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PART-A

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		- Vietnam develops new vaccine for African swine fever: official
		- India successfully carries out training launch of Intermediate Range Agni 4 Ballistic Missile
		- IISC scientists develop miniproteins that may prevent COVID infection

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GS II	INTERNATIONAL RELATIONS	- India Bangladesh joint military exercise: EX SAMPRITI-X
GS I	ART & CULTURE	- Pandit Bhajan Sopori passes away
GS II	INTERNATIONAL RELATIONS	- Multinational Peacekeeping exercise 'Ex Khaan Quest 2022' commences in Mongolia

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SECTION: A
(MAINS)
CURRENT AFFAIRS

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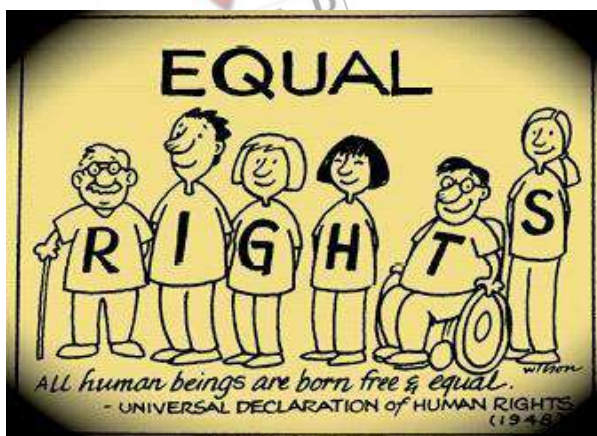
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RIGHTS OF PERSONS WITH DISABILITY

CONTEXT

The 'Accessible India Campaign' (AIC) was launched for making government buildings, public transport and websites accessible for Persons with disability (PwD).

a The Ministry of social justice and empowerment has formed an advisory board to look after this campaign and deadline for its implementation till June this year.

◉ BACKGROUND

o As per Census 2011, in India, out of the total population of 121 crore, **about 2.68 Cr persons are 'Disabled' (2.21% of the total population)**

o Out of 2.68 crore, 1.5 crore are males and 1.18 crore are females.

o Majority (**69%) of the disabled population resided in rural areas.**

o After the government has launched the legislation for Person with disability act, 2016, it is evident that till now no state is able to fulfil the criteria for disability infrastructure**.**

o Progress on public transport was less, with only 8.73% of buses fully accessible as against the target of 25% targeted.

o The DEPwD had raised concerns about the slow pace of implementation of AIC and emphasized on the need of concrete changes in the ecosystem of public infrastructure to make it accessible for **Divyangjans.**

EQUAL RIGHTS

ALL human beings are born free & equal.
— UNIVERSAL DECLARATION of HUMAN RIGHTS (1948)

What a disability mean?

o Disability is an umbrella term, covering impairments, activity limitations, and participation restrictions. Such impairment is a problem in body function or structure or an activity limitation is a difficulty encountered by an individual in executing a task or action.

Constitutional provisions

o **Article 41** of the Directive Principles of State Policy (DPSP) states that State shall make effective provision for securing right to work, to education and to public assistance in cases of unemployment, old age, sickness and disablement, within the limits of its economic capacity and development.

o The subject of '**relief of the disabled and unemployable'** is specified in state list of the **Seventh Schedule** of the constitution**.**

Legislative backing for Disabled in India

- **Rights of person with Disability Act,2016**

  ➤ The Act replaces the **Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995**.

  ➤ **"Person with disability**" means a person with long term physical, mental, intellectual or sensory impairments which, in interaction with barriers, hinders his full and effective participation in society equally with others.

  ➤ Disability has been defined based on an **evolving and dynamic concept.**

  ➤ Principles stated to be implemented for empowerment of persons with disabilities (PWD) are respect for the inherent dignity, individual autonomy including the freedom to make one's own choices, and independence of persons.

  ➤ The principle reflects a paradigm shift in thinking about disability from a social welfare concern to a human rights issue.

  ➤ The act added mental illness, autism, spectrum disorder, cerebral palsy, muscular dystrophy, chronic neurological conditions, speech and language disability, thalassemia, hemophilia, sickle cell disease, multiple disabilities including deaf blindness, acid attack victims and Parkinson's disease which were largely ignored in earlier act.

Some programmes and initiatives for PwD in India

- **Accessible India Campaign : Creation of Accessible Environment for PwDs:**

  ➤ A nation-wide flagship campaign for achieving universal accessibility that will enable persons with disabilities to gain access for equal opportunity.

  ➤ The campaign targets at enhancing the accessibility of built environment, transport system and Information & communication ecosystem.

- National Fellowship for Students with Disabilities (RGMF)

  ➤ The scheme aims to increase opportunities to students with disabilities for pursuing higher education.

- **DeenDayal Disabled Rehabilitation Scheme:** Under the scheme financial assistance is provided to NGOs for providing various services to Persons with Disabilities, like special schools, vocational training centres, community based rehabilitation, pre-school and **early intervention etc**

- **Assistance to Disabled Persons for Purchase / fitting of Aids and Appliances (ADIP):** The Scheme aims at helping the disabled persons by bringing suitable, durable, scientifically-manufactured, modern, standard aids and appliances within their reach.

Issues and Challenges

o **Health:** A large number of disabilities are preventable, including those arising from medical issues during birth, maternal conditions, malnutrition, as well as accidents and injuries.

  ➤ Healthcare facilities and poorly trained health-workers in rehabilitation centres is another concern.

o **Education:** There are various issues such as availability **special schools, access to schools, trained teachers, and availability of educational materials for the disabled.**

  ➤ Further, reservation for the disabled in higher educational institutions has not been fulfilled in many instances.

o **Employment:** Even though many disabled adults are capable of productive work, disabled adults have far lower employment rates than the general population.

  ➤ The situation is even worse in the private sector, where much less disabled are employed.

Accessibility: Physical accessibility in buildings, transportation, access to services etc still remains a major challenge.

o **Discrimination/Social Exclusion:** Negative attitudes held by the families of the disabled, and often the disabled themselves, hinder disabled persons from taking an active part in the family, community or workforce.

o **Inadequate data and statistics**: The lack of rigorous and comparable data and statics further hinders inclusion of persons with disabilities.

The major issues with collection of data and measuring disability are:

  ➤ **Difficult to define disability**

  ➤ **Coverage**: Different purposes require different disability data

  ➤ Reluctance in reporting disability as disability is considered to be a stigma in many places/ societies

  ➤ Poor implementation of policies and schemes hinders the inclusion of disabled persons.

  ➤ Though various acts and schemes have been laid down with an aim to empower the disabled, their enforcement face many challenges.

◉ WAY FORWARD

o **Prevention and Health:** Preventive health programs need to be strengthened and all children need to be screened at a young age.

  ➤ **Kerala** has already started an early prevention programme. Comprehensive New-born Screening (CNS) programme seeks early identification of deficits in infants and reduce the state's burden of disability.

o **Awareness:** People with disabilities need to be better integrated into society by overcoming stigma

  ➤ There should be awareness campaigns to educate and aware people about different kinds of disability

o **Employment:** Disabled adults need to be empowered with employable skills

  ➤ The private sector needs to be encouraged to employ them.

o **Better measurement**: The scale of disability in India needs to be better understood by improving the measurement of disability.

o **Education:** State-wise strategies on education for children with special needs need to be devised.

  ➤ There should be proper teacher training to address the needs of differently-abled children

and facilitate their inclusion in regular schools

- ➤ Further there should be more special schools and ensure educational material for differently-abled children

o **Access:** Safety measures like road safety, safety in residential areas, public transport system etc, should be taken up

- ➤ Further, it should be made legally binding to make buildings disabled-friendly.

o Policy Interventions:

- ➤ More budgetary allocation for welfare of the disabled. There should be a disability budgeting on line of gender budget.

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NATIONAL SPORTS CODE

CONTEXT

The Delhi High Court summoned the joint secretary of the sports ministry for overlooking the violation of the National Sports Code by the federations.

Origin

o The government constituted panel to draft National Sports Development Code initially.

o In this former Olympic champion Abhinav Bindra, legendary badminton player Prakash Padukone and athlete Anju Bobby George were the part of a nine-member government panel formed to make recommendations for bringing out a comprehensive National Sports Development Code across all disciplines.

o The committee will be headed by Sports Secretary and will study issues related to sports governance, including court judgments and best international practices.

Role of the Committee:

- Identify basic universal principles of ethics and good governance based on the – IOC Charter international best practices – Draft National Sports Development Bill – National Sports Development Code, 2011, – Supreme Court and High Court judgments, etc.

- To identify issues pertaining to good governance in administration of sports in the country.

- To make specific recommendations for bringing out a comprehensive Sports Code to address the issues of governance pertaining to the National Olympic Committee.

⦿ ANALYSIS

What is the Sports Code?

o It is a set of regulations passed by the government in 2011, which enunciated the '**basic universal principles of good governance, ethics and fair play.**'

o The Sports Code seeks to put restrictions on the age and tenure of the office-bearers of federations apart from envisaging transparent functioning along with free and fair elections.

What is the legal status of the Code?

o The Code was notified by the Ministry of Youth Affairs and Sports, Government of India (Government) in 2011, with an aim of bringing together all notifications and instructions pertaining to good governance of National Sports Federations.

o Various High Courts and the Supreme Court have upheld the binding nature of the **provisions of the Code.**

What entities are covered by the Code?

o The Code largely governs the functioning of national level sports governing bodies, officially termed as "**National Sports Federations" (NSF).** Under the Code, NSFs are fully accountable for the management, direction, promotion, and sponsorship of the discipline for which they are recognized by the relevant International Federation.

What are the benefits of recognition as anNSF?

o While the Code treats **NSFs as autonomous bodies**, government recognition is necessary for them to represent the country.

o Recognition is also necessary to obtain government funding and enjoy the various facilities/concessions that the government provides.

o NSFs officially represent the country in international sporting events are authorized, through this recognition, to use the word "**India"** in its name.

o In addition to this, the government also **provides funding to NSFs with recognition.**

o Other financial concessions are also provided to NSFs in the form of customs duty **exemptions, tax benefits and special dispensation to remit funds abroad.**

Who is responsible for ensuring that the federations follow the Sports Code?

o The government is responsible for ensuring that all federations are compliant with the Sports Code.

o **In 2014**, a Delhi High Court bench held that the government can insist upon adherence to these provisions (sports code), without the aid of legislation and the sports code provisions were '**neither arbitrary'** nor did they 'violate any freedom under the Constitution.'

What are the consequences of not following

the sports code by the Court?

o A federation that does not follow the guidelines should be suspended.

o Additionally, also suggested that grants given to the federations should be stopped.

What are the issues?

o There are in total **41 national federations,** which are found accused of not following the National sports code.

o There are **three of the main points** of **dispute in the NCGGS 2017:**

➤ The ban on **politicians serving** as board members in national sport federations (NSFs);

➤ **The age limit of 70 years** for board members in NSFs; and

➤ The four-year **cooling-off period** to be served after two consecutive terms for board members in NSFs.

What can be the way ahead?

o **Globalization of Sports governance:** Sports should be made universalised for making it a Global issue for violations by the federations.

➤ Global alliance should be allowed to make regulations regarding the issues with laws of several countries.

o **Arbitration panel:** By forming other means of arbitration panels can benefit the cause and save time of courts on matters related to sports.

o **Involvement of more sport experts:** the lack of sports related persons in law making and committees bring a challenge for stakeholders to get the benefit of provisions to the fullest.

➤ Hence involvement of sports person in decision making is important.

o **Sensitize the cause and educate people regarding sports:** Many a times sportsperson are not even aware of their rights and privileges.

◉ CONCLUSION

The issues plaguing the sports arena are numerous. If we don't get rid of these as soon as possible, sports would become devoid of the most important things which include fairness and safety of the players. This rampant commercialisation and selfishness is killing the spirit of sportsmanship. If we want to witness the sports in their true spirit, we need to protect our sportspersons from becoming the victims of selfishness of sponsors, coaches and clubs. It is important for the government to promote its national sports and culture and raise it to international standards. This will pave India's way forward into the exclusive league of developed countries across the world and open new avenues for our players.

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PROJECT TO TRACK SMALL FISHING VESSELS PENDING SINCE 26/11

CONTEXT

A long plan to execute a satellite based vehicle monitoring system since 26/11 Mumbai attack; the process is still facing hurdles. The long unfulfilled journey is widening the threat over maritime security.
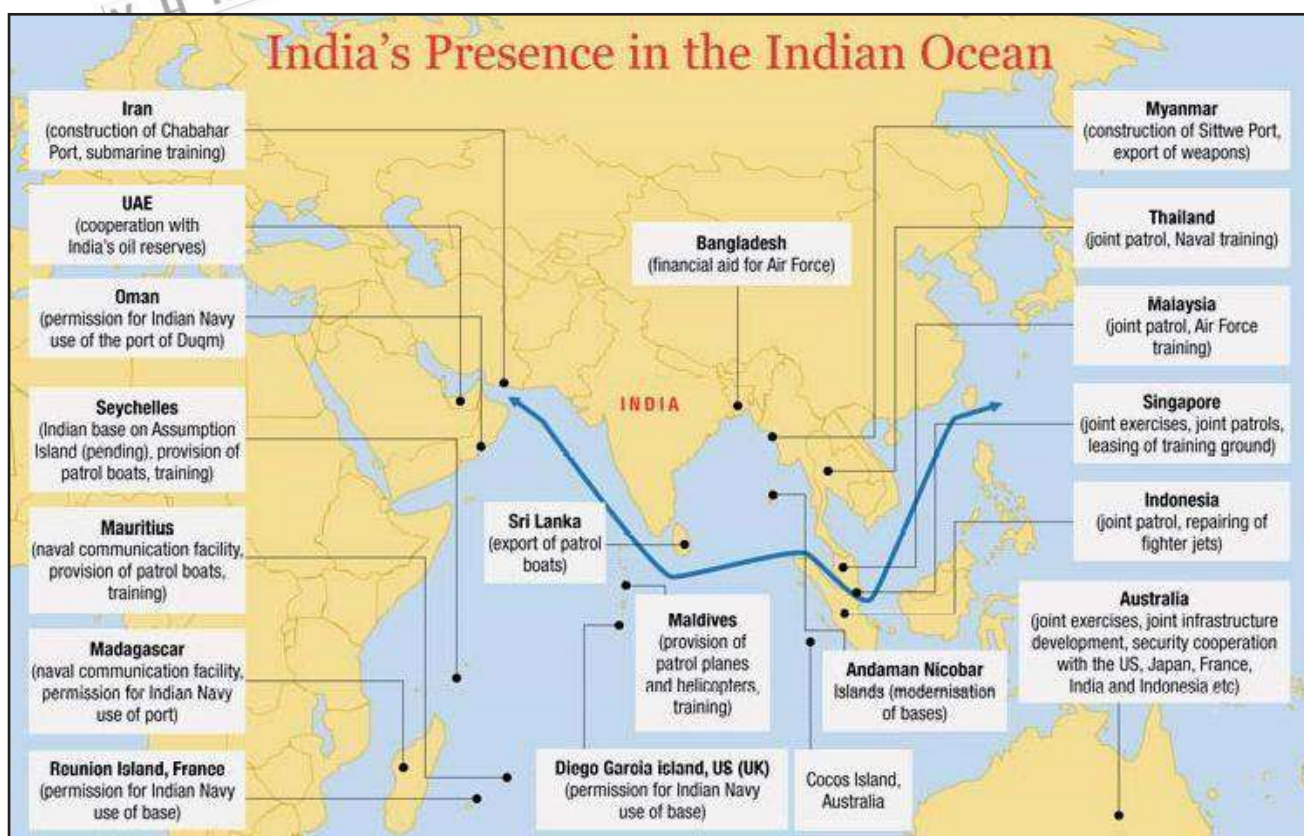
◉ BACKGROUND

o India with huge coastline is vulnerable to the threats emerging from maritime domain.

o After the Mumbai attack of 26/11 Indian government had increased the focused on the maritime security domain.

o Apart from the maritime terrorism, blue economy is a major part of the Indian economy requires security of fisherman community and their livelihood.

o Tokyo summit of the QUAD grouping has enhanced the focused on the maritime security concerns over Indo-Pacific region and announced an ambitious Indo-Pacific Maritime Domain Awareness (IPMDA) initiative.

o On the strategic front Indp-Pacific is gaining a significance to fulfill the interests of major powers of the world, providing a ground for power tussle of the countries.

◉ ANALYSIS

Why maritime security is important for India?

o **Water for trade:** India's major import and exports is carried out through the maritime water, thus enhancing the importance of securing coastlines is imperative of economic growth.

o **Maritime threats:** India's huge coastlines, around 7000km, increases the vulnerability to maritime threats as testified by 26/11 Mumbai attacks.

o **Blue economy:** One of the major economic activities of the coastal states of India, comprising around 4% of the Indian economy, with an immense future potential.

o **Strategic Factor:** Increasing Chinese influence and assertiveness in the Indian Ocean Region providing a potential threat to the India's regional interest.

India's Presence in the Indian Ocean

Iran (construction of Chabahar Port, submarine training)

UAE (cooperation with India's oil reserves)

Oman (permission for Indian Navy use of the port of Duqm)

Seychelles (Indian base on Assumption Island (pending), provision of patrol boats, training)

Mauritius (naval communication facility, provision of patrol boats, training)

Madagascar (naval communication facility, permission for Indian Navy use of port)

Reunion Island, France (permission for Indian Navy use of base)

Bangladesh (financial aid for Air Force)

Sri Lanka (export of patrol boats)

Maldives (provision of patrol planes and helicopters, training)

Diego Garoia island, US (UK) (permission for Indian Navy use of base)

Andaman Nicobar Islands (modernisation of bases)

Cocos Island, Australia

Myanmar (construction of Sittwe Port, export of weapons)

Thailand (joint patrol, Naval training)

Malaysia (joint patrol, Air Force training)

Singapore (joint exercises, joint patrols, leasing of training ground)

Indonesia (joint patrol, repairing of fighter jets)

Australia (joint exercises, joint infrastructure development, security cooperation with the US, Japan, France, India and Indonesia etc)

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o Security of the fisherman

o Ocean resource security

What are the persistent issues in Maritime Security?

o **Piracy:** One of the major persistent threat in the martime security is, pirate attacks on ships and vessels.

o **Terrorism:** International waters provide a safe ground to the terrorist organisations to execute the plan of action.

o **Illegal migration:** International waters serve as a safe gateway to enter into another country's territory. A higher degree of illegal migration takes place through maritime water.

o **Transnational Organised crimes:** Maritime waters are also used for organized transnational crimes, impacting the global economy and security of the state like trafficking of drugs and narcotic substances, firearms and human.

o **Environmental Corcern:** Rising pollution and climate change have threatened the marine and aquatic lives along with creating a severe influence over natural calamities like floods and cyclones.

Mechanism available for combating maritime security:

o **United Nations Convention on the Law of the Sea (UNCLOS)** provides a framework regarding rights and responsibility of the nations over international waters.

o **SAGAR (Security and Growth for All in the Region) Doctrine**: Indian initiative, aims to deepen the economic and security cooperation with its maritime neighbours, along with enhancing their security capabilities.

o Indo-Pacific Oceans' Initiative (IPOI)

o QUAD initiative to ensure safe, secure and free Indo-Pacific region

o National level mechanism:

➤ **The Customs Marine Organisation**

➤ **The Indian Coast Guard**

➤ **Operation Tasha**

➤ **Operation Swan**

➤ **Monitoring system**

What are the major challenges ahead of India's maritime security?

o **No proper legislative structure**: Implementation of legislative method regarding maritime security faces certain hurdles:

➤ **State List issue:** Fisheries are defined under the state list barring the central government to legislate over the subject.

➤ **Hindrances from fisherman**: Vehicle monitoring system cannot be mandated due to agitation arising from fisherman community to prevent their privacy on good yield and illegal activities.

o **TransnationalInterest**:Indiasharesitsinternational waters with other countries as well, e.g., Sri Lanka., which hinders the process of stringent legislative actions on maritime security.

o Non obedience over international laws and arbitration process.

o Lack of Universal International laws over international waters.

o Geopolitical dominance over security interest.

What should be done?

- **Five points agenda on maritime security by UNSC**

➤ Free maritime trade without barriers to establishing legitimate trade;

➤ Settlement of maritime disputes should be peaceful and on the basis of international law only;

➤ Responsible maritime connectivity should be encouraged;

➤ Need to collectively combat maritime threats posed by non-state actors and natural calamities;

➤ Preserve the maritime environment and maritime resources.

o Diplomatic channels: Diplomatic channels should be fostered for better collaboration with the maritime neighbor states.

o Coastal development plans should be executed

o Involvement of state police for securing maritime borders.

o Vehicle monitoring system for the fishing vessels

o Satellite monitoring of weather forecast and disaster resilient preparedness

◉ CONCLUSION

o Coastal security involves multiple stakeholders with both, independent and shared responsibilities. Hencecoordination amongst these agencies should be maintained through a cooperative approach that will focus on the key aspects described below, whilst remaining sensitive to any limitations and constraints of partner agencies. This should takes into consideration the specific needs of changing threat levels, including conditions wherein a coastal security operation may need to translate rapidly into a coastal defence operation, with joint deployment of forces from multiple maritime agencies.

INDIA'S POSITION IN SUSTAINABLE DEVELOPMENT REPORT: A CAUSE OF CONCERN

CONTEXT

India's rank in the global Sustainable Development Report, 2022 has slipped for the third consecutive year.

a The country continues to face major challenges in achieving 11 of the 17 SDGs, which has pushed down its global ranking on SDG preparedness.

◉ BACKGROUND

o In September **2000,** the **United Nations**-mandated that all of its members adhere to a Millennium Development Goal, which consisted of a set of **eight time-bound goals** that were to be met within a **fifteen-year period**.

o **In 2015**, the UN received a final report confirming the beneficial impact of the Millennium Development Goal.

o Once the MDG's 15-year target was met, the responsibility for development was transferred to the **Sustainable Development Goal's 17 targets.**

o The Sustainable Development Goals are a series of seventeen pointer targets that all **UN members have pledged** to work on in order to improve the **country's future**.

o **"Future We Want,"** a documentary played at the Rio+20 meeting, proposed a post-2015 development agenda.

o The Rio+20 summit (2012) in Rio de Janeiro produced the SDGs, which are non-binding document.

o The United Nations Sustainable Development Summit established a post-negotiation agenda named "Transforming Our World: the 2030 Agenda for Sustainable Development."

◉ ANALYSIS

What is Sustainable Development means?

o **"Sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs."**

o The main features of sustainable development include

➤ Increase in per capita income

➤ Judicious use of natural resources

➤ Preserving the resources for future generations

What are the key Highlights of the report?

o In the 2022 Global Index of SDGs, the country ranked 121 out of the 163 countries. It had ranked 117 in 2020 and 120 in 2021.

o The progress in around 10 of these goals is similar to those in 2021. These include SDG 2 on ending hunger, SDG 3 on good health and well-being and SDG 6 on clean water and sanitation.

o But ensuring **decent work (SDG 8)** has become more challenging.

o India is on track to achieving **SDG 13 on climate action.**

o The decline in India's overall performance is primarily due to **eight states** — **Bihar, Telangana, Rajasthan, Uttar Pradesh, Karnataka, Andhra Pradesh, Punjab and Jharkhand,** whose scores have dipped under **SDG 13** in the two years.

How are states and UTs ranked?

- The SDG India Index scores range between 0–100, higher the score of a State/UT, the greater the distance to target achieved.

- **States and UTs are classified in four categories based on Index score:**

➤ **Aspirant**: 0–49

➤ **Performe**r: 50–64

➤ **Front-runner**: 65–99

➤ **Achiever**: 100

What are the challenges for India?

o **Tackling Climate issues**: In India, factors like rapid growth of population, urbanization, industrialization, and poverty, among others are responsible for harming the environment. Some of the severe environmental issues prevalent in India are;

➤ Degrading Air Quality Index

➤ Rampant Environmental Degradation

➤ Loss of Biodiversity

➤ Urbanization in the Himalayas

- ➤ Loss of Resilience in Ecosystems
- ➤ Lack of Waste Management
- ➤ Depletion of Resources (land, air, water)
- ➤ Growing Water Scarcity

o **Defining the Key Indicators**: One of the major challenges for India is to devise suitable indicators to effectively assess the progress of SDGs.

- ➤ The key definitions for areas, such as poverty, hunger, safe drinking water, education need to be revised in order to effectively implement the SDGs.

o **Financing Sustainable Development Goals**: Despite India's best efforts and making poverty alleviation a priority since the Fourth 5-year Plan, India has the highest number of people living below the poverty line.

- ➤ At today's level of investment, there is a huge funding shortfall that hinders the progress of attaining SDGs.

o **Monitoring & Ownership of Implementation Process**: Although NITI Aayog is expected to play an important role in taking ownership of the implementation process, the members of the Aayog have expressed their concerns time and again about the limited manpower they have to handle such a tedious task.

o **Measuring the Progress**: The government of India has admitted the non-availability of data,

especially from the sub-national areas.

- ➤ Incomplete coverage of administrative data is yet another factor that has hampered the measurement of progress for even the Millennial Development Goals (MDGs) that were the precursor to SDGs**.**

Measures taken by India to achieve SDG

o NITIAayogisentrusted with thetaskof coordinating SDGs in India.

o States are also advised to undertake similar mapping, including visioning, planning, budgeting, and developing implementation & monitoring systems for the state-sponsored schemes that are being implemented to fulfill the SDGs.

o In addition to that, the **Ministry of Statistics & Programme Implementation** is engaged in the process of building key indicators to monitor the implementation of SDGs.

o Since 2015 (when the United Nations, along with other countries, adopted the SDGs) the Indian government has launched several flagship programs that are at the heart of SDGs. Some of these include **Swachh Bharat Mission, Skill India, Make in India, Digital India, etc.**

◉ CONCLUSION

Sustainability is often thought of as a long-term goal (i.e. a more sustainable world), while sustainable development has many processes and pathways to achieve it (e.g. sustainable agriculture and forestry, sustainable production and consumption, good government, research and technology transfer, education and training, etc.). Hence we should give efforts on building our states to achieve SDGs by proper governmental and community participation, which will be beneficial for country's development as a whole.

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HOW FPI DUMPING IMPACTS THE INDIAN MARKET?

CONTEXT:

Foreign Portfolio Investors have been on a selling spree in India. May figures of about Rs. 44,000 crore forming the highest monthly quantum of sell-off since March 2020 when India announced nation-wide lockdown in the backdrop of covid pandemic.

◉ BACKGROUND:

- o Capital account of India's Balance of Payment constitutes foreign both foreign direct investments and foreign portfolio investment.

- o Foreign investments are one of the major sources of foreign capital inflow for India.

- o COVID pandemic has given a severe stress in the process of foreign currency inflow through foreign investment route.

- o Along with covid, other several factors such as, middle-east crisis and rise in oil prices in the international market and inflationary stress as contributed to the sell-off of FPIs in the Indian economy.

◉ ANALYSIS?

What are FPIs?

- o Foreign Portfolio Investments are investments in the market outside of the home turf.

- o FPIs typically includes equities, bonds and mutual funds, with having an administrative control over the company.

- o FPI, being a passive mode of investment, providing a easy way for entry and exit from the market.

What are benefits of FPIs?

- o **Inflow of foreign currency:** More FPIs increases the inflow of foreign currencies in the country, positively impacting the balance of Payment of the nation.

- o **Surplus Balance of Payment:** More dollar in the forex reserve increase strengthens the balance of payment situation.

- o **Appreciation of currency:** Supply of dollar in the economy limits the downfall of rupee and increases the value of rupee with respect to foreign currency.

- o **Increase in Import cover:** Availability of forex reserve at surplus position makes the country's import cover stronger, essential for import dependent country like India.

- o **Reduction in Import Bill:** Appreciated currency or a stronger rupee reduces the burden of out shelling of funds on imports.

What are the risk associated with the FPI?

- o **Easy way of entry and exit:** FPIs are volatile in nature, with a barrier free entry and exit method, creating a fluctuation in the Indian market.

