

CURRENT AFFAIRS

WEEKLY

WEEK: 3
DECEMBER
2022

MAINS

GS-II

- ❑ BUREAUCRATISATION OF THE ELECTION COMMISSION OF INDIA (ECI)
- ❑ IS THE RTI ACT FULFILLING ITS PURPOSE?
- ❑ GUJARAT'S SOLAR ROOFTOP POWER SPREADS ACROSS VILLAGES MAKING POLICY SUCCESSFUL

GS-III

- ❑ CHINA IS EXPANDING MODEL VILLAGES IN STRATEGIC AREAS
- ❑ DECRIMINALIZATION OF OFFENCES UNDER GST
- ❑ OLD IS NOT GOLD: ON THE RETURN TO THE OLD PENSION SCHEME
- ❑ INDIA'S DIGITAL ECONOMY GREW 2.4 TIMES FASTER THAN THE ECONOMY FROM 2014-19: RBI PAPER
- ❑ THE FIRST-EVER 'SURETY BOND INSURANCE' FOR INFRASTRUCTURE PROJECTS
- ❑ CARBON MARKETS AND THEIR OPERATION
- ❑ CURBING AIR POLLUTION IN INDIA NEEDS EFFORTS ACROSS SOUTH ASIA: WORLD BANK REPORT

PRELIMS

HISTORY

- ❑ The 1925 Kakori Train Action and its young revolutionary leaders

INTERNATIONAL RELATIONS

- ❑ White House supports 'EAGLE Act'

POLITY & GOVERNANCE

- ❑ LS passes bill to grant ST status to Narikoravan, Kurivikkaran communities
- ❑ No survey done to identify number of EWS beneficiaries
- ❑ Rajya Sabha passes Maritime Anti-Piracy Bill

ECONOMY

- ❑ India's coal production to surpass a billion tonnes by 2025: IEA annual report

ENVIRONMENT

- ❑ Rajasthan's Tal Chhapar sanctuary gets protection cover

SPECIES IN NEWS

- ❑ Previously extinct bird, gecko populations from the Galapagos Islands reappears
- ❑ Scientists finally discover 'overlooked' clitoris in snakes
- ❑ Asian Giant Tortoise re-wilded in Nagaland.
- ❑ Black Buck in Tal chhapar sanctuary
- ❑ PM2 elephant

SCIENCE & TECHNOLOGY

- ❑ The 5 biggest scientific breakthroughs of 2022
- ❑ China to rein in 'deepfake' tech
- ❑ INS Mormugao commissioned into the Indian Navy

NEWS IN SHORTS

- ❑ Sardar Patel's 72nd Death Anniversary
- ❑ Three more sites added to UNESCO's tentative list of World Heritage.
- ❑ Kashmiris celebrate warm 'pheran' to beat freezing 40 days of Chillai Kalan
- ❑ Winter solstice
- ❑ NASA Launches International Mission to Survey Earth's Water
- ❑ Fusarium head blight (FHB), fungal toxins widespread in Europe
- ❑ Hepatitis-A

SPECIAL

- ❑ COP 15 on Conservation of Biological Diversity at Montreal'

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— **Disclaimer** —

The current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.

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SECTION: A

(MAINS)

CURRENT AFFAIRS

GS FOUNDATION

1 YEAR & 2 YEAR
PROGRAMME



- PREMIER- BRIDGE CLASSES
- MAINS INTEGRATED CLASSES
- ANSWER WRITING PRACTICE
- WEEKLY CURRENT AFFAIRS
- PRELIMS CLASSES
- MAINS UPDATION
- PERSONALISED MENTORING
- STUDY MATERIAL

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ANTHROPOLOGY



GEOGRAPHY



HISTORY



**POLITICAL
SCIENCE**



LAW



SOCIOLOGY



BUREAUCRATISATION OF THE ELECTION COMMISSION OF INDIA (ECI)

CONTEXT

The Appointments of Election Commissioners (ECs) and Chief Election Commissioner (CECs) are probed several times by the Supreme Court for being monopolised by the officials of administrative services.

About the issue:

- The way India's constitutional and political structures have evolved over the years seems to have made elections almost a mechanistic and ritualistic exercise.
- The reason behind this is the setting up and functioning of the Election Commission of India (ECI).
- This has come into public discourse because of the hearings in the Supreme Court on the appointment of Election Commissioners (ECs).
- SC has mentioned that ECI may be useful in the preservation of democracy in the country.

Suggestion for effective functioning and appointment procedure for EC and CEC:

- **Formation of a Committee:** An existing committee of Parliament or a new committee formed for this purpose should propose the qualifications and requirements for persons to be appointed as ECs/CEC.
- **Role of Committee:**
 - The committee should invite nominations and applications of individuals appropriate for or interested in being appointed as ECs/CEC.
 - The committee should send its **recommendations to Parliament** for consideration.
 - Recommendations of the committee should be considered approved by Parliament only if approved by **two-thirds majority of the members** of Parliament present and voting.
 - Once Parliament approves the recommendations, they should be sent to the President for approving the appointments.
- **Term and Tenure specified:** Once appointed, such persons should stay in their positions for '**six years**' or the '**age of 75 years**', whichever is earlier. Persons above the **age of 69 years** should not be appointed.

Law Commission 255th Report on Electoral Reforms: Strengthening the office of the Election Commission of India:

- The Commission in its report inter-alia suggested, the ECI must be strengthened by:
- Giving equal constitutional protection to all members of the Commission in matters of removability;
- Making the appointment process of the Election Commissioners and the CEC consultative; and
- Creating a permanent, independent Secretariat for the ECI.

- **Process of Impeachment:** Persons so appointed should be removable only by a process of impeachment as applicable to the Supreme Court judges.

Present System of Appointment of Election Commissioners

Constitutional versus Executive Power of Appointment:

- There is no prescribed procedure for appointment of the Chief Election Commissioner and Election Commissioners as per the constitution.
 - Under the **Transaction of Business rules**, the President shall appoint the CEC and EC based on the recommendations made by the Prime Minister.
- Therefore, it is the executive power of the President to appoint CEC and ECs.
- However, **according to Article 324(5)**, the Parliament has the power to regulate the terms of conditions of service and tenure of ECs.
- It is under this article that the Parliament has made laws till date, and not under Art. 324(2) in which the Parliament can establish a selection committee for regulating the appointments made by the President.

IS THE RTI ACT FULFILLING ITS PURPOSE?

CONTEXT

- The Right to Information (RTI) Act was aimed at giving people access to the records of the Central and State governments.
- In this article, we shall be taking stock of what's working and the issues that appear to be weakening the law.

What is the Right to Information?

- RTI is an act of the parliament that sets out the rules and procedures regarding citizens' **right to information**.
- It replaced the former **Freedom of Information Act, of 2002**.
- Under the provisions of the RTI Act, any citizen of India may request information from a "public authority" (a body of Government or "instrumentality of State") which is required to reply expeditiously or within 30 days.
- In case of a matter involving a petitioner's life and liberty, the information has to be provided within 48 hours.
- The Act also requires every public authority to computerize their records for wide dissemination and to proactively publish certain categories of information so that the citizens need minimum recourse to request information formally.

Governing of the RTI

- The Right to information in India is governed by two major bodies:
 - **Central Information Commission (CIC)** – Chief Information commissioner who heads all the central departments and ministries- with their own public information officers (PIOs). CICs are directly under the President of India.
 - **State Information Commissions (SIC)** – State Public Information Officers or SPIOs head over all the state departments and ministries. The SPIO office is directly under the corresponding State Governor.

Benefits of RTI	Major Issues
<ul style="list-style-type: none"> Greater accessibility to information Efficient governance Citizen's participation Government obligation Maintenance of public record 	<ul style="list-style-type: none"> Lack of awareness of this law and lack of widespread adoption. Lack of accountability: Public information officers use words like this division does not have the information. <ul style="list-style-type: none"> ➤ Under RTI Act, liability is on the officer to find out who is holding the information and transfer the RTI application. Large numbers of denials where people are just told that this information cannot be provided to them, which is an illegal denial.

- **Maintaining datasets and information:** putting information in the public domain has become a big problem.

Why is RTI empowering legislation for people?

- **Obligation on the government** to respond to them in a time-bound manner
- **To get the information** to hold the government accountable.
- **Balance of power** in favour of those governed.

RTI Act fulfilling its purpose

It has fulfilled its purpose to some extent:

- The majority of the RTI applications are filed by people who are **asking about their basic rights and entitlements**.
- It enabled **exposure to big-ticket scams** such as the Adarsh, Commonwealth Games and Vyapam scams.
- It has also made it possible to **expose human rights violations**, and then force accountability in those cases as well.
- The Act is still effective despite the widespread attempts to dilute its efficacy

What are the challenges faced by the RTI Act?

- **Resistance by bureaucracy:** The public information officers these days use excuses like this division does not have the information.
- **Resistance to sharing of information:** Within the government, asking for information is not encouraged.
- **Vacancies:** Huge vacancies in information commissions means that appeals and complaints keep pending.
- **Dilution of law**– Successive governments have tried to whittle down this law.
 - The **Digital Data Protection Bill, 2022** proposes to amend the RTI Act.
 - Clause 30(2) of the draft proposes an amendment to Section 8(j) of the RTI Act, which will have the effect of totally exempting personal information from disclosure.
 - Section 8 (1)(j), which is criminally misused by the bureaucrats to deny the information. The new law proposes an amendment to increase its purview, giving officials the right to deny access to most information.

Section 8(1) (j) of the RTI Act, 2005 encapsulates that information which relates to personal information the disclosure of which has no relationship to any public activity or interest, or which would cause unwarranted invasion of the privacy of the individual, unless the CPIO or SPIO or the Appellate Authority is satisfied that the larger public interest justifies the disclosure of such information should be exempted from disclosure.

- Some States with an RTI application within 150 words: Condensing the question, especially for those who might not have the benefit of formal education.

GUJARAT'S SOLAR ROOFTOP POWER SPREADS ACROSS VILLAGES MAKING POLICY SUCCESSFUL

CONTEXT

The implementation of Gujarat's aggressive solar rooftop policy is slowly seeping into villages too, contributing to India's solar mission of 2030.

About Gujarat's plan:

- Gujarat leads in **residential rooftop solar installations** — a segment that hasn't quite taken off nationally despite India's overall success with boosting solar power capacity.
- Gujarat accounts for the lion's share of all rooftop solar installations: About 63 per cent.
- Progress:** Since 2016, the Gujarat government has

installed a total of 3, 91,830 residential rooftop solar panel systems.

- The majority of these were installed over the past three years under the **SURYA Gujarat Yojana**.
 - Gujarat Development Authority is the governing agency of the Yojana.

India's solar rooftop installation capacity:

An October 2022 study on India's rooftop solar potential by the **international think-tank Institute for Energy Economics and Financial Analysis (IEEFA)** and consultancy firm **JMK Research** found that the state's focus on "digitalisation" — using digital media to communicate simplified and relevant information about the process can become a key driver in its success with rooftop solar.

