- Allowing cannabis cultivation would reaffirm the government's commitment to safeguarding the interests of the farmers, who have been long demanding to lift the ban on cultivation.

### Cannabis cultivation in other states:

- The NDPS Act of 1985, imposes a ban on extracting the resin and flowers from the plant, but the law determines the method and extent of its cultivation for medicinal and scientific purposes.
- Section 10 (a) (iii) of the Act empowers the States to make rules regarding the cultivation of any cannabis plant, production, possession, transport, consumption, use and purchase and sale, and consumption of cannabis (except charas).
- The States are empowered to permit, by general or special order, the cultivation of hemp only for obtaining fibre or seeds or for horticultural purposes.
- In 2017, Himachal Pradesh's neighbour Uttarakhand became the first State in the country to legalise cannabis cultivation.

### NATIONAL MEDICAL COMMISSION ACHIEVES PRESTIGIOUS WFME RECOGNITION STATUS FOR 10 YEARS

### Why in news?

- The National Medical Commission (NMC), India has achieved the remarkable feat of being granted the

coveted World Federation for Medical Education (WFME) Recognition Status for a remarkable tenure of 10 years.

- This recognition is a testament to NMC's unwavering commitment to the highest standards in medical education and accreditation.



### Significance:

- As part of this recognition, all the 706 existing medical colleges in India will become WFME accredited and the new medical colleges that will be set up in the coming 10 years will automatically become WFME accredited.
- The recognition will further enhance the quality and standards of medical education in India by aligning them with the global best practices and benchmarks.
- It will also enable Indian medical graduates to pursue postgraduate training and practice in other countries that require WFME recognition, such as the United States, Canada, Australia, and New Zealand.
- It will increase the international recognition and reputation of Indian medical schools and professionals, facilitate academic collaborations and exchanges and promote continuous improvement and innovation in medical education and foster a culture of quality assurance among medical educators and institutions.
- With NMC being WFME accredited all the Indian students become eligible to apply for Education Commission on Foreign Medical Education and United States Medical Licensing Examination.

### About World Federation for Medical Education (WFME):

- The World Federation for Medical Education (WFME) is a global organization dedicated to enhancing the quality of medical education worldwide.
- WFME's accreditation program plays a pivotal role in ensuring that medical institutes meet and uphold the highest international standards of education and training.

### About National Medical Commission (NMC):

- The National Medical Commission (NMC) is India's premier regulatory body overseeing medical education and practice.

- Committed to upholding the highest standards in healthcare education, N M C ensures the delivery of quality medical education and training across the nation.

## CULTURE

### ADOPT A HERITAGE 2.0 PROGRAMME



### Why in news?

- The Archaeological Survey of India (ASI) has 3696 monuments under protection, which are spread, throughout the country. In order to sustain the rich cultural legacy, the heritage sites require time to time enhancement of the amenities.
- To this end and to further enhance the experience of visitors, ASI launched "Adopt a Heritage 2.0" programme at Samvet Auditorium, IGNC, New Delhi.

### Details:

- Union Minister of Culture urged all entities to come forward and help in better upkeep and rejuvenation of India's rich cultural heritage, in line with the vision of 'Virasat Bhi, Vikas Bhi'.
- 'Adopt a Heritage 2.0' programme seeks to foster collaboration with corporate stakeholders through which they can contribute to preservation of these monuments for the next generations.

### Key Highlights:

- Under this programme, ASI invites corporate stakeholders to enhance the amenities at the monuments by utilizing their CSR funds.
- The programme is a revamped version of the earlier scheme launched in 2017 and clearly defines the amenities sought for different monuments as per AMASR Act 1958.
- The stakeholders can apply for adopting a monument or specific amenities at a monument through a dedicated web portal, which contains details of monuments sought for adoption along with gap analysis and financial estimation of amenities.

### Selection process:

- The process for selection will be carried out after due-diligence and discussions with various stakeholders and assessing the economic and developmental opportunities at each monument.