- o **Short term investment:** Due to negligible barrier for movement, there remains a scope for volatility in the investment.

- o **Hot money:** Frequent inflow and out flow of dollar, increases the risk of currency volatility in the exchange rate market, further having a prolonged impact in the stock market and profitability of the domestic investors.

- o **Forex stress:** Repayment of the investment money in dollar terms increases the burden on the forex reserve of the country.

- o **Depreciation of rupee:** Sudden dumping of FPIs in the economy reduces the value of local currency with respect to dollars.

- o **Increase in Import bills:** With a weaker rupee, India has to shell out more fund for the same amount of goods, widening the scope for imported inflation.

- o **Balance of Payment crisis:** Increasing import bills and decline in foreign investment leads to outflow of dollars from the economy, creating a potential threat to the Balance of Payment.

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o **Balance of Payment crisis:** Increasing import bills and decline in foreign investment leads to outflow of dollars from the economy, creating a potential threat to the Balance of Payment.

What are the available preventivemeasures

o **Tobin tax:** Tax imposed on the frequent movement of foreign currency, i.e., Hot Money, is considered as Tobin Tax. This ensures stability in the exchange rate as well as stock market of the domestic economy.

o **Convertibility of currency:** Government of India has distinguished convertibility measure for capital and current account. A partial convertibility is allowed for capital investment, reducing the risk of currency market volatility and stock market shocks.

o **Fiscal and monetary policy:** A stabilization policy measure from both fiscal and monetary side, to control various sources of inflation in the economy.

o **Differential investment routes:** Government of India follows a policy measure of differential investment routes, few type of investments require government approval where others don't.

o **Limit on several sectors:** Imposition of cap for foreign investment in several sectors is one of the preventive measures by the government.

⦿ CONCLUSION:

Foreign Portfolio Investment has a significant share in the Balance of Payment of India, thus, becomes a deciding factor for India's share in world economy. Sudden decline in FPIs provides a severe stress in the exchange rate market further creating a domino effect in the stock market and inflation in the economy.

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USE OF CERAMICS IN MEDICAL PURPOSES

CONTEXT

Ceramic implants can regenerate broken bones and will help to regrow the bones as well.

◉ BACKGROUND

- Prior to 1925, the materials used in implant surgery were primarily relatively pure metals.

- The success of ceramic materials was surprising considering the relatively primitive surgical techniques.

- The 1930s marked the beginning of the era of better surgical techniques as well as the first use of **alloys such as vitallium.**

- Ceramics are now commonly used in the medical fields as dental and bone implants.

- These are surgical cermet, used for Joint replacements are commonly coated with bio-ceramic materials to reduce wear and inflammatory response.

- Other examples of medical uses for bio-ceramics are in pacemakers, kidney dialysis machines, and respirators**.**

◉ ABOUT

- A **bone replacement** following a fracture, it is often **based on a metal part**.

- But **metal parts are sometimes toxic over time**, and **will not help the original bone regrow.**

- The Tokyo Medical and Dental University (TMDU) research found that, **Calcium phosphate ceramics** are in principle an **ideal alternative to conventional metals** because **bone can eventually replace the ceramic and regrow.**

- Calcium phosphate ceramics are **substitutes for the bone mineral hydroxyapatite**.

- The researchers have reported that most of the studied ceramics **underwent chemical transformations into particulate or fibrous hydroxyapatite within a few days.**

◉ ANALYSIS

What are Bioceramics?

- Bioceramics are typically used as rigid materials in surgical implants, though some bioceramics are flexible.

- The ceramic materials used are not the same as porcelain type ceramic materials. Rather, bioceramics are closely related to either the body's own materials or are extremely durable metal oxides.

- Bioceramics are meant to be used in extracorporeal circulation systems (dialysis for example) or engineered bioreactors; however, they're most common as implants.

- Ceramics show numerous applications as biomaterials due to their physico-chemical properties.

- They have the advantage of being inert in the human body, and their hardness and resistance to abrasion makes them useful for bones and teeth replacement.

- Some ceramics also have excellent resistance to friction, making them useful as replacement materials for malfunctioning joints.

- Properties such as appearance and electrical insulation are also a concern for specific biomedical applications.

How does it work?

- **Calcium phosphate-based ceramics constitute** the preferred bone substitute material in orthopaedic and maxillofacial applications, as they are similar to the main mineral phase of bone in structure and chemical composition.

- Such synthetic bone substitutes are typically porous, which provides an increased surface area that encourages absorption, involving cell colonisation and revascularisation.

- However, such porous materials generally exhibit lower mechanical strength compared to bone, making highly porous implants very delicate.

- Since the elastic modulus values of ceramic materials are generally higher than that of the surrounding bone tissue, the implant can cause mechanical stresses at the bone interface.

Future prospects

- Bioceramics have been proposed as a possible treatment for cancer.

- Two methods of treatment are hyperthermia and radiotherapy.

- Hyperthermia treatment involves implanting a bioceramic material that contains a ferrite or other magnetic material. The area is then exposed to an alternating magnetic field, which causes the implant and surrounding area to heat up.

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Alternatively, the bioceramic materials can be doped with β-emitting materials and implanted into the cancerous area.

o Other trends include engineering bioceramics for specific tasks.

o On-going research involves the chemistry, composition, and micro- and nanostructures of the materials to improve their biocompatibility.

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INTERNATIONAL LIQUID-MIRROR TELESCOPE (ILMT)

CONTEXT

A new telescope facility has been launched in top of the Himalayan range that will keep a watch on the overhead sky.

a It can identify transient or variable objects such as supernovae, gravitational lenses, space debris, and asteroids.

Highlights of the event

o It is the **first liquid mirror telescope** in the country and the largest in Asia.

o The novel instrument employs a **4-meter-diameter** rotating mirror made up of a thin film of liquid mercury to collect and focus light.

o It has been developed by the scientists of India, Belgium and Canada.

o It is located at an altitude of 2450 metres at the Devasthal Observatory campus of **Aryabhatta Research Institute of Observational Sciences (ARIES)**.

What is liquid mirror telescope?

o **Liquid-mirror telescopes** are telescopes with mirrors made with a reflective liquid.

o The most common liquid used is mercury, but other liquids will work as well (for example, low-melting alloys of gallium).

o The liquid and its container are rotated at a constant speed around a vertical axis, which causes the surface of the liquid to assume a paraboloidal shape.

o This parabolic reflector can serve as the primary mirror of a reflecting telescope.

The rotating liquid assumes the same surface shape regardless of the container's shape; to reduce the amount of liquid metal needed, and thus weight, a rotating mercury mirror uses a container that is as close to the necessary parabolic shape as possible.

o Liquid mirrors can be a low-cost alternative to conventional large telescopes.

o Compared to a solid glass mirror that must be cast, ground, and polished, a rotating liquid-metal mirror is much less expensive to manufacture.

How does it work?

o It has spun a pool of mercury which is a reflective liquid, so that the surface curved into a parabolic shape which is ideal for focusing light.

o A thin transparent film of mylar protects the mercury from wind.

o The reflected light passes through a sophisticated multi-lens optical corrector that produces sharp images over a wide field of view.

o A large-format electronic camera located at the focus records the images.

o The rotation of the earth causes the images to drift across the camera, but this motion is compensated electronically by the camera itself.

o This mode of operation increases observing efficiency and makes the telescope particularly sensitive to faint and diffuse objects.

> **Different space telescopes**
>
> - This **list of space telescopes** (astronomical space observatories) is grouped by **major frequency ranges**:
>   - ➤ **Gamma ray**: Gamma ray telescopes collect and measure individual, high energy gamma rays from astrophysical sources. These are absorbed by the atmosphere, requiring that observations are done by high-altitude balloons or space missions.

o

- ➤ **X-ray:** X-ray telescopes measure high-energy photons called X-rays. These cannot travel a long distance through the atmosphere, meaning that they can only be observed high in the atmosphere or in space.
- ➤ **Ultraviolet:** Ultraviolet telescopes make observations at ultraviolet wavelengths, i.e. between approximately **10 and 320 nm.** Light at these wavelengths is absorbed by the Earth's atmosphere, so observations at these wavelengths must be performed from the upper atmosphere or from space.
- ➤ Objects emitting ultraviolet radiation include the Sun, other stars and galaxies.
- ➤ **Visible:** The oldest form of astronomy, optical or visible-light astronomy, observes wavelengths of light from approximately **400 to 700 nm**.
- ➤ Positioning an optical telescope in space eliminates the distortions and limitations that hamper that ground-based optical telescope, providing higher resolution images.
- ➤ **Infrared**: Infrared light is of lower energy than visible light, hence is emitted by sources that are either cooler, or moving away from the observer (in present context: Earth) at high speed.
- ➤ **Microwave**: Microwave space telescopes have primarily been used to measure cosmological parameters from the Cosmic Microwave Background.
- ➤ **Radio:** As the atmosphere is transparent for radio waves, radio telescopes in space are most useful for Very Long Baseline Interferometry: doing simultaneous observations of a source with both a satellite and a ground-based telescope and by correlating their signals to simulate a radio telescope the size of the separation between the two telescopes.

Significance

- o ILMT is the first liquid-mirror telescope designed exclusively for astronomical observations.
- o Devasthal Observatory now hosts two **four-meter class telescopes** – the **ILMT and the Devasthal Optical Telescope (DOT).**
- o Both are the **largest aperture telescopes** available in the country.
- o It is based on the application of Big Data and Artificial Intelligence/Machine Learning (AI/ML) algorithms that will be implemented for classifying the objects observed.
- o The data collected from ILMT will be ideally suited to perform a deep photometric and astrometric variability survey over a period of typically 5 years.

Consequences

- o **Cost:** The greatest advantage of a liquid mirror is its small cost, about 1% of a conventional telescope mirror. This cuts down the cost of the entire telescope at least 95%.
- o **Alignmentproblem**: But thegreatest disadvantage is that the mirror can only be pointed straight up.
  - ➤ Research is underway to develop telescopes that can be tilted, but currently if a liquid mirror were to tilt out of the line and it can lose its shape.
- o **Health:** Since mercury metal and its vapour are both toxic to humans and animals, there remains a problem for its use in any telescope where it may affect its users and others in its area.

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SECTION: B (PRELIMS)

CURRENT AFFAIRS

WHO WAS SANT KABIR, THE EXTRAORDINARY POET-SAINT OF THE BHAKTI MOVEMENT?

◉ **CONTEXT:** President Ram Nath Kovind inaugurated the Sant Kabir Academy and Research Centre Swadesh Darshan Yojana and paid tribute to the Bhakti saint, Kabir at Maghar (Uttar Pradesh) recently.

Saint Kabir Das:

- He was born in Varanasi and lived between the years 1398 and 1448.

- He was from a community of 'lower caste' weavers of the Julaha caste, a group that had recently converted to Islam.

- Kabir's beliefs were deeply radical, and he was known for his intense and outspoken voice which he used to attack the dominant religions and entrenched caste systems of the time.

- He composed his verses orally and is generally assumed to be illiterate.

- The Bijak contains works attributed to Kabir and is argued by historians to have been written in the 17th century.

- Kabir's compositions can be classified into three literary forms –

    o dohas (short two liners),

    o ramanas (rhymed 4 liners),

    o sung compositions of varying length, known as padas (verses) and sabdas (words)

- Several of Kabir's verses and songs form a vital part of the Guru Granth Sahib.

    o Compiled in 1604, the text is the oldest written collection of Kabir's work.

- Kabir's teachings continue to shape various religious discourses in India today. In the Sikh tradition he is seen to have **influenced Guru Nanak**, for **Hindus he is a Vaishnavite** (devotees of Vishnu), and is revered by **Muslims as a Sufi saint**.

- In the **Dabistan** of Mohsin Fani **and Ain-i-Akbari** of Abul Fazl, he is **mentioned as a muwahid or believer in one God.**

- Kabir's ultimate goal was **one absolute God** who is formless, without attributes, who is beyond time and space, beyond causation.

    o Kabir's God is knowledge, bliss.
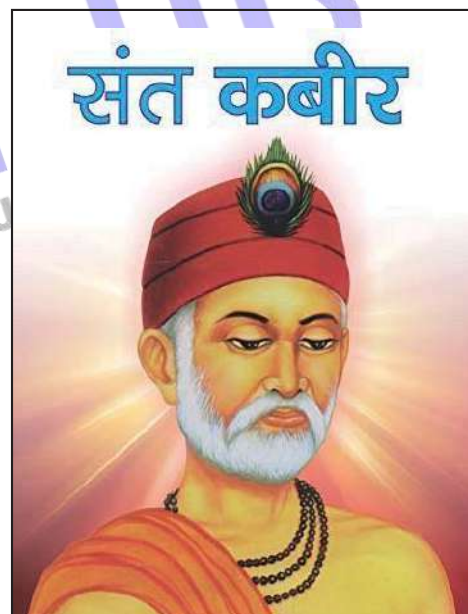
PANEL TO HEAR APPEALS ON SOCIAL MEDIA POSTS

◉ **CONTEXT:** The government has proposed a new panel that will have the power to overturn the decisions related to content moderation/takedown of social media platforms such as Facebook, Twitter and YouTube, following appeals by users.

- **The Central Government shall constitute one or more Grievance Appellate Committees.**

Grievance Appellate Committees:

- One or more 'Grievance Appellate Committees' will be constituted by the Central Government as per the draft of the proposed amendments to the IT Rules, 2021.

- The appellate committees will be dealing with appeals by users against the decision of the Grievance Officer appointed by the social media intermediary.

- The committee will comprise a chairperson and other members appointed by the Central government.

SOCIAL MEDIA

- ■ Identify 'first originator' of content that authorities consider anti-national
- ■ Appoint grievance officer, resolve complaints in 15 days
- ■ File monthly compliance report on complaints received, action taken

DIGITAL NEWS

- ■ Follow Press Council of India, Cable TV Networks (Regulation) Act norms.
- ■ Self-regulatory bodies to oversee adherence to Code of Ethics
- ■ I&B Ministry to form panel, oversight mechanism

OTT PLATFORMS

- ■ Self-classify content into five age-based categories: U (universal), U/A 7+ (years), U/A 13+, U/A 16+, and A.

- ■ Parental locks for any content classified as U/A 13+ or above.
- ■ Age verification mechanism for content classified as 'A' (adult)

Issues:

- The rules may be going beyond the powers delegated under the IT Act, 2000 in certain cases like providing for the regulation of SSMIs and online publishers, and requiring certain intermediaries to identify the first originator of the information.

- Grounds for restricting online content are overbroad and may affect freedom of speech.

- There are no procedural safeguards for requests by law enforcement agencies for information under the possession of intermediaries.

- Requiring messaging services to enable the identification of the first originator of information on its platform may adversely affect the privacy of individuals.

> **What are IT Rules, 2021?**
> - The Rules aim to empower ordinary users of social media and OTT platforms with a mechanism for redressal and timely resolution of their grievance with the help of a Grievance Redressal Officer (GRO) who should be a resident in India.

- **Safety measures:** Special emphasis has been given on the protection of women and children from sexual offences, fake news and other misuse of the social media.

- **Source identification:** Identification of the "first originator of the information" would be required in case of an offence related to sovereignty and integrity of India.

- **Appointment of Chief Compliance Officer**: A Chief Compliance Officer, a resident of India, also needs to be appointed and that person shall be responsible for ensuring compliance with the Act and Rules.

- **Complaint monitoring:** A monthly compliance report mentioning the details of complaints received and action taken on the complaints would be necessary.

- **Code of Ethics:** The OTT platforms, online news and digital media entities, on the other hand, would need to follow a **Code of Ethics.**

- **Self-classification:** OTT platforms would be called as 'publishers of online curated content' under the new rules.

  ➤ They would have to self-classify the content into five categories based on age and use parental locks for age above 13 or higher. They also need to include age verification mechanisms for content classified as 'Adult'.

- **Redressal mechanism:** A three-level grievance redressal mechanism has been mandated. This includes the appointment of a GRO, self-regulatory bodies registered with the Ministry of Information & Broadcasting (MIB) to look after the Code of Ethics and a Charter for the self-regulating bodies formulated by MIB.

IRDAI EASES CAPITAL REQUIREMENT FOR PMJJBY TO BRING IN MORE INSURERS

◉ **CONTEXT:** The Insurance Regulatory and Development Authority of India (IRDAI) recently relaxed capital requirement norms significantly for insurers to encourage their participation in the government's flagship programme Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY).

Key Points:

- The government has recently hiked the premium rates for the two flagship schemes – PMJJBY and Pradhan Mantri Suraksha Bima Yojana (PMSBY) — to make these schemes economically viable.

- The premium for PMJJBY has been increased from Rs 330 to Rs 436 annually effective June 1.

- The premium for PMSBY has been increased from Rs. 12 to Rs. 20

- The premium rate of PMJJBY has been revised upward to Rs 1.25 per day.

Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY):

- The PMJJBY is available to people in the age group of 18 to 50 years having a bank account who give their consent to join / enable auto-debit. Aadhar would be the primary KYC for the bank account.

- Risk coverage under this scheme is for Rs. 2 Lakh in case of death of the insured, due to any reason.

- The premium is Rs. 330 per annum (Now revised to Rs. 436) which is to be auto-debited in one instalment from the subscriber's bank account as per the option given by him.

- The scheme is being offered by Life Insurance Corporation and all other life insurers who are willing to offer the product on similar terms with necessary approvals and tie up with banks for this purpose.

❚ **Performance:**

o The number of active subscribers enrolled under the PMJJBY was 6.4 crore as of March 31, 2022.

o An amount of Rs 9,737 crore has been collected by the implementing insurers towards premium and claims of Rs 14,144 crore have been paid under the PMJJBY as of March 31, 2022.

Pradhan Mantri Suraksha BimaYojana (PMSBY):

- The Scheme is available to people in the age group 18 to 70 years with a bank account.

- Aadhar would be the primary KYC for the bank account.

- The risk coverage under the scheme is Rs. 2 lakh for accidental death and full disability and Rs. 1 lakh for partial disability.

- The premium of Rs. 12 per annum (Now revised to Rs. 20) is to be deducted from the account holder's bank account through 'auto-debit' facility in one instalment.

- The scheme is being offered by Public Sector General Insurance Companies or any other General Insurance Company who are willing to offer the product on similar terms with necessary approvals and tie up with banks for this purpose.

> **Insurance Regulatory and Development Authority of India (IRDAI)**
>
> - It is an autonomous, statutory body tasked with regulating and promoting the insurance and re-insurance industries in India.
>
> - It was constituted by the Insurance Regulatory and Development Authority Act, 1999, an Act of Parliament passed by the Government of India.
>
> - IRDAI is a 10-member body including the chairman, five full-time and four part-time members appointed by the government of India.
>
> - It was created based on the recommendations of the Malhotra Committee.
>
> - Its headquarters is in Hyderabad.

FM NIRMALA SITHARAMAN REVIEWS PROGRESS IN SETTING UP OF NARCL

◉ **CONTEXT:** **Finance Minister Nirmala Sitharaman recently reviewed the progress in setting up of National Asset Reconstruction Company Ltd (NARCL).**

National Asset Reconstruction Company (NARCL):

- The National Asset Reconstruction Company (NARCL) is a government-created entity to sort out the bad asset problem in India through asset reconstruction process.

- It was incorporated in July 2021 under the Companies Act (with Registrar of Companies) and is waiting for an Asset Reconstruction Company (ARC) license from the RBI.

- India Debt Resolution Company Ltd (IDRCL) is an operational entity of NARCL.

- It will manage the stressed assets acquired by NARCL and try to raise their value for final resolution.

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How is NARCL different from existing ARCs? How can it operate differently?

- The proposed bad bank will have a public sector character since the idea is mooted by the government and majority ownership is likely to rest with state-owned banks.

- At present, ARCs typically seek a steep discount on loans. With the proposed bad bank being set up, the valuation issue is unlikely to come up since this is a government initiative.

- The government-backed ARC will have deep pockets to buy out big accounts and thus free up banks from carrying these accounts on their books.

How will the NARCL-IDRCL work?

- The NARCL will first purchase bad loans from banks.

- It will pay 15% of the agreed price in cash and the remaining 85% will be in the form of "Security Receipts".

- When the assets are sold, with the help of IDRCL, the commercial banks will be paid back the rest.

- If the bad bank is unable to sell the bad loan, or has to sell it at a loss, then the government guarantee will be invoked.

- The difference between what the commercial bank was supposed to get and what the bad bank was able to raise will be paid from the Rs 30,600 crore that has been provided by the government.

How are banks benefited from NARCL?

- Incentivize quicker action on resolving stressed assets

- Help in better value realization

- Helps in freeing up bank personnel to focus on increasing business and credit growth

- Improve banks' valuation

- Enhance banks' abilities to raise market capital

75% OF RIVER MONITORING STATIONS REPORT HEAVY METAL POLLUTION

◉ **CONTEXT:**   **According to Centre for Science and Environment (CSE), heavy toxic metals such as lead, iron, nickel, cadmium, arsenic, chromium and copper were present at alarming levels.**

Key Findings:

- Heavy Metal Contamination:
  o In about a fourth of the monitoring stations, which are spread across 117 rivers and tributaries, high levels of two or more toxic metals were reported.
  o Of the 33 monitoring stations in Ganga, 10 had high levels of contaminants.

- **Coastline erosion:** Over a third of India's coastline that is spread across 6,907 km saw some degree of erosion between 1990 and 2018. West Bengal is the worst hit with over 60% of its shoreline under erosion.

▋ **Ocean Health:**

o While the global average of the Ocean Health Index, a measure that looks at how sustainably humans are exploiting ocean resources, has improved between 2012 and 2021.

o India's score in the index has declined over the same period.

▋ **India's Forest Cover:**

o India has a forest cover of 77.53 million hectares. But recorded forests, the area under the forest department with forest cover are only 51.66 million.

o This gap of 25.87 million hectares —a size bigger than Uttar Pradesh— remains unaccounted.

Heavy Metal Pollutants and its effects on Human health:

Pollutants	Major sources	Effect on human health	Permissible level (mg/l)
Arsenic	Pesticides, fungicides, metal smelters	Bronchitis, dermatitis, poisoning	0.22
Cadmium	Welding. electroplating, pesticide fertirder, Cd a. Ni battedes, nuclear fission plant	Renal dysfunction, Lung disease, Lung cancer, Bone defects (Osteomalacia, Osteoporosis), increased bone narrow, cancer	0.06
Lead	Paird, pesticide, smoking, automobile emission, mining, buming of coal	Mental retardation in children, developmental delay, fatal infant encephalopaltry, congenital paralysis, sensor neural deafness and, acute or chronic damage to the nervous system, epileptic., liver, kidney, gastrointestinal damage	0.1
Manganese	Welding, fuel adetion, ferromanganese production	Inhalation or contact causes damage to central nervous system	0.26
Mercury	Pesticides, battenes, paper industry	Tremors, gingivitis, minor psychological changes, acrodynia characterized by pink hands and feet, spontaneous abortion, damage to nervous system, protoplasm Poisoning	0.01
Zinc	Refineries, brass manufacture, metal Plating, plumbing	Zinc fumes have corrosive effect on skin, cause damage to nervous membrane	15

Chromium Cooper	Mines, mineral sources Mining, pesticide production, chemical industry, metal piping	Damage to the nervous system, fatigue, irritability Anemia, liver and kidney damage, stomach and intestinal irritation	0.05 0.1

About Centre for Science and Environment (CSE):

- Centre for Science and Environment (CSE) is a **non-governmental, independent policy research institution based in Delhi,** which was started in 1980.

- For more than three decades, CSE has helped shape policies and build public awareness to bring change in areas of pollution mitigation and public health security, low-carbon development, natural resource management and livelihood security to make growth sustainable and inclusive.

- CSE researches into, lobbies for and communicates the urgency of development that is both sustainable and equitable.
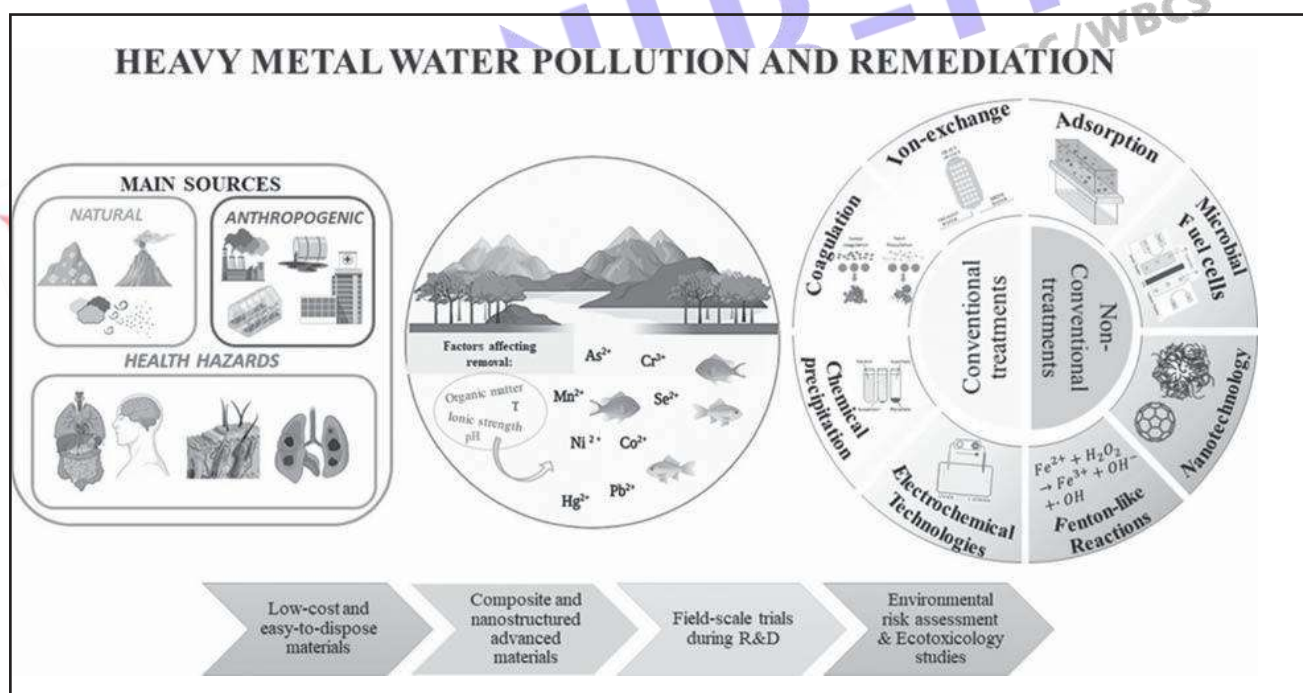
PM LAUNCHES GLOBAL INITIATIVE 'LIFESTYLE FOR THE ENVIRONMENT- LIFE MOVEMENT'

⊙ **CONTEXT:**   **Prime Minister Narendra Modi has launched the 'Lifestyle for the Environment (LiFE) Movement', a global initiative, and asserted that its vision is to live a lifestyle that is in tune with our planet**

Key points:

- The idea of LiFE was introduced by the Prime Minister during the 26th United Nations Climate Change Conference of the Parties COP-26 in Glasgow last year.

- The idea promotes an environment conscious lifestyle that focuses on mindful and deliberate utilisation instead of mindless and destructive consumption.
- Mission LiFE borrows from the past, operates in the present and focuses on the future.

What is the aim of the LiFE movement?

- The LiFE Movement aims to bring positive change in the environment by collective action.
- It aims to persuade individuals across the world to undertake simple climate-friendly actions in their daily lives or adoption of environment-conscious lifestyle.

  o Global leaders have applauded India for focusing on individual behaviour change towards Climate Change

- It also seeks to make the best use of social networks to influence social norms surrounding climate.


What is P3 in LiFE movement?

- The Mission plans to create and nurture a global network of individuals, namely 'Pro-Planet People' (P3)
- P3 will have a shared commitment to adopt and promote environmentally friendly lifestyles.
- Through the P3 community, the Mission seeks to create an ecosystem that will reinforce and enable environmentally friendly behaviors to be self-sustainable.

What is one of the most important objectives of LiFE?