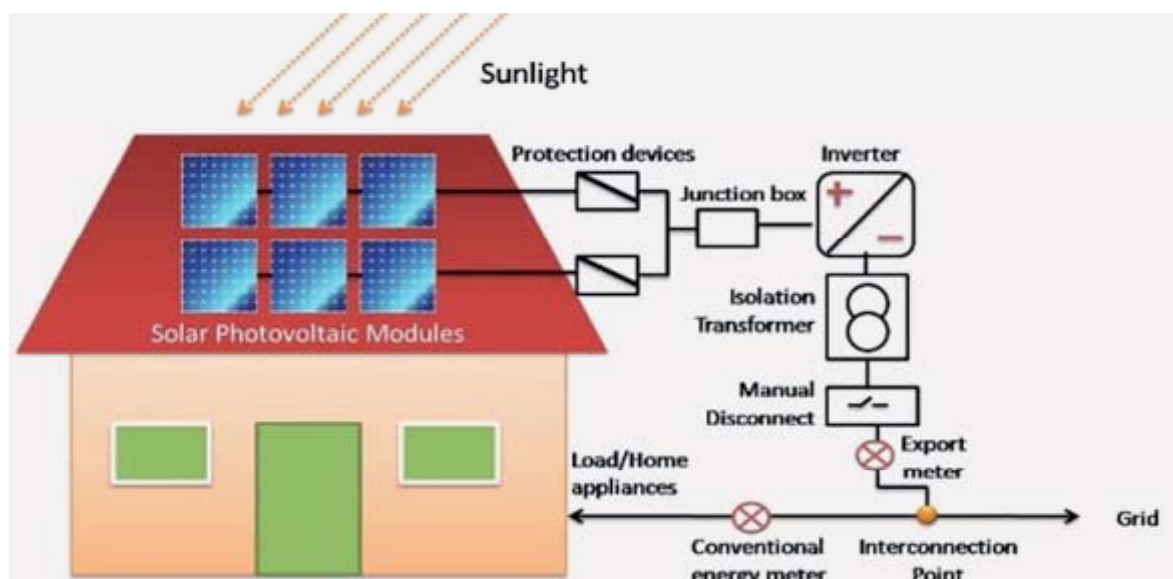
Types of Solar power installations:

- Rooftop installations
- Floating Installations
- Land Installations

Among all types of installations, rooftop solar panels are most comfortable for household generation of power.

India Solar Mission:

- Starting from less than 10 MW in 2010, India has added significant solar PV capacity over the past decade, achieving over 50 GW by 2022.
- By 2030, India is targeting about 500 GW of renewable energy deployment, out of which 280 GW is expected from solar PV. This necessitates the deployment of nearly 30 GW of solar capacity every year until 2030.
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- By 2030, India is targeting about 500 GW of renewable energy deployment, out of which 280 GW is expected from solar PV. This necessitates the deployment of nearly 30 GW of solar capacity every year until 2030.

What makes Gujarat's rooftop solar panel policy a success?

- Smooth policy execution
- Good DISCOMS
- Buy-in from people
- Location:** With its 1,600km long coastline and abundant wasteland in the form of the Great Rann of Kutch, Gujarat has taken the lead in implementing the adoption of renewable energy through policy interventions.

The success story of Modhera

- Gujarat's Modhera is India's first "fully solar-powered village".
- The Modhera model offers a blueprint for what being "fully solarised" might eventually look like — for both rooftop and other types of solar plants.
- Modhera is the first village in India to rely on a system, called a **grid-scale battery energy storage system** (BESS), which is considered the future of truly renewable solar energy.

Challenges:

- Dependence on Imports:** Indian solar companies depend heavily on imports, as India presently does not have enough module and cell manufacturing capacity. The demand-supply gap gets widened as we move up the value chain.
- Limited manufacturing capacity:** India currently manufactures only 3.5 GW of solar cells and has a limited solar module manufacturing capacity of 15 GW.
- Import of Raw Material Supply:** The dependence is not restricted to silicon wafers. Raw materials like silver and aluminium metal pastes which are crucial for making electrical contacts are almost 100% imported.
- Land Issues:** Land, the most expensive part of solar projects, is scarce in India — and the Indian industry has no choice but to move towards newer and superior technologies as part of expansion plans.

Government Initiatives:

- PLI scheme to Support Manufacturing:** The Scheme has provisions for supporting the setting up of integrated manufacturing units of high-efficiency solar PV modules by providing a Production Linked Incentive (PLI) on sales of such solar PV modules.

- Levying Custom Duties on the Import of Solar Cells & Modules:** The Government has announced the imposition of **Basic Customs Duty (BCD)** on the import of solar PV cells and modules.
 - It includes a **40% duty on the import** of modules and a **25% duty on the import of cells**.
- Domestic Content Requirement (DCR): Central Public Sector Undertaking (CPSU) Scheme Phase-II, PM-KUSUM, and Grid-connected Rooftop Solar Programme Phase-II,** wherein government subsidies are given, it has been mandated to source solar PV cells and modules from domestic sources.
 - It is mandatory to procure modules only from an **approved list of manufacturers (ALMM)** for projects that are connected to state/ central government grids; so far, only India-based manufacturers have been approved.
- Modified Special Incentive Package Scheme (M-SIPS):** It's a scheme of the Ministry of Electronics & Information Technology.
 - The scheme mainly provides a subsidy for capital expenditure on PV cells and modules 20% for investments in Special Economic Zones (SEZs) and 25% in non-SEZ.
- Solar Parks Scheme:** The scheme facilitates and speeds up the installation of grid-connected solar power projects for electricity generation on a large scale. All the States and Union Territories are eligible for getting benefits under the scheme. The capacity of the solar parks shall be 500 MW and above.
- Central Public Sector Undertaking (CPSU) Scheme:** A scheme for setting up 12 GW Grid-Connected Solar PV Power Projects by Central Public Sector Undertakings with domestic cells and modules is under implementation.

CHINA IS EXPANDING MODEL VILLAGES IN STRATEGIC AREAS

CONTEXT

According to defence sources, China has set up a ropeway near the **India-Bhutan-China tri-junction** and is strengthening roads and other infrastructure along the entire eastern sector.

More about the news:

- The People's Liberation Army (PLA) has installed a ropeway close to the **Torsa Nala** on their side near the confluence point (**India-Bhutan-China tri-junction**).

- A **tripoint, trijunction, triple point, or tri-border** area is a geographical point at which the boundaries of three countries or subnational entities meet.
- There has been hectic activity and construction along the **eastern sector**.

India-China Border:

- **India shares 3488 Km of the border with China** that runs along the States of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh.
- **Both countries have differing perceptions** owing to the Un-demarcated boundary, which leads to transgressions and face-offs as each side patrols up to the areas.
- **Border Guarding Force:** The Indo-Tibetan Border Police Force (ITBP) is the Border Guarding Force at Indo-China Border.
- **Line of Actual Control (LAC):** It is divided into the western (Ladakh), middle (Himachal Pradesh and Uttarakhand), and eastern (Arunachal Pradesh and Sikkim) sectors.
 - LAC in the eastern sector consisting of Arunachal Pradesh and Sikkim is called the McMahon Line which is 1,140 km long.



McMahon Line	Line of Actual Control
The 890-km McMahon Line separating British India and Tibet was drawn by Sir Henry McMahon at the China-Tibet-Britain Simla Convention (1914) .	The Line of Actual Control (LAC) is the effective border between India and China.

The line marked out previously unclaimed/undefined borders between Britain and Tibet. Also, the Line put Tawang (a region of the present Arunachal Pradesh) in the British Empire.

The line was forgotten until the British government published the documents in 1937. Subsequently, **China refused to accept the line.**

LAC was supposed to **divide areas under Indian and Chinese** control since the end of the Sino-Indian War of 1962.

Unlike the LoC (between India and Pakistan), the LAC was **not mutually agreed upon**. This was because the war ended with a **unilateral ceasefire by China**.

- India and China have mutually agreed on disputed areas and areas of differing perception along the 3,488 km-long LAC.
- For instance, in eastern Ladakh, there are two mutually agreed disputed areas, **Trig Heights** and **Demchok**, while there are 10 areas of differing perception. Similarly, Yangtse is one of the eight major friction points in the eastern sector.

Some Strategic Constructions by China:

- **Railway Line:** In 2020, China had begun work on a strategically significant railway line that will link Sichuan province with Nyingchi in Tibet, which lies close to the Arunachal Pradesh border.
- **New Villages:** In January 2021, there were reports of the Chinese construction of three villages in Arunachal Pradesh 5 kilometres from the Bum La pass.
- **Bridge across Pangong Lake:** China is building a new bridge on Pangong Tso which will provide an additional axis to deploy troops faster between the north and south banks of the lake, and closer to the LAC (Line of Actual Control).

Current Areas of a dispute between India & China

- **In the Western sector:** Here India shares a 2152 km long border with China, and territorial disputes over the Aksai Chin region of Jammu and Kashmir, with both countries claiming the region as their own.
- **In the middle sector:** Here India roughly shares about a 625 km long boundary with China with a few minor disputes regarding Tibet.
- **In the Eastern Sector:** The major dispute here is around the region of Tawang Valley of Arunachal Pradesh, Chumbi Valley (Doklam Tri-Junction) which India shares with Bhutan.

DECRIMINALIZATION OF OFFENCES UNDER GST

CONTEXT

As per the conclusion of the 48th GST Council meeting, the GST Council chaired by Finance Minister recommended decriminalising certain offences under Section 132 of the Central Goods and Services Tax (CGST) Act, 2017.

Key highlights of the meeting:

The council has recommended various measures to 'decriminalise the GST offences' such as;

- Raising the minimum threshold of tax amount for launching prosecution under GST from **one crore to two crores**,
- Except for the offence of **issuance of invoices** without a supply of goods or services or both,
- Reducing the compounding amount from the present range of **50 to 150%** of the tax amount to the range of **25 to 100%**, and
- Decriminalising certain offences specified under **Section 132 of the CGST Act, 2017**, such as obstructing or preventing any officer from doing his **duties, deliberate tempering of material evidence and failure to supply information**.

What was previously criminalised under GST Act?

- The GST law establishes stringent **penalties and guidelines** that taxpayers must abide by in order to ensure smooth **intrastate or interstate trade of goods** and combat corruption and maintain an effective tax collection system.
- The GST Law provides for **two different types of penalties**. They may be both concurrent and simultaneous.
- The department authorities have the authority to impose **monetary fines and the seizure of goods** as penalties for violating statutory provisions.
- **Criminal penalties** include imprisonment and fines, which are also provided by GST Law but which can only be awarded in a **criminal court** following a prosecution.
- **Sections 122 to 131** of the CGST Act of 2017 contain provisions relating to penalties, while **Sections 132 to 138** contain provisions relating to prosecution and compounding.

What are the offences being included under CGST Act, 2017?

- Under the CGST Act, if a group of **two persons or more** agree to commit an illegal act like **tax evasion**, fraud etc. they are held liable under the act of criminal conspiracy.
 - **Section 69** of the CGST Act provides the power to arrest a person by an order of a commissioner when he believes that a person has committed any offence under Section 132.
 - **Section 67** of the CGST Act defines that only an officer not below the rank of joint commissioner can authorise in writing an inspection or search.
- **IPC and CrPC provisions:**
 - **Section 120A** of the **Indian Penal Code (IPC)**, defines criminal conspiracy,
 - **Section 120B** deals with punishment for the same and
 - **Section 46** of the Code of Criminal Procedure (CrPC) deals with how the arrest is made.
 - **Section 67 of CrPC** states that if a summons is issued outside the local authority, a duplicate copy of that summons should be sent to the Magistrate of that outside authority to serve the summons.
 - **Section 165 of CrPC** deals with the search by the police officer.

Impacts of decriminalisation:

The GST law is still developing and is in its infancy which makes the same difficult and uncertain to enforce.

- **Conflicts between legal and Constitutional provisions:** There are instances of conflict between court decisions and rulings.
- **Existing confusion between laws and GST act provision:** It is important to recognise that imposing **penal provisions** in an ambiguous ecosystem significantly alters how businesses **perceive risk and uncertainty**, directly impacting their ability to conduct business.
- The law already contains sufficient penalties that serve as a deterrent against tax evasion.
- **More restrictions for investors:** Investors may be discouraged by the fear of criminal sanctions in **small, trivial, and petty matters**, even before their engagement in any business activity or investment.

Other major recommendations:

- The GST Council in its **47th meeting** had also granted in-principle approval for allowing unregistered suppliers and composition taxpayers to make intra-state supply of goods through E-Commerce Operators (ECOs), subject to certain conditions.