- The selected stakeholders will develop, provide and maintain amenities in hygiene, accessibility, safety and knowledge categories.
- In doing so, they will get an opportunity to be recognized as a responsible and heritage-friendly entity.
- The term of the appointment will be for a period of five years initially, which may be further extended up to five years.

### 'WAGH NAKH' IS SET TO RETURN TO INDIA



#### Why in news?

- Recently, the Maharashtra Government said that 'Wagh Nak' will be brought to the country in November.

#### What is Wagh Nakh?

- Wagh Nakh, sometimes also referred to as 'Bagh nakh' or 'Vagh nakhya' is a claw-shaped weapon which has its origins in India. The weapon is designed in a way that it can fit over the knuckles.
- It consists of four to five sharp blades (nakh) which were used to cut through skin and muscle of the enemy.
- The weapon and its name 'bagh nakh' have drawn inspiration from the claws of big cats. Notably, 'bagh' is Hindi for tiger and 'Nakh' refers to tiger's claws.

#### Historical significance:

- While it was never used as an official weapon, given its size and design, Wagh Nakh could be concealed effectively and be used to conduct assassinations.
- Its most famous use was made by the first Maratha leader Chhatrapati Shivaji who attacked Bijapur general Afzal Khan with a 'Wagh nakh'.
- Like many other Indian artefacts, the 'Wagh nakh' is also placed in a British museum.

### SANTINIKETAN FINDS ITS PLACE ON UNESCO'S WORLD HERITAGE LIST

#### Why in news?

- Santiniketan, a town established by Nobel laureate Rabindranath Tagore, made it to the UNESCO's World Heritage List recently.

- Located in West Bengal's Birbhum district, Santiniketan, which means "abode of peace", started taking shape in 1901 and is the place where Tagore laid the foundations of Visva-Bharati University.



#### Facts:

- Santiniketan becomes the 41st UNESCO World Heritage Site in India and the third in West Bengal, after the Sundarbans National Park and the Darjeeling Mountain Railways.
- In 2022, the state's Durga Puja got space in "Intangible Cultural Heritage of humanity" under UNESCO.

#### About Santiniketan:

- Established in 1901 by the Nobel Laureate, Santiniketan was a residential school and centre for art based on ancient Indian traditions and a vision of the unity of humanity transcending religious and cultural boundaries.
- A 'world university', Visva Bharati was established at Santiniketan in 1921.

#### Other sites to find place on the prestigious list recently include

- Ancient Jericho in Palestine;
- the Zarafshan-Karakum Corridor of Silk Roads in Tajikistan, Turkmenistan, Uzbekistan;
- the Gedeo Cultural Landscape in Ethiopia; and
- the Cultural Landscape of Old Tea Forests of the Jingmai Mountain in China's Pu'er.

#### About UNESCO World Heritage Site:

- A World Heritage Site is a place that is listed by UNESCO for its special cultural or physical significance.
- The list of World Heritage Sites is maintained by the international 'World Heritage Programme', administered by the UNESCO World Heritage Committee.
- The UNESCO World Heritage Committee is composed of 21 UNESCO member states, elected by the General Assembly.
- The United Nations Educational, Scientific and Cultural Organization (UNESCO) seeks to encourage the identification, protection, and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity.

- ⇒ This is embodied in an international treaty called the Convention concerning the Protection of the World Cultural and Natural Heritage, adopted by UNESCO in 1972.

### PANEL CALLS FOR REVISING RULES OF CONSTRUCTION AROUND PROTECTED ASI MONUMENTS



#### Why in news?

- ⇒ A parliamentary panel has observed that the provision of 100-metre prohibited area and 300-metre regulated area around all monuments protected by the Archaeological Survey of India (ASI) has pitted the local community against these heritage structures in many places as they find it difficult to carry out necessary repair work of their residential spaces.