- The Mission envisions replacing the prevalent '**use-and-dispose' economy with a circular economy.**
- 'Use and dispose' economy is governed by mindless and destructive consumption whereas circular economy is defined by mindful and deliberate utilization.

- The circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible.
  o In this way, the life cycle of products is extended. In practice, it implies reducing waste to a minimum.
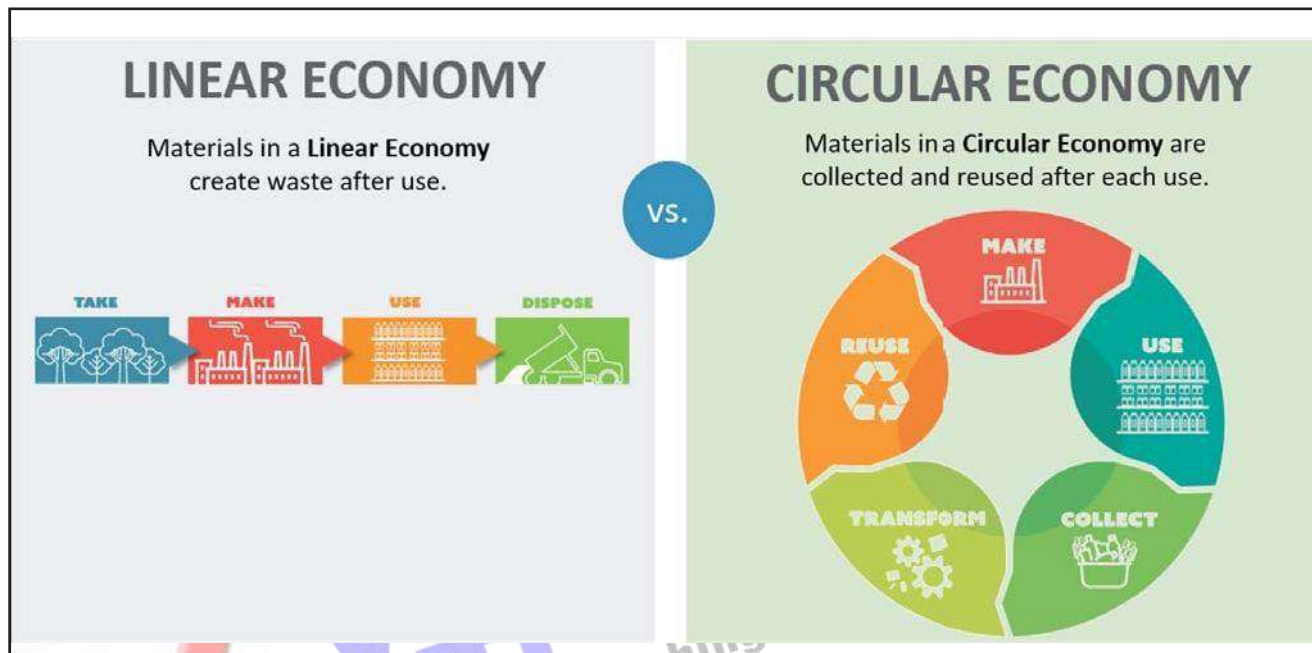
WORLD'S FIRST FISHING CAT CENSUS DONE IN CHILIKA

◉ **CONTEXT:**   **The Chilika Development Authority (CDA) recently informed that there are 176 fishing cats in Odisha's Chilika Lake.**

About the census:

- The Census was conducted in Collaboration with **The Fishing Cat Project (TFCP).**
- This is the **world's first population estimation** of the fishing cat, which has been conducted outside the protected area network.
- **Spatially Explicit Capture Recapture (SECR)** method was used to analyze the data.
- The census by The Fishing Cat project was conducted in **two phases**.
  o In 2021, for the first phase, surveyors focused on the 115 sq. km marshland in the north and north eastern section of Chilika Lake.
  o The second phase of the fishing cat survey conducted in 2022 on the Parikud Side along the coastal part.

About the Fishing Cat:

- The fishing cat is a globally threatened species found in marshlands, mangroves, flooded forests and other wetlands.
- They are found in 10 Asian countries but have remained untraced in Vietnam and Java for more than a decade.

- Wetlands are the favorite habitats of the fishing cat.

- In India, fishing cats are mainly found in the mangrove forests of the Sundarbans, on the foothills of the Himalayas along the Ganga and Brahmaputra river valleys and in the Western Ghats.

- **West Bengal** declared the fishing cat to be its **state animal in 2012.**

- Authorities in Chilika also named the cat as the **lake's ambassador in 2020.**

- Protection Status:

  o IUCN Red List: Vulnerable. Despite multiple threats, the Fishing Cat was recently down listed to **"Vulnerable" from "Endangered"** in the IUCN Red List species assessment.

  o CITES: **Appendix II**

  o Indian Wildlife Protection Act, 1972**: Schedule I**

- The fishing cat is nocturnal and apart from fish also preys on frogs, crustaceans, snakes, birds, and scavenges on carcasses of larger animals.

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NOT EVALUATED	DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	< VULNERABLE >	ENDANGERED	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
NE	DD	LC	NT	VU	EN	CR	EW	EX

Fishing Cat range Map:

❚ **Importance:**

o The fishing cat, a **Schedule I** species according to the **Wildlife (Protection) Act, 1972,** generally indicates the health of wetland and coastal ecosystems, which are considered as one of the major safeguards against climate change.

o Fishing cats are the apex predator in coastal areas.

o If they survive, it means the area is climate-resistant.

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KEEP ECO-SENSITIVE ZONE OF 1 KM AROUND FORESTS: SC

The Supreme Court recently directed that every protected forest, national park and wildlife sanctuary across the country should have a mandatory eco-sensitive zone (ESZ) of a minimum one km starting from their demarcated boundaries.

Key remarks of Supreme Court:

- The **role of the State** is **more relevant** today, than, possibly, at any point of time in history with the threat of climate catastrophe resulting from global warming looming large

- The **State has to act as a trustee** for the benefit of the general public in relation to the natural resources so that sustainable development could be achieved in the long term.

- The court directed that "**mining within the national parks and wildlife sanctuaries shall not be permitted".**

- The court held that in case any national park or protected forest already has a buffer zone extending beyond one km, which would prevail.

- The **Principal Chief Conservator** for each State and the Union Territory has also been **directed to make a list of subsisting structures within the ESZs** and submit reports to the apex court in three months.

Eco-Sensitive Zone:

- The Eco Sensitive Zones are envisaged as a cushion or **shock absorbers for protected areas**.

- They are supposed to act as the **transition zones from areas of high protection to less protection.**

- They are **notified by the Ministry of Environment, Forests and Climate Change**, Government of India around Protected Areas, National Parks and Wildlife Sanctuaries.

- They are **like an ecotone**- the transition between two biological communities or ecosystems, and it is crucial for the protection of protected areas like wildlife sanctuaries and forests.

- Its aim is to **reduce the impact of human intervention in the core protected area**.

### ESZ Guidelines classify activities under three categories:

- **Prohibited:** Commercial Mining, Setting of Saw Mill, Setting of industries causing pollution, 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:** Ongoing agriculture and horticulture practices by local communities, rain water harvesting, organic farming etc.

GECKO FOUND IN ANDHRA, ODISHA TURNS OUT TOBE A NEW SPECIES

A gecko found in Visakhapatnam in 2017, then thought to belong to a known species, has now been identified as a member of a new species.

About:

- Researchers had initially identified the specimen, which they had found dead in a water tank, as an **East Indian Leopard Gecko (Eublepharis hardwickii).**

- Now, a phylogenetic study and morphological comparisons have distinguished it as a new species.

- The gecko genus Eublepharis now has 7 species.

- The **new species, Eublepharis pictus**, also known as the **Painted Leopard Gecko**.

- The new species differs from all members of the genus Eublepharis except for E hardwickii.

  o Geographically the two species appear to be **separated by the Brahmani River.**

- E hardwickii has been recorded from several places in West Bengal, Jharkhand, Odisha and Andhra Pradesh.

  o While noting that the **new species is distributed across Odisha and Andhra Pradesh.**
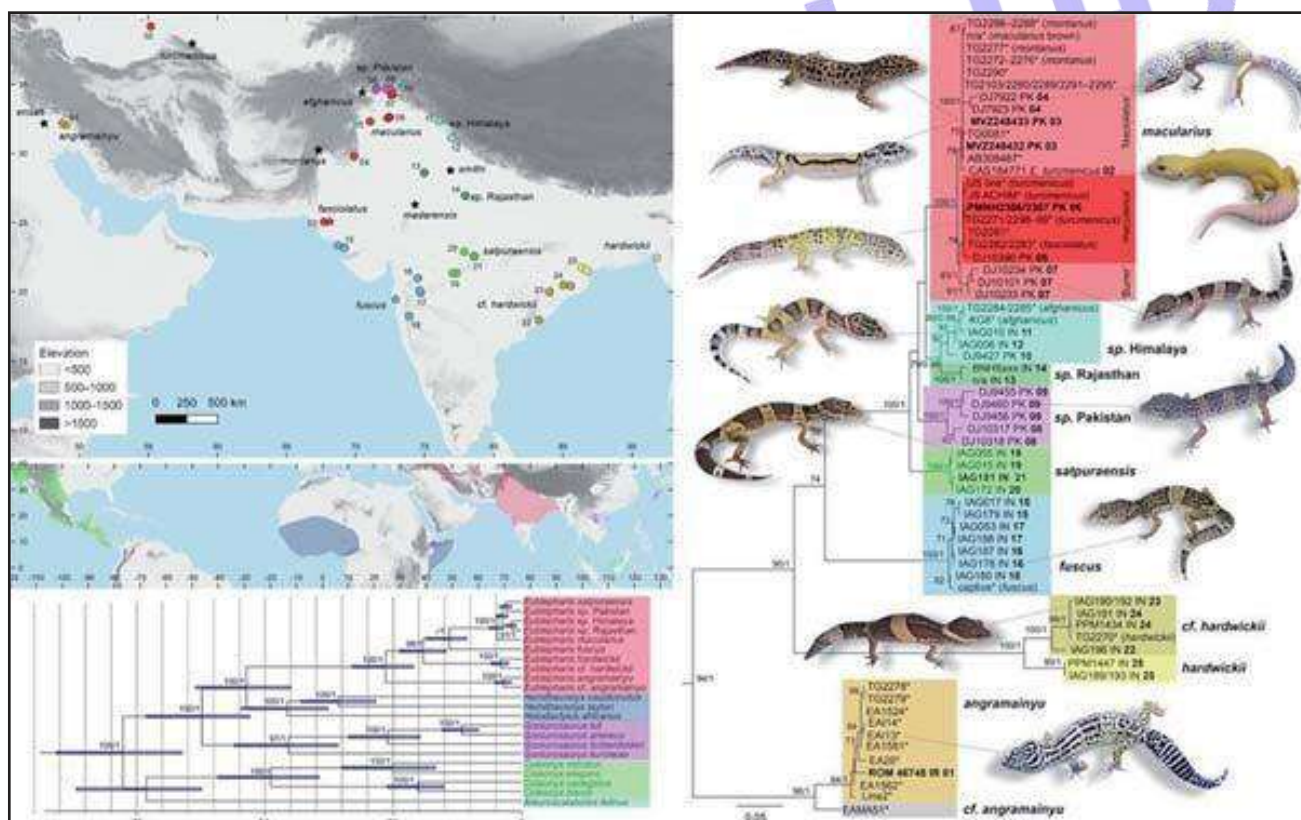
LARGEST KNOWN PLANT IN THE WORLD IS 4,500 YEARS OLD AND STRETCHES ACROSS 180KM

◉ **CONTEXT:**   **Researchers have discovered what is now believed to be the largest plant in the world: an ancient specimen of an incredibly resilient seagrass that stretches across 180km and is estimated to be at least 4,500 years old.**

About:

- The single plant of **Posidonia Australis** was discovered in the shallow waters of the **World Heritage Area** of **Shark Bay in Western Australia.**

- Posidonia Australis stretches **across 180km** and is estimated to be **at least 4,500 years old.**

- The plant is so large because it **clones itself**, creating genetically identical offshoots.

- This process is a way of reproducing that is rare in the animal kingdom although it happens in certain environmental conditions and occurs more often among some plants, fungi and bacteria.

How did they found the plant?

- Researchers from The University of Western Australia (UWA) and Flinders University were taking **samples of seagrass shoots from Shark Bay to generate "fingerprints"** that used over 18,000 genetic markers.

- But they were stunned by the results when they did so: what they thought were different **plants more than 180km apart turned out to be the exact same plant with the same genetic fingerprint.**
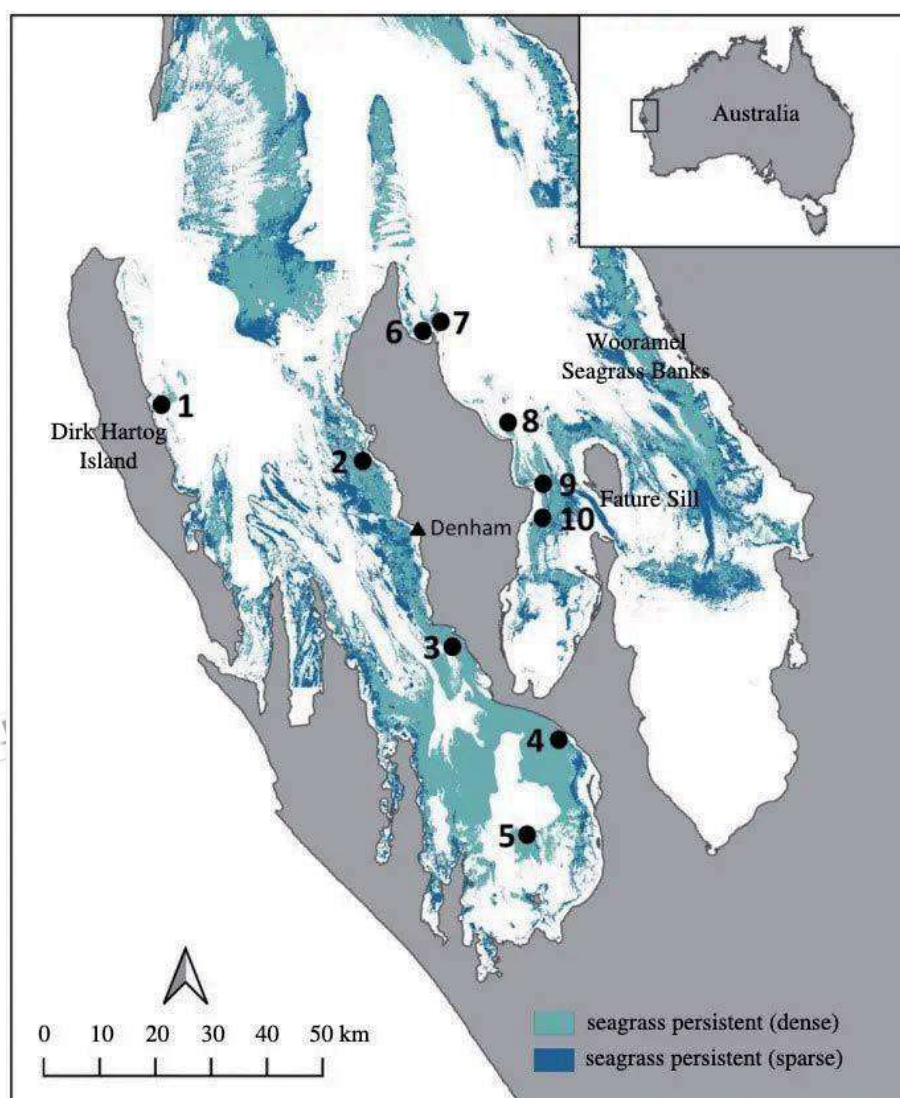

Unique features:

- The existing 200 square kilometres of ribbon weed meadows appear to have expanded from a single, colonising seedling.

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- The plant also has twice as many chromosomes as its oceanic relatives; making it a "polyploid."
  - Whole-genome duplication **through polyploidy – doubling the number of chromosomes** – occurs when diploid 'parent' plants hybridise.
- The new seedling **contains 100 per cent of the genome from each parent**, rather than sharing the usual 50 per cent.
- The plant appears to be extremely **resilient without successful flowering and seed production.**
  - It experiences a wide range of temperatures and salinities and also extremely high light conditions.
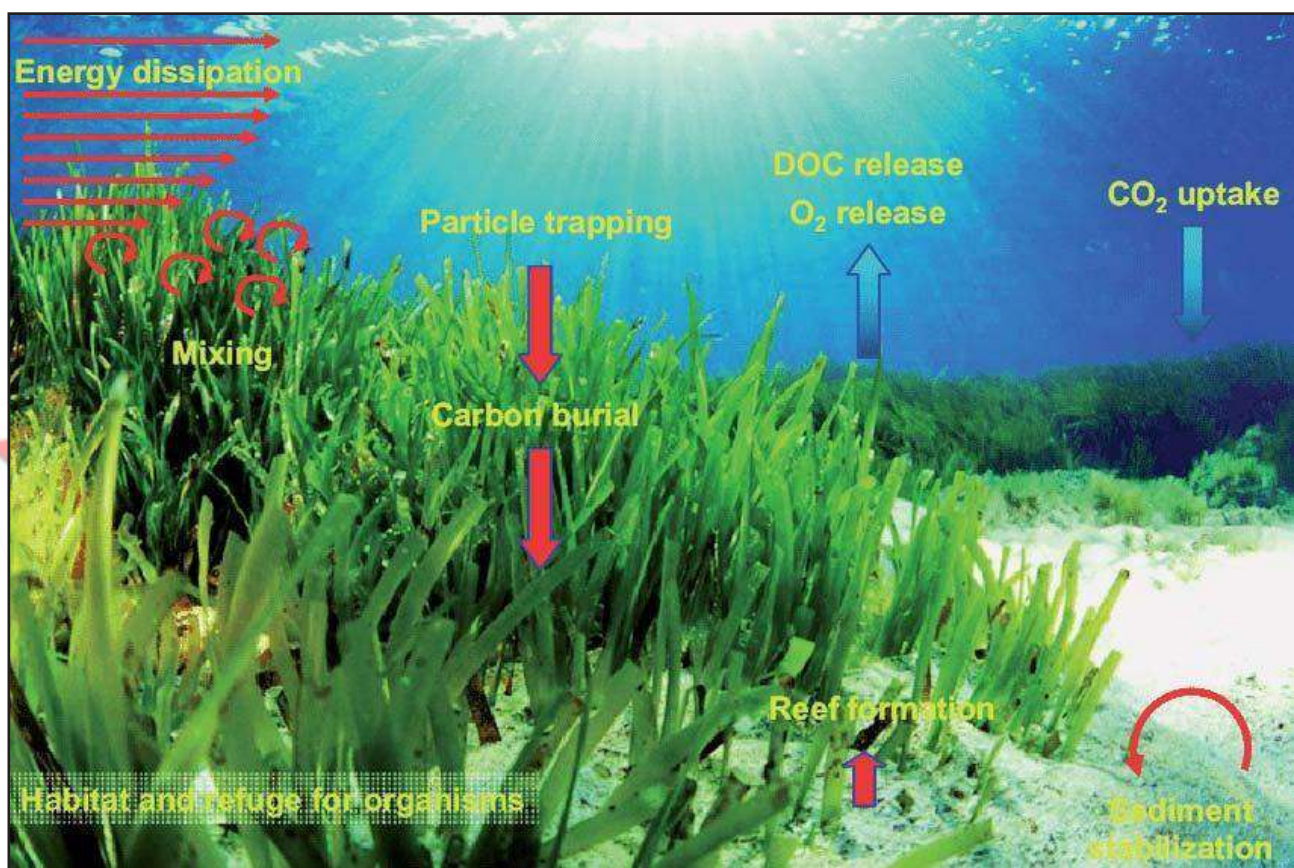
Do you know?

- A Posidonia oceanica plant discovered in the western Mediterranean that spans up to 9.3 miles (15 kilometers) may be greater than 100,000 years old.

CHINA TO NOT GIVE ADVANCED SAFETY TO EMPEROR PENGUINS

◉ **CONTEXT:** **China has blocked efforts to step up protection of emperor penguins that are increasingly threatened by the effects global warming is having on their natural habitat in Antarctica.**

Emperor Penguin Species:

- The emperor is the **largest living penguin species** standing around 115cm tall.

- Penguins are **brilliant swimmers**.

- Emperor penguins have the **deepest and longest dives** for any bird, often reaching depths of over 200 metres.

- Emperor's are well adapted to thrive in the freezing conditions of the Antarctic.

- To preserve heat, they have a dense **double layer of feathers** – about 70 feathers per square inch – **large fat reserves** and, proportionally, **smaller beaks and flippers** compared to other penguins. This all helps prevent heat loss.

- **Habitat:**

  o Of the 18 different species of penguin, only two (the emperor and Adélie) are actually true Antarctic residents.

  o Breeding colonies of emperor penguins are found around the coast of the entire Antarctic continent.

  o Emperor penguins may be the only bird never to set foot on land as their colonies are on the sea ice and they even breed on frozen sea.

  o The Antarctic ice is vulnerable from climate change making the future uncertain for emperors.

▌ Importance:

  o Emperor penguins are a vital part of the Antarctic food chain – they eat creatures like squid and small fish, and are an important source of food for predators like leopard seals and large sharks.

  o By protecting emperor penguins we're helping look after their ocean environment, which is good for all the wildlife that depends on it.

CLIMATE CHANGE VICTIM: KALAHARI BIRD

◉ **CONTEXT:** **The southern yellow-billed hornbill has not been able to breed properly and its numbers have declined subsequently.**

About:

- Climate change has been wreaking havoc on a number of species for quite some time now. Some have even gone extinct.

- It is now threatening a resident of the Kalahari Desert of southern Africa: **The southern yellow-billed hornbill (Tockus leucomelas).**

- A recent study has found that an **increase in temperatures** could see the **hornbill disappear** from parts of the **Kalahari by 2027**.

Key finding:

- In the Kalahari, air temperatures have already risen more than 2°C in a few decades. At this rate, by 2027, these birds will not breed at all at this site.

- Above a daily maximum temperature of 35.7 degrees Celsius (96.3 Fahrenheit), there were no successful breeding attempts among the hornbills.

- Comparing the first three seasons (2008-2011) of monitoring to the last three (2016-2019), the mean percentage of nest boxes occupied declined from 52% to 12%.

- Nest success, a breeding attempt successfully raising at least one chick fell from 58% to 17%.

- Fledglings produced per breeding attempt declined from 1.1 to 0.4.

About

- The bird is best known for its unusual breeding and nesting habits where the female seals herself in a cavity and stays there for about 50 days to brood and care for chicks.

- They feed on insects, spiders, and scorpions as well as seeds that they find on the ground.

- In appearance, the southern yellow-billed hornbill looks a lot like its sister species, the red-billed hornbill, Tockus erythrorhynchus.

Distribution:

- Continents: Africa

- Countries: South

- Africa, Angola, Botswana, Malawi, Mozambique, Namibia, Zambia, Zimbabwe

- Regions: Eswatini

- Biogeographical realms: Afrotropical

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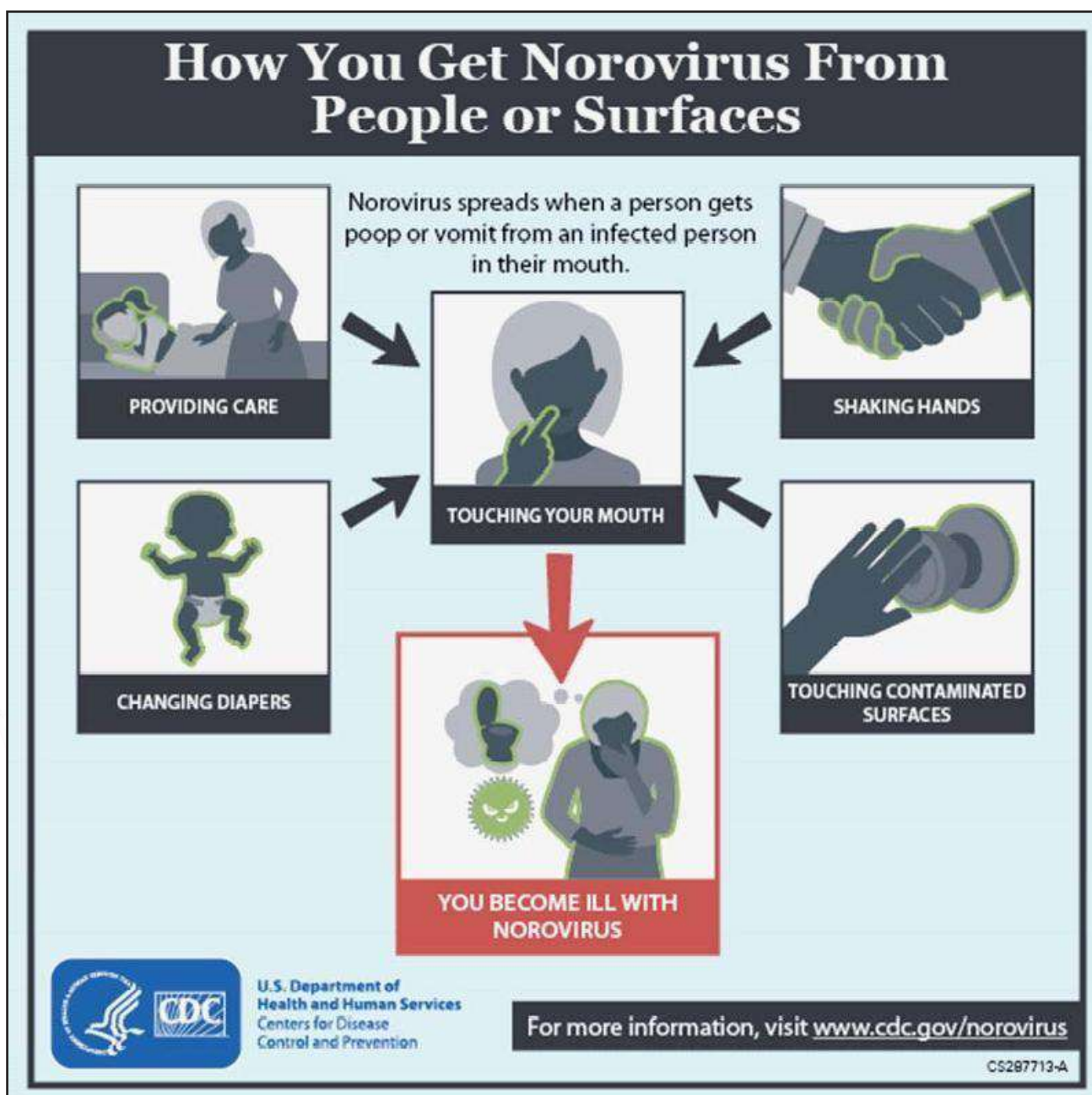
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Kalahari Desert:

- The Kalahari Desert is a **large semi-arid sandy savannah** in Southern Africa which covers much of Botswana, and parts of Namibia and South Africa.
- The Kalahari Desert is a **featureless, gently undulating, sand-covered plain**.
- Bedrock is exposed only in the low but vertical-walled hills, called **kopjes that** rarely but conspicuously rise above the general surface.
- **People:** The Kalahari Desert is inhabited primarily by **Bantu speakers** and **Khoisan-speaking San,** with a small number of Europeans.

WHAT IS NOROVIRUS, THE STOMACH BUG THAT INFECTED TWO STUDENTS IN KERALA?

◉ **CONTEXT:** **At least two cases of norovirus have been found in Thiruvananthapuram among lower primary school students.**

Norovirus:

- Norovirus is a **highly contagious virus** that is also sometimes referred to as the **'stomach flu' or the 'winter vomiting bug'.**
- It can be transmitted through **contaminated food, water, and surfaces**.
- The primary route is **oral-faecal.**
- It is similar to diarrhoea-inducing rotavirus and infects people across age groups.
- Disease outbreaks typically occur aboard cruise ships, in nursing homes, dormitories, and other closed spaces.
- According to the WHO, emerging evidence suggests that "**norovirus infection is associated with intestinal inflammation, malnutrition and may cause long-term morbidity**".
- An estimated 685 million cases of norovirus are seen annually, including 200 million cases amongst children under 5.
- Norovirus, an **RNA virus of the family Caliciviridae**, is a human enteric pathogen that causes substantial morbidity across both health care and community settings.