- The Council approved the amendments in the **GST Act and GST Rules**, along with the issuance of relevant notifications, to enable the same.
- Further, considering the **time required for the development of the requisite functionality** on the portal as well as for providing sufficient time for preparedness by the E-Commerce Operators (ECOs), the Council has recommended that the scheme may be implemented from October 2023.

OLD IS NOT GOLD: ON THE RETURN TO THE OLD PENSION SCHEME

CONTEXT

Few states in the country are promising to restore the Old Pension Scheme. Though the old pension scheme works as an electoral strategy but is an imprudent fiscal policy.

What is the Old Pension Scheme (OPS)?

- It is often described as a '**Defined Benefit Scheme**'.
- The scheme **assures life-long income**, post-retirement.
- Under OPS, employees get a pension under a **pre-determined formula** which is equivalent to **50% of the last drawn salary**.
- They also get the benefit of the **revision of Dearness Relief (DR)**, twice a year.
- The payout is fixed and there was **no deduction from the salary**.
- There was the **provision of the General Provident Fund (GPF)**.
- The Government bears the **expenditure incurred on the pension**. The scheme was **discontinued in 2004**.

Concerns associated with the old pension scheme:

- **The pension liability remained unfunded:** As there was no corpus specifically for pension, which would grow continuously and could be dipped into for payments.
- **No fixed source of funding:** The Government of India's budget provided for pensions every year; there was no clear plan on how to pay year after year in the future.
- **The burden on Government Budget:** The government estimated payments to retirees ahead of the Budget every year, and the present generation of taxpayers paid for all pensioners as of date.

- The '**pay-as-you-go**' scheme created inter-generational equity issues — meaning the present generation had to bear the continuously rising burden of pensioners

Why is the OPS both bad economics and bad politics?

- **Rolling out a major amount of money:** Overall, pension payments by states roll out a quarter of their own tax revenues. For some states, it is much higher.
 - For Himachal, it is almost **80 per cent** (pensions as a percentage of the state's own tax revenues)
 - for Punjab, it is almost 35 per cent
 - for Chhattisgarh 24 per cent
 - for Rajasthan 30 per cent
- **The high Budget deficit for Governments:** If wages and salaries of state government employees are added to this bill, states are left with hardly anything from their own tax receipts.
- **Short-term gains for the state:** States reverting to OPS can achieve some **short-term gains** as they need not put up the matching contribution of **10% towards employee pension funds**.
- **Inter-generational equity:** There is also the larger issue of inter-generational equity. Today's taxpayers paying for the ever-increasing pensions of retirees, with Pay Commission awards almost taking the pension of old retirees to current levels, means the pension of someone who retired in 1995 may well be the same as that for someone who retires in 2025.
- **Limiting benefit:** It will only benefit organized government sector employees.
- **Less spending on general welfare:** An increase in the fiscal burden of OPS is going to take up a significant portion of the State's budget, thereby curtailing its outlays on general welfare as a whole.

How NPS is a better option?

- **Freedom to allocate savings**
 - The current clamour by government employees for the old scheme seems to be based on **misconceptions** about how the NPS works.
 - The biggest fear about the NPS is that it redirects subscribers' money into the '**volatile**' stock market.
 - But the fact is that NPS subscribers have complete freedom to allocate their savings to equities, corporate bonds or government securities, or any combination of the three.
 - Risk-averse investors can simply allocate all their money to bonds or gilts in NPS, altogether skipping stocks.

• Beating Inflation:

- The biggest challenge for any retirement saver is to beat inflation. Equities do this job better than any other asset class.
- A 20-year analysis of **Nifty50** shows that while it frequently delivered losses over one-year periods, stretching one's holding period to 10 years reduced the loss probability to zero while fetching an **11-12 percent return**.
- While the EPFO has been struggling to declare an 8-8.5 percent return from its 'safe' debt portfolio, NPS managers have earned a **13-14 percent return** on equities and **8.5-9 percent on bonds and government securities** over a decade.

• Greater control:

- With NPS, an employee has **greater control over his pension** as he can save more or allocate more to equities.
- In the old pension scheme, the employee's pension is mandatorily limited to half of his last-drawn pay.

INDIA'S DIGITAL ECONOMY GREW 2.4 TIMES FASTER THAN THE ECONOMY FROM 2014-19: RBI PAPER

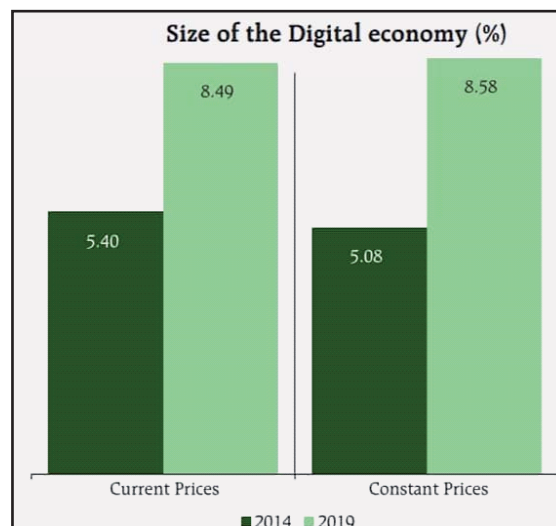
CONTEXT

According to the paper published in the bulletin of RBI, India's digital economy grew 2.4 times faster than the economy from 2014-19.

Key Points:

- **Purpose:** To measure the size of India's digital economy and how it interacts with other **non-digital sectors**.
- **Growth in the size of the economy:** The size of the digital economy has grown from \$107.7 billion in 2014 to \$222.5 billion in 2019.
- **Growth Rate:** India's digital economy exhibited a growth rate (compounded annually, CAGR) of 15.62 percent between 2014 and 2019.

Gross value added (GVA) is an economic productivity metric that measures the contribution of a corporate subsidiary, company, or municipality to an economy, producer, sector, or region.



- **In absolute (not in relation to a benchmark) US dollar terms:** India's economy (GVA) grew annually at a compound rate of 6.59 percent.
- **Employment:** It has been estimated that 62.4 million workers are employed in India's overall digital economy.
- The cumulative effect of the above-given numbers has made India's digital economy to grow 2.4 times faster than the Indian economy itself.

Components of India's digital economy:

- Hardware
- Software publishing
- Web Publishing
- Telecommunication services, and
- Specialized and support services

What is the digital economy?

- The digital economy is the economic activity that results from billions of everyday online connections among people, businesses, devices, data, and processes.
- The backbone of the digital economy is hyper-connectivity which means the growing interconnectedness of people, organizations, and machines that results from the Internet, mobile technology, and the internet of things (IoT).

Digital economy and its impact on other sectors:

- The core digital economy acts as a **supplier of value-added to the non-digital sectors** because the **forward linkages are stronger** than the **backward linkages**.
 - **Forward linkage** refers to what other products can be built, produced, or made using that particular product.

- Industries with the **highest forward linkages** from the core digital economy in 2019 are:
 - Construction
 - renting of machinery and equipment
 - food beverages and tobacco
 - textiles and textile products, and
 - electrical and optical equipment
- Policies such as the Make in India, and PLI scheme, act as a pull force to incentivize domestic production of computers, electronics, etc. in the country. This results in:
 - spurring innovation
 - generating efficiencies and
 - improving services

Advantages of the Digital Economy

- Increased productivity:** The digital economy has increased the productivity of businesses as they can now use technology to automate their operations and processes.
- Increased competitiveness:** Businesses can use technology to improve their products and services. This has increased the competitiveness of businesses.
- Increased employment opportunities:** The digital economy has generated new job opportunities as new businesses are springing up.
- Increased transparency:** The digital economy has increased the transparency of businesses as they can now use technology to share information with their customers.
- Innovation:** The digitization of businesses and their processes leads to innovation with respect to not just offerings but also the way businesses operate.

Why the non-digital sectors has not grown at a comparable pace?

- This is because the impact of digital innovations on the growth of non-digital sectors in an economy may take longer to reflect in terms of numerical growth.

◎ WAY FORWARD:

- Need for Digital Literacy:** Given that, 62.4 million workers are employed in India's digital economy, it underscores the need for digital literacy and skilling.
- More jobs to come:** As internet connectivity and industry 4.0 alter production and consumption technologies, high growth of employment is expected in the digital sector in the coming years.

THE FIRST-EVER 'SURETY BOND INSURANCE' FOR INFRASTRUCTURE PROJECTS

CONTEXT

Government launched the first-of-its-kind 'Surety Bond Insurance' for the infrastructure sector.

About the initiative:

- Aim:** To enhance the participation of contractors in project bids, freeing collaterals in between to support the working capital requirements.
- Functions:**
 - Surety Bond Insurance will act as a security arrangement for infrastructure projects and will insulate the contractor as well as the principal (contract awarding authority) from any loss.
- Launched by:** Bajaj Allianz General Assurance.

Finance Minister **Nirmala Sitharaman** in the **Budget 2022-23** had said Surety Bonds can be used as a substitute for bank guarantees for government procurement.

Significance:

- Surety Bonds Insurance is a benchmark initiative in the infrastructure sector in line with the Government's vision to up-scale the infrastructure development in the country to enhance the pace of development of upcoming projects.
- The Government of India is making concerted efforts to implement measures that will accelerate the development of infrastructure in India and Surety Bond Insurance is a decisive step in this direction.

What is Surety Bond?

- A surety bond is a kind of **risk transfer tool** for the Principal and protects the Principal from losses that may cause in case the contractor fails to perform their contractual duties.
- The product gives the principal a contract of guarantee that contractual terms and other business deals will be concluded in accordance with the mutually agreed terms.
- In case the contractor does not fulfil the terms then the Principal can claim surety bonds to recover the losses.

Who is Principal in bond agreement?

The principal is the party being required to obtain the surety bond by the obligee. When filling out a surety bond application, you are the principal. The obligee requires the principal to obtain a surety bond to ensure they uphold their end of the agreement.

Benefits:

- The surety is provided by an **insurance company** which acts as a **security arrangement** for infrastructure projects and **insulates the contractor** as well as the principal.
- The availability of both **liquidity and capacity** will definitely be boosted; such products stand to strengthen the sector.
- It will lead to more prosperity, increased employment opportunities, and increased social connectivity.

How is it different from a Bank guarantee?

- Unlike a bank guarantee, the surety bond Insurance does not require large collateral from the contractor, thus, it frees up significant funds for the contractor, which they can utilize for the growth of the business.
- The product will also help in reducing the contractors' debts to a large extent by addressing their financial worries.
- The insurance product aims to facilitate the growth of upcoming infrastructure projects in the country.

CARBON MARKETS AND THEIR OPERATION

CONTEXT

Recently passed Energy Conservation (Amendment) Bill, 2022 empowers the Government to establish carbon markets in India and specify a carbon credit trading scheme.

What are carbon markets?

- To meet **nationally determined contributions (NDCs)**, one mitigation strategy is becoming popular with several countries— **carbon markets**.
- **Article 6 of the Paris Agreement** provides for the use of international carbon markets by countries to fulfil their NDCs.
- Carbon markets are essentially a **tool for putting a price on carbon emissions**— they establish trading

systems where carbon credits or allowances can be bought and sold.

- A carbon credit is a kind of **tradable permit** that, **per United Nations standards**, equals one tonne of carbon dioxide removed, reduced, or sequestered from the atmosphere.
- These markets create incentives to reduce emissions or improve energy efficiency.