#### Key recommendations:

- ⇒ It has recommended rationalising the application of such rules based on the historical significance of the monuments.
- ⇒ In some cases, the entire village is within a radius of 300 metres, which makes it difficult for the entire village to carry out repair work of their residential houses. Such a situation in many places creates a hostile scenario, pitching the local community against the monuments.
- ⇒ It also recommended that the list of all 3,691 ASI-protected monuments be rationalised and categorised based on their national significance, unique architectural value and specific heritage content.

#### Provision under AMASR Act:

- ⇒ The prohibited and restricted area provision was introduced in 2010 through an amendment to the Ancient Monuments and Archaeological Sites and Remains (AMASR) Act, 1958.
- ⇒ It prohibits and regulates all activities like mining and construction around 100 metres and 300 metres. The Central government has already said that it was in the process of amending the Act.
- ⇒ The committee went on to say that at present, the same set of rules apply to both significant and insignificant monuments.

#### Way Forward:

- ⇒ The Parliamentary Standing Committee on Transport Tourism and Culture has asked the government to revise the rules to make them realistic.

### INDIA'S FIRST LIGHTHOUSE FESTIVAL



#### Why in news?

- ⇒ Recently, the Union Ministry of Ports, Shipping & Waterways inaugurated the maiden edition of 'Bharatiya Prakash Sthamb Utsav' or Indian Lighthouse Festival at the historic Fort Aguada in Panjim, Goa.

#### Mandate:

- ⇒ The Ministry of Ports, Shipping & Waterways is aiming to leverage the Indian Lighthouse Festival to shore up base for Public Private Partnership route to develop the historic into world class tourist destinations.
- ⇒ The Directorate General of Lighthouses and Lightships has already identified 75 such lighthouses, and this festival is a testament to the commitment of the government to celebrate and preserve our maritime heritage.

#### Key highlights:

- ⇒ The key highlights of India's First Lighthouse Festival are cultural exhibitions, session highlighting maritime history and culture, classical performances, light and sound shows, melodious evenings with celebrity singers, flavours of the coast and community engagements.

#### Way Forward:

- ⇒ The festival is aimed at rejuvenating the rich maritime history of India's 75 iconic lighthouses and unravel the illustrious stories to the world.

### MALAYALAM SURVIVAL DRAMA 2018 IS INDIA OFFICIAL OSCAR ENTRY

#### Why in news?

- ⇒ 'Malayalam survival drama 2018: Everyone is a Hero' has been chosen as India's official entry to the best foreign language film category at the 96th Academy Awards.



### Details:

- It became the fourth film from the language to be chosen for the honour.
- Before this, Guru (1997), directed by Rajiv Anchal and starring Mohanlal; Adaminte Makan Abu (2011), directed by Salim Ahamed; and Jallikattu (2019), filmed by Lijo Jose Pellissery, were chosen as the country's official entry for the Oscars, but none of these films got nominated.

### About Malayalam survival drama 2018:

- Directed by Jude Anthony Joseph, 2018 is based on the unprecedented rain and flood that hit Kerala in 2018.
- With an ensemble cast including Tovino Thomas, Vineeth Sreenivasan, Aparna Balamurali, Kalaiyaran, Kunchacko Boban, Lal, Narein, Tanvi Ram and others, the film became a moving reminder of the days when everyone in Kerala, irrespective of their religion, caste or political inclinations, came together to help people in distress.

## A DICTIONARY TO PREVENT A LANGUAGE FROM VANISHING

### Why in news?

- A language spoken by barely 1,600 people living in parts of West Bengal bordering Bhutan is to get a dictionary, due to the efforts of a professor at the University of Calcutta.
- Toto is a Sino-Tibetan language spoken by the tribal Toto people and is written in the Bengali script.

### Details:

- Even though prominent community member Dhaniram Toto developed a script as recently as in 2015, most people either write it in Bengali script or write in Bengali language.
- A book by the Padma Shri-decorated Dhaniram Toto, titled 'Dhanua Totor Kathamala', was written in Bengali.

### Composition:

- The dictionary is a step in the direction of preserving the language, alive so far only orally, by putting its vocabulary in print.