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How You Get Norovirus From People or Surfaces

Norovirus spreads when a person gets poop or vomit from an infected person in their mouth.

PROVIDING CARE

SHAKING HANDS

TOUCHING YOUR MOUTH

CHANGING DIAPERS

TOUCHING CONTAMINATED SURFACES

YOU BECOME ILL WITH NOROVIRUS

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

For more information, visit www.cdc.gov/norovirus

CS287713-A

Norovirus symptoms

- Diarrhoea, vomiting, nausea, and stomach discomfort are the most common norovirus symptoms. Fever, headaches, and body aches are possible side effects.

Norovirus transmission prevention

- One may get infected multiple times as the virus **has different strains**.
- Norovirus is resistant to many disinfectants and **can withstand heat up to 60°C**.
  - Therefore, merely steaming food or chlorinating water does not kill the virus.
  - The virus can **also survive many common hand sanitisers.**
- Protect yourself and others from norovirus by washing your hands often, rinsing fruits and vegetables, cooking shellfish thoroughly, staying at home when sick and for two days after symptoms stop and avoid preparing food for others when sick and for two days after symptoms stop.

Treatment:

- The disease is self-limiting. The infection normally lasts only two or three days and one can ride it out with sufficient rest and hydration.

- It is important to maintain hydration in the acute phase. In extreme cases, patients have to be administered rehydration fluids intravenously.

- Diagnosis is done by real-time reverse transcription-polymerase chain reaction. No vaccines are available for the disease.
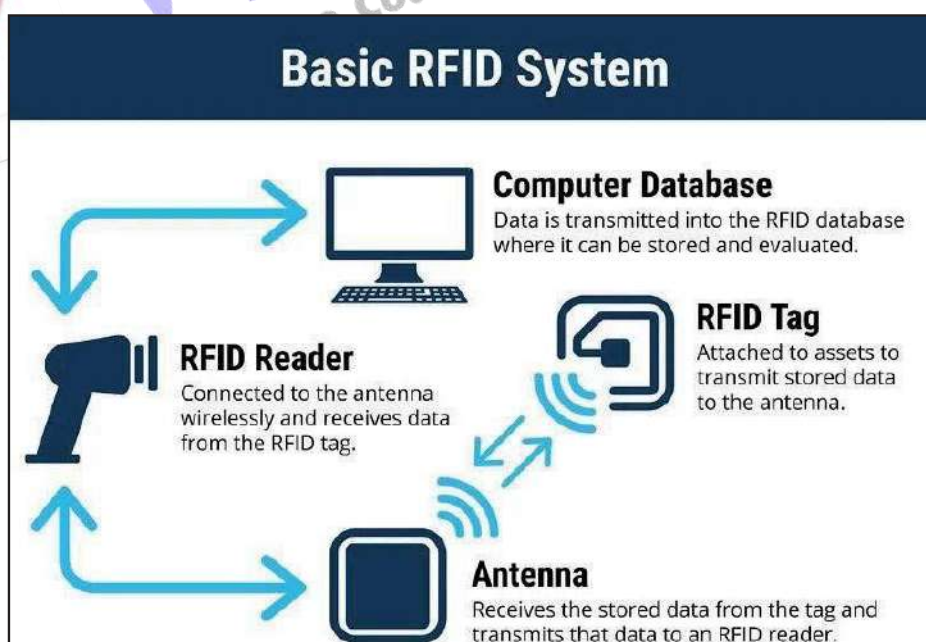
HOW BARCODES DIFFER FROM RADIO-FREQUENCY IDENTIFICATION TAGS

◉ **CONTEXT:** **Baggage tags equipped with radio-frequency identification (RFID) will soon be available at Delhi's Indira Gandhi International Airport, marking a first of its kind for the country.**

Radio-frequency identification (RFID) technology:

- Radio Frequency Identification (RFID) is a technology that **uses radio waves** to passively identify a tagged object.

- It is used in several commercial and industrial applications, from **tracking items along a supply chain to keeping track of items checked out of a library.**

- Radio Frequency Identification (RFID) is a type of **passive wireless technology** that allows for tracking or matching of an item or individual.

- The **three components of an RFID system are**:

  o Transponder,

  o receiver, and

  o transmitter

- The system has **two basic parts:** tags and readers.

  o The reader gives off radio waves and gets signals back from the RFID tag, while the tag uses radio waves to communicate its identity and other information.

Basic RFID System

Computer Database
Data is transmitted into the RFID database where it can be stored and evaluated.

RFID Tag
Attached to assets to transmit stored data to the antenna.

RFID Reader
Connected to the antenna wirelessly and receives data from the RFID tag.

Antenna
Receives the stored data from the tag and transmits that data to an RFID reader.

Different kinds of RFID:

Passive tags, semi-passive tags, and active tags are the three types of RFID tags that are commercially available.

- **Passive Tags:** There is no power supply for passive tags. They acquire their power from the readers' incoming radio waves.
- **Semi-passive tags** comprise an internal circuit with a power source, but rely on the radio waves received from the reader to transmit the response.
- **Active Tags:** The internal circuit of active tags is powered by a power source.

Types of RFID tags

Type of Tag	Power source	Range	Description
Passive	Rely on radio signal that was transmitted to them	10 cm – a few meters	Can only reflect signals back
Semi Passive	Internal battery	10-100 meters	Power source activates chip, does not emit signal
Active	Internal battery	Hundreds of meters	Generate powerful responses – reliable and effective

Barcode:

- A barcode is a **printed series of parallel bars or lines of varying width** used for entering data into a computer system.
- The **bars are black on a white background** and vary in width and quantity depending on the application.
- The **bars represent the binary digits zero and one**, which represent the digits zero to nine processed by a digital computer.
- These barcodes are scanned using special **optical scanners** known as barcode readers, which come in a variety of shapes and sizes.
- The majority of these codes use only two different widths of bars, however some use four.
- The numbers that make up a barcode are also printed at the bottom. One of the most **well-known examples of a barcode is the QR code.**

Radio-frequency identification (RFID) technology Vs barcodes

D2M TECHNOLOGY

⊙ **CONTEXT:** **The Department of Telecommunications (DoT) and India's public service broadcaster Prasar Bharati are exploring the feasibility of a technology that allows broadcasting video and other forms of multimedia content directly to mobile phones, without needing an active internet connection.**

Direct-to-Mobile (D2M) broadcasting:

- The technology is based on the convergence of broadband and broadcast, using which mobile phones can receive terrestrial digital TV.

- It would be similar to how people listen to FM radio on their phones, where a receiver within the phone can tap into radio frequencies.

- Using D2M, multimedia content can also be beamed to phones directly.
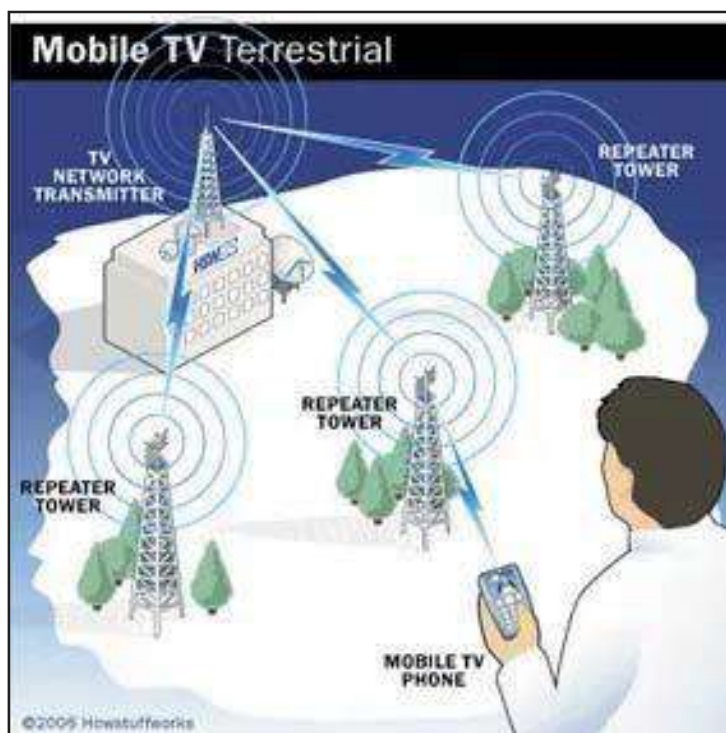
Possible benefits:

- It can possibly be used to directly broadcast content related to citizen-centric information.

- It can be further used to counter fake news, issue emergency alerts and offer assistance in disaster management.

- It can be used to broadcast live news, sports etc. on mobile phones.

- The content should stream without any buffering whatsoever while not consuming any internet data.

Impact:

❚ **For consumers:**

- o A technology like this would mean that they would be able to **access multimedia content** from **Video on Demand (VoD) or Over The Top (OTT)** content platforms **without** having to exhaust their **mobile data** and at **a nominal rate.**

- o The technology will also allow people from rural areas, with limited or no internet access, to watch video content.

❚ **For businesses:**

- o It can enable telecom service providers to **offload video traffic** from their mobile network onto the broadcast network.

➤ It will help them to **decongest valuable mobile spectrum**.

o This will also **improve usage of mobile spectrum** and **free up bandwidth** which will **help reduce call drops, increase data speeds** etc.

JAMES WEBB SPACE TELESCOPE WILL CLOSELY OBSERVE TWO EXTREMELY HOT 'SUPER-EARTHS'

◉ **CONTEXT:**   **The James Webb Space Telescope will observe two giant Earth-like planets as part of its initial observations: 55 Cancri e and LHS 3844 b.**

About:

- Among the investigations that are planned for the telescope's first year are two exoplanets classified **as "super-Earths"**: the lava covered 55 Cancri e and the atmosphere-less LHS 3844 b.

- They are classified as super-Earths due to their size and rocky composition.

- **55 Cancri e: Super-hot super-Earth**

    o 55 Cancri e is an exoplanet that orbits less than 1.5 million miles from its star, which is 4 per cent of the distance between Mercury and the sun.

    o This means that the planet completes an entire revolution around its star in less than 18 hours.

    o Basically, a year on 55 Cancri e is equivalent to 18 Earth hours.

▌ **LHS 3844 b: Literally cooler**

    o Unlike 55 Cancri e, LHS 3844 b will offer a unique opportunity to analyse solid rock on an exoplanet surface.

    o LHS 3844 b orbits extremely close to its star; completing a full orbit in 11 hours.

    o But since its star is relatively small and cool, the exoplanet's surface is not hot enough for the surface to be molten.

Earth (Rocky)
Radius: 6,370 kilometers (3,960 miles)
Average Temperature: 15°C (60°F)
Distance from Star: 1 AU (150 million kilometers, 93 million miles)
Orbital Period: 365.25 days

LHS 3844 b (Hot Rocky)
Radius: 1.3 × Earth
Average Temperature: >525°C (~1000°F) on the day side
Distance from Star: 0.005 AU
Orbital Period: 11 hours

55 Cancri e (Super-Hot Rocky)
Radius: 1.9 × Earth
Average Temperature: >1700°C (~3100°F) on the day side
Distance from Star: 0.015 AU
Orbital Period: 18 hours

Neptune (Ice Giant)
Radius: 3.88 × Earth
Average Temperature: -195°C (-320°F)
Distance from Star: 30 AU
Orbital Period: 165 Earth-years

About James Webb Space Telescope:

- The James Webb Space Telescope is the **largest, most powerful space telescope** ever built. It will allow scientists to look at what our universe was like about 200 million years after the Big Bang.

- The telescope will be able to **capture images of some of the first galaxies ever formed**.

- It will also be able to **observe objects in our solar system** from Mars outward, look inside dust clouds to see where new stars and planets are forming and examine the atmospheres of planets orbiting other stars.

- The James Webb Space Telescope will **use its infrared cameras to see through dust** in our universe.

- Stars and planets form inside those dust clouds, so peeking inside could lead to exciting new discoveries.

- It will also be able to see objects (like the first galaxies) that are so far away that the expansion of the universe has made their light shift from visible to infrared.

- **Webb has a sunshield to protect its instruments and mirrors as the Webb telescope's cameras are sensitive to heat from the Sun.**

- Webb telescope has 18 smaller mirrors that fit together like a puzzle. The mirrors fold up inside the rocket, then unfold to form one large mirror in orbit.

- The **James Webb Space Telescope will help to study the atmospheres of exoplanets.**

VIETNAM DEVELOPS NEW VACCINE FOR AFRICAN SWINE FEVER: OFFICIAL

Vietnam has developed an African swine fever vaccine for pigs in partnership with the United States, and is aiming to become the first global commercial exporter.

African swine fever:

- African Swine Fever (ASF) is a **highly contagious viral disease of pigs**.

- In its acute form the disease generally results in **high mortality**.

- ASF is a **different disease to swine flu.** African swine fever is **harmless to humans**.

- It originated in Africa before spreading to Europe and Asia and has killed hundreds of millions of pigs globally.

- It is caused by a large **DNA virus of the Asfarviridae family**, which also infects ticks of the genus.

- **Transmission:** Its routes of transmission include direct contact with an infected or wild pig (alive or dead), indirect contact through ingestion of contaminated material such as food waste, feed or garbage, or through biological vectors such as ticks.

- **Symptoms:**

  o The disease is characterised by sudden deaths in pigs. Its symptoms include:

  o vomiting

  o diarrhoea (sometimes bloody)

  o reddening or darkening of the skin, particularly ears and snout

  o gummed up eyes

o laboured breathing and coughing

o abortion, still births and weak litters

o weakness and unwillingness to stand

African Swine Fever (ASF) Vaccine:

- African swine fever, one of the most devastating livestock diseases, was first detected in Vietnam in February 2019 and forced the country to cull around 20% of its hog herd.

- With immunity lasting six months, the vaccine will be a shield for hog-raising industry and pig production globally.
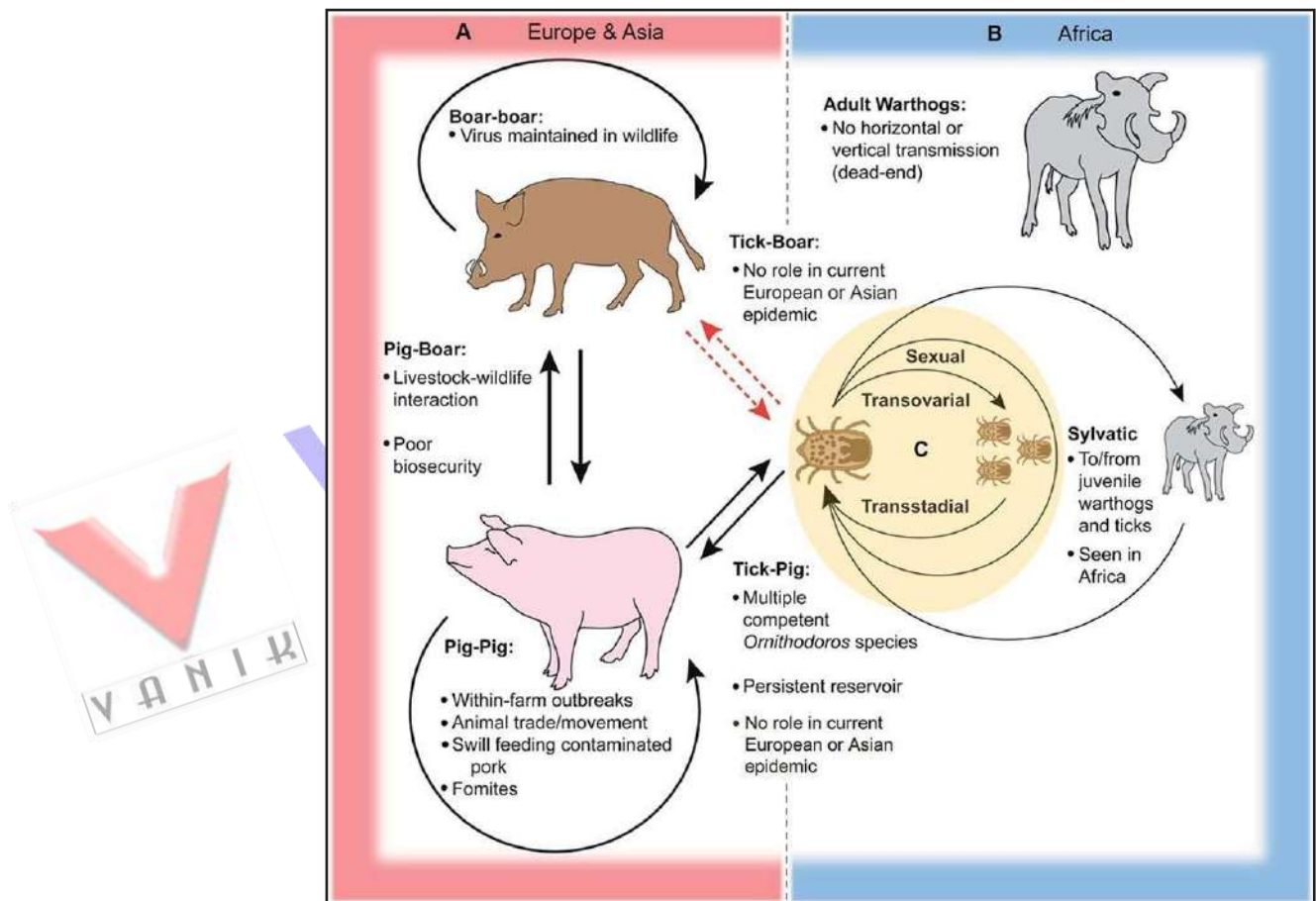
INDIA SUCCESSFULLY CARRIES OUT TRAINING LAUNCH OF INTERMEDIATE RANGE AGNI 4 BALLISTIC MISSILE

◉ **CONTEXT:**   **India successfully carried out a "training launch" of the Agni-4 intermediate-range ballistic missile from the APJ Abdul Kalam Island in Odisha, marking a significant boost to the country's military capabilities.**

Ballistic Missile:

- A ballistic missile is a missile that has a ballistic trajectory over most of its flight path, regardless of whether or not it is a weapon-delivery vehicle.

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INDIA'S MISSILES

India has developed a series of tactical, medium and long-range missiles to deal with the threat posed by two nuclear adversaries - China in the north and Pakistan on its west.

1. Prahaar | 150 km
2. Brahmos (Cruise Missile) | 300 km
3. Prithvi II | 350 km
4. Agni-1 | 700+ km
5. Nirbhay (Cruise Missile) | 800+ km
6. Agni-2 | 2,000+ km
7. Agni-3 | 3,200+ km
8. Agni-4 | 3,500+ km
9. Agni-5 | 5,000+ km

P   B   PII   A1   N   A2   A3   A4   A5

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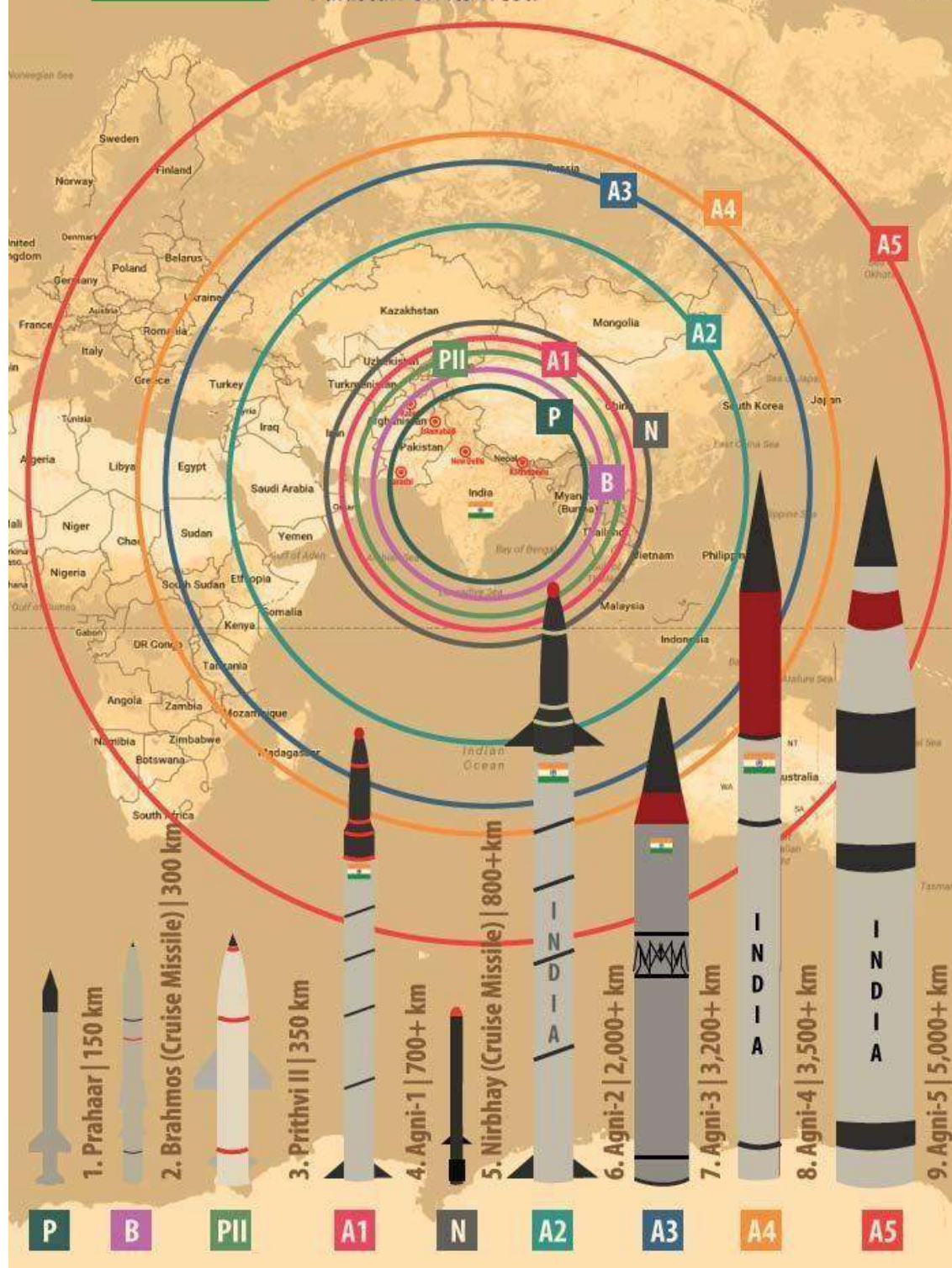
- Ballistic missiles are categorised according to their range, maximum distance measured along the surface of earth's ellipsoid from the point of launch to the point of impact of the last element of their payload.

- The missile carries a huge payload. The carriage of a deadly warhead is justified by the distance the missile travels.

- Ballistic missiles can be launched from ships and land based facilities.

- For example, **Prithvi I, Prithvi II, Agni I, Agni II** and **Dhanush ballistic missiles** are currently operational in the Indian defence forces.

Advantages:

- The course taken by ballistic missiles has two significant desirable properties. First, ballistic missiles that fly above the atmosphere have a much longer range than would be possible for cruise missiles of the same size.

- Powered rocket flight through thousands of kilometers of air would require vastly greater amounts of fuel, making the launch vehicles larger and easier to detect and intercept.

- Ballistic missiles can travel extremely quickly along their flight path. An ICBM can strike a target within a 10,000 km range in about 30 to 35 minutes.

- With terminal speeds of over 5,000 m/s, ballistic missiles are much harder to intercept than cruise missiles, due to the much shorter time available.

- Therefore ballistic missiles are some of the most feared weapons available, despite the fact that cruise missiles are cheaper, more mobile, and more versatile.

Nuclear Triad:

- A nuclear triad comprises land-based ICBM (inter-continental ballistic missile), SLBM (INS Arihant) and strategic bomber aircraft (sukhoi-30 and Mirage-2000) .

- These tests are a strong reminder to the adversaries about our capabilities.

- Agni Missile Family:
  ➤ The name Agni originates from the Sanskrit word for fi re and is taken in the context of Agni being one of the fi ve primary elements of Panch Mahabhutas.
  ➤ Agni I: Range of 700-800 km
  ➤ Agni II: Range more than 2000 km
  ➤ Agni III: Range of more than 2,500 Km
  ➤ Agni IV: Range is more than 3,500 km and can fire from a road mobile launcher
  ➤ Agni-V: The longest of the Agni series, an Inter-Continental Ballistic Missile (ICBM) with a range of over 5,000 km

- **No-first use policy** India maintains the 'Non-use of nuclear weapons against non-nuclear-weapon states', the doctrine states that 'in the event of a major attack against India, or Indian forces anywhere, by biological or chemical weapons, India will retain the option of retaliating with nuclear weapons.'

IISC SCIENTISTS DEVELOP MINIPROTEINS THAT MAY PREVENT COVID INFECTION

◉ **CONTEXT:** Researchers at the Indian Institute of Science (IISc) Bangalore have designed a new class of artificial peptides or miniproteins that they say can render viruses like SARS-CoV-2 inactive.

Mini-protein:

- The miniproteins can not only block virus entry into our cells but also clump virus particles together, reducing their ability to infect.
- The researchers noted that a protein-protein interaction is often like that of a lock and a key.
- This interaction can be hampered by a lab-made miniprotein that mimics, competes with, and prevents the 'key' from binding to the 'lock', or vice versa.

Characteristics of a mini-protein:

- These miniproteins are helical, hairpin-shaped peptides, each capable of pairing up with another of its kind, forming what is known as a dimer.
- Each dimeric 'bundle' presents two 'faces' to interact with two target molecules.

About the research:

- The team designed miniproteins that can bind to, and block the spike protein on the surface of the SARS-CoV-2 virus, which helps it to enter and infect the human cells.
- Using one of the miniproteins called SIH-5 to target the interaction between the spike protein of SARS-CoV-2 and ACE2 protein in human cells.
- The spike protein is a complex of three identical polypeptides, each of which contains a Receptor Binding Domain (RBD) that binds to the ACE2 receptor on the host cell surface, facilitating viral entry into the cell.
- The SIH-5 miniprotein was designed to block the binding of the RBD to human ACE2.
- When a SIH-5 dimer encountered an S protein, one of its faces bound tightly to one of the three RBDs on the S protein trimer, and the other face bound to an RBD from a different S protein.
- This 'cross-linking' allowed the miniprotein to block both S proteins at the same time.

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INDIA BANGLADESH JOINT MILITARY EXERCISE: EX SAMPRITI-X

⊙ **CONTEXT:**   As part of the ongoing India Bangladesh bilateral defence cooperation, a joint military training exercise Ex SAMPRITI-X is being conducted at Jashore Military Station in Bangladesh.

Exercise SAMPRITI:

- Exercise SAMPRITI is an important bilateral defence cooperation endeavour conducted alternately by both countries which aims to strengthen and widen the aspects of interoperability and cooperation between both the armies.

- The aim of the exercise is to strengthen interoperability between the two armies and to understand each other's tactical drills and operational techniques.

- Exercise Sampriti IX was help at Umroi, Meghalaya in 2020.

Exercise SAMPRITI-X:

- The Indian contingent of company strength is being represented by a Battalion of the **DOGRA Regiment.**

- During the joint military exercise Ex SAMPRITI-X, armies of both the Nations will share expertise in multiple simulated scenarios of **Counter Terrorism, Humanitarian Assistance & Disaster Relief and UN Peacekeeping Force under UN mandate.**

- In addition to sharing best practices and understanding each other at the tactical level, this exercise is an opportunity for greater cultural understanding to strengthen trust and cooperation between armies of both the Nations.

- The exercise will benefit both the armies by gaining from each other's vast experience which will further contribute to peace and stability in the region.