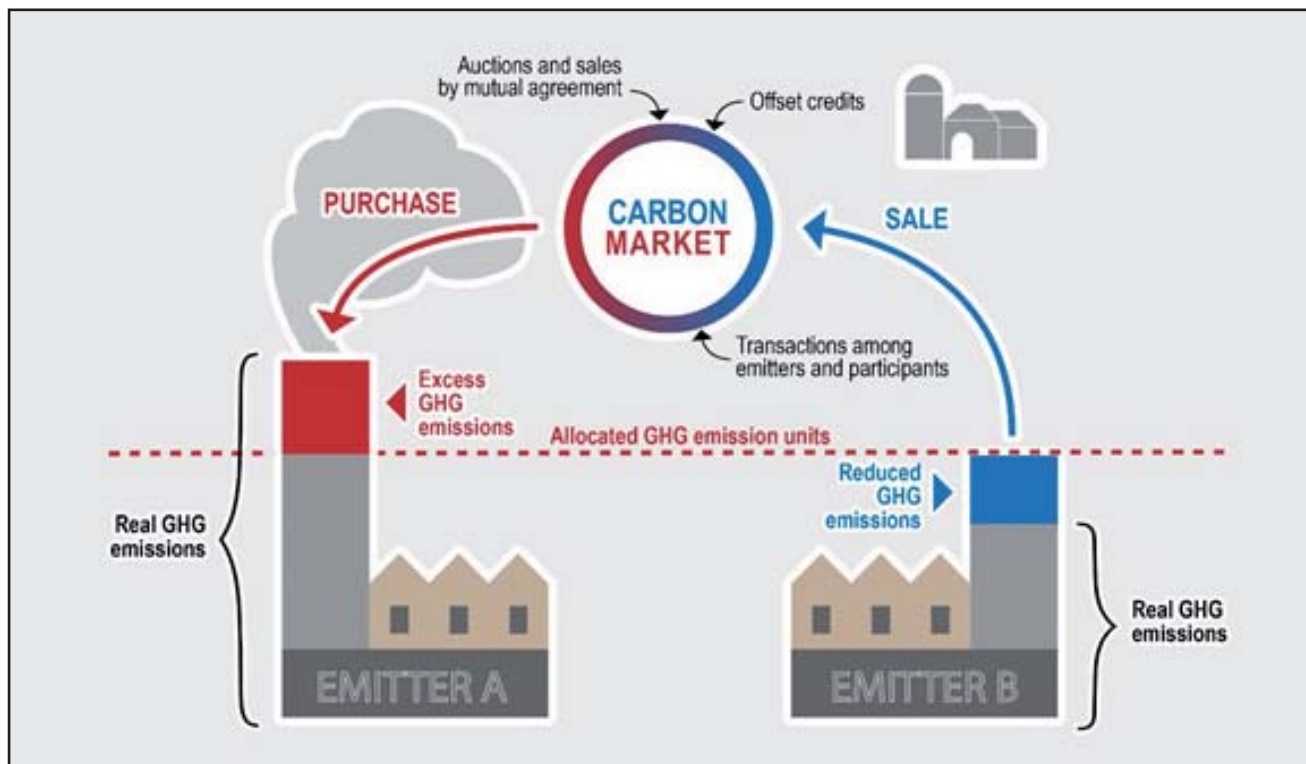
Sentiments of countries about carbon markets

- About 83% of NDCs submitted by countries mention their intent to make use of international market mechanisms to reduce greenhouse gas emissions.

What are the types of carbon markets?

- There are broadly two types of carbon markets that exist today— **compliance markets** and **voluntary markets**.

Voluntary Markets	Compliance Markets
<ul style="list-style-type: none"> • Here, the Emitters—corporations, private individuals, and others— buy carbon credits to offset the emission. 	<ul style="list-style-type: none"> • Compliance markets are set up by policies at the national, regional, and/or international levels— that is <i>officially regulated</i>.
<ul style="list-style-type: none"> • In voluntary markets, credits are verified by private firms as per popular standards. 	<ul style="list-style-type: none"> • Most of these markets operate under a principle called '<i>cap-and-trade</i>'.
<ul style="list-style-type: none"> • Here the participants purchase emissions reductions for public relations or <i>personal reasons</i>. 	<ul style="list-style-type: none"> • Here the carbon offsets are created by the need to comply with a regulatory act
<ul style="list-style-type: none"> • There are traders and online registries where climate projects are listed and certified credits can be bought. 	<p>Examples of compliance carbon markets are the:</p> <ul style="list-style-type: none"> • Kyoto Protocol • European Union emissions trading system • California emissions trading system (ETS) • Australia ETS • British Columbia ETS • New Zealand ETS • China launched the world's largest ETS in 2021.



Cap-and-Trade vs Carbon Tax

- A carbon tax and cap-and-trade are opposite sides of the same coin.
- A **carbon tax** sets the price of CO₂ emissions and allows the market to determine the amount of reduced emissions.
- A **cap-and-trade system** sets the quantity of emissions allowed, which can then be used to estimate the decline in the rise of global temperatures.
 - The market price of carbon gets determined by market forces when purchasers and sellers trade in emissions allowance.

Advantages:

Related Indian Initiatives

- **PLI Scheme:** Diversification of the supply chain by introducing a production-linked incentive scheme for the manufacturing of polysilicon cells into modules.
 - **Clean Development Mechanism:** In India, the clean development mechanism under the Kyoto Protocol provided a primary carbon market for the players.
 - **Energy Conservation (Amendment) Bill, 2022**
- These markets may promote the reduction of energy use and encourage the shift to cleaner fuels.
 - Through this kind of carbon trading, companies can decide if it is more cost-efficient to employ

clean energy technologies or to purchase additional allowances.

- Since government-regulated trading schemes may prompt companies to innovate, invest in, and adopt cost-efficient low-carbon technologies.

What are the challenges to carbon markets?

- **Effectiveness of carbon markets:** Some companies simply buy credits without making any effort to reduce emissions themselves.
 - It is cheaper for them to buy carbon credit than to invest in emission-reducing technologies.
- Environmental activists argue that **only high-quality carbon offsets are effective in reducing emissions. High-quality carbon offsets have certain features:**
 - **Additionality:** Emission reductions must be additional i.e., they would not have occurred in the absence of a market for offset credits e.g., a renewable project could be set up only because a high emitter paid for it.
 - **Verifiable:** There must be proper audits to ensure the monitoring, reporting, and verification of emission cuts.
 - **Permanence:** The emission reduction should not be reversed.
- However, many credits available in markets are of poor quality i.e., they do not meet the above criteria.
- Buying carbon credits can **deviate rich nations** from the path of reducing emissions.

- It is difficult to **establish the amount of carbon reduced by offset projects** (like afforestation or wind energy project).

CURBING AIR POLLUTION IN INDIA NEEDS EFFORTS ACROSS SOUTH ASIA: WORLD BANK REPORT

CONTEXT

Recently, the World Bank released a report titled 'Striving for Clean Air: Air Pollution and Public Health in South Asia'.

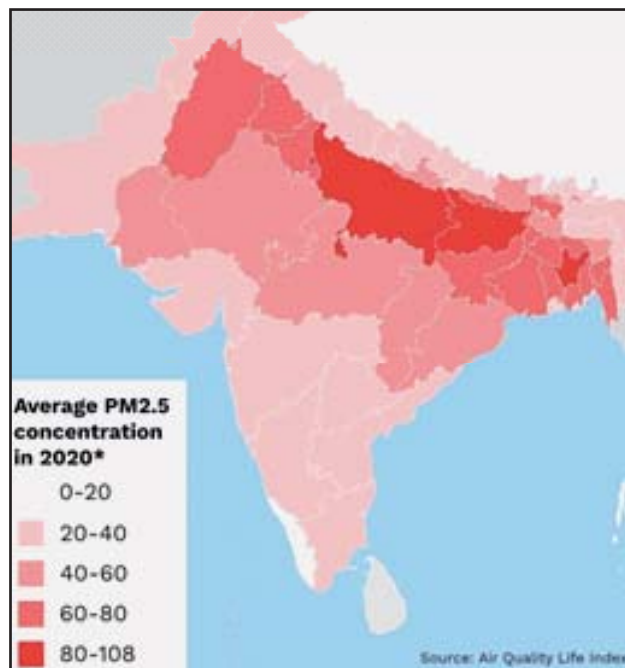
◎ BACKGROUND:

- Persistently hazardous levels of air pollution have caused public health crises in South Asia demanding urgent action.
- Using a modelling approach over South Asia as a whole, the WB report lays out multiple scenarios and costs involved in reducing the region's exposure to particulate matter (PM)

Highlights of the Report:

- Over 60% of South Asians** are exposed to an **average of 35 $\mu\text{g}/\text{m}^3$ of PM_{2.5}**
- In some parts of the **Indo-Gangetic Plain (IGP)** it spiked to as much as **100 $\mu\text{g}/\text{m}^3$ – nearly 20 times the upper limit of 5 $\mu\text{g}/\text{m}^3$ recommended by the WHO.**
- According to a World Bank report, India has six large airsheds, some of them shared with Pakistan, between which air pollutants move. They are:
 - West/Central Indo-Gangetic Plain (IGP)** that included Punjab (Pakistan), Punjab (India), Haryana, part of Rajasthan, Chandigarh, Delhi, and Uttar Pradesh.
 - Central/Eastern IGP:** Bihar, West Bengal, Jharkhand, Bangladesh
 - Middle India:** Odisha/Chhattisgarh
 - Middle India:** Eastern Gujarat/Western Maharashtra
 - Northern/Central Indus River Plain:** Pakistan, part of Afghanistan; and
 - Southern Indus Plain and further west:** South Pakistan, Western Afghanistan extending into Eastern Iran.

- Dominant Sources of Air Pollution:** These include the combustion of solid fuels for cooking and heating, emissions from small industries such as brick kilns, burning of municipal and agricultural waste, and cremation.
- It **highlights the interdependence in air quality within airsheds in South Asia**, which is necessary for pollution control.



What are Airsheds?

- The World Bank defines an airshed as a common geographic area where pollutants get trapped, creating similar air quality for everyone.
- The concept is demonstrated by a 2019 study that found approximately half of the population-weighted PM_{2.5} in Delhi comes from outside the territory, of which 50% is from Haryana and Uttar Pradesh.

Suggestion

- Full coordination between airsheds:** Curbing air pollution requires not only tackling its specific sources, but **also close coordination across local and national jurisdictional boundaries.**
 - Coordination between airsheds, would cut the average exposure of PM 2.5 and save more than 7,50,000 lives annually.
- Establish a dialogue on air pollution:** Scientists from India, Pakistan, Nepal, Bangladesh and other South Asian countries must establish a dialogue on air pollution to tackle it with an '*airshed approach*'.
 - In ASEAN, Nordic regions and across China, air pollution is tackled in this way.

- All feasible measures it would bring pollution below that number.

Indian efforts to curb air pollution

- **National Clean Air Campaign (NCAP):** Launched in 2019, it aims to reduce air pollution in 131 of India's most polluted cities.
- **(SAFAR) Portal:** SAFAR is a national initiative introduced by the Ministry of Earth Sciences (MoES) to measure the air quality of a metropolitan city.
- **Air Quality Index:** AQI has been developed for

eight pollutants viz. PM2.5, PM10, Ammonia, Lead, nitrogen oxides, sulphur dioxide, ozone, and carbon monoxide.

- **Graded Response Action Plan (for Delhi)**
- **National Clean Air Campaign (NCAP):** It aims to reduce (40% over 2017 levels by 2025-26) air pollution in 131 of India's most polluted cities.
- **National Air Quality Monitoring Programme (NAMP):** Under NAMP, four air pollutants viz. SO₂, NO₂, PM10, and PM2.5 have been identified for regular monitoring at all locations.

Section: B

(SPECIALS)

CURRENT AFFAIRS

COP 15 ON CONSERVATION OF BIOLOGICAL DIVERSITY AT MONTREAL'

CONTEXT

At Convention on Biological Diversity (CBD), the COP15 biodiversity conference in Montreal, India highlighted the burden of implementing the targets for conservation on developing nations and the need for a dedicated fund to help them.