- Toto words, to be translated into Bengali and English, will be composed in the Bengali script, considering that the Toto script is still in a nascent stage and members of the tribe are more familiar with the Bengali script.

### What's next?

- The trilingual dictionary, Toto Shabda Sangraha, will be released in Kolkata on October 7.

## MISCELLANEOUS

### RUIXIANG ZHANG TO RECEIVE SASTRA RAMANUJAN PRIZE



### Why in news?

- The 2023 SASTRA Ramanujan Prize will be awarded to Ruixiang Zhang of the University of California, Berkeley.
- This annual \$10,000 prize is for outstanding contributions by individuals in areas of mathematics influenced by Indian mathematics great Ramanujan (in a broad sense).

### About Ruixiang Zhang:

- He received his BS degree in mathematics from Peking University in 2012 and his PhD in mathematics at Princeton University in 2017.
- After working at the Institute for Advanced Study, Princeton, and the University of Wisconsin, since 2021, he has been an assistant professor at the University of California, Berkeley.
- His fundamental work spans analytic number theory, combinatorics, Euclidean harmonic analysis, and geometry.
- Building on his doctoral thesis, he and Shaoming Guo proved a generalisation of the main conjecture in Vinogradov's mean value theorem, which is concerned with the sums of numbers raised to a certain power.

### Way Forward:

- The prize will be awarded at an International Conference in Number Theory on December 20-22 at SASTRA University in Kumbakonam, Ramanujan's hometown.



## PRACTICE QUESTION FOR UPSC PRELIMS EXAM

- Consider the following statement regarding Fungi:
  - They are eukaryotic organisms.
  - Fungi are either terrestrial or aquatic.
  - Fungi reproduce asexually.Choose the correct option from the codes given below:
  - 1 and 2
  - 2 and 3
  - 1 and 3
  - 1, 2 and 3
- Consider the following statement regarding Aditya-L1 mission:
  - It will be launched by the GSLV launch vehicle.
  - It is the first space-based Indian mission to study the Sun.
  - The spacecraft shall be placed in a halo orbit around the Lagrange point 1 (L1) of the Sun-Earth system.Choose the correct option from the codes given below:
  - 1 and 2
  - 2 and 3
  - 1 and 3
  - 1, 2 and 3
- Consider the following statement regarding Bhoramdeo Wildlife Sanctuary:
  - It is situated in Chhattisgarh.
  - This wildlife sanctuary is the origin of the Fen and Sankari rivers.Choose the correct option from the codes given below:
  - 1 Only
  - 2 Only
  - 1 and 2
  - None of the above
- Consider the following statement:
  - Kamaladevi Chattopadhyay
  - Arvind Kejriwal
  - Anshu Gupta of GoonjWho among the following are the winner of Ramon Magsaysay Award?
  - 1 and 2
  - 2 and 3
  - 1 and 3
  - 1, 2 and 3
- Consider the following statement regarding Currency Chest:
  - It is a place where the RBI stocks the money meant for banks and ATMs.
  - New currency notes that are printed by RBI, they are first delivered to currency chests.
  - They do not act as cash distribution centres.Choose the correct option from the codes given below:
  - 1 and 2
  - 2 and 3
  - 1 and 3
  - 1, 2 and 3
- Consider the following statement regarding Leaf Blight:
  - It is a plant disease that affects the foliage (leaves) of various plants.
  - It is typically caused by various types of fungi or bacteria that infect and damage the plant tissues.
  - It can affect ornamental plants and crops only.Choose the correct option from the codes given below:
  - 1 and 2
  - 2 and 3
  - 1 and 3
  - 1, 2 and 3
- Consider the following statement regarding Financial Action Task Force (FATF):
  - It was established in 1991 during the G8 Summit in Moscow.
  - It is an inter-governmental policy-making to combating money laundering and terrorist financing.
  - India became a member of FATF in 2010.Choose the correct option from the codes given below:
  - 1 and 2
  - 2 and 3
  - 1 and 3
  - 1, 2 and 3
- Consider the following statement regarding Strategic disinvestment:
  - It imply the sale of a substantial portion of the Government shareholding of a central public sector enterprise of upto 50%.
  - It involves the transfer of ownership and control of a public sector entity to some other entity.Choose the correct option from the codes given below:
  - 1 Only
  - 2 Only
  - 1 and 2
  - None of the above
- Consider the following statement regarding Kokborok Language:
  - It is the language spoken by the Borok people in Tripura.
  - The dialect belongs to the Tibeto-Burman group of languages.
  - It is one of the state languages of Tripura.





