PANDIT BHAJAN SOPORI PASSES AWAY

⊙ **CONTEXT:**   **Pandit Bhajan Sopori, saint of santoor, succumbed to cancer recently.**

About Pandit Bhajan Sopori:

- The santoor player was born in Sopore in **Kashmir Valley in 1948** and belonged to the **Sufiana Gharana** of Indian classical music.

- He was the great-grandson of Pandit Shankar Pandit, who had developed the style popularly known as the **'Sufi Baaj' (style),** based on Sufiana Qalam and Hindustani Classical music.

- Hailed as '**Saint of the Santoor'** and the '**King of Strings',** Sopori won the **Sangeet Natak Akademi Award in 1992 and the Padma Shri in 2004.**

- In 2009 he was honoured with the **Baba Allaudin Khan Award and M N Mathur award** in 2011 for his contribution to Indian classical music.

SANTOOR:

- **Type:** TAT VADYA

- Santoor is a stringed instrument made of wood, steel, and bamboo.

- This is a traditional instrument, foud in Jammu and Kashmir.

- Majorly used in the traditional music of Kashmir called Sufiana Qalam.

- It has now acquired an important place as a classical music instrument.
- A trapezoid wooden box, 120 steel strings, stretched on 30 wooden bridges in sets of four on each bridge.
- Bridges are arranged in a set of fifteen on each side.
- Struck by bamboo mallets.
- It is placed on a triangular wooden stand while playing.
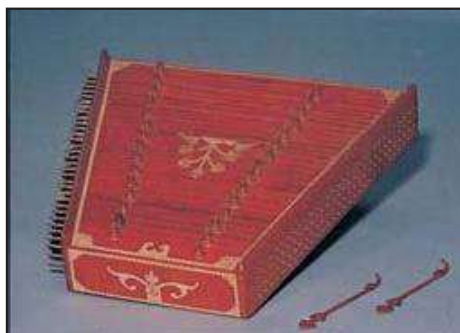
MULTINATIONAL PEACEKEEPING EXERCISE 'EX KHAAN QUEST 2022' COMMENCES IN MONGOLIA

◉ **CONTEXT:** **A multinational peacekeeping exercise-Ex Khaan Quest 2022 featuring participation from military contingents from 16 countries including India commenced in Mongolia.**

About:

- Khaan Quest 2022 is a multinational peacekeeping operations exercise conducted in Mongolia.
- It consists of a United Nations Peacekeeping Mission command post exercise, a UN PKO (PeaceKeeping Operation) Mission field training exercise, at the Mongolian Armed Forces' Five Hills Training Area.
- 16 countries are taking part in this exercise including India.
- This exercise has been inaugurated by the President of Mongolia.
- Indian Army is represented by a contingent from the Ladakh Scouts.
- Aim: Enhance interoperability, building military to military relationships, developing peace support operations and military readiness among participating nations.
- The military exercise will enhance the level of defence co-operation between Indian Army and participating countries especially with the Mongolian Armed Forces which will enhance bilateral relations between the two countries.

PART-B

CONTENTS

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SECTION: A (MAINS)

CURRENT AFFAIRS

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REMAINS OF THE BUDDHA TO MONGOLIA

CONTEXT

The Four Holy relics of Lord Buddha are taken to Mongolia for display for 11 days to coincide with the Mongolian Buddhist festivals of Purnima.

a **The four relics come from among 22 Buddha relics, known as the Kapilavastu relics.**

a **In Mongolia, the Holy Relics are on display at the Batsagaan Temple within the Gandan Monastery building**

◉ **BACKGROUND**

o The Holy Buddha Relics is known as the **'Kapilvastu Relics', first** discovered in 1898.

o It was originated in the area of Bihar, which is believed to be the ancient city of **Kapilvastu.**

o Located at the stupa site in **Piprahwa** (near Siddharthnagar in Uttar Pradesh), an inscribed casket was found.

o This helped in identifying the ancient city of Kapilavastu.

o The inscribed casket contained relics of Buddha and Sakya, his community.

o The relics are currently housed at **Delhi's National Museum.**

Signs of the Buddha:

o As per the Buddhist belief, at the age of 80 (486-483 BC), lord Buddha obtained salvation **in Kushinagar (Uttar Pradesh)**.

o Lord Buddha was cremated as a universal king by the **Mallas of Kushinagar.**

o His **funeral relics** were collected and divided into eight shares to be distributed among them

➤ Ajathsatrus of Magadha

➤ Vaishali's Licchavis

➤ the Sakyas of Kapilavastu

➤ Housing in Kushinagar

➤ Alakappa Bullies

➤ Mallas of Pava

➤ the Colossians of Ramagrama once

➤ Brahmana of Vethadipa

o The purpose was to place stupas on sacred relics.

o Other stupas appeared, one on top of the pipe where the remains were collected and the other on the coals.

o The remains were later excavated by Ashoka - ruler of the Maurya Dynasty, who ruled almost the entire Indian subcontinent from c. 268 to 232 B.C.

o He dispersed the remains and built stupas over them throughout his district.

o According to Ashokavadana, Ashoka had relics of Buddha placed on 84,000 stupas made up of Yakshas (usually gentle natural spirits).

India-Mongolia relationship

o Mongolia regards India as its "third" and a "spiritual neighbour". The year 2022 marks the 67th anniversary of diplomatic ties between India and Mongolia.

o The spiritual connect between India and Mongolia continues to bind the people of our two nations.

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o   The bilateral relationship was upgraded to a Strategic Partnership in 2015 during the historic visit of Prime Minister which has proven to be a watershed event in India's bilateral relations with Mongolia.

o   Since then, bilateral cooperation with Mongolia has expanded and has seen significant growth.

Buddhism in India:

- **Origin:**
  - ➤ Siddhartha Gautam, born in 563 BC, was part of the Sakya royal family that ruled from Kapilvastu, Lumbini. At the age of 29, Gautama left home and led a life of self-denial.
  - ➤ After 49 days of meditation, Gautama received enlightenment under a pipal tree at Bodhgaya in Bihar.
  - ➤ Buddha made his first sermon in the village of Sarnath, near the town of Benares in the UP. The event is known as the Dharma-Chakra-Pravartana (legal wheel revolution).
  - ➤ He died at the age of 80 in Kushinagara, a city in the UP. The event is known as Mahaparinibban.

- **The rules of Buddhism:**
  - ➤ **Middle Path:** Avoid both extremes of worldly pleasure and the practice of extreme self-control. The Buddha instead called the **'Madhyam Marg'** or the intermediate method to be followed.
  - ➤ **Four good truths:** Suffering (dukkha) is the backbone of the world, All suffering has a reason - Samudya, Suffering can end - Nirodha, Can be gained by following Atthanga Magga
  - ➤ **Eight-Way Ways:** Positive Views, Proper Objective, Proper Speech, Proper Action, Proper Health, Positive Thinking, Positive Effort, Positive Concentration
  - ➤ **Five Principles or Pancasil** - Violence, theft, sexual misconduct, lying or gossip, drunkenness

- **Major Buddhist texts:**
  - ➤ **Three pitakas:** Vinaya Pitaka (moral code), Sutta Pitaka (Dhamma Buddha): Divided into five Nicayas: Digha, Majjhima, Samyutta, Anguttara, Anguttara Khuddaka, Abhidamma Pitaka (philosophical analysis)
  - ➤ Other important Buddhist texts include Divyavadana, Dipavamsa, Mahavamsa, Milind Panha etc.

  Buddhist councils:
  - ➤ **First:** It was held in the Sattapani cave at Rajgriha shortly after Mahaparinirvan Buddha, about 483 BC under the rule of King Ajatshatru

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The Three Baskets (Tipiṭaka)

The Basket of Discourses (Sutta Piṭaka)
1. The Collection of Long Discourses (Dīgha Nikāya)
2. The Collection of Middle Length Discourses (Majjhima Nikāya)
3. The Collection of Kindred Discourses (Samyutta Nikāya)
4. The Colleetion of Gradual Discourses (Anguttara Nikāya)
5. The Miscellaneous Collection (Khuddaka Nikāya)

The Basket of Discipline (Vinaya Piṭaka)
1. Major Offences (Pārājika Pāli)
2. Minor Offences (Pācittiya Pāli)
3. Greater Section (Mahā Vagga)
4. Lesser Section (Cullavagga)
5. Epitome of Discipline (Parivara)

The Basket of Analysis (Abhidhamma Piṭaka)
1. Classification of Phenomenon (Dhammasangani)
2. Division (Vibhanga)
3. Discourse on Elements (Dhātukathā)
4. Human Types (Puggala Paññatti)
5. Points of Controversy (Kathāvatthu)
6. The Book of Pairs (Yamaka)
7. Causal Relations (Patthāna)

A. Miscellaneous Text (Khuddaka Pātha)
B. Path of Dhamma (Dhammapada)
C. Verses of Uplift (Udāna)
D. The Thus Said (Ittivuttaka)
E. Discourse Collection (Sutta Nipāta)
F. Stories of Mansions (Vimāna Vatthu)
G. Stories of The Departed (Peta Vatthu)
H. Verses of The Monks (Theragāthā)
I. Verses of The Nuns (Therigāthā)
J. Birth Stories (Jātaka)
K. Expositions (Niddesa)
L. Way of Analytical Knowledge (Patisambha Magga)
M. Lives of The Saints (Apadāna)
N. History of The Buddha (Buddhavamsa)
O. Basket of Conduct (Cariyā Piṭaka)

and was led by Mahakasyapa, a monk.

➤ **Second:** held at Vaishali under the reign of King Kalasoka in 383 BC. It was owned by Sabakami.

➤ **Third:** 250 BC at Patliputra under Ashoka rule and led by Moggaliputta Tissa.

➤ **Fourth:** held in 72 AD in Kundalvana, Kashmir. It was controlled by Vasumitra, while Asvaghosa supported him under the direction of King Kanishka of the Kushan Empire. Buddhism is divided into Mahayan and Hinayan.

- **Buddhist Schools:**

   ➤ **Mahayana:** literally means "Great Car". It believes in the heaven of the Buddha and the idolatrous worship of the Buddha and the Bodhisattvas including the Buddha Nature.

   ➤ **Hinayana:** A small car literally. It believes in the original teachings of the Buddha or the Doctrine of the Elders. He does not believe in idolatry and seeks to gain personal salvation through self-discipline and meditation.

   ➤ **Theravada:** is a Hinayana sect, founded in Sri Lanka and later spread throughout Southeast Asia.

   ➤ **Vajrayana:** means "Car of Thunder", also known as tantric Buddhism.

➤ **Zen:** It is a school of Mahayana Buddhism founded in China.

How does Buddhism still operate in recent times?

o **Non-Violence:** Buddhism preached a non-violent approach, gaining significant significance in the aftermath of the Middle East crisis.

o **Middle path:** At the diplomatic front non-alignment policy is the unique example of middle path, which fosters the ideas to collaborate with every nation.

o **Mutual co-existence:** Buddhism had preached for mutual co-existence and tolerant policy for all religions, one should not disrespect others belief and faith to protect one's own religion, promoting fraternity among the citizens.

⦿ CONCLUSION:

The recent cultural exchange and soft power diplomacy will provide a stronger base to strengthen up the diplomatic relations between India and Mongolia. The urgency of Buddhist's ideology is increasing in the recent events of Middle-east crisis and societal clashes.

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WHY ARE INDIA'S ECONOMIC STAKES HIGH IN WEST ASIA?

CONTEXT

In the wake of recent allegedly derogatory remarks made against Prophet Mohammad, that triggered a diplomatic offensive from the Muslim world, it is important to analyse India's stakes in West Asia.

The geographic boundary

o Western Asia is bounded in the

o west by the Mediterranean Sea and the Red Sea

o north by the Black Sea, the Caucasus, and the Caspian Sea

o east by the fringing mountains of Iran

o south by the Arabian Sea and the Indian Ocean

Assessing India's dependence on West Asian countries

o **Domestic crude oil production** meets **less than a fifth of the country's oil requirement**, forcing India to rely on imports to fill the gap of over 80%.

o The **share of Gulf countries of India's total crude oil imports** has remained fairly stable over the past 15 years at **around 60%.**

➤ In 2020-21, **India's top oil exporter was Iraq** with a share of over 22%, followed by **Saudi Arabia** – at around 18%.

o **Bilateral trade:** Countries in the West Asian region collectively account for **one-sixth of India's total bilateral trade** and contribute about **three-fifths of India's crude oil supply**.

o **Economic opportunity:** The region is a major provider of **jobs and economic opportunities** for Indian workers, professionals and entrepreneurs and is home to approximately 8.9 million Indians.

Getting the better picture (with numbers)

- According to the World Bank, India is the top remittance-receiving country in 2021.

- In 2021, India received remittances totalling more than $89 billion, an increase of 8 percent above the $82.73 billion received in 2020.

- The Reserve Bank of India(RBI) documents reveal that 82 percent of the total remittances received by India originated from seven countries: the United Arab Emirates (UAE), the United States (US), Saudi Arabia, Qatar, Kuwait, the United Kingdom, and Oman.

- India's trade with the GCC in 2020-21 was $87 billion, and in 2019-20 it was $120 billion.

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o **International Treaties:** India has signed a Comprehensive Economic Partnership Agreement (CEPA) with the **United Arab Emirates** earlier this year, has become **one of the biggest contributors to the region.**

o **Easy access:** With the region acting as a **major hub for markets in Africa**, India is keen to have tariff-free access to its exports not only in the Gulf region but also in countries in Africa.

Challenges for India in West Asia

o Islam: On issues of Islam, particularly with reference to the Quran and Prophet Mohammed, most if not all 57 members of the Organisation of Islamic Countries (OIC) stay together.

➤ For them, it is also a common 'identity issue', in these times of perceived and propagated strife.

o **Lack of direct investment:** India lacks direct investment in the energy sector of this oil and gas-rich region.

o **Growing divide:** The region is quickly turning into a highly polarised part of the world. The growing divide between Riyadh and Tehran and Washington's hypocritical ignorance could put New Delhi in a spot of bother.

o **Emergence of non-state actors:** Another emerging threat in the region is of non-state actors. Large scale instability and growing terrorism in West Asia has increased the threat of takeovers of natural resources by non-state actors.

NATIONAL FINANCIAL REPORTING AUTHORITY (NFRA): FUNCTIONS AND SIGNIFICANCE

CONTEXT

With an aim of improving the powers of the National Financial Reporting Authority (NFRA), the government has committed to strengthen the mandates of defending the general public interests.

◉ **BACKGROUND**

o The decision to constitute the NFRA was taken after the role of auditors and the **Institute of Chartered Accountants of India** came under the scanner for alleged lapses in various corporate scams including that at the **Punjab National Bank.**

◉ **ABOUT**

o NFRA was **constituted in 2018** by the Government of India **under section 132 (1) of the Companies Act, 2013.**

o It functions as an **audit regulator.**

o Its account is monitored by the **Comptroller and Auditor-General of India.**

o It is headquartered in **New Delhi.**

Powers of National financial reporting authority:

o NFRA, administered by the **Ministry of Corporate Affairs**, regulates the auditing standards in the country.

o It also oversees the **Quality of Service provided** by the accounting and audit professions.

o **According to the Companies Act, 2013 NFRA has following powers**;

➤ To investigate matters of professional misconduct by chartered accountants or CA firms, impose a penalty and debar the CA or firm for up to 10 years.

➤ No other institute or body shall initiate or continue any proceedings in such matters of misconduct where the National Financial Reporting Authority has initiated an investigation.

➤ It is expected that the NFRA's functioning would result in improved domestic and foreign investments, improved economic growth, assistance in the development of the audit profession and supporting the globalisation of business through compliance with international practices.

Important roles played by NFRA

o **As an Advisor to the government**: It recommends accounting and auditing policies and standards to be adopted by companies for approval by the Central Government.

o **As Enforcing Agency:** Monitor and enforce compliance with accounting standards and auditing standards.

o **Eligible to issue penalty**: Oversee the quality of service of the professions associated with ensuring compliance with such standards and suggest measures for improvement in the quality of service.

o **Guardian of Public Interest**: Protect the public interest.

What is the need to strengthen NFRA?

o To enable it to discharge its duties effectively as well as strengthen the mandates of protecting the public interests.

o To bring in efficiency at the independent regulatory body.

Benefits

o India gains eligibility for **IFIAR** (International Forum of Independent Audit Regulators), which was denied earlier, resulting in enhancing the confidence of Foreign/Domestic investors and India's position on a **global scale**.

o Increase in foreign/domestic investors.

o Economic growth.

o IFIAR eligibility proves our international standards of business, further supporting globalization.

o Further development of the auditing profession.

o Establishment of NFRA will free resources for the ICAI to work on developing new and complex skills needed in the uncertain world of technology.

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UPHOLDING THE RIGHT TO REPAIR

CONTEXT

Apple recently announced that consumers will have the right to purchase spare components of their products, following an order of the Federal Trade Commission of the United States.

a **It is directed to the manufacturers to remedy unfair anti-competitive practice and asks them to make sure that consumers can make repairs, either themselves or by a third-party agency.**

What is 'Right to repair'?

o The rationale behind the "right to repair" is that the individual who purchases a product must own it completely.

o This implies that apart from being able to use the product, consumers must be able to repair and modify the product the way they want to.

o Monopoly on repair processes infringes the customer's' "right to choose" recognised by the **Consumer Protection Act, 2019.**

> In *Shamsher Kataria v Honda Siel Cars India Ltd (2017),* for instance, the Competition Commission of India ruled that restricting the access of independent automobile repair units to spare parts by way of an end-user license agreement was anti-competitive.

Need to include Right to repair: Ending manufacturers' monopoly

o An expensive affair: Repairing is becoming unreasonably expensive or pretty much impossible as the technology becoming obsolete.

o **Unwanted monopoly:** Companies avoid the publication of manuals that can help users make repairs easily.

o **Incompatibility**: Manufacturers have proprietary control over spare parts and most firms refuse to make their products compatible with those of other firms.

o **Replacement than repair:** Planned obsolescence results in products breaking down too soon and buying a replacement is often cheaper and easier than repairing them.

o **Losing the right of warranty:** Digital warranty cards, for instance, ensure that by getting a product from a "non-recognised" outfit, a customer loses the right to claim a warranty.

What is the status of 'repair laws' in India?

o In accordance with the **Consumer Protection Act, 2019**, monopoly on repair processes infringes the customer's **"right to choose"**.

o The right to repair has been partially acknowledged in India in the Consumer disputes jurisprudence.

International practices

o Many countries have taken initiatives, adopted policies and even tried to enact legislation that recognise the "right to repair" to reduce electronic waste.

o Some jurisdictions offer limited scope for exercising the right to repair.

o For instance, under the Australian Consumer Law consumers have a right to request that certain goods be repaired if they break too easily or do not work properly.

o The Massachusetts Motor Vehicle Owners' Right to Repair Act, 2012 requiresautomobile manufacturers to provide spare parts and diagnostics to buyers and even independent third-party mechanics.

o The UK also introduced the path-breaking "right to repair" in 2021 that makes it legally binding on manufacturers to provide spare parts.

o **Well-drafted legislation** will not only uphold the right to repair but may aid in striking a much-needed balance between intellectual property and competitive laws in the country.

◉ CONCLUSION

If people want to fix things in a timely, safe and cost-effective way, whether by doing it themselves or taking it to a service centre of their choice, providing access to spare parts and information is imperative.

FSSAI RELEASES STATE FOOD SAFETY INDEX

CONTEXT:

The Food Safety and Standards Authority of India (FSSAI) have recently released the State Food Safety Index (SFSI) 2021-22.

◉ BACKGROUND:

o Food Security is important for the healthy growth of the demography irrespective of the development and income status of a nation.

o Green Revolution, use of new variety seeds and use of fertilisers, has narrowed down the scope of food insecurity for India

o The climate change, land use pattern soil degradation and global warming are possessing a potential threat to the food security in various ways.

o Socio-economic factor and accessibility of sea food are correlated to each other.

◉ ANALYSIS:

What is Food Safety Index?

o Food Security Index developed by **Food Security and Standards Authority of India (FSSAI).**

o The index aims to measure the performance of states and Union Territories on selected "parameters" of food safety.

o The major objective of the index is to encourage states and UTs to improve their performance and work towards establishing a proper food safety ecosystem.

What are the parameters measured in the food safety index?

o Human Resources and Institutional Data; 20% weightage

o Compliance; most important parameter with 30% weightage

o Food Safety- Infrastructure and Surveillance; 20% weightage

o Training and Capacity; 10% weightage

o Consumer Empowerment; 20% weightage

How are the states assessed?

The states and UTs are classified into three categories and are assessed separately:

o Large state

o Small state

o Union Territories

Key Findings of the Index:

o Large state category:
  ➤ Tamil Nadu: 1st rank with a score, 82 out of 100
  ➤ Andhra Pradesh: 17th rank with a score of 26

o Small state:
  ➤ Goa: 1st rank; 56 score
  ➤ Arunachal: 8th rank with 21 score

o UTs:
  ➤ J&K: 1st rank; 68.5 score
  ➤ Lakshadweep: 8th rank; 16 score

Significance of the Food Security and Safety:

o Access to sufficient amounts of safe food is key to sustaining life and promoting good health, reducing the events of non-communicable diseases.

o Food safety has a critical role in assuring that food stays safe at every stage of the food chain - from production to harvest, processing, storage, distribution, all the way to preparation and consumption.

What are the major challenges behind ensuring food safety and security?

o **Socio-economic diversity:** The amplitude of socio-economic diversity poses a threat to the accessibility of safe food, leading to food insecurity.

o **Land degradation and desertification:** Climate change and global warming has led to degradation and desertification of land, reducing the harvest.

o **Climate change:** Climate change and global warming has also impact the local seasonal climate which further contributes to crop failure.

o Unemployment and poverty

o Unplanned rural to urban migration

o Gender inequality and lack of education

o Lack of safe storage facility

o Lack of logistics support and connectivity

o Rapidly growing population and resource constraints

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Initiatives taken by the government:

o Eat Right India Movement; aligned with National Health Policy

o Et Right Research awards and grants

o Targeted Public Distribution System

o Ayushman Bharat

o Poshan Abhiyan 2.0

o Swachh Bharat Abhiyan

o Plastic Waste Neutral

◉ CONCLUSION:

Food security and food safety remains the prime objective of any nation for the health growth of the demography. India with the high demographic dividend and diversified income level needs to focus on narrowing down the socio-economic gap and make food available to every citizen irrespective of their economic and geographical position.

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POLICY ON AIR SPORTS: A STEP AHEAD TOWARDS INCLUSIVE GROWTH

CONTEXT

A National air sport policy 2022 (NASP) was launched by civil aviation minister.

The new policy lays out the vision of making India one of the top sports nations.

⊙ ABOUT

o Air sports encompass various sports activities involving the medium of air.

o These include 11 sports like **air-racing, aerobatics, aero-modelling hang-gliding, paragliding, paramotoring and skydiving** etc.

o India has the potential to be among the leading nations in the world of air sports.

o It has been drafted based on the inputs received from policymakers, air sports practitioners and the public at large and will ensure the establishment of good quality **infrastructure, equipment, instructors and services.**

o It aims to provide by providing a **safe, affordable, accessible, enjoyable and sustainable air sports ecosystem in India.**

⊙ ANALYSIS

What does the policy aims to provide?

o The key objectives of the NASP 2022 include promoting an air sports culture in the country enabling the adoption of international good practices in safety.

o Under the new policy, there will be a **four-tier governance structure** for air sports in India namely;

➤ The Air Sports Federation of India (ASFI) as the apex governing body;

➤ National associations for individual air sports or a set of air sports,

➤ Regional or State and Union Territory level units of the national of air sports association;

➤ And District-level air sports associations.

o This will generate Indian sportspersons in global air sports events; and to promote design, development and manufacturing of air sports equipment in India in line with the **Atmanirbhar Bharat Abhiyaan.**

The Fédération Aéronautique Internationale (FAI)

- It headquartered in **Lausanne, Switzerland** is the **Global governing body** for air sports.

- It sets **standards, organises events** and has **over 100 members**.

- It was founded on 14 October 1905.

- **Facts:** The FAI suspended Russia and Belarus due to the **2022 Russian invasion of Ukraine,** as a result of which pilots from Russia and Belarus will not be able to compete in any FAI-sanctioned event in the **13 FAI air sports disciplines** including paragliding, hang gliding and paramotoring.

Why India should promote Air sports?

o **Geographic advantage**: India has the potential to be among the leading nations in the world of air sports.

➤ It has a large geographical expanse, diverse topography, and fair-weather conditions.

o **Using Demographic Dividend**: It has a large population, especially the youth.

➤ It has a growing culture for adventure sports and aviation mostly for youth in our country will like to take part in such sports.

o **Generating employment**: We can leverage the energy of our youth below the age of 35 which accounts for 70% of India population.

➤ It will provide employment opportunities for youth and can generate approx. 1 lakh job annually.

o **Increase Tourism**: It will serve to attract air sports enthusiasts from all over the world.

➤ Especially those who live in areas where harsh winters prevent them from participation.

o Economic Benefits: presently in India, air sports has a small market of 80-100 crores and 5000 participants across the country.

➤ Policy will make rules regarding these activities and thus help people to participate more to explore new things.

➤ This will generate revenue for our country and

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can reach up to 8000 crore Industry, according to the government.

What are the challenges for India?

o **Lack of adequate safety measures**: Inability to enforce safety standards by an air sports association might lead to penal action by the ASFI against such association, including financial penalties, suspension or dismissal.

o **Funding issues**: the air sports will not be funded by the government directly and its Long term funding will come from corporate investors, sponsors, membership fees, events and media rights.

o **Making quality sporting goods**: The sporting goods used under the policy has been proposed to be made indigenously.

➤ Whereas till now India is not equipped with best quality sporting goods and it can impact safety measures of sportspersons.

What can be done to make this policy effective?

o **School based training to students**: Government should promote air sports in school curriculum for better skill management from early stage in children and youth.

o **Promote air sports as a Career option**: Youth in our country who are unemployed should be made aware of benefits in this industry.

➤ This can be done by providing benefits and allowances in air sports services as coaches, instructors and guides.

o **Training and Infrastructure**: adequate Training is essential before promoting any such activity in the country as it may lead to accidental damages to human life.

o **Developing Air sports zone**: Creating air spaces free from aeroplanes and any air traffic for this activity will help in the forward direction.

◉ CONCLUSION

There is need to leverage the energy of Indian youth which accounts for 70 % of India's population which is larger than the total population of Europe and three times that of USA. Hence we have an opportunity to make use of this policy for betterment of our country's image globally and harness the potential of India to be a global leader in air sports in future.

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GREEN GOLD AND THE TRIBAL RIGHTS

CONTEXT

Tribal residents of 50 villages in Chhattisgarh's have decided to file an FIR against the officials.

a **As the official had seized Tendu leaves collected by tribals and they wanted to sell on their own instead of to the government.**

◉ BACKGROUND

- o **Forest produce** is defined under **section 2(4)** of the Indian Forest Act, 1927.

- o Minor Forest Produce (MFP) is a subset of forest produce and got a definition only in 2007 when the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, was enacted.

- o **Section 2(i)** of the act defines a **Minor Forest Produce (MFP)** as all non-timber forest produce of plant origin and includes bamboo, brushwood, stumps, canes, Tusser, cocoon, honey, waxes, Lac, tendu/kendu leaves, medicinal plants and herbs, roots, tuber and the like ones.

- o As per the Report of the National Committee on Forest Rights Act, submitted in 2010, in all, about **100 million people** living in and around forests derive at least part of their livelihood from collection and marketing of non-timber forest products or MFPs.

- o This includes, in addition to **Tribals, Dalits, other forest dwellers** whom have not been officially declared as tribals, women, and other marginalised groups.

◉ ANALYSIS

What is the issue?

- o **Tendu** is also called '**green gold'** and is a prominent minor forest produce in India.

- o In 1964, the trade in **tendu leaves was nationalised** in then-undivided Madhya Pradesh. Until then, people were free to sell tendu leaves in markets across the country.

- o Under the state provision the **state forest department** collects tendu leaves, allows their **transportation and sells them to traders**.