◎ ABOUT COP-15

- ▶ The 15th Conference of Parties COP15, to the UN Convention on Biological Diversity, is the most important gathering on biodiversity in a decade.
- ▶ It aims at achieving a historic deal to halt and reverse biodiversity loss on par with the 2015 Paris Agreement on climate change. Its precise commitment is:
 - Holding the increase in the global average temperature to well below 2°C above pre-industrial levels
 - To pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.
- ▶ **"Kunming-Montreal Global Biodiversity Framework" (GBF)** was adopted. GBF includes 4 goals and 23 targets for achievement by 2030.
- ▶ The U.N. biodiversity conference was concluded in Canada Montreal.

What are the Key Targets of the GBF?

- **30x30 Deal:**
 - ▶ **Restore 30% of degraded ecosystems** globally (on land and sea) by 2030.
 - ▶ **Conserve and manage 30% of areas** (terrestrial, inland water, and coastal and marine) by 2030.
- **Stop the extinction of known species, and by 2050** reduce tenfold the extinction risk and rate of all species (including unknown)
- **Reduce risk from pesticides by at least 50% by 2030** Reduce nutrients lost to the environment by at least 50% by 2030
- **Reduce pollution risks and negative impacts of pollution** from all sources by 2030 to levels that are not harmful to biodiversity and ecosystem functions
- **Reduce the global footprint of consumption by 2030**, including through significantly reducing overconsumption and waste generation and halving food waste
- **Sustainably manage areas under agriculture, aquaculture, fisheries, and forestry** and substantially increase agroecology and other biodiversity-friendly practices

- Tackle climate change through **nature-based solutions**
- **Reduce the rate of introduction and establishment of invasive alien species** by at least 50% by 2030
- Secure the safe, legal and sustainable **use and trade of wild species** by 2030
- Green up **urban spaces**

Key points highlighted by India:

- **Resource Mobilization Mechanism:** There is a need to create a new and dedicated fund to implement a post-2020 **Global Biodiversity framework (GBF)** to halt and reverse biodiversity loss.
 - ▶ It will ensure effective implementations of the **post-2020 GBF** by all countries.
- **Common but Differentiated Responsibilities and Respective Capabilities' (CBDR)** must be the basis of the conservation of biodiversity.
- Cost and the **burden of environmental recovery fall disproportionately** on the countries that can least afford them
- Need to put in place a **Resource Mobilization Mechanism**.
- **Ecosystem approaches** for the conservation of biodiversity need to be adopted rather than going for **nature-based solutions**.
- The parties are trying to achieve a **consensus on eliminating subsidies that are harmful to the environment**. But India differentiates on this issue.
- **GBF must be framed** considering **science and equity and the sovereign right of countries**.

What is the Post-2020 Global Biodiversity Framework?

- The post-2020 global biodiversity framework builds on the **Strategic Plan for Biodiversity 2011-2020**.
- It aims to **spur urgent and transformative action by Governments and all of society to contribute to the objectives of the Convention on Biological Diversity**, its Protocols, and other biodiversity-related multilateral agreements, processes, and instruments.

- The draft GBF is set to replace the **Aichi Biodiversity Targets**.

Why does India differ in reducing the agriculture-related subsidy?

- **Agriculture is a paramount economic driver** for rural communities.
- The majority of the **rural population in India is dependent on agriculture** and allied sectors.
 - So, the critical support provided to these sectors cannot be redirected.
- **Food Security:** It is of utmost importance for developing countries.
 - So, prescribing numerical targets for pesticide reductions is unnecessary.
 - It must be left to countries to decide, based on national circumstances, priorities and capabilities.

Other important Global Climate Funds

- **Green Climate Fund (GCF):** It was established to limit or reduce Greenhouse Gas (GHG) emissions in developing countries and to help vulnerable societies adapt to the unavoidable impacts of climate change.
- **Adaptation Fund (AF):** It was established under the Kyoto Protocol in 2001 and has committed USD 532 million to climate adaptation and resilience activities.
- **Global Environment Fund (GEF):** GEF has served as an operating entity of the financial mechanism since the Convention came into force in 1994.

- It is a private equity fund focused on seeking long-term financial returns through investments in clean energy under climate change.

- **Additional Funds:** In addition to guiding the GEF and the GCF, parties have established two special funds:
 - The Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF).
 - Both funds are managed by the GEF.

About Global Environment Facility (GEF)

- The **Global Environment Facility (GEF)** is the key source of funding for biodiversity conservation.
 - It caters to multiple conventions, including the **UNFCCC and UN Convention to Combat Desertification**.
 - It remains the only source of funding for biodiversity conservation.
- **Global Environment Facility – Key Areas**
- As an independently operating financial organization, GEF addresses six designated focal areas which are listed below.
 - Biodiversity
 - Climate change
 - International waters
 - Ozone depletion
 - Land degradation
 - Persistent Organic Pollutants



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CURRENT AFFAIRS

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THE 1925 KAKORI TRAIN ACTION & ITS YOUNG REVOLUTIONARY LEADERS

◎ CONTEXT:

Four revolutionaries of the Indian independence movement were hanged on December 17, Rajendranath Lahiri and December 19 Ashfaqullah Khan, Ram Prasad Bismil, Thakur Roshan Singh in 1927, two years after the Kakori Train Robbery.

◎ BACKGROUND

- **1920:** Declaration of the **Non-Cooperation Movement** by Mahatma Gandhi
- Gandhi envisioned this movement envisioned to be non-violent, using his methods of Satyagraha to eventually attain self-governance.
- However, an incident changed the movement's trajectory in 1922.
 - After police firing killed **three protesting men** in the town of **Chauri Chaura** in present-day Uttar Pradesh, a mob later set fire to the police station, burning 22 policemen to death.
 - The incident led to the sudden end of the **Non-cooperation movement**.
- The **Hindustan Republican Association (HRA)** was thus founded by a **group of young men** who were dissatisfied by;
 - Non-violence tactics
 - closing down the Non-cooperation movement

Kakori Train Action:

- **Date:** August 9, 1925
- The revolutionaries of HRA looted the money being transferred to the British government treasury through a train.

- They wanted to buy weapons from the money for an armed struggle against the British.

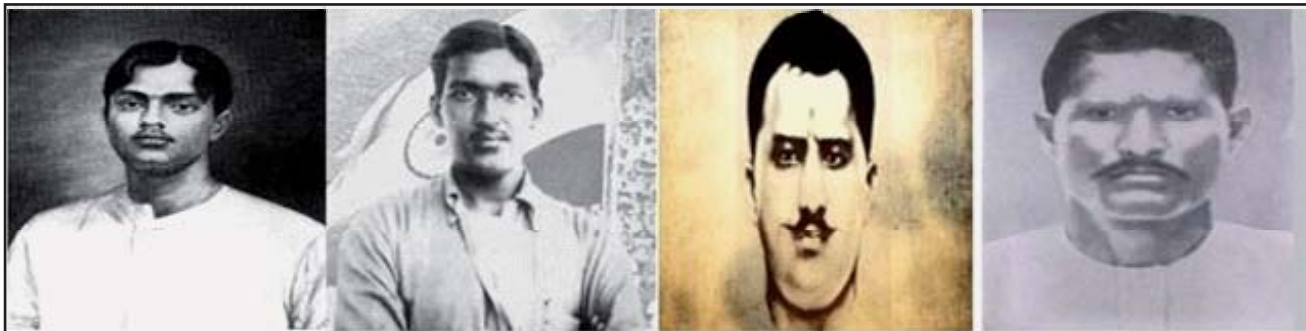
The only major leader of HRA at this time who evaded arrest was **Chandrashekhar Azad**.

• Important revolutionaries:

- Around ten revolutionaries, Rajendranath Lahiri, Ram Prasad Bismil and Ashfaqullah Khan looted the treasury bags (**containing approx Rs.4, 600**) and escaped to Lucknow.
- The British authorities were enraged, undertaking a violent crackdown and soon arresting many members of the HRA.
- Four of them were hanged to the death between December 17 and December 19, some were deported to cellular jail ('kaala paani') in Port Blair while others were imprisoned in various jails.
 - **Rajendra Nath Lahiri** was hanged in Gonda jail on December 17, 1927.
 - Two days later, **Ram Prasad Bismil** was hanged in Gorakhpur, **Ashfaqullah Khan** in Faizabad and **Thakur Roshan Singh** in Naini jail in Allahabad.

The Hindustan Republican Association (HRA):

- It was a revolutionary organisation set up in 1923. It was renamed in 1928 as the Hindustan Socialist Republican Association (HSRA).
- **Founders:** Ram Prasad Bismil, Ashfaqulla Khan, Sachindra Nath Bakshi, Sachindranath Sanyal and Jogesh Chandra Chatterjee.
- **Aim:** To free India from British rule through revolution, including armed rebellion.
- Their manifesto released on January 1, 1925, was titled **Krantikari (Revolutionary)**, written by **Ram Prasad Bismil**.
 - The document expressed the ideology, plans and vision of the HRA on questions regarding foreign rule, the independence movement and the future of India.



Outcomes of the Conspiracy: Contribution to the Indian freedom struggle:

- After the conspiracy, the Britishers got an early detection of the Indian's planning against their loot and exploitations.
- It enraged the youth of the nation towards the freedom struggle.
- Several looting activities and non-cooperation by locals started in response to the case.
- Nationwide protests against the British tactics caught fire.
- Major leaders of the Indian freedom struggle also advocated the members of HRA actions making the Indian movement united.

WHITE HOUSE SUPPORTS 'EAGLE ACT'

◎ CONTEXT:

Recently, the White House supported the US Congress to pass legislation (EAGLE Act of 2022), whose aim is to eliminate the per-country quota on issuing green cards.

What is the EAGLE Act of 2022?

- It is known as The Immigration Bill, HR 3648.
- Eagle stands for Equal Access to Green cards for Legal Employment (EAGLE) Act, 2022.
- It focuses on hiring immigrants based on merit, not their birthplace.
- It was originally introduced in House on June 1st, 2021.
- It was later re-introduced in 2022.

The goal of the Act:

- To allow US employers to "focus on **hiring immigrants based on merit**, not their birthplace, by **eliminating the "per country" limitation** on employment-based immigrant visas (green cards)."

Exceptions:

- **During the transition period, some visas would be put aside for:**
 - Physical therapists and nurses
 - employment-based immigrants and their family members who are not currently in the United States

- **Individuals waiting in the immigrant visa backlog:** The act includes provisions to allow individuals who have been waiting in the immigrant visa backlog for two years to file their green card applications.

Impact on less-populated countries:

- To reduce the impact of this on less-populated countries, the legislation plans to **phase out the per-country caps over the course of nine years.**

Benefits of the act

- It will **benefit the US economy** by allowing American employers to focus on hiring immigrants based on their merit, not their birthplace.
- The bill will be **advantageous for Indian job-seekers** who currently rely on temporary visas or await green cards to work in the US.
- **Faster processing** of the citizenship application will also help immigrant workers to get protection from exploitation

Resistance from Americans:

- Several Americans have expressed their scepticism about the Act and have shown concern:
 - This would encourage more foreigners to come to the US for residency.
 - The low-wage and low-skilled workers would get Green Cards.

How will the legislation benefit Indian Americans?

- Backlogged Indian workers face an **impossible wait of nine decades** if they all could remain in the line
- **More than 200,000 petitions filed for Indians could expire** as a result of the workers dying of old age before they receive green cards.
- With the EAGLE Act 2022, the **per-country cap would be removed**, which may expedite the petitions for those applying for employment-based green cards.

Benefits of having a green card:

- It provides a pathway to citizenship
- A cardholder can sponsor immediate family members for the same card
- Easy access to us social security system
- Makes travel to and from the country easier
- A cardholder can choose to live anywhere

- freedom in terms of career opportunities
- a cardholder can also have some amount of engagement in the political process of the country

What is a green card and what are its benefits?

- It is officially known as a **Permanent Resident Card**, a green card, issued to immigrants, that allows them to live and work in the United States permanently.