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**PRACTICE QUESTION FOR UPSC MAINS EXAM**


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1. Discuss why Uniform Civil Code (UCC) must focus on the 'best interests of child' principle in all custody disputes, including the point of biological ties, the rights of adoptive, single, surrogate and even LGBT parents. With the help of recent court cases, highlight the social and psychological impact of custody decisions on children's well-being.
2. A just and green transition must respond to the economic and labour systems of the Global South can unlock the real potential for green employment generation. Comment and discuss.
3. Has the Right to Information been weakened over the years? What are the recent concerns of activists about dilution of the Right to Information?
4. There is an urgent need for sustainable and resilient food systems to guarantee sustainable diets that are nutritious and aligned with the evolving ecosystem and climate change. Elaborate.
5. Discuss how gender equality and environmental sustainability goals, are interconnected particularly in the context of the Sustainable Development Goals (SDGs). Why women are considered to be highly vulnerable and disproportionately affected by climate change? How women-led climate action can provide the solution?
6. Why did the Mizoram Assembly pass a resolution against the Forest (Conservation) Amendment Act, 2023? Why is the Forest (Conservation) Act not applicable in Nagaland? What are the special constitutional provisions for Nagaland and Mizoram?
7. To reduce its digital carbon footprint, India must acknowledge the extent of its footprint and frame policies for its reduction. Comment.
8. Any loss of language is not only a loss of linguistic diversity but also a loss in terms of the associated cultural variations, opinions, views and knowledge. Elaborate.
9. Discuss various provisions and changes introduced in the Bharatiya Nagarik Suraksha Sanhita (BNSS) 2023 bill aimed at replacing the existing legal framework in India. What does the proposed legislation to overhaul criminal justice system mean?
10. What are the issues, apart from the Ukraine war, on which there is consensus in the New Delhi declaration? Why is the summit important to India and the Global South?
11. What is the 'deceitful means' clause in the Bharatiya Nyaya Sanhita, 2023? How have courts previously dealt with cases of consent and rape under IPC?
12. Ensuring that Indians have permanent access to a healthy diet is the most important task of economic policy today. Discuss the need for second green revolution to strengthen supply side and role of states in its success.
13. How might climate change affect farming and food security in India in the future? How the El Niño and is connected with other climate phenomena and food security in India? Discuss strategies for mitigation and adaption in the long run.
14. Biofuels play a critical role in ensuring access to affordable, reliable, sustainable, and modern energy for all, which is vital in a circular economy, and helps address climate change. Discuss how India can strengthen the development of sustainable biofuels, in addition to promoting ethanol uptake?
15. At COP28, developing countries should consider the global target of tripling renewable energy capacity from current levels by 2030 only if the North commits to equitable absolute targets domestically. Comment.
16. What is the blueprint of the India-Middle East-Europe Economic Corridor? Will it also influence the politics of the region? Is it going to pose a challenge to China's Belt and Road Initiative?
17. Although biohacking offers opportunities for improved health, the rapid growth of biohacking has raised significant ethical, social, and regulatory concerns. Elaborate.
18. Quantum computing is one of the fastest-growing areas in technology in recent times. Highlight some of the major international initiatives in quantum computing and the hurdles they may face in the future.
19. How is the Constitution amended? What are the different procedures for amending provisions in the Indian Constitution? Can constitutional amendments be struck down for want of ratification by States? Is there a time-limit prescribed for ratification?
20. SDGs are not enough for global sustainability. Discuss how adopting 'Sustainable Consumption Goals (SCG)' by OECD countries could provide a complementary approach to achieving global sustainability.
21. Competition Commission of India (CCI)'s recent draft regulations on settling competition law infringements set it on the same path of failure as the EU's 'commitments' regime'. Comment.
22. While progress has been made under Poshan Maah, India's size, diversity, and numerous challenges make it a persistent issue that demands constant attention. Comment and discuss.