- o Now, the villagers have claimed that the **Gram Sabhas of 13 villages** had passed a proposal to collect and sell tendu leaves on their own.

- o Despite this, the forest range officer seized 250 sacks of tendu leaves**.**

- o Even the documents related to the confiscation of these goods have not been handed over to the tribals.

- o The villagers, who are enraged by the development, have consequently decided to lodge an FIR against the officer.

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What does the Forest Rights Act 2006 says?

o FRA enacted in 2006 recognises the rights of forest-dwelling tribal communities and other traditional forest dwellers to forest resources on which these communities were dependent for a variety of needs, including **livelihood, habitation and other socio-cultural needs.**

o It recognizes and vests the forest rights and occupation in Forest land in Forest Dwelling **Scheduled Tribes (FDST) and Other Traditional Forest Dwellers (OTFD**) who have been residing in such forests for generations.

o It strengthens the conservation regime of the forests while ensuring livelihood and food security of the FDST and OTFD.

o **The Gram Sabha** is the authority to initiate the process for determining the nature and extent of Individual Forest Rights (IFR) or Community Forest Rights (CFR) or both that may be given to FDST and OTFD.

Role of Gram Sabha

Under the Forest Rights Act, 2006, the Gram Sabha has been assigned the following roles for implementing the provisions of the Act:

- To initiate the process for determining the nature and extent of individual or community forest rights.

- To recommend developmental projects managed by the Government which involve felling of trees not exceeding seventy-five trees per hectare.

- To consider the resettlement or alternative packages prepared by the State Governments.

- To protect the wild life, forest, biodiversity, adjoining catchments areas, water sources, other ecological sensitive areas, preserve the habitat of forest dwelling Scheduled Tribes to preserve their culture.

- To pass a resolution against any higher authority by giving a notice of not less than sixty days to the State Level Monitoring Committee.

Rights Under the Forest Rights Act:

o **Title rights**: It gives FDST and OTFD the right to ownership to land farmed by tribals or forest dwellers subject to a maximum of 4 hectares.

o Ownership is only for land that is actually being cultivated by the concerned family and no new lands will be granted.

o **Use rights**: The rights of the dwellers extend to extracting Minor Forest Produce, grazing areasetc.

Relief and development rights: To rehabilitate in case of illegal eviction or forced displacement and to basic amenities, subject to restrictions for forest protection.

o **Forest management rights**: It includes the right to protect, regenerate or conserve or manage any community forest resource which they have been traditionally protecting and conserving for sustainable use.

Why there is a need for reforms?

- **Administrative Apathy: As tribals are not a big vote bank in most states, governments find it convenient to subvert FRA or not bother about it at all in favour of monetary gains.**

o The forest bureaucracy has misinterpreted the FRA as an instrument to regularise encroachment instead of a welfare measure for tribals.

o Corporates fear they may lose the cheap access to valuable natural resources.

- **Dilution of Act**:

  ➤ Certain sections of environmentalists raise the concern that FRA bends more in the favour of individual rights, giving lesser scope for community rights.

- **Institutional Roadblock:**

  ➤ Rough maps of community and individual claims are prepared by Gram Sabha which at times often lack technical knowhow and suffers from educational incapacity.

- **Misuse of FRA:**

  ➤ The FRA has been misused and communities have rushed to file claims. Politicians across party lines have interpreted FRA as a land distribution exercise and have fixed targets for districts.

◉ WAY FORWARD

o It is important that the governments at Central and State levels are strengthened with human and financial resources to help implement FRA on a mission mode.

o Besides leveraging modern technology to map and monitor the implementation of FRA, the forest bureaucracy must also be reformed to serve as service providers to gram sabhas.

o **Gender inclusive initiatives** must be taken so that the work opportunities should be equal for both men and women with adequate protection of their rights.

⦿ **CONCLUSION**

This activity has a strong linkage to women's financial empowerment as most of the Minor Forest Produces are collected and used/sold by women. Minor Forest Produce sector has the potential to create about 10 million workdays annually in the country. Hence governments and officials should leave exploiting innocent tribals and should be paid for their resources, as MFP are not just a source for their earning but attached to their culture and social activities.

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INDIA'S PATENT REGIME

CONTEXT:

The U.S. Trade Representative (USTR) said in a report released last month that India was one of the most challenging major economies as far as IP protection and enforcement is concerned.

a It has decided to retain India on its Priority Watch List along with six other countries —Argentina, Chile, China, Indonesia, Russia and Venezuela.

◉ BACKGROUND

o **Right granted for an invention-** A patent is an exclusive set of rights granted for an invention, which may be a product or process that provides a new way of doing something or offers a new technical solution to a problem. Indian patents are governed by the Indian Patent Act of 1970.

o **Patent protection of pharmaceuticals -**The original Indian Patents Act did not grant patent protection to pharmaceutical products to ensure that medicines were available at a low price. Patent protection of pharmaceuticals were reintroduced after the 2005 amendment to comply with TRIPS

o **Recent situation-** The USTR report highlighted a range of issues in domains ranging from copyright and piracy to trademark counterfeiting and trade secrets, saying that India "remained one of the world's most challenging major economies with respect to protection and enforcement of IP."

◉ ANALYSIS:

What is a patent?

o A patent is an exclusive set of rights granted for an invention, which may be a product or process that provides a new way of doing something or offers a new technical solutions to a problems.

o **What is India's Patent regime?**

o India's Patent regime is governed by **India's Patent Act 1970**, with the provision:

➤ It should be novel

➤ It should have inventive steps or it must be non-obvious

➤ It should be capable of Industrial application

➤ It should not attract the provisions of **sections 3 and 4 of the Patents Act of 1970**

What does the Section 3 of Indian patent act deal with?

o **Section 3** deals with non-compliance as established under the Act.

o **Section 3 (d)** does not exclude "the discovery of

a new type of known object that is not effective in developing the known success of that object.

➤ or the mere discovery of any new space or new use of a known object

➤ or just the use of a known process, machine or resources unless that known process results in a new product

➤ or uses at least one new reactant "to qualify for protection under copyright law.

o **Section 3 (d)** prohibits what is known as "ever-greening" of patents.

o It is a business, legal, business, and technical strategy to extend / extend the patent granted to an expired site, in order to save profits for them, by taking new patents.

o According to the Committee report, **Section 3 (d)** allows generic competition by authorizing only novels and real inventions.

o A minor decision in the **Novartis vs. case. Union of India (2013),** proposed the validity of section 3 (d).

Judicial Intervention (Novartis v/s Union of India):

o In this case, pharmaceutical company Novartis filed a patent for the latter type of cancer drug Gleevec, which was challenged in the Supreme Court.

o The Supreme Court concluded that Gleevec was a beta crystalline type of known drug, i.e., imatinib mesylate, and did not differ significantly in properties in terms of efficacy. Therefore, it would not be patented in India.

o The decision also states that Article 3 is in line with the TRIPS agreement and the Doha Declaration.

o The Doha Declaration on the TRIPS and Public Health Accord was adopted in November 2021, by WTO member states.

o The declaration recognizes the "complexity of public health problems affecting developing and developing countries" and emphasizes the need for TRIPS to be part of a broader national and international initiative to address these issues.

o The declaration states that the agreement "can be interpreted and should be interpreted and

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implemented in a way that supports the right of WTO members to protect public health and, in particular, to promote universal access to medicines."

o These conditions include the right to issue compulsory licenses and the reasons for such licenses,

➤ the right to decide what "includes the national emergency or other emergency, including public health problems"

➤ and the right to establish its own state of intellectual property rights.

o Compulsory licenses may be requested by the state in the public interest, which allows companies without a patent to produce a patented product without permission.

What are the major issues related to the Indian patent act?

o Copyright issues have continued to be "a major concern in India," highlighting the threat of copyright withdrawal, lack of speculative copyright and narrow licensing process as "issues affecting companies in various sectors".

o The issue of narrow licensing procedures was also raised in terms of Section 3 (d) of the Copyright Act of India, with the report that in the field of pharmaceutical industry, the United States "continued to monitor the limited patent title in the Category. 3 (d) of the Copyright Act of India and its implications.

Issues addressed by Parliamentary committee on Patents:

o The threat of copyright infringement, lack of consideration of patent infringement and narrow patent conditions as problems "companies with various sectors were largely addressed by the Parliamentary Standing Committee which took over 'the intellectual property rights review in India.

o The Parliamentary Standing Committee noted that section 3 (d) "acts as a protection against the irrational establishment in line with the flexibility provided for in the TRIPS agreement.

o According to the Committee report, Section 3 (d) allows for "generic competition by authorizing only novels and real inventions."

Issues with TRIPS agreement:

- The process of policy development and production has a few steps, and involves a complex approach to intellectual property.

◉ WAY FORWARD:

o Common issues related to IPR were largely addressed by the Parliamentary Standing Committee which began 'reviewing intellectual property rights in India.

o Voluntary Licensing: The state of compulsory licensing is compulsory and may have the advantage of forcing a number of pharmaceutical companies to grant licenses voluntarily.

o India has historically played a leading role in stabilizing TRIPS flexibility as a compulsory license to the WTO. In this global and national health emergency, the government must enforce compulsory licenses in a mysterious way.

o The government's efforts to strengthen National IPR policy, IP court of appeals, electronic governance and commitment to compliance with the WIP TRIPS agreement by letter and air will help advance India's global vision.

o An effective and equitable system of inventory can help all countries recognize the potential of intellectual property as a catalyst for economic development and social and cultural well-being.

o It is important to ensure effective, affordable, and equitable access to all anti-epidemic tools, and therefore, the need to create a framework for their distribution.

o The report also highlights the positive steps India has taken in the past, such as joining the World Intellectual Property Organization (WIPO) Performances and Phonograms Treaty and the WIPO Copyright Treaty, jointly known as the WIPO Internet Treaties, 2018 and Nice . Agreement for 2019.

- Different types of IP rights apply to different processes and no single type of IP can unlock the policy generating policy.

- Performance technologies may be protected as a trade secret, and data from clinical trials evaluating the safety and effectiveness of the policy may be protected by copyright.

- Manufacturing vaccines will require designing a vaccine production process, obtaining the necessary equipment, building production facilities, and conducting clinical trials to obtain regulated approvals.

- The production process itself has different steps, some of which may be incorporated into other organizations.

- Thus, copyright withdrawal alone does not give producers the ability to start producing a product immediately.

INDIA'S STAND IN ENVIRONMENT PERFORMANCE INDEX 2022

CONTEXT

With an overall score of 18.9, India ranks at the bottom of all countries in the 2022 EPI with low scores across a range of critical issues.

⊙ ABOUT

- o **Environment Performance Index 2022,** which lists countries based on the environmental performance of their policies.

- o India is ranked **180th among 180 countries** in the Environmental Performance Index **(EPI) 2022.**

- o It has been published by the **Yale Center for Environmental Law and Poli**cy and the **Center for International Earth Science Information Network**, Columbia University.

- o This is a method of quantifying and **numerically marking** the environmental performance of a **state's policies.**

- o It uses **40 performance indicators across 11 issue categories**, on climate change performance, environmental health, and ecosystem vitality.

- o The overall EPI rankings indicate which countries are best addressing the environmental challenges that every nation faces.

- o It provides a way to spot problems, set targets, track trends, understand outcomes, and identify best policy practices.

Significance of the Index

- o The EPI offers a scorecard that highlights leaders and laggards in environmental performance and provides practical guidance for countries that aspire to move toward a sustainable future.

- o The indicators provide a gauge at a national scale of how close countries are to established environmental policy targets.

- o The Index provides a data-driven summary of the state of sustainability around the world.

- o Data and fact-based analysis can also help government officials refine their policy agendas, facilitate communications with key stakeholders, and maximise the return on environmental investments.

- o The EPI also offers a powerful policy tool in support of efforts to meet the targets of the UN Sustainable Development Goals and to move society toward a sustainable future.

⊙ ANALYSIS

What does EPI stated for India?

- o With an overall score of **18.9**, India ranks at the bottom of all countries in the 2022 EPI with low scores across a range of critical issues.

- o Deteriorating **air quality and rapidly rising greenhouse gas emissions** pose especially urgent challenges.

- o Most low-scoring countries such as **Myanmar and Vietnam** are those that have prioritised economic growth over sustainability, or those that are struggling with civil unrest and other crises.

- o According to EPI, India also ranks poorly in terms of rule of law, corruption control, and government performance.

- o "India slips to the bottom of the rankings for the first time, with increasingly hazardous air quality and quickly rising greenhouse gas emissions," the report stated.

- o With a score of 27.6, India was ranked 168th in EPI-2020.

What are the concerns recognized for India?

- o **On India's 180th ranking**, the Government of India has responded by saying that some indicators are extrapolated and based on surmises and unscientific methods.

- o Some concerns raised by India are:

  - ➤ **Projected GHG Emissions Levels in 2050** the new indicator in the Climate Policy Objective is calculated using the average rate of change in emissions over the previous ten years rather than modelling that takes into account a longer time period.

  - ➤ It also included the level of renewable energy capacity and usage, extra carbon sinks, energy efficiency and so on in the individual nations.

  - ➤ China and India are projected to be the largest and second-largest emitters of greenhouse gases in 2050, despite recently promising to curb emission growth rates.

o The weight of indicators in which the country performed well has been lowered as compared to earlier performances.

What is India's stand on its performance?

o The Environment Ministry questioned the ranking stating that some of the indicators it used were "**extrapolated**" and based on "**surmises and unscientific methods**".

o Indicators such as **agricultural biodiversity, soil health, food loss and waste** are not included, despite the fact that these are critical for developing nations with significant agrarian populations.

o In the current calculation, historical data on the lowest emission trajectory was ignored.

o The country's forests and wetlands are important carbon sinks that have been overlooked while calculating EPI 2022's predicted GHG emissions trajectory up to 2050.

o The equity principle is given relatively small weightage in the form of statistics such as GHG emission per capita and GHG emission intensity trend.

◉ CONCLUSION

o India ranked lowest on the parameters set by the Environmental Performance Index. India must make information about its efforts and achievements easily available and verifiable. This will aid in providing a more accurate picture of the country's environmental performance. The country must conduct an internal review to determine whether its environmental performance is adequate. It must assess if it is adopting sufficiently appropriate steps and implementing policies aimed at promoting human well-being and lowering environmental impact.

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SCIENCE BEHIND THE NEW CANCER CURE

CONTEXT

Twelve patients in the United States were completely cured of rectal cancer without requiring any surgery or chemotherapy found in a medical trial.

◉ ABOUT THE TRIAL

o The study was done by doctors from the **Memorial Sloan Kettering Cancer Centre in New York**, and its results have been published in the New England Journal of Medicine.

o The trial **used a monoclonal antibody called dostarlimab** every three weeks for six months for the treatment of a particular kind of stage **two or three rectal cancer**.

o The participants of the trial had a **mismatch repair deficient stage II or III** rectal adenocarcinoma.

o All 12 patients had completed the treatment and were followed for six to 25 months after.

o No cases of progression or recurrence had been reported during the follow-up, as per the study.

o The response shown in colon cancer in this study is **100 per cent** it needs to be validated involving a larger cohort of patients.

o Cancer is a leading cause of death worldwide, accounting for nearly 10 million deaths in 2020, or nearly one in six deaths.

What is Rectal Cancer?

o Rectal cancer is cancer that begins in the rectum. The rectum is the last several inches of the **large intestine.**

o It starts at the end of the final segment of your colon and ends when it reaches the short, narrow passage leading to the anus.

o While rectal cancer's treatments are quite different. This is mainly because the rectum sits in a tight space, barely separated from other organs and structures.

o The tight space can make surgery to remove rectal cancer complex.

o Signs and symptoms of rectal cancer include:

➤ A change in bowel habits, such as diarrhea, constipation or more-frequent bowel movements

➤ Dark maroon or bright red blood in stool

➤ Narrow stool

➤ A feeling that your bowel doesn't empty completely

➤ Abdominal pain

➤ Unexplained weight loss

➤ Weakness or fatigue

What is PD1 Therapy?

o PD1 is a type of protein that regulates certain functions of the immune system, including by suppressing **T cell activity**, and PD1 blockade therapy looks to release the T cells from this suppression.

o T-cells are the **White Blood cells (WBCs)**. They are critical for developing immunity towards common pathogens or antigens.

o Although the therapy is usually used for cancers that have metastasised (spread to locations other than where the cancer formed), it is now recommended for all mismatch repair deficient cancers as they result in quicker improvement and lesser toxicity as compared to traditional chemo and radiotherapy.

o Eliminating other treatments can improve a patient's quality of life by preserving fertility, sexual health, and bladder and bowel functions.

What are monoclonal antibodies?

o Monoclonal antibodies are laboratory-produced molecules engineered to serve as substitute antibodies that can restore, enhance, modify or mimic the immune system's attack on cells that aren't wanted, such as cancer cells.

> **Key terms related to the Trial**
> - **Mismatch repair deficient cancer**
>   ➤ It is most common among colorectal, gastrointestinal, and endometrial cancers.
>   ➤ Patients suffering from this condition **lack the genes to correct typos in the DNA** that occur naturally while cells make copies.
>   ➤ The anomalies in the DNA result in cancerous growths in patients.
> - **Dostarlimab**
>   ➤ Dostarlimab belongs to a group of monoclonal antibodies called "**checkpoint inhibitors**".
>   ➤ These are synthetic antibodies which block the proteins that cancer cells produce to prevent the body's immune system from attacking them.

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➤ It is a game of blocking the blocker, so that the native immune system which has recognised the cancer threat is not impeded in launching its attack on the malignant cells.

➤ This form of immunotherapy does not attack the cancer cells directly but unshackles the body's own able defenders.

- **Checkpoint inhibitors**

  ➤ They are named according to the type of protein they block — **CTLA-4 inhibitors, PD-1 inhibitors and PD-L1 inhibitors.**

  ➤ Dostarlimab is an inhibitor of the **Programmed Cell Death Protein (PD-1).**

  ➤ PD1 is a type of protein that regulates certain functions of the immune system, including by suppressing T cell activity, and PD1 blockade therapy looks to release the T cells from this suppression.

- **T cells**

  ➤ They are also called T lymphocytes

  ➤ They are a type of white blood cell.

  ➤ T cells are part of the immune system and develop from stem cells in the bone marrow.

  ➤ They help protect the body from infection and may help fight cancer

⊙ ANALYSIS

Why is treating Cancer so difficult?

o The difficulty in treating cancer is that it's not a single disease, but rather a group of diseases.

o In total there are more than 100 different types of cancers.

o Cancers are also caused by different things, so no one strategy can prevent them.

o Likewise, different cancers respond to different treatments, so no one treatment can cure them all.

o Treating cancer is further complicated due to the lifestyle and attitude of patients, the different physiology of people and the rate their bodies will metabolise drugs, the blood supply to the tumour affecting the drug getting into the tumour, the tumour physiology and the fact that the tumour can continue to change.

What does the new discovery bring for India?

o **Responsibility for more researches**: The trial is a phase II one and conducted in a small set of patients with a short follow-up.

➤ Larger phase III studies are required to confirm the results and see whether this is a temporary phenomenon or can the cancer return aggressively.

o **Most cases do not need surgeries:** These patients can be well managed with chemotherapy and radiotherapy as well.

➤ Around **10 to 15% of cancer patients** actually do not need surgeries.

o **High cost:** Immunotherapies are expensive and unaffordable for most people in India.

➤ An immunotherapy treatment can cost around Rs 4 lakh per month, with patients needing the treatment for six months to a year.

o **Use in initial stages in India:** Precision medicine, such as using particular immunotherapy drugs for particular types of cancers, is still at a nascent stage in India

Measures to be taken for early detection of diseases

o **Cancer registry network:** A network of cancer registries have to be set up towards this end.

➤ To start with hospital based cancer registries can be initiated by the regional cancer centres and they can later on be **expanded to population based cancer registries**.

o **Strategy matrix:** Cancer Control is an area in which we need participation from all sectors of the society.

➤ There are areas in which various agencies can put in their contributions. Keeping targets will help to monitor the programme as well as to identify the usefulness of the strategies.

o **Role of international agencies:** The World Health Organization has promoted National Cancer Control Programmes and India is one of the few countries that has actively taken up this initiative.

⊙ CONCLUSION

Where resources are limited, diagnosis and treatment services should initially target all patients presenting with **curable cancers, such as breast, cervical and oral cancers** that can be detected early. They could also include childhood acute lymphatic leukaemia, which has a high potential for cure although it cannot be detected early. Above all, services need to be provided in an equitable and sustainable manner. As and when more resources become available, the programme can be extended to include other curable cancers as well as cancers for which treatment can prolong survival considerably.

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HOW DO INTEREST RATES AFFECT INFLATION IN THE ECONOMY?

CONTEXT

Recent Economic turmoil faced by all the countries due the highest inflation in last four decades is undeniable.

a The central banks of the United States and UK are hiking interest rates in order to contain inflation.

◉ BACKGROUND

o The term inflation appeared in **America in the mid-nineteenth** century related to something that happens **to a paper currency**.

o By the nineteenth century, economists categorised **three separate factors** that cause a **rise or fall in the price of goods**:

➤ A change in the **value** or production costs of the good,

➤ A change in the **price of money** which then was usually a fluctuation in the commodity price and

➤ **Currency depreciation** resulting from an increased supply of currency.

o Following the proliferation of private banknote currency printed during the **American Civil War,** the term "inflation" started to appear as a **direct reference to the currency depreciation**.

o At that time, the term inflation referred to the devaluation of the currency, and not to a rise in the price of goods.

o Today, however, it is understood as referring to a **sustained increase in the general price** level.

◉ ANALYSIS

What is Inflation?

o **Inflation** is a general increase in the prices of goods and services in an economy.

o When the general price level rises, each unit of currency buys fewer goods and services; consequently, inflation corresponds to a reduction in the **purchasing power of money**.

How do we measure it?

o The common measure of inflation is the **inflation rate**, the annualized percentage change in a **general price index.**

➤ As prices do not all increase at the same rate, the **consumer price index (CPI)** is often used for this purpose.

➤ The CPI is a measure that examines the **weighted average of prices of a basket** of goods and services which are of **primary consumer needs**.

o **GDP deflator** is also a measure of the price of all the goods and services included in **gross domestic product (GDP).**

➤ It is defined as its **nominal GDP** measure divided by its **real GDP** measure.

o **The Wholesale Price Index**: The WPI is another popular measure of inflation, which measures and tracks the changes in the price of goods in the stages before the retail level.

➤ For example, it includes cotton prices for raw cotton, cotton yarn, cotton gray goods, and cotton clothing.

> **Formula of Inflation calculation:**
>
> - Per cent Inflation Rate = (Final CPI Index Value/ Initial CPI Value) x 100

What are the factors affecting Inflation?

o **Increase in Money Supply**: Inflation is caused by an increase in the supply of money which leads to increase in aggregate demand. The higher the growth rate of the nominal money supply, the higher is the rate of inflation.

o **Increase in Disposable Income**: When the disposable income of the people increases, it raises their demand for goods and services. Disposable income may increase with the rise in national income or reduction in taxes or reduction in the saving of the people.

o **Increase in Public Expenditure**: Government activities have been expanding much with the result that government expenditure has also been increasing at a phenomenal rate, thereby raising aggregate demand for goods and services.

o **Increase in Consumer Spending**: The demand for goods and services increases when consumer expenditure increases. Consumers may spend more due to conspicuous consumption or demonstration effect.

o **Cheap Monetary Policy**: When credit expands, it raises the money income of the borrowers which,

in turn, raises aggregate demand relative to supply, thereby leading to inflation.

o **Deficit Financing**: In order to meet its mounting expenses, the government resorts to deficit financing by borrowing from the public and even by printing more notes. This raises aggregate demand in relation to aggregate supply increasing inflation.

Steps to be taken to curb Inflation

o **By Strict Monetary Policy:** It refers to the actions of a central bank or other committees that determine the size and rate of growth of the money supply**.**

o **Maintaining Price stability:** This will promote maximum employment, which is determined by non-monetary factors that fluctuate over time and are therefore subject to change.

  ➤ It also allows businesses to plan for the future since they know what to expect.

o **Quantitative Easing:** Quantitative easing (QE) is a form of unconventional monetary policy in which a central bank purchases longer-term securities from the open market in order to increase the money supply and encourage lending and investment.

➤ Quantitative easing usually involves a country's central bank purchasing longer-term government bonds, as well as other types of assets, such as mortgage-backed securities.

o **Demonetisation of Currency:** However, one of the monetary measures is to demonetise currency of higher denominations.

  ➤ Such a measure is usually adopted when there is abundance of black money in the country.

o **Fiscal Measures:** Monetary policy if alone is incapable of controlling inflation it should therefore be supplemented by fiscal measures.

  ➤ Fiscal measures are highly effective for controlling government expenditure, personal consumption expenditure, and private and public investment.

⦿ CONCLUSION

Inflation is all together not only a bad omen for the Country's economy but has advantages too. It is often used by many to curb their losses and income flows to their countries. However it can be controlled by the Governmental, the Central bank and Public efforts together.

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WIDENING URBAN-RURAL DIVIDE, AND NEED OF ECONOMY'S STRUCTURAL TRANSFORMATION

CONTEXT

There are some serious concerns about growing inequality or disparity between rural and urban areas in India.

Disparities in income distribution, consumption, and quality of life between the rural and urban area are known as the **rural-urban divide.** The rural-urban disparity, as measured by the ratio of urban-to-rural expenditure, has gone up from 1.63 in 1993-'94 to 2.42 in 2017-'18.

Role of rural economy

Rural areas

- As per the last census (2011) 68.84 percent of India's population (833m) live in 640867 villages.
- All the areas not covered by **Notified Area Council (NAC), Municipal Corporation, Cantonment Area** are basically rural area.

The rural-urban divide

There are glaring disparities in income distribution, consumption and quality of life between rural and urban India.

o **Income disparity:** The rural-urban divide in India is so prominent that the income of an average person in the rural parts of India is less than even half of the urban counterpart.

o **Lack of opportunities:** There is a lack of livelihood opportunities, modern amenities and services, necessary for decent living in rural areas.

o **Insufficient public healthcare infrastructure.** A majority of health infrastructure is in the private sector, which is limited to the middle classes in urban India. Rural areas are catered by government-run dispensaries which lack infrastructure and medicines.

o **Exclusion:** A majority of rural society remains excluded from India's journey of development.

o **Lack of infrastructure:** There is improper and inadequate provision of infrastructure when compared to urban areas.

o **Decline in profitability and productivity within agriculture:** The decline of India's agriculture and the rise of the urban-centric service-led economic growth has led to the widening of rural-urban disparities.

What are the challenges?

o **Social customs:** In closed rural societies, social institutions such as caste system, joint family

system and various social customs play a major role in the day-to-day life of an individual.

➤ **For example**, the rigid caste system does not allow a low caste person to give up his traditional work. While in urban areas, the emphasis is on individual's merit and qualification.

o **Pushing factor:** The rural area characterised by lower wages, a small size of landholdings, lack of opportunities and amenities have been a pushing factor for migration from rural area to urban area.

o **Multiple issues:** Although there is no dearth of schemes for rural development, the benefits of these schemes are not reaching the target population mainly due to

➤ corruption in the disbursal of funds

➤ non-transparency in financial transactions

➤ wrong identification of the beneficiaries

➤ lack of involvement of Gram Panchayats in planning and implementation

➤ lack of political and administrative accountability

What measures are required?

o **Reforms in farm sector:** To address the longstanding economic problems of agriculture, the farm sector needs reform to raise productivity, enhance farmers' income, built market infrastructure and address declining soil fertility.

o A concomitant industrial policy that takes into account the structural relationship between agriculture-industry that also provides urban infrastructure and social sector support, particularly investments in education and health.

o Policies needs to be crafted to increase productivity simultaneously diversify the workforce to accelerate the structural transformation of the Indian economy.

o **E**quitable access to quality education and healthcare.