How long does it take Green Card holders to become US citizens?

- Once issued, a Green Card is valid for ten years.
- A Green Card holder can apply for US citizenship after five years of permanent residency.
- They need to renew their Green Card before applying for citizenship if it is set to expire in less than six months or has already expired.

LS PASSES BILL TO GRANT ST STATUS TO NARIKORAVAN, KURIVIKKARAN COMMUNITIES

◎ CONTEXT:

Lok Sabha passed the Constitution (Scheduled Tribes) Order (Second Amendment) Bill, 2022, which seeks to grant Scheduled Tribe status to Narikoravan and Kurivikkaran communities in Tamil Nadu.

◎ BACKGROUND:

- Lokur Committee and the Joint Committee of Parliament had recommended the inclusion of the community in 1965 and 1967 respectively.
- The Narikoravars constitute one of the most deprived and vulnerable communities in Tamil Nadu and therefore deserve all constitutional protection and welfare measures envisaged, by its inclusion in the list of STs.

Narikoravan & Kurivikkaran Communities:

- The Narikurava, also called Narikuravar, are an indigenous group from Indian state of Tamil Nadu.

- ▶ Narikoravan is a nomadic community by tradition.
- Kurivikkaran's traditional occupations is 'trapping birds, especially sparrows' (Kurivi in Tamil denotes sparrow).

Process of Inclusion in ST list:

- The process begins at the level of a State or Union Territory with the concerned government or administration seeking the addition or exclusion of a particular community from the SC or ST list.
- The final decision rests with the President's office issuing a notification specifying the changes under powers vested in it from Articles 341 and 342.
- The inclusion or exclusion of any community in the Scheduled Tribes or Scheduled Castes list comes into effect only after the President assents to a Bill that amends the Constitution (Scheduled Castes) Order, 1950 and the Constitution (Scheduled Tribes) Order, 1950 as is appropriate after it is passed by both the Lok Sabha and Rajya Sabha.

Criteria for ST list inclusion:

- To establish whether a community is a Scheduled Tribe, the government looks at several criteria, including its **ethnological traits, traditional characteristics, distinctive culture, geographical isolation and backwardness**.

NO SURVEY DONE TO IDENTIFY NUMBER OF EWS BENEFICIARIES

◎ CONTEXT:

The Union government has not conducted any survey nor is it considering a proposal to conduct one to identify the number of beneficiaries entitled to the Economically Weaker Sections (EWS) reservation.

◎ BACKGROUND:

- Earlier this year, Supreme Court had heard the constitutionality of the EWS reservation.
- The Union government had orally told the Constitution Bench that it was relying on the data compiled in the **NITI Aayog's Multi-Dimensional Poverty Index**.

- The union government has recently made it clear, that no survey has been done to identify number of EWS beneficiaries.
- NITI Ayog has estimated that 18.2% of the General Category population would fall under the EWS category (about 3.5 crore).
- The Supreme Court Bench, while hearing the challenge to the income criteria for EWS reservation had also questioned the Union government over **what data it had considered to arrive at the ₹8 lakh criteria for annual family income** and on what basis it had arrived at the **10% requirement**.

What was the basis of the challenge to the amendment?

- **Violates the Basic Doctrine of the Constitution:** On the ground that it violates the Supreme Court's 1992 ruling in *Indira Sawhney & Ors v Union of India*, which upheld the Mandal report and capped reservations at **50 per cent**.
 - The court had held that economic backwardness cannot be the sole criterion for identifying a backward class.
- **Issue of private, unaided educational institutions:** They have argued that their fundamental right to **practice a trade/profession** is violated when the state compels them to implement its reservation policy and admit students on any criteria other than merit.

About EWS Quota:

- The 10% EWS quota was introduced under the **103rd Constitution (Amendment) Act, 2019** by amending **Articles 15 and 16**.
 - It inserted Article 15 (6) and Article 16 (6).
- It is for **economic reservation** in jobs and admissions in education institutes for **Economically Weaker Sections (EWS)**.
- It was enacted to promote the welfare of the poor not covered by the 50% reservation policy for Scheduled Castes (SCs), Scheduled Tribes (STs) and socially and Educationally Backward Classes (SEBC).
- It enables both **Centre and the states** to provide reservation to the EWS of society.

Significance:

- **Addresses Inequality:** The 10% quota is progressive and could address the issues of educational and income inequality in India since the economically weaker sections of citizens have remained excluded from attending higher

educational institutions and public employment due to their financial incapacity.

- **Recognition of the Economic Backwards:** There are many people or classes other than backward classes who are living under hunger and poverty-stricken conditions.
- The proposed reservation through a constitutional amendment would give constitutional recognition to the poor from the upper castes.
- **Reduction of Caste-Based Discrimination:** Moreover, it will gradually remove the stigma associated with reservation because reservation has historically been related to caste and most often the upper caste looks down upon those who come through the reservation.

S R Sinho Commission:

- The EWS reservation was granted based on the recommendations of a commission headed by Major General (retd) S R Sinho. The commission, which was constituted in March 2005, submitted its report in July 2010.
- The Sinho Commission recommended that all below-poverty-line (BPL) families within the general category as notified from time to time, and also all families whose annual family income from all sources is below the taxable limit, should be identified as EBCs (economically backward classes).

RAJYA SABHA PASSES MARITIME ANTI-PIRACY BILL

◎ CONTEXT:

The Rajya Sabha passed the Maritime Anti-Piracy Bill after the approval of Lok Sabha for cooperation and repression of piracy in high seas.

◎ BACKGROUND:

- Till now, India does not have a domestic legislation on maritime piracy.
- In the past, provisions of the Indian Penal Code, 1860 (IPC) pertaining to armed robbery and the admiralty jurisdiction of certain courts have been invoked to prosecute pirates. However, the sovereignty of India extends only up to the territorial waters of India (12 nautical miles from the coastline).

- Piratical **acts by a foreigner** committed outside the territorial waters of India do not constitute an offence under the IPC.
- For example, in the Alondra Rainbow case (1999), the Mumbai High Court acquitted the accused on grounds that India did not have the jurisdiction to prosecute them.

- In 1995, **India ratified the UNCLOS**, which gives a uniform international legal framework for combatting acts of piracy. Consequently, the Piracy Bill, 2012 was introduced in Lok Sabha in April 2012.
- The 2012 Bill lapsed with the dissolution of the 15th Lok Sabha.
- The **Anti-Maritime Piracy Bill, 2019** was introduced in Lok Sabha on December 9, 2019, and has been referred to the Standing Committee on External Affairs for detailed examination.
- No it has been passed by both the houses of the Parliament.

Key highlights of the Bill:

- The Bill enables Indian authorities to take action against piracy in the high seas. The Bill brings into law the UN Convention on the Law of the Sea. It applies to the sea beyond the **Exclusive Economic Zone (EEZ)**, i.e., **beyond 200 nautical miles** from India's coastline.
- The Bill defines **piracy** 'as any illegal act of violence, detention or destruction against a ship, aircraft, person or property, for private purposes, by the crew or passengers of a private ship or aircraft.'
- Piracy also includes inciting and intentionally facilitating such acts of violence, and voluntarily participating in the operation of a pirate ship or aircraft.
- Committing an act of piracy will be punishable with:
 - life imprisonment; or
 - Death, if the act of piracy causes or seeks to cause death.
- Participating, organising, aiding, supporting, attempting to commit, and directing others to participate in an act of piracy will be punishable with **up to 14 years** of imprisonment, and a fine.

Key Issues and Analysis:

- Under the Bill, if a person, while committing an act of piracy causes or seeks to cause death, he will be punished with death. This implies a mandatory death penalty for such offences.
 - The Supreme Court has held that mandatory death penalty for any offence is

unconstitutional as it violates **Articles 14 and 21** of the Constitution. However, Parliament has passed laws providing for mandatory death penalty for some offences.

- The Bill provides for imprisonment of up to 14 years if a person participates in an act of piracy. Committing an act of piracy (which includes voluntarily participating in the operation of a pirate ship or aircraft) is punishable with life imprisonment.
 - As these circumstances may overlap, it is unclear how the punishment would be determined in such cases.
- The Bill will apply to all parts of the sea adjacent to and beyond the limits of the Exclusive Economic Zone (EEZ) of India, i.e., beyond 200 nautical miles from the coastline.
 - The question is whether the Bill should cover the EEZ also, that is the area between 12 nautical miles and 200 nautical miles (from the coastline of India).

INDIA'S COAL PRODUCTION TO SURPASS A BILLION TONNES BY 2025: IEA ANNUAL REPORT

◎ CONTEXT:

International Energy Agency (IEA) in its annual report has predicted that India's coal production will surpass a billion tonnes by 2025.

Key Highlights of the Report

- India's coal consumption has doubled since 2007 at an annual growth rate of 6 per cent.
- India and China are the only two countries where investment in the coal sector has gone up.
- Domestic production has been ramped up in both countries to reduce external reliance.
- With the present trend, Coal's global phaseout is also nowhere in sight.

Impact of steeper gas prices on coal demand

■ On India and China:

- For both India and China, coal is the backbone of the electricity system and not gas. As a result, the impact of steeper gas prices on coal demand has been limited.

- Increased coal use in these countries had replaced some gas, which has been purchased by other regions willing to pay more for it.

■ On Europe:

- Europe has a reliance on Russian gas and the Russian invasion of Ukraine has sparked a surge in gas prices.
- The spike in the prices of gas due to the war as well as lower output from hydro and nuclear led to **'fuel switching'** to coal in the European Union to generate power.
- Despite the surge in gas prices, the production of electricity from coal has not been much in most European countries except for Germany.
 - ▶ Germany is the only country in Europe that has ramped up electricity production from coal and is expected to remain at these higher levels for some time.
- EU coal generation and demand will return to a downward trajectory as soon as 2024.

■ China:

- Coal power generation in China increased by around 15 per cent year-on-year to over 500 terawatt-hours (TWh).
- An increase in renewable power generation in China means that growth in coal consumption is expected to remain relatively stagnant at an average of 0.7 per cent a year to 2025.

■ In the United States

- IEA has made a forecast that coal use will maintain its downward trajectory in the United States.

What is the government of India's stand?

- The union coal minister has confirmed that:
 - India is geared up to stop the import of thermal coal by 2024-25 (the next fiscal).
 - India's coal production with touch one billion tonnes in the next fiscal.
 - Our requirement by 2030 will be 1,500 million tonnes.

What is compelling India to continue its dependency on coal-based thermal energy?

- It was for the first time in the 50 years of Coal India's existence that the public sector undertaking was asked to import the dry fuel.

- The geo-political situation triggered by the Russia-Ukraine war has resulted in:

- Supply chain constraints
- Increased energy prices
- Pushed inflation to highest-ever levels

What is the Reason for Increasing Coal Demand?

- Iron and steel production uses coal and there are not **many technologies to replace the fuel immediately**.
- **Continued expansion of India's economy is expected during 2022-2024**, with annual average GDP growth of 7.4%, fuelled partially by coal.
- The central government has opened **up coal mining for the private sector, claiming it as one of its most ambitious coal sector reforms**.
 - The government anticipates that it will bring efficiency and competition in coal production, attract investments and best-in-class technology, and help create more jobs in the coal sector.
- As part of the Covid-19 recovery plan, the government opened up its **coal mining sector for private players** and announced many new coal mines for auction.

Impact:

- It **hampers its efforts to push for greener options**.
- Coal is increasingly becoming **economically unviable**.
- India's promise that renewables will provide 50% of its electricity by 2030, may not get fulfilled.

Concern

- India is **developing coal mines despite** the Union government's **international pledge to achieve net zero emissions by 2070**.
- India, in its **nationally determined contributions**, announced a target to cut 1 billion tonne carbon emissions by 2030 and reduce the carbon intensity of the economy to less than 45 percent.
 - Coals' domestic and global phaseout is also nowhere in sight, given the demand for it.
- In the **absence of low-emissions alternatives**, global coal demand is set to remain flat through our forecast period.