23. Why will the implementation be delayed by several years? When will the Census and delimitation exercise take place? Why are some parties demanding a sub-quota for women from Other Backward Classes?
24. What does 'One Nation, One Election' mean? Discuss why and how implementing simultaneous elections will be deeply problematic in a parliamentary democracy?
25. Many cutting-edge AI deployments are not designed specifically for children even though they are accessed by them. Discuss how can the upcoming Digital India Act (DIA) better protect children's interests when interacting with AI?
26. Climate change has heightened the global risk of infectious diseases. Protecting ecosystems, fostering collaboration and embracing the 'One Health' paradigm would be the best defences. Comment.
27. 'The recognition of unpaid labour and equitable sharing of household duties will ultimately dictate whether substantive reform in gender equality is achieved through efforts like women's reservation Bill in the Parliament'. Elaborate.
28. Reforming India's kidney transplant laws is not only a matter of urgency but also a humanitarian imperative. Discuss how innovative kidney exchange methods face legal roadblocks, worsening a massive kidney shortage in India and what needs to be done?
29. The National Ignition Facility (NIF) experiment has opened up a new avenue for achieving nuclear fusion. India should invest in it since it can help India achieve its net-zero carbon emissions goals. Elaborate.

## PRACTICE QUESTION FOR UPSC PRELIMS EXAM

### ANSWER KEY

1. (a) 2. (b) 3. (c) 4. (d) 5. (a) 6. (a) 7. (b) 8. (c) 9. (d) 10. (a)  
 11. (a) 12. (b) 13. (c) 14. (d) 15. (a) 16. (a) 17. (b) 18. (c) 19. (d) 20. (a)  
 21. (a) 22. (b) 23. (c) 24. (d) 25. (a) 26. (a) 27. (b) 28. (c) 29. (d) 30. (a)  
 31. (a) 32. (b) 33. (c) 34. (d) 35. (a) 36. (a) 37. (b) 38. (c) 39. (d) 40. (a)  
 41. (a) 42. (b) 43. (c) 44. (d) 45. (a) 46. (a) 47. (b) 48. (c) 49. (d) 50. (a)  
 51. (a) 52. (b) 53. (c) 54. (d) 55. (a) 56. (a) 57. (b) 58. (c) 59. (d) 60. (a)  
 61. (a) 62. (b) 63. (c) 64. (d) 65. (a) 66. (a) 67. (b) 68. (c) 69. (d) 70. (a)  
 71. (a) 72. (b) 73. (c) 74. (d) 75. (a) 76. (a) 77. (b) 78. (c) 79. (d) 80. (a)  
 81. (a) 82. (b) 83. (c) 84. (d) 85. (a) 86. (a) 87. (b) 88. (c) 89. (d) 90. (a)  
 91. (a) 92. (d) 93. (c) 94. (d) 95. (a) 96. (a) 97. (b) 98. (c) 99. (d) 100. (a)  
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 111. (a) 112. (b) 113. (c) 114. (d) 115. (a) 116. (a) 117. (b) 118. (c) 119. (d) 120. (a)  
 121. (a) 122. (b) 123. (c) 124. (d) 125. (a) 126. (a) 127. (b) 128. (c) 129. (d) 130. (a)  
 131. (a) 132. (b) 133. (c) 134. (d) 135. (a) 136. (a) 137. (b) 138. (c) 139. (d) 140. (a)  
 141. (a) 142. (b) 143. (c) 144. (d) 145. (a)



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