SECTION: B (PRELIMS)

CURRENT AFFAIRS

WORLD DAY AGAINST CHILD LABOUR: A LOOK AT GLOBAL FIGURES

◉ **CONTEXT:**   **The World Day against Child Labour is held annually on June 12 as a day dedicated to creating awareness about the menace of child labour and human trafficking.**

World Day against Child Labour:

- June 12 was officially adopted as World Day against Child Labour in 2002 by the International Labour Organisation, a United Nations body that regulated the world of work.

  o The day aims to guarantee a normal childhood to victims of child labour by providing them appropriate support for education, and medical services.

- **Theme:** The theme for World Day against Child Labour 2022 is **"Universal Social Protection to End Child Labour."**

  o The theme is dedicated to the cause of increasing investment in social protection systems and schemes to establish solid social protection for protecting children from child labour.

▌ Significance:

  o The day focuses on providing dignity to the life of children affected by child labour and ensuring support for their education, medical services and other needs.

  o It is observed with campaigns, events and programs also addressing the issue of negative mental and physical concerns that children who are pushed into child labour endure across the world.

Child labour:

- Child labour is work carried out to the detriment and endangerment of a child, in violation of international law and national legislation.

- It either **deprives children of schooling or requires them to assume the dual burden of schooling and work.**

- Child labour to be eliminated is a subset of children in employment. It includes:

  o All "**unconditional" worst forms of child labour**, such as slavery or practices similar to slavery, the use of a child for prostitution or for illicit activities;

  o **Work done by children under the minimum legal age** for that type of work, as defined by national legislation in accordance with international standards.

- The worst forms of child labour involves children being enslaved, separated from their families, exposed to serious hazards and illnesses and/or left to fend for themselves on the streets of large cities – often at a very early age.

- Whether or not particular forms of "work" can be called "child labour" depends on the child's age, the type and hours of work performed, the conditions under which it is performed and the objectives pursued by individual countries.

- **Convention No. 138** provides that the minimum age for admission to employment shall not be less than the age of completion of compulsory schooling.

- The **ILO's adoption of Convention No. 182 in 1999** consolidated the global consensus on child labour elimination.

  o It provided much-needed focus without abandoning the overarching goal, expressed in Convention No. 138, of the effective abolition of child labour.

o Moreover, the concept of the worst forms helps set priorities and can be used as an entry point in tackling the mainstream child labour problem.

Child labour situation around the world:

- Around the world, 160 million children, some as little as five, are engaged in child labour, despite alleviation efforts of the last two decades.

- Africa ranks highest among regions both in the percentage of children in child labour — one-fifth — and the absolute number of children in child labour — 72 million, states the UN.

- Africa and the Asia and the Pacific regions together account for almost nine out of every ten children in child labour worldwide.

- The remaining child labour population is divided among the Americas (11 million), Europe and Central Asia (6 million), and the Arab States (1 million).

- In terms of incidence, 5% of children are in child labour in the Americas, 4% in Europe and Central Asia, and 3% in the Arab States, according to the UN.

HOW TO DECARBONISE DEFENCE: INTERNATIONAL MILITARY COUNCIL SHARES GUIDELINES

◉ **CONTEXT:**   **International Military Council on Climate and Security (IMCCS) recently released a report on the need to decarbonise defence agencies across the world.**

Key highlights of the report:

- Only a handful of the 30 members of the North Atlantic Treaty Organization (NATO) share information on the carbon footprint from their defence activities

- The world's defences are dominated by the use of fossil fuels, which serve as a reliable and efficient means to operate the forces across the world.

    o But military fuel consumption does not only pose a problem in terms of operations but also involves high expenses and dependence on external suppliers.

- The Russian army attack on a fuel storage facility in Odessa in southern Ukraine in April 2022, for instance, crippled the Ukrainian troops fighting the Russians near the Mikolayev front.

- The recent risks and the commitments of the United States and the European Union to become carbon neutral by 2050 and the recent conflict have compelled the western international organisations and the European Union (EU) to accelerate the process of military decarbonisation.

Key recommendations:

- **High technology innovations** such as use of bio-fuel, could help to shift them to low-carbon alternatives thus evolving the modernisation process.

- To bring **hybrid vehicles or alternative fuel technologies** to reduce reliance on fossil energy.

- Concerted move in such a direction to **combat climate change by phasing out use of fossil energy** can also work as weapon against Russia in its war against the Ukraine.

NATO's stand

- In **2010, NATO acknowledged the link between climate change and security** for the first time in its report Strategic Concept.

   o The Allied forces have prioritised adaptation to the drawbacks of climate change on various aspects of the military such as its installations, equipment, force readiness and operations.

- NATO strongly believes that decarbonisation can be achieved by initially introducing **innovations and sustainable solutions** in sectors of operating buildings, facilities, short and medium distance vehicles, equipment and energy consumption.

- NATO is **not a first responder to climate change**. This role is played by other international bodies, in particular those who can set limits on CO2 emissions.

   o NATO **instead seeks to become "the leading international organization when it comes to understanding and adapting to the impact of climate change on security.**

International Military Council on Climate and Security (IMCCS):

- IMCCS is a **group of senior military leaders,** security experts, and security institutions across the globe dedicated to anticipating, analysing, and **addressing the security risks of a changing climate.**

- The **launch** of the IMCCS was announced at **The Hague, Netherlands**, in **2019** in response to a growing demand from military professionals for sharing information and best practices on addressing the security and military dimensions of climate change.

- **Governance:** The IMCCS is administered by the Center for Climate and Security (CCS), an institute of the Council on Strategic Risks, and consists of three main entities.

   o **IMCCS Leadership:** The IMCCS Leadership is a multi-organizational consortium made up of an Expert Group, Executive Committee and Secretariat who govern the activities of the IMCCS.

   o **IMCCS:** The IMCCS is a Council of senior military leaders and security experts from the governmental and nongovernmental sectors, consisting of the full Council and an IMCCS Expert Group.

   o **IMCCS Institutional Partners:** IMCCS Institutional Partners are security organizations, networks and donors that formally affiliate with the IMCCS.

THAILAND BECOMES FIRST ASIAN NATION TO MAKE MARIJUANA LEGAL FOR MEDICAL USE

◉ **CONTEXT:**   **The decision by the Food and Drug Administration to remove all of the plant from the category of narcotic drugs makes Thailand the first nation in Asia to decriminalise marijuana for medical and industrial use.**

About:

- Thailand made **it legal to cultivate and possess marijuana.**
- Thailand's government has warned that those eager to light up for fun that smoking in public could still be considered a nuisance, subject to a potential 3-month jail sentence and 25,000 baht ($780) fine.

Cannabis in parts

Seeds
These parts are illegal and can only be used by licensed growers for planting with special permission.

Flowers
These parts are illegal and can only be used for medical uses and research purposes.

Leaves
These parts are legal if used for medical purposes, research, and ingredients for food, cosmetics and herbal products.

Branches
These parts are legal if used for medical purposes, research, and ingredients for food, cosmetics and herbal products.

Legal parts can be made into the following:

Food

Cosmetics

Herbal Products

Medicines

Roots
These parts are legal if used for medical purposes, research, and ingredients for food, cosmetics and herbal products.

Stems
Legal for research purposes, industrial production, and components for textiles, vehicle parts, and paper.

- **Marijuana extracts, such as oil, remain illegal** if they contain more than 0.2% of tetrahydrocannabinol, or THC, the chemical that makes people high.

Which countries permit the use of cannabis?

- In 2018, Canada became the first G20 country to legalise the recreational use of cannabis.
- Meanwhile, Uruguay legalised the recreational use of marijuana for all adults above the age of 18 in 2013.
- Here, you can purchase weed at pharmacies.
- Several European countries — including the Netherlands, Spain and the Czech Republic — permit smoking marijuana in public places.
- In the US, consumption of marijuana is legal in at least 20 states, including Washington DC, New York and California.

Cannabis:

- Cannabis is a generic term used to denote the several psychoactive preparations of the plant **Cannabis sativa.**
- The major psychoactive constituent in cannabis is **delta-9 tetrahydrocannabinol (THC).**
- Compounds which are structurally similar to THC are referred to as cannabinoids.

CiSS APPLICATION TO HELP REHABILITATION OF CHILDREN IN STREET SITUATIONS

◉ **CONTEXT:** **The National Commission for the Protection of Child Rights (NCPCR) has launched the "CiSS application" to help Street Children.**

About CiSS application

- The **CiSS application** is used for receiving data of children in street situations from all the states and union territories, tracking their rescue and rehabilitation process.
- The initiative is taken under the direction of **the Supreme Court of India**.
- The program embodies **Article 51 (A)** of the Constitution of India, as it provides a platform to the public and organizations catering to the welfare of the children to report any child in need of assistance.
- It also provides a platform for professionals and organizations to provide any help that they can to children in need.
- Help can be provided in the form of open shelters, counselling services, medical services, sponsorships, de-addiction services, education services, legal/paralegal services, volunteering etc.
- CiSS application has been launched under the **Baal Swaraj portal.**
  - o The Baal Swaraj portal was launched by the **National Commission for the Protection of Child Rights (NCPCR**) for online tracking and monitoring of children in need of care and protection.
- Bal Swaraj portal follows a 6 steps framework for children's rehabilitation-
  - o Collection of the child's details through the portal
  - o Prepare a **Social Investigating Report (SIR)** i.e. investigating the child's background under the supervision of the **District Child Protection Unit (DCPU)**

- o Formulating an **Individual Care Plan (ICP)** for the child
- o Release an order of the **Child Welfare Committee (CWC)** based on the reports.
- o Allocating the schemes and benefits
- o Prepare a Checklist for the evaluation of the progress.

About National Commission for Protection of Child Rights (NCPCR)

- The National Commission for Protection of Child Rights (NCPCR) is a **statutory body** established under the Commission for Protection of Child Rights (CPCR) Act, 2005.
  - It is under the administrative control of the **Ministry of Women and Child Development.**
  - **Under the act, a Child is defined as a person in the 0 to 18 years age group.**
  - It aims to ensure that all Laws, Policies, Programmes, and Administrative Mechanisms are in harmony with the Child Rights perspective as enshrined in the Constitution of India and also the UN Convention on the Rights of the Child.

Composition

- This commission has a chairperson and six members of which at least two should be women.
- All of them are appointed by the Central Government for 3 years.
- The maximum age to serve in commission is 65 years for Chairman and 60 years for members.
- The salary and allowances payable to, and other terms and conditions of service of, the Chairperson and Members, shall be such as may be prescribed by the Central Government.

WHAT IS POST OFFICE RECURRING DEPOSIT SCHEME?

◉ **CONTEXT:** **Regarding the deposit schemes for small savings in India, there are nine savings schemes that India Post offers in which recurring deposit or RD accounts offer an interest rate of 7.2 per cent per annum.**

Background

- India Post operates across a network of more than 1.5 lakh post offices in the country provides a variety of banking services.
- Among the nine savings schemes that India Post offers, recurring deposit or RD accounts offer an interest rate of **2 per cent per annum.**
- Small savings instruments help the citizens to achieve their financial goals over a particular time period.
- Interest rates on these post office saving schemes move in line with the government's interest rates **on small savings schemes, which are revised on a quarterly basis.**

◉ **ABOUT** **What is recurring Deposit (RD)?**

- A recurring deposit is a type **of term-deposit**.
- Unlike a fixed deposit account, a recurring deposit account allows the investor to park a fixed amount of funds at regular intervals; for instance, every month.

How to open a recurring account (RD)?

- A post office recurring deposit (RD) account can be opened by cash as well as cheque. In case of cheque, the date of deposit is the date of presentation of cheque, according to India Post.

- Any number of RD accounts can be opened in a post office.

- Account can also be opened in the name of a minor. A minor of **10 years and above age** can open and operate the account.

Benefits

- The maturity period of post office RD account is 5 years. However, it can be continued for another five years on a year-to-year basis.

- It can be opened with a minimum of **Rs 10 per month** or any amount in **multiples of Rs 5.**

- There is **no maximum limit on investment in post office** recurring deposit (RD).

- One withdrawal up to **50 per cent of the balance** is allowed after one year.

- The monthly deposits should be credited on any day of the month.

Disadvantage

- The withdrawal amount should be repaid in one lump-sum along with interest at the prescribed rate at any time during the currency of the account.

- Non-payment of a monthly instalment leads to a default.

- If in any RD account, there is monthly default amount, the depositor has to first pay the defaulted monthly deposit with default fee and then pay the current month deposit, according to India Post.

Small savings schemes in India

- **The small savings instruments include**
    - ➤ Public Provident Fund Account (PPF)
    - ➤ Sukanya Samriddhi Scheme
    - ➤ Senior Citizen Savings Scheme
    - ➤ Post Office Savings Account
    - ➤ 5-Year Post Office Recurring Deposit Account (RD)
    - ➤ National Savings Certificates (NSC)

- They are the **major source of household savings** in India.

- The small savings schemes basket can be classified under three categories. They are;

    - ➤ **Postal deposits**: Post Office Savings Account(SB), National Savings Recurring Deposit Account(RD), National Savings Time Deposit Account(TD) etc.

    - ➤ **Savings certificates**: National Savings Certificates (VIIIth Issue), Kisan Vikas Patra (KVP) etc.

    - ➤ **Social security schemes:** Public Provident Fund (PPF), Senior Citizens 'Savings Scheme (SCSS) etc.

- **Interest rates are reviewed every quarter** by the Government for these schemes

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RHINO REINTRODUCTION SUCCESS IN ASSAM

◉ **CONTEXT:** **Recently, the latest census (14th Assam rhino estimation) revealed that the Manas National Park rhinos have higher life expectancy but need translocation support.**

About the 14th Assam rhino estimation

- The rhino census in the Manas Park was carried out in all three ranges: **Bhuyanpara, Bansbari and Panbari** comprising 71 estimation blocks.

- The current rhino population in the park was estimated at 40.

- The park's rhinos have a male-female sex ratio of 1:1.

- The number of calves born in the wild reflects the availability of welfare factors to foster rhinos in Manas National Park.

- **Methodology: Total count or Direct count method**

  o A total count is generally used when a single species is targeted to be counted in a well-defined, specific area.

  o This method assumes the detection probability to be one, which means that each and every animal has a 100% chance of being seen during the counting.

Limitations of this method

- The limitations of this method include undercounting as the assumption of a detection probability of 1 is unrealistic especially if the population closure cannot be established satisfactorily within a small area of 10-20 sq. km.

- Total count requires high visibility to observe the animals from far off, which is not possible in case of "shy, cryptic animals".

- The level of precision cannot be measured in total counts either.

About Greater One-Horned Rhino

- There are three species of rhino in Asia-
  ➤ Greater one-horned (Rhinoceros unicornis)
  ➤ Javan
  ➤ Sumatran
- World Rhino Day is celebrated on September 22 every year.
- The five rhino range nations are India, Bhutan, Nepal, Indonesia and Malaysia.
- They have signed 'The New Delhi Declaration on Asian Rhinos 2019' for the conservation and protection of the species.
- **IUCN Red list-**
  ➤ Javan and Sumatran Rhino are critically endangered
  ➤ Greater one-horned (or Indian) rhino is vulnerable
- **CITES-**
  ➤ All three listed under **Appendix I**
- **Wildlife Protection Act, 1972-**
  ➤ Greater one-horned rhino is listed under the Schedule I of the Act.

CHELONOIDIS PHANTASTICUS

◉ **CONTEXT:** **Species of turtle named Fernanda after her Fernandina Island thought extinct 100 years ago rediscovered recently.**

What is Chelonoidis Phantasticus?

- It belongs to Chelonoidis phantasticus.
- Chelonoidis phantasticus means "fantastic giant tortoise".
- It is commonly called Fernandina Island, Galápagos Giant Tortoise.
  - o It has been named Fernanda after the Fernandina Island where it was discovered.
- The species was so far known only from a single individual, collected in 1906.
- It has now been recently discovered again in 2019.
- These tortoises can't swim from one island to another. But they can be carried from one Galápagos island to another during major storms. There are also historical records of seafarers moving the tortoises between islands.

Habitat and Distribution

- Chelonoidis phantasticus is a saddle backed tortoise adapted for browsing on higher vegetation such as Opuntia trees.
- Fernandina habitat is largely dry xeric brushland at lower elevations, but much of that habitat has been destroyed by extensive recent lava flows.
- The small area of remaining higher-quality habitat is mesic and at higher elevations.
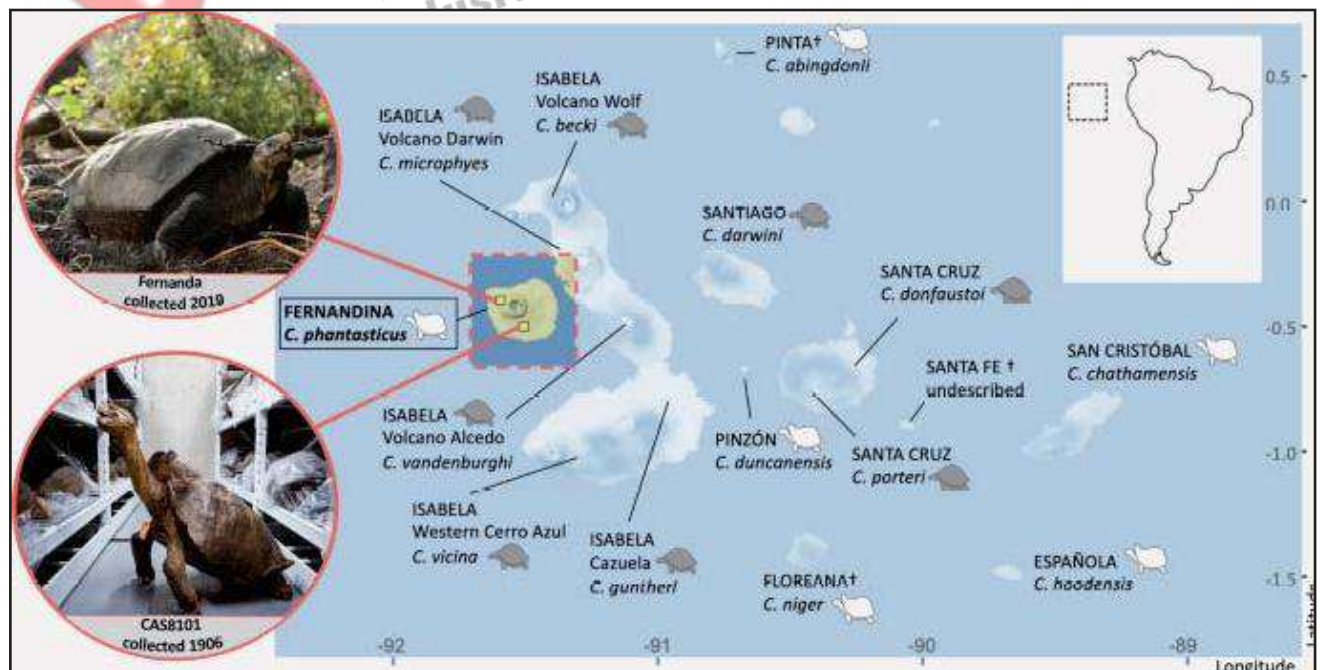
IUCN Status

- Chelonoidis phantasticus is listed as Critically Endangered.

What is Fernandina Island?

- Fernandina Island is an active volcano that stands alone on the western periphery of the Galápagos Archipelago.

- It is reputed to be the largest pristine island on Earth.
- Fernandina Island is the third largest, and youngest, island of the Galápagos Islands, as well as the furthest west.

> **About Galapagos Islands**
> - The Galapagos Islands, spread over almost 60,000 sq km, are a part of Ecuador, and are located in the Pacific Ocean around 1,000 km away from the South American continent.
> - Ecuador made a part of the Galapagos a wildlife sanctuary in 1935, and the sanctuary became the Galapagos National Park in 1959.
>   ➤ In 1978, the islands became UNESCO's first World Heritage Site.
> - The Galapagos Islands host a wide array of aquatic wildlife, including marine iguanas, fur seals, and waved albatrosses.

MICROPLASTICS DISCOVERED IN FRESH ANTARCTIC SNOW FOR FIRST TIME

◉ **CONTEXT:** **Microplastics have been found in freshly fallen snow in Antarctica for the first time.**

About:

- Scientists have found microplastics in fresh Antarctic snow for the first time, highlighting the extent of global plastic pollution as even the most remote regions experience contamination.
- Researchers gathered samples of snow from 19 different sites in the Ross Ice Shelf in Antarctica and discovered plastic particles in all of them.
- Most of the particles were from a type of plastic called polyethylene terephthalate, which is found in clothing and water bottles.
- The study found an average of 29 particles per liter of melted snow, higher than marine concentrations previously reported from the surrounding Ross Sea and in Antarctic sea ice.
- Microplastics in the freshly fallen snow of Antarctic would only accelerate the process of melting of ice.
- There is increasing international alarm over volume and omnipresence of plastics pollution, and its impact.
- Infiltrating the most remote and otherwise pristine regions of the planet, microplastics have been discovered inside fish in the deepest recesses of the ocean and locked inside Arctic ice.

What are microplastics?

- Tiny particles of plastic measuring less than 5mm in diameter is termed as microplastic.
- They are one of the major pollutants of land and ocean.

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LIFE-CYCLE OF MICROPLASTICS
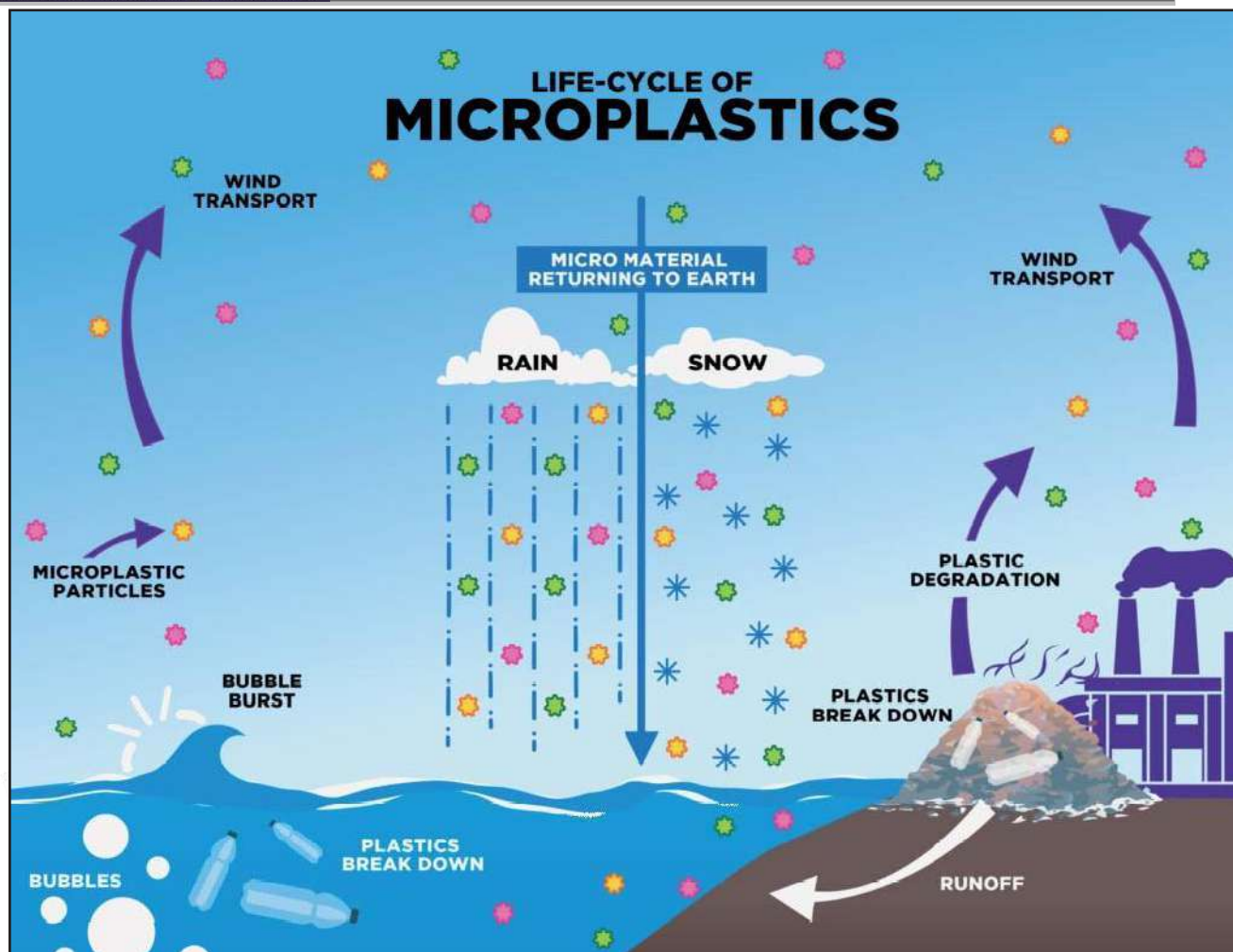
Impacts of microplastic

- **On Oceans**: Microplastics are source of pollution in oceans they accumulate by breaking into small constituent particles and settle down inside the ocean residing inside for many years without degrading.

  o According to the IUCN, at least 8 million tonnes of plastic end up in the oceans every year and make up about 80% of all marine debris from surface waters to deep-sea sediments.

  o As perUNEP, in the last four decades, concentrations of these particles appear to have increased significantly in the surface waters of the ocean.

- **On marine organisms:** Marine organisms such as **fish, crabs, prawns** consume these minute plastic particles and thus add them to the food chain and leads to bioaccumulation.

- **On land: Microplastics are major pollutant of land** as they leach in the water bodies such as rivers and lakes through soil.

- **Agriculture** and plant health is affected.

- **On humans:** Human health is a matter of concern as plastic is used by us in our day to day routine and unknowingly we are consuming it in the form of microplastics.

  o Thus it add to **human blood** and even can accumulate in organs.

- A study conducted by the **World Wide Fund for Nature revealed** that an average person **consumed 5 grams of plastic.**

HOW CHEETAHS WENT EXTINCT IN INDIA, AND THE PLAN TO REINTRODUCE THEM INTO THE WILD

◉ **CONTEXT:**   **The Union Environment Ministry recently said that India is set to bring cheetahs from South Africa to Madhya Pradesh's Kuno-Palpur National Park by August this year.**

How cheetahs went extinct in India?

- The cheetah is the only large carnivore to have gone extinct in India, primarily due to hunting and habitat loss.

- Maharaja Ramanuj Pratap Singh Deo of Korea, Madhya Pradesh, is widely believed to have killed the last three recorded cheetahs in India in 1947.

- In 1952, the Indian government officially declared the Cheetah extinct in the country.

Cheetah in Indian History:

- The **earliest available record for cheetahs being used for hunts** in India, comes from the 12th century Sanskrit text **Manasollasa**, which was produced by the **Kalyani Chalukya ruler**, **Someshvara III** (reigned from 1127-1138 CE).

- According to the wildlife expert, "**Cheetah coursing**" or the use of trained cheetahs for hunting had become a highly specialized activity in the medieval period and was carried out on a large scale during the Mughal Empire.

  o **Emperor Akbar**, who reigned from 1556-1605, was particularly fond of the activity and is recorded to have collected 9,000 cheetahs in total.

  o **Abul Fazl**, Akbar's chief courtier, noted that the emperor had devised a new method to capture cheetahs. Akbar is said to have used shallow pits with an automatic trap door which would close after they fell inside.

- The capture of wild cheetahs for hunting and the difficulty to breed them in captivity was leading to a decline in the cheetah population, even before the entry of the British.

- Unlike the Mughals, the British were not very interested in coursing with the cheetahs. Rather, they preferred to hunt big game, such as tigers, bison and elephants.

  o Under the British Raj, forests were extensively cleared, so as to develop settlements and to set up indigo, tea and coffee plantations.

  o This further resulted in the loss of habitat for big cats, contributing to their decline.

What is reintroduction and why reintroduce Cheetah now?

- '**Reintroduction' of a species means releasing it in an area where it is capable of surviving**.

- Reintroductions of large carnivores have increasingly been recognised as a strategy to conserve threatened species and restore ecosystem functions.

- The **cheetah is the only large carnivore** that has been extirpated, mainly by over-hunting in India in historical times.

- India now has the **economic ability** to consider restoring its lost natural heritage for ethical as well as ecological reasons.

Re-introducing Cheetah in India:

- The project to **translocate cheetahs from Africa to India** is a long-term one being implemented by the environment ministry with the help of the Wildlife Institute of India.

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- The **Supreme Court** appointed an expert panel, which **approved Kuno Palpur as the possible location for cheetah relocation.**
- In the past six months, the Madhya Pradesh forest department has relocated villagers from Kuno and has prepared an enclosure with round-the-clock surveillance for reintroduction of cheetahs.

About Cheetah:

- The cheetah, Acinonyx jubatus, is one of the **oldest of the big cat species**, with ancestors that can be traced back more than five million years to the Miocene era.
- The cheetah is also the **world's fastest land mammal**.
- It is listed as **vulnerable** in **IUCN red listed species**.
- The country's last spotted feline died in Chhattisgarh in 1947. Later, the cheetah — which is the fastest land animal — was **declared extinct in India in 1952.**
- **The Asiatic cheetah is classified as a "critically endangered"** species by the IUCN Red List, and is believed to survive only in Iran.

WORLD OCEANS DAY: MARINE LITTER

◉ **CONTEXT:**   **The United Nations designated June 8 as World Ocean Day to raise awareness about ways to safeguard the seas.**

Marine litter:

- It is any **man-made, long-lasting solid material** that humans have incorrectly disposed of and that has ended up on the beach, in estuaries, rivers, seas and ocean.

- It is made of many materials including plastic, rubber, paper, processed wood, textiles, metal, and glass, ceramic and sometimes a mix of them.
- Marine litter **threatens ecosystems**, affects public health and negatively impacts fishery and tourism industries around the globe.

Key Statistics of Marine litter:

- Plastics are the most common man-made objects sighted at sea, with an estimate of **18,000 pieces of plastic litter floating on every square kilometre of the world's oceans.**
- By 2050 there will be **12 billion tonnes of plastics** in landfills or the natural environment.
- Estimates show that 4.8-12.7 million tonnes of plastic enters the ocean every year from land-based sources.
- It's estimated that 100,000 turtles and marine mammals, such as dolphins, whales and seals, are now killed by plastic marine litter every year around the world.

India's measures

India is taking strong measures to tackle the menace of marine litter.

- In 2021, the Government of **India prohibited the manufacture, import, stocking, distribution, sale, and use of several single-use plastic items** like plastic flags, plates, cups, spoons and straws from July this year.
- The Government of India has already **banned the import of plastic waste** in the country.
- Many states and Union Territories have gone further, banning identified single-use plastic items like decorative styrofoam / thermocol plastic, cups, glasses, flags, earbuds, candy and ice-cream sticks — **all plastic which is less than 100 microns in thickness**.

UK-India Intervention:

- United Kingdom and India agreed a **'Roadmap 2030'** last year, which sets out an ambitious framework for UK and India partnerships in a wide range of science disciplines, including marine science.
- **Commonwealth Litter Programme (CLiP):** Under the CLiP, the UK and India have launched a pilot project to understand deteriorating sea water quality due to marine litter.

  o Under CLiP, the UK has partnered with India for a longer term and channelled the efforts to facilitate the creation of a strong science evidence base to inform India's National Marine Litter Strategy.

- The UK is also leading the **Global Ocean Alliance: 30by30 initiative** which aims to protect 30 per cent of all land and water by 2030.

World Ocean Day:

- The idea of World Ocean Day was first proposed by Canada's International Centre for Ocean Development (ICOD) and the Ocean Institute of Canada (OIC) in 1992.
- But only after global collaboration between The Ocean Project and the World Ocean Network, and various other scientific institutes and organisations did the UN official recognise June 8 as World Ocean Day in 2008.

Theme:

- The theme for World Ocean Day 2022 is "Revitalisation: Collective Action for the Ocean".

- This year's theme focuses on how to not only stop harming the ocean but on actions that need to be taken in order to restore the oceans to their former glory through collective efforts.

Significance:

- World Ocean Day seeks to promote knowledge about the delicate systems that govern the world's oceanic system and how they're at increasing risk from climate change.

- From rising pollution, acidification of ocean water, rising average temperatures, to a reduction in ocean biodiversity.

- Through spreading awareness, World Ocean Day hopes to protect the Earth's major water bodies.

CARBON BOMBS

◉ **CONTEXT:**

A group of environmentalists, lawyers, and activists have come together to identify and 'defuse carbon bombs'– coal, oil and gas projects that have the potential to contribute significantly to global warming.

What are carbon bombs?

- The usage of the **term 'carbon bombs' picked up after an investigative project of The Guardian** from May 2022.

- Defining the term in its report, The Guardian said that it is **"an oil or gas project that will result in at least a billion tonnes of CO2 emissions over its lifetime."**

- In total, around 195 such projects have been identified world over, including in the US, Russia, West Asia, Australia and India.

- According to the report, they will collectively overshoot the limit of emissions that had been agreed to in the Paris Agreement of 2015.

- Examples of **Carbon Bomb projects in India** include the Carmichael Coal Project owned by the Adani Group, Gevra Coal Mines in Chhattisgarh owned by Coal India, and Rajmahal Coal Mines in eastern Jharkhand owned by Eastern Coalfields.

Key findings of the investigation:

- More than 60% of these carbon bomb projects are already underway, according to the investigation.

- Apart from coal, oil, and gas operations, the report highlighted the threat of methane, which "routinely leaks from gas operations and is a powerful greenhouse gas, trapping 86 times more heat than CO2 over 20 years".

- The four countries with the biggest number of carbon bombs are China, the United States, Russia and Saudi-Arabia.

- The US is the leading source of emissions from these mega projects, with its 22 carbon bombs spanning the deep waters of the Gulf of Mexico to the foothills of the Front Range in Colorado to the Permian Basin.

    o Together they have the potential to emit 140bn tonnes of CO2, almost four times more than the entire world emits each year.

Carbon Bombs World Map

Source: Kjell Kühne, currently under submission; don't cite without author's permission

Potential CO₂-Emissions

Country	Potential Emissions
China	332.9
United States	151.1
Russian Federation	117.0
Saudi Arabia	107.1
Australia	46.3
Qatar	43.3
Canada	39.0
Iraq	27.6
India	27.0
Brazil	25.9
Iran	23.9
United Arab Emirates	23.0
Indonesia	21.9
Kazakhstan	20.3
South Africa	18.2
Kuwait	17.1
Mongolia	16.0
Turkmenistan	13.3
Mozambique	11.8
Mexico	10.3
Colombia	8.8
Venezuela	7.8
Algeria	5.8
Poland	5.6
Argentina	5.2
Pakistan	4.7
Turkey	4.1
North Korea	3.2
Germany	3.0
Norway	2.8
Libya	2.7
Serbia	2.5
Bulgaria	2.5
Uzbekistan	2.4
Denmark	2.2
Botswana	2.2
Greece	2.2
Guyana	2.1
Ukraine	1.7
Azerbaijan	1.7
United Kingdom	1.5
Bahrain	1.4
Bangladesh	1.4
Syria	1.4
Israel	1.1
Nigeria	1.0
Tanzania	1.0
Zimbabwe	1.0

- Saudi Arabia is the second biggest potential emitter after the US, with 107bn tonnes, followed by Russia, Qatar, Iraq, Canada, China and Brazil.

What is the plan for 'defusing' carbon bombs?

- The network working towards this goal is called **Leave It In the Ground Initiative (LINGO).**
- Its mission is to "leave fossil fuels in the ground and learn to live without them."
- It believes the root of climate change is the burning of fossil fuels, and the 100% use of renewable energy sources is the solution.
- LINGO **aims to organise ground support for protesting** such projects, challenge them through litigation, and conduct analysis and studies for the same.

TESTOSTERONE DEFICIENCY & THE SAFETY OF REPLACEMENT THERAPY

◉ **CONTEXT:**   **A new study found that the testosterone treatment increases the risk of cardiovascular events such as arrhythmia, heart attack, and stroke, in the short to medium terms.**

Hypogonadism:

- It is a condition caused by the deficiency of the male sex hormone, testosterone.
- **Types - There are two types of hypogonadism:** primary and central.
  - o **Primary hypogonadism** means that you don't have enough sex hormones in your body due to a problem in your gonads.
    - ➤ Your gonads are still receiving the message to produce hormones from yourbrain, but they aren't able to produce them.
  - o **In central (secondary) hypogonadism**, the problem lies in your brain.
    - ➤ Your hypothalamus and pituitary gland, which control your gonads, aren't working properly.
- **Symptoms** - Sexual dysfunction, weakening of bones and muscles, and reduced quality of life.
- Risk factors include ageing (as testosterone levels decline with age), obesity and diabetes.
- Worldwide, 2% of men aged over 40 are affected, and this is growing as the population gets older.

Testosterone replacement therapy:

- Testosterone replacement therapy is the standard treatment for hypogonadism, which can cause sexual dysfunction, weakening of bones and muscles, and reduced quality of life.
- Prescribing of testosterone for hypogonadism is increasing globally, but conflicting messages about its safety may have led to many patients not receiving the treatment.
- Impacts - Testosterone treatment significantly reduced serum total cholesterol, HDL, and triglycerides.
- However, there were no significant differences in LDL, blood pressure, glycaemic parameters, diabetes incidence, and prostate adverse outcomes.

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Hypothalamic - pituitary gland - gonadal axis, with the ductus/vas deferens

Brain

Hypothalamus

Pituitary gland

Epididymis

Ductus/vas deferens

Negative feedback

Testicle

Cross section of the seminiferous tubule, with Sertoli cells and sperm

FAST RADIO BURST

⊙ **CONTEXT:**
Astronomers have recently reported a fast radio burst (FRB) whose characteristics are different from almost all other FRBs previously detected, except one.

Fast radio burst (FRB):

- FRBs are bright flashes of light that appear for a few milliseconds and then vanish.

- The phenomenon was discovered in 2007, by graduate student David Narkevic and his supervisor Duncan Lorimer.

- The source of these highly energetic events is a mystery, but clues as to their nature are being gradually collected.

- Since 2007, 140 more were discovered until June 2021. Their origins are unknown, and their appearance is unpredictable.

Fast radio burst 20190520B:

- The new source, Fast radio burst 20190520B, was detected with the Five hundred-meter Aperture Spherical radio Telescope (FAST) in Guizhou, China in May 2019.

- It emits frequent, repeating bursts of radio waves. And between bursts, it constantly emits weaker radio waves.

- Only one FRB has been previously observed to behave this way. Called FRB 121102, which was discovered in 2012.

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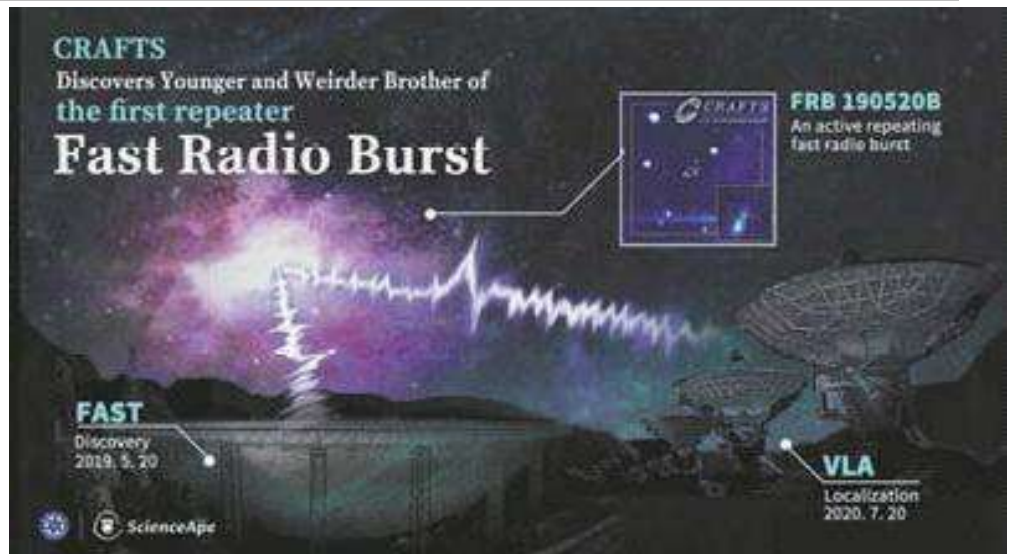
How a Burst Bursts

- Astronomers have racked up roughly 50 separate theories to explain fast radio bursts — a tally that until recently outnumbered the events.

- The ideas include a variety of wild scenarios involving evaporating black holes, snapping cosmic strings, and even the propulsion systems of alien civilizations.
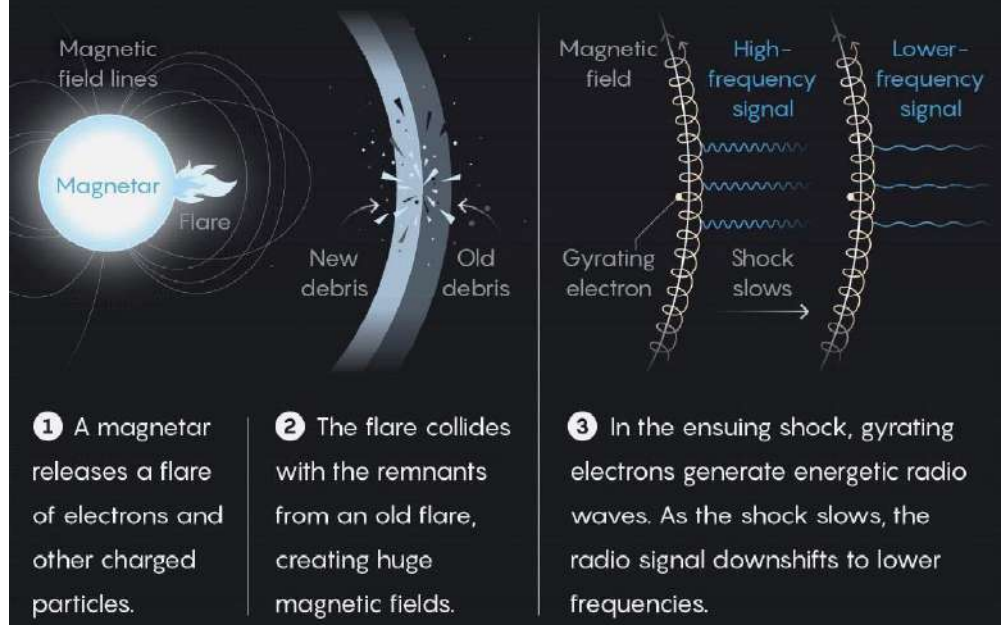
What is a magnetar?

- A magnetar is a neutron star, "the crushed, city-size remains of a star many times more massive than our Sun."

- The magnetic field of such a star is very powerful, which can be over 10 trillion times stronger than a refrigerator magnet and up to a thousand times stronger than typical neutron stars.

- Neutron stars are formed when the core of a massive star undergoes gravitational collapse when it reaches the end of its life.

NEXT-GENERATION CORVETTES

◉ **CONTEXT:**   **The Defence Acquisition Council (DAC) has given the Acceptance of Necessity (AoN) for several capital acquisition projects of the Indian defence forces.**

- **It includes the procurement of next-generation Corvettes for the Indian Navy at an approximate cost of Rs 36,000 crore.**

Corvette:

- A Corvette is the smallest class of naval ships and it falls below the warship class of a frigate.

- These are highly agile ships and are categorised as missile boats, anti-submarine ships, coastal patrol crafts and fast attack naval vessels.

- The word corvette itself is derived from French and Dutch origin.

- Corvettes date back to the 18th and the 19th century when they were extensively used in the naval warfare duels that were fought at high seas.

Corvettes that Indian Navy possess:

- The Indian Navy at present has the Kamorta Class Corvettes, which are also known as Project 28.

- These ships have an anti-submarine role and are manufactured at Garden Reach Shipbuilders and Engineers in Kolkata.

- The four Kamorta Class Corvettes that the Indian Navy possesses are named INS Kamorta, INS Kadmatt, INS Kiltan and INS Kavaratti.

- The first of these was commissioned in 2014 and the last one in 2020.
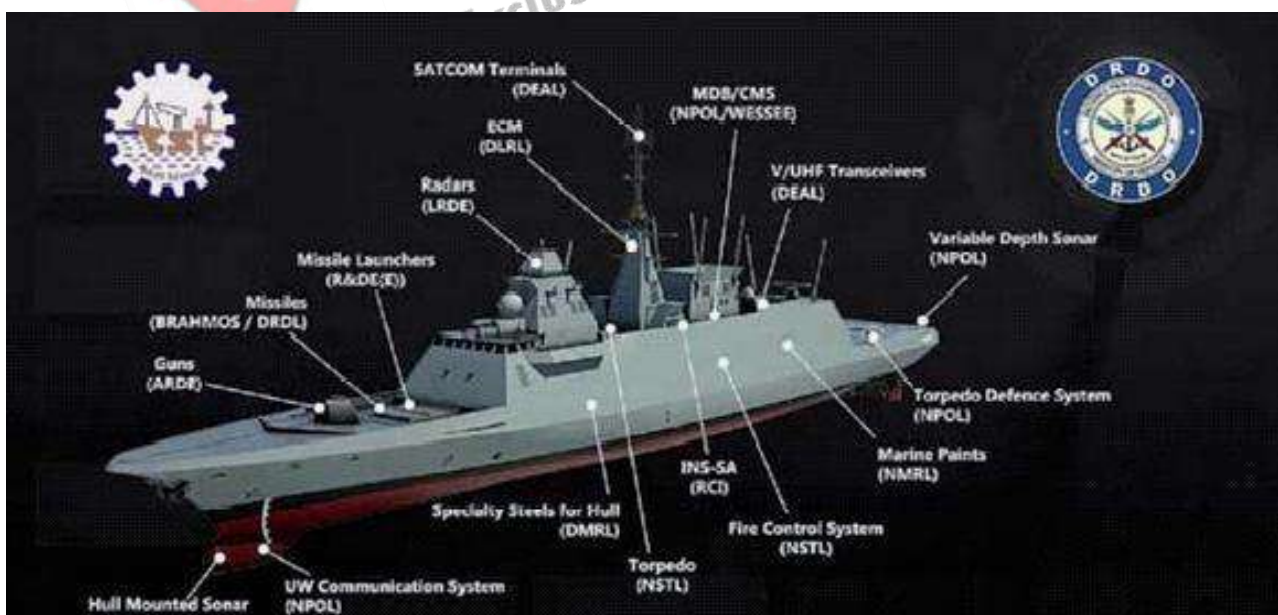
New capabilities of the new generation Corvettes:

- The next-generation Corvettes will be manufactured for various roles like **surveillance missions, escort operations, deterrence, surface action group operations, search and attack and coastal defence.**

  o These roles will be in addition to the **anti-submarine roles** being already performed by the existing Corvettes in the Navy.

- These NGCs will be built based on a **new design** developed in-house by the Indian Navy, using **state-of-the-art shipbuilding technologies** and are expected to help **promote the government's SAGAR (Security and Growth for All in the Region) initiative.**

CHINA RELEASES WORLD'S 'MOST DETAILED' MAP OF MOON

◉ **CONTEXT:**   **China has released a new geological map of the moon, which it says is the most detailed to date, registering even finer details of the lunar surface than mapped by the US in 2020.**

About the new map:

- China has released a new comprehensive geologic map of the moon to a scale of 1:2500000, the most detailed to date.

- The map includes 12,341 impact craters, 81 impact basins, 17 rock types and 14 types of structures, providing abundant information about geology of the moon and its evolution.

- The new map was first published in a Chinese science journal called the Science Bulletin.

- It is expected to make a great contribution to scientific research, exploration and landing site selection on the moon.
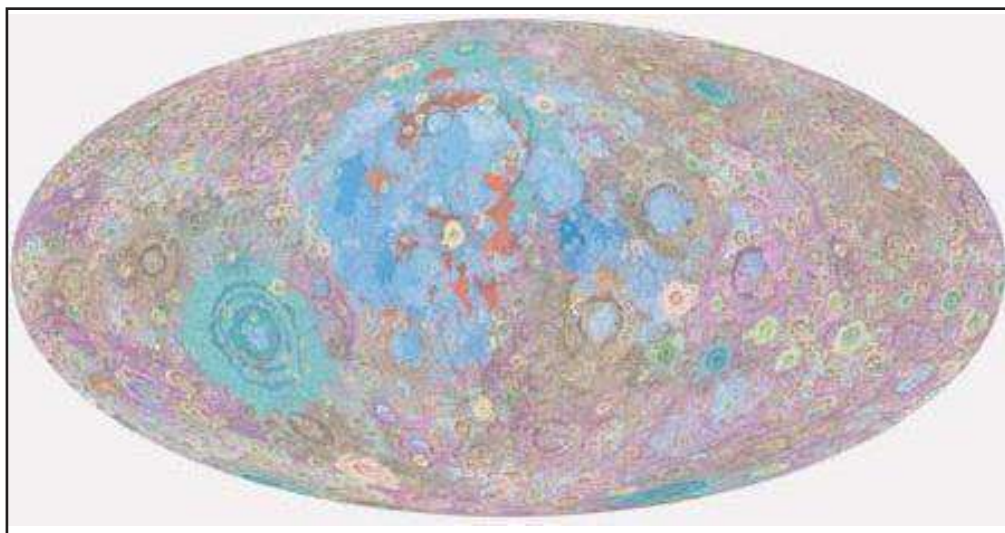
China and Moon:

- In January 2019, China's Chang'e-4 probe landed on the far side of the moon, making it the first spacecraft to touch down on the part of the moon, which is never visible from earth.

- In December 2020, China's Chang'e-5 mission has returned to Earth with the cargo of rock and "soil" it collected from the lunar surface.
- China plans to send a crewed mission to the moon in the 2030.

MADRAS HC GETS ITS FIRST WOMAN MACE-BEARER

◉ **CONTEXT:**   **In a first, the Madras High Court has appointed a woman mace bearer. Justice R.N Manjula is the first to utilise the services of the court's first woman mace bearer.**

Mace Bearer:

- The Mace bearer/ Chobdar, a position traditionally held by men, **is an officer who carries the mace and walks before a dignitary signifying the dignitary's power.**
- In courts, the mace helps in **the free passage of Judges between the court halls.**
- The mace carries significance in the history of the High Court since its presence outside a judge's chamber indicates his/presence inside the chambers and its absence indicates otherwise.

▌ **Appointment:**

o The Mace Bearer/ Chobdars are appointed through **direct recruitment by the High Court.**

o The Madras High Court, in 2021 had called for applications for filling up 40 vacancies in the post of Chobdars among others.

o The candidates are offered Pay Level- I in the band of rupees 15,700-50000.

o The appointment is done after a **common written test, a practical test and an oral test.**

- **Uniform:** While male Chobdars were expected to wear a white shirt and pant with a turban-like red cap that displays the national emblem and a band around their waist, the uniform of the woman chobdar consists of a **white salwar kameez with a dupatta, though the cap and the waist band remains the same.**

RAMSAY HUNT SYNDROME

◉ **CONTEXT**   Pop sensation Justin Bieber recently revealed that a viral disease has temporarily paralysed one side of his face.

About

- **Ramsay Hunt Syndrome:**

  o Ramsay Hunt Syndrome is neurological disease in which a **virus – Varicella Zoster –** causes inflammation of the nerves involved in facial movements.

  o When the nerves get inflamed, they lose their ability to function, leading to **temporary facial palsy or paralysis.**

  o It means that the facial muscles in the infected person cannot receive necessary signals to function properly.

  o The condition was named after **James Ramsay Hunt**, an **American neurologist** and army officer in **World War I**, who first observed and noted the condition.
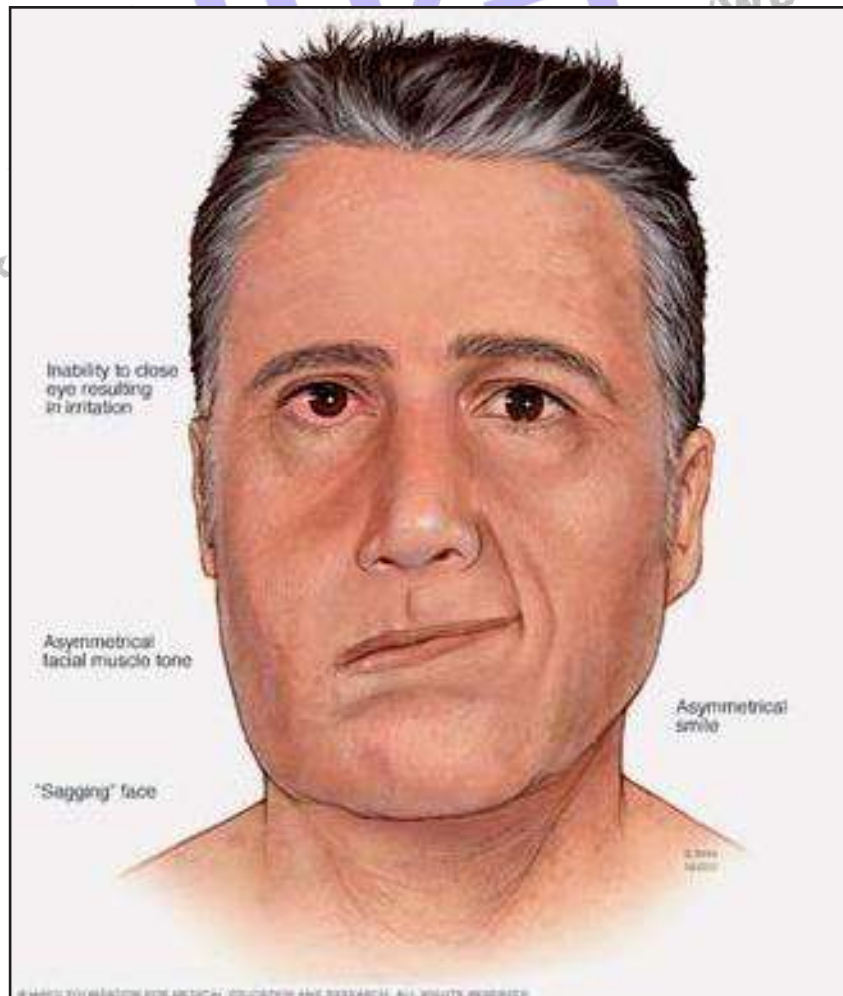
- There are **12 cranial nerves in the body**.

- Ramsay Hunt Syndrome is the viral infection impacting the 7th cranial nerve that is involved in facial movements.

- The inflammation caused by the **Varicella Zoster Virus** makes the nerve ineffective.

Symptoms of Ramsay Hunt Syndrome:

The two main signs and symptoms of Ramsay Hunt syndrome are:

- A painful red rash with fluid-filled blisters on, in and around one ear
- Facial weakness or paralysis on the same side as the affected ear

— sensory fibres
— motor fibres

Olfactory (I) sensory: nose

Optic (II) sensory: eye

Trochlear (IV) motor: superior oblique muscle

Abducent (VI) motor: external rectus muscle

Oculomotor (III) motor: all eye muscles except those supplied by IV and VI

Trigeminal (V) sensory: face, sinuses, teeth, etc.
motor: muscles of mastication

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Facial (VII) motor: muscles of the face

Hypoglossal (XII) motor: muscles of the tongue

intermediate nerve

vestibular
cochlear

Intermediate motor: submaxillary and sublingual gland
sensory: anterior part of tongue and soft palate

Vestibulocochlear (VIII) sensory: inner ear

Glossopharyngeal (IX) motor: pharyngeal musculature
sensory: posterior part of tongue, tonsil. pharynx

Vagus (X) motor: heart, lungs, bronchi, gastrointestinal tract
sensory: heart. lungs, bronchi, trachea, larynx, pharynx, gastrointestinal tract, external ear

Accessory (XI) motor: sterno-cleidomastoid and trapezius muscles

Other symptoms:

- Ear pain
- Hearing loss
- Ringing in your ears (tinnitus)
- Difficulty closing one eye
- A sensation of spinning or moving (vertigo)
- A change in taste perception or loss of taste
- Dry mouth and eyes

Virus that causes Ramsay Hunt