RAJASTHAN'S TAL CHHAPAR SANCTUARY GETS PROTECTION COVER

◎ CONTEXT:

The famous Tal Chhapar blackbuck sanctuary in Rajasthan's Churu district has received a protective cover against a proposed move of the State government to reduce the size of its eco-sensitive zone.

The matter:

- Tal Chhapar's area was going to be reduced to three sq. km. under pressure from mine owners and stone crusher operators.
- To protect the sanctuary, the Rajasthan High Court ordered a "complete prohibition" on any action to reduce the wildlife sanctuary's area.
- The court directed to complete the formalities for the declaration of the eco-sensitive zone surrounding Tal Chhapar at the earliest.

The Tal Chhapar Sanctuary:

- The Tal Chhapar Sanctuary is known as the home of **blackbuck** and a variety of **birds in Rajasthan**.
- It is located in the **Churu district** of Northwestern Rajasthan, in the **Shekhawati region of India**.
- The sanctuary is flanked by the **Great India Desert**, Thar and boasts a unique ecosystem and is an important birdwatching destination in India.
- **Migratory birds in the sanctuary:** Raptors, Harriers, eastern imperial eagles, tawny eagles, short-toed eagles, sparrows, and little green bee-eaters, black ibis and demoiselle cranes, whereas skylarks, crested larks, ring doves, and brown doves are seen round the year.
 - The raptors, which include predators and scavengers, are on top of the food chain and control the populations of small mammals, birds and reptiles as well as insects.

ESZ Guidelines classify activities under three categories:

- **Prohibited:** Commercial Mining, Setting of Saw Mills, Setting of industries causing pollution, the establishment of major hydroelectric projects etc.
- **Regulated:** Felling of Trees, Establishment of hotels and resorts, erection of electrical cables, drastic change of agricultural systems etc.
- **Permitted:** On-going agriculture and horticulture practices by local communities, rainwater harvesting, organic farming etc.

- **Fauna:** Desert foxes and desert cats can be spotted in the sanctuary.

Eco-sensitive Zone (ESZs):

- As per the **National Wildlife Action Plan (2002-2016)**, issued by the Union Ministry of Environment, Forest and Climate Change, land within 10 km of the boundaries of national parks and wildlife sanctuaries are to be notified as **eco-fragile zones or Eco-Sensitive Zones (ESZ)**.
- While the **10-km rule** is implemented as a general principle, the extent of its application can vary.
- Areas beyond 10 km can also be notified by the Union government as ESZs, if they hold larger ecologically important "**sensitive corridors**."
- The Eco-Sensitive Zones are envisaged as a cushion or shock absorbers for '**protected areas**'.

Threats:

- increase in human population around the sanctuary
- unplanned and rampant construction activities
- Hyper-aridity
- Grazing pressure
- Invasive weed *Prosopis juliflora*
- Salt mines in the vicinity

SPECIES IN NEWS

Previously extinct bird, gecko populations from the Galapagos Islands reappears

- Two species that were previously extinct on the Galapagos Islands have reappeared a decade.
 - Locally extinct cactus finches and geckos are now "thriving" in their restored habitats.

**Galápagos finch:**

- This cactus-loving Galápagos finch has an especially distinctive bill, which is long, deep at the base, and often appears droopy.
- Bill is black on breeding male and dull orange on female and nonbreeding male.

Union Island gecko (*Gonatodes daudini*)

- The Union Island gecko is brightly coloured and the size of a paper clip.
 - It is found in Chatham Bay forest on the island of the same name in Saint Vincent and the Grenadines.
 - It was first scientifically described in 2005 and quickly became highly attractive for the illegal international pet trade.
- This led to its wild population fall.

Scientists finally discover 'overlooked' clitoris in snakes

An international team of scientists has for the first time provided a **detailed anatomical description** of the **female snake clitoris**, an advance that could lead to better understanding of **reptile evolution**.

Findings: Snakes have two individual clitorises - hemiclitorises - separated by tissue and hidden on the underside of the tail.

- The double-walled organ is composed of nerves, collagen and red blood cells consistent with erectile tissue.
- If subsequent research confirms the presence of a functional clitoris, it could challenge the assumption that **snake sex is coercive**.

Asian Giant Tortoise re-wilded in Nagaland

In a first such conservation exercise in India, 10 captive-bred **Asian giant tortoises**, the largest tortoise in mainland Asia, were released into **Intanki National Park**, a **protected area** in Nagaland.

About

- Asian Giant Tortoises are the largest tortoises in mainland Asia.
- It is a species of tortoise in the family Testudinidae. The species is endemic to Southeast Asia.
- They are found in Bangladesh, India, Indonesia, and Malaysia among other places.

Black Buck in Tal chhappar sanctuary



The Tal Chhappar Sanctuary is known as the home of **blackbuck** and a variety of **birds in Rajasthan**.

- Indian Blackbuck (*Antelope cervicapra*) is an antelope and is the only living species of the genus *Antelope*.
- It is considered to be the fastest animal in the world next to Cheetah.
- The horns of the blackbuck are ringed with one to four spiral turns and the female is usually hornless.

Protection Status:

- Hunting of blackbuck is prohibited under Schedule I of the Wildlife Protection Act of 1972.
- It has been categorised least concerned in IUCN Red Data Book.
- The Bishnoi community of Rajasthan is known worldwide for their conservation efforts to blackbuck and Chinkara.

PM2 elephant



PM2 elephant which was captured and relocated is acclimatizing to a new habitat in Mudumalai Tiger Reserve.

- PM 2 Makana elephant was caught in Gudalur (*in Nilgiri District of Tamil Nādu*)
- Pandalur Makhna-2 (PM2), is called '**Arisi Raja**' by Gudalur residents.
- These are called "**makhna**" as they are **tuskless elephants**.
- It is because of **genetic disorders** sometimes male elephants can't develop tusks at all.
- Such male elephants are **known to be aggressive and dangerous**.

THE 5 BIGGEST SCIENTIFIC BREAKTHROUGHS OF 2022

◎ CONTEXT:

Here are 5 of the biggest scientific breakthroughs that happened in 2022.

Fusion energy breakthrough promises a future of clean energy

- **Details:** The researchers at the *Lawrence National Laboratory in California* conducted a nuclear fission reaction that **produced more energy than what was used to ignite it**.

- **Concept Involved- 'Nuclear Fusion':** It happens when two nuclei fuse to form a single heavier nucleus.
 - When this happens, the mass of the new heavier nucleus is less than the sum of the individual nuclei combined; meaning that a little bit of mass is lost.
 - **$E=mc^2$** , Einstein's most famous equation, explains how this mass is converted into a large amount of energy.
- **Significance:** In comparison to nuclear fission, **four times more energy** can be produced using nuclear fusion.
 - If commercialized it would offer a clean and renewable source of energy that will help fight climate change.

- No radioactive waste products

Large hadron collider (LHC) gets back into action, producing almost immediate results:

- **Details:** Roughly after 3 years of maintenance work, the LHC (located in Geneva, Switzerland) went ahead with its third run.
 - A new kind of "pentaquark" and the first-ever pair of "tetraquarks" have been found by LHC. But these states were not found until now.
- **Concept Involved:** It works on the simple principle of first 'accelerating particles' in two paths to near the speed of light and later directing them towards each other and analyzing the sequence of events.
- **Significance:** In its **first run** it confirmed the discovery of the Higgs boson or the 'God Particle'.
 - This led to Peter Higgs and his collaborator François Englert being awarded the Nobel Prize for physics in 2013.
 - **Second run:** It began in 2015 and lasted till 2018. The second season of data-taking produced five times more data than Run 1.
 - After the discovery of the Higgs boson, scientists have started using the data collected as a tool to look beyond the "Standard Model".

"Baby wormhole" simulated in a quantum computer

- **Details:** Researchers *forged two miniscule simulated black holes*— in a quantum computer and transmitted a message between them through what amounted to a **tunnel in space-time**.
- **Concept Involved:** The concept of a wormhole was first proposed by Albert Einstein and Nathan Rosen in 1935.
 - These are theoretical structures that can be considered a tunnel with two ends at different points in space-time.
- **Significance:** A wormhole – a rupture in space and time – is considered a bridge between two remote regions in the universe.
- It would help simulate more interesting **quantum gravity theories** in the future.

"Reversing death" by reviving pig cells

- **Details:** Sixty minutes after stopping the heart in the dead pigs, Yale researchers were able to restart the circulation using a specialized machine

and synthetic fluid carrying oxygen.

- **Concept involved:** The experiment utilized "**OrganEx solution**", which contains nutrients, anti-inflammatory medicine, drugs preventing cell death, nerve blockers, and artificial haemoglobin.
- **Significance:** This technology could be used to prevent severe damage to organs like the heart after a major heart attack or the brain after a stroke.

Synthetic mouse embryo develops a beating heart

- **Details:** Scientists from the University of Cambridge have achieved the rare feat of creating the world's first synthetic embryo that has a brain and a beating heart.
- **Concept involved:** The embryo was created using the **stem cells** of the mouse instead of the normal process of fusing sperm and egg cells.
 - **Stem cell:** Stem cells are the body's raw materials — cells from which all other cells with specialized functions are generated.
 - The stem cells are the body's master cells and can develop into almost any of the many cell types in the body.
- **Significance:** The researchers hope the technology can be used to develop certain human organ types.
- It will help to understand the crucial organ development processes that could not be done with real human embryos.

CHINA TO REIN IN 'DEEPPFAKE' TECH

◎ CONTEXT:

China is working to more tightly scrutinize so-called "deep fake" technology and services next month as unchecked use of deep fakes could lead to its use in criminal activities.

Details:

- China has been pushing for new **synthetic content regulations**.
- Earlier this year, China released "Provisions on the Administration of Deep Synthesis Internet Information Services".
 - It was basically a draft of regulations for deep synthesis technology, an umbrella

term covering “text, images, audio, video, virtual scenes, or other information” created with **generative models**.

■ The new regulations are aimed at:

- Deep synthesis service providers and emphasize Cybersecurity
- real-name verification of users
- data management
- marking of synthetic content to alert viewers
- Dispelling rumours

What is a deep fake?

- Deep fakes use a form of artificial intelligence called **deep learning** to make images of fake events, hence the name deep fake.
- This new technique allows unskilled people to make deep fakes with a handful of photos, and fake videos.

Is it just about videos?

- The answer is ‘No’. Audio can be deep faked too, to create “**voice skins**” or “voice **clones**” of public figures.

How are they made?

- First running thousands of face shots of the two people through an **AI algorithm called an encoder**.
- The encoder finds and learns similarities between the two faces, and reduces them to their shared common features, compressing the images in the process.
- A **second AI algorithm called a decoder** is then taught to recover the faces from the compressed images.
- Another way to make deep fakes uses what’s called a **generative adversarial network**, or GAN.

Why are deep fakes becoming harder to detect?

- This type (GAN) of machine learning system consists of two neural networks, operating in concert. One network generates the fake and the other tries to detect it, with the content iterating back and forth, and improving with each iteration (repetition of the process).
- This dynamic is replicated in the wider research landscape, where each new deep fake detection technique gives the deep fake makers a new challenge to overcome, making deep fakes increasingly fool proof.

- Thus, any deep fake’s detector will only be going to work for a short while before deep fake makers account for it in their algorithm.

What technology does one need?

- High-end desktops with powerful graphics cards
- Several companies are doing all the processing in the cloud.

How are deep fakes detected currently?

- Currently, deep fakes are identified manually or by software, using some identifiers like:
 - Flicking, blur with bleeding colour, etc. in poorly produced deep fake videos
 - Unusual eye blinking pattern in deep fake videos
 - Using markers known as “soft biometrics” of a person i.e., his/her eyebrow movements, lip movements, etc.

Dangers Associated with Deep Fake:

- **New Front of Warfare:** A deepfake could act as a powerful tool by a nation-state to undermine public safety and create uncertainty and chaos in the target country.
- **Targeting Women:** The malicious use of a deepfake can be seen in pornography, inflicting emotional, reputational, and in some cases, violence toward the individual.
- **Damage to Personal Reputation:** Deepfake can depict a person indulging in antisocial behaviour and saying vile things.
- **Undermining Democracy:** A deepfake can also aid in altering the democratic discourse and undermine trust in institutions and impair diplomacy.
- **Disrupting Electioneering:** A deepfake of a political candidate can sabotage the image and reputation of a contestant.

Steps taken:

- Governments, universities, and tech firms are all funding research to detect deepfakes.
- **Deepfake Detection Challenge:** It is backed by Microsoft, Facebook, and Amazon.
 - It will include research teams around the globe competing for supremacy in the deepfake detection game.
- Facebook has been banning deepfake videos that are likely to mislead viewers into thinking about someone.

- Certain US states like New Jersey and Illinois have introduced local privacy legislation that addresses deepfakes.
- Major US platforms like Facebook and Twitter have created new systems meant to detect and flag deepfakes.

INS MORMUGAO COMMISSIONED INTO THE INDIAN NAVY

◎ CONTEXT:

INS Mormugao, an indigenously developed missile destroyer has been commissioned into the Indian Navy.



Details:

- **INS Mormugao (Pennant D67)** is the second of the **Project 15B** stealth-guided missile destroyers.
- It is built by Mazagon Dock Shipbuilders Limited (MDSL).
- The ship, named after a **key port in Goa**, was commissioned a day before the Goa Liberation Day celebrations.

What is Project 15B?

- The contract for four ships of Project 15B was signed in 2011.
- This Project is follow-on of the **Kolkata class (Project 15A) destroyers** commissioned in the last decade.
- A total of four ships are being developed under this project.
 - **Visakhapatnam:** The lead ship of the Project - INS Visakhapatnam has already been commissioned into the Indian Navy on 21 Nov 21.

- Mormugao
- Imphal
- Surat

- The purpose of the Indian Navy's Project 15B is to develop stealth destroyers having maximized indigenous inputs.
- They are all designed by the Indian Navy's in-house organized, **Warship Design Bureau**.
 - They are built by Mazagon Dock Shipbuilders Ltd in Mumbai.

Specifications:

- **Dimensions:** Measuring 163m in length and 17m in breadth with a displacement of 7,400 tonnes.
- The ship is propelled by four powerful gas turbines.
- Equipped to fight under nuclear, biological, and chemical (NBC) warfare.

Total atmospheric control system (TACS): Protection of the crew from chemical, biological, and nuclear threats.

- State-of-the-art combat management system
- **Max Speed:** 30 knots (55 km/h)
- **Maximum range:** 4,000 nautical miles (7,400 km)

Weaponry

- Barak-8 surface-to-air missiles
- BrahMos surface-to-surface cruise missiles
- 127 mm main gun
- four AK-630 30 mm guns
- 533 mm torpedo launchers
- RBU-6000 anti-submarine rocket launchers.

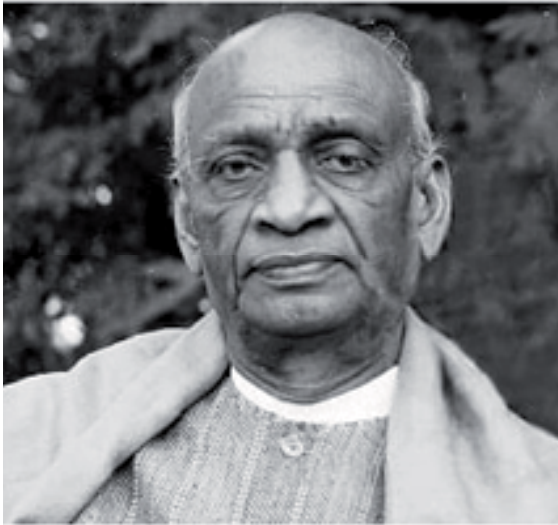
Strategic significance

- High speed and manoeuvrability
- Longer endurance to be part of the escort for larger vessels
- More than 75% of the content is indigenous.
- Anti-surface operations.
- Capable of anti-aircraft and anti-submarine warfare

Section: D

(SHORT NEWS)

CURRENT AFFAIRS



Sardar Patel's 72nd Death Anniversary

Sardar Vallabhbhai Patel (1875-1950):

About:

- Sardar Vallabhbhai Patel was appointed as the **first Deputy Prime Minister** and **Home Minister of India** from 1947 to 1950.
- Sardar Patel was among the leaders who fought hard for India's freedom.
- Sardar Patel was not inclined towards politics. It was when he met **Gandhi** in **Godhra** that he changed his decision and decided to join **Congress**.
- He joined the movement to fight for the **exemption of taxes in Kheda** at the time of plague and famine.
- In 1922, 1924 and 1927, Patel was elected Ahmedabad's municipal president.
- Patel led the **Satyagraha movement** in Nagpur in 1923 against the **British law of banning the hoisting of the Indian Flag**.

He played an extremely important role in integrating over 500 princely states with the union of India, and is, therefore, called as the '**Iron Man**' of India.



Three more sites added to UNESCO's tentative list of World Heritage.


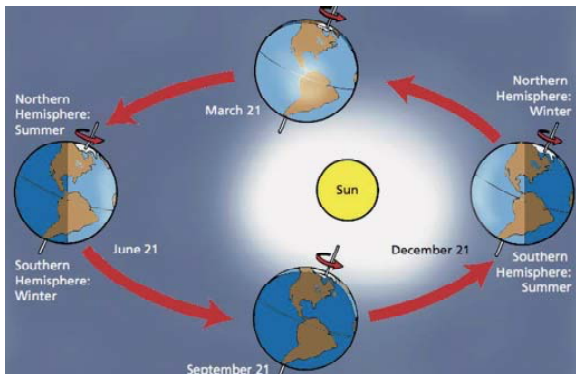
Gujarat's Vadnagar town, the iconic Sun Temple at Modhera, and the rock cut sculptures of Unakoti in Tripura have been added to the tentative list of UNESCO World Heritage Sites.

About the list:

- With this, India now has **52 sites** on **UNESCO Tentative List**.
- The list indicates rich cultural and natural wealth of India and shows huge diversity of our heritage.
- India has a dynamic vision and leadership and is committed to add more sites on the World Heritage List.

Details of the sites included:

- **Vadnagar Town:** It is a multi-layered historic town in Gujarat's
- Mehasana district. Some other names attributed to Vadnagar in history are Chamatkarpur, Anandpur, Snehpur and Vimalpur.
 - **The Archeological Survey of India (ASI)** has unearthed structures resembling a **Buddhist monastery in Vadnagar city of Gujarat**, a finding which could further establish the importance of the region as a thriving Buddhist centre.
- **Modhera Sun Temple:** Modhera Sun Temple was built in 1026-27 CE during the reign of **Bhima I** of the **Chaulukya dynasty**.

	<ul style="list-style-type: none"> ► The historical complex is famous for the magnificent kund known as the Ramakund, built in rectangular shape containing 108 shrines to various gods and demi-gods. • Unakoti Rock cut sculptures: It is 'Shaiba' (Saivite) pilgrimage and dates back to 7th – 9th centuries. <ul style="list-style-type: none"> ► As per Hindu mythology, when Lord Shiva was going to Kashi along with one crore gods and goddesses he made a night halt at this location. ► The images found at Unakoti are of two types, namely rock-carved figures and stone images. <p>Among the rock cut carvings, the central Shiva head and gigantic Ganesha figures deserve special mention.</p>
	<p>Kashmiris celebrate warm 'pheran' to beat freezing 40 days of Chillai Kalan</p> <p>The 40-day harshest spell of winter, locally called 'Chillai Kalan', has been celebrated as 'Pheran Day' in the Kashmir Valley.</p> <ul style="list-style-type: none"> • Objective: to popularise the loose-and-long woollen gown worn to fight the biting cold as the minimum temperature hovers below sub-zero in Srinagar. • The "Chillai Kalaan" is the forty-day period of harsh winter which begins on December 21 and ends on January 31 next year <ul style="list-style-type: none"> ► In the Persian tradition, the night of December 21, the longest of the year, is celebrated as Shab-e-Yalda (night of birth) or Shab-e-Chelleh. • Dozens of netizens from Kashmir named it the 'Pheran Day', after the long woollen gown worn during the winters in Kashmir. • "The first day of 'chillai kalan' is to be celebrated as 'World Pheran Day'," <p>The 40-day chillai kalan is followed by the 'chillai khurd' and 'chillai bacha', which sees a rise in day temperatures.</p>
	<p>Winter Solstice</p> <p>21 December is marked as the Winter Solstice, considered to be the shortest day in a year.</p> <p>About:</p> <ul style="list-style-type: none"> • The winter solstice marks the shortest day and longest, darkest night of the year. • Also known as the December solstice, the astronomical occurrence happens due to Earth's tilted axis of rotation in relation to the sun. • On this occasion, daylight lasts only about 10 hours, 11 minutes. • Significance: During the solstice, the earth's axis is tilted at its furthest point from the sun. <p>This means that, for us in the northern hemisphere, the sun is at its lowest point in the sky.</p>



NASA Launches International Mission to Survey Earth's Water

- SWOT (Surface Water and Ocean Topography) is the advanced radar satellite designed to give an unprecedented view of the life-giving fluid covering 70% of the planet.
- **Joint project:** NASA and the French space agency Centre National d'Études Spatiales (CNES).
- The satellite will take the first global survey of Earth's freshwater systems from space, observing not only the oceans but also lakes, rivers, and coastal regions. It will be able to measure the height of water in these systems for the first time.
- SWOT will cover the entire Earth's surface between 78 degrees south and 78 degrees north latitude at least once every 21 days, sending back about one terabyte of unprocessed data per day.
- The satellite's primary tool is the Ka-band Radar Interferometer, or KaRIn.



Fusarium head blight (FHB), fungal toxins widespread in Europe

A fungal disease called **fusarium head blight (FHB)**, which can infect wheat crops and contaminate the grain with toxins, is on rise in Europe.

About:

- Fusarium head blight (FHB) is a devastating fungal disease of wheat causing yield loss and grain contamination with mycotoxins, such as deoxynivalenol (DON) and zearalenone (ZEN).
- These so-called mycotoxins include **deoxynivalenol**, commonly called "**vomitoxin**".
- Vomitoxin is one of the most common mycotoxins, and it can contaminate a wide variety of grains including corn, wheat, oats, barley, and rice.

Current situation:

- Vomitoxin was present in every European country studied, and overall it was found in half of all wheat samples destined for food. In the UK, vomitoxin was found in 70% of the food wheat produced between 2010 and 2019.

Almost all (95%) of the vomitoxin contamination recorded in European wheat was within legal limits.



Hepatitis-A

Six cases of Hepatitis-A have been reported in the village among them two have died while four are under observation.

What is viral Hepatitis?

- Viral hepatitis is an infection that involves predominantly the liver.
- Pathogens:
 - hepatitis A virus (HAV)

	<ul style="list-style-type: none"> ➤ hepatitis B virus (HBV) ➤ hepatitis C virus (HCV) ➤ hepatitis D virus (HDV) ➤ hepatitis E virus (HEV) <p>What causes Hepatitis A?</p> <ul style="list-style-type: none"> • Hepatitis A is an infection of the liver etiologically related to HAV. • HAV is an RNA virus, classified in the hepatovirus genus of the Picornaviridae family. <p>Humans are the only natural host for HAV. HAV infection is predominantly spread from one person to another through the orofecal route or by contaminated food and water.</p>
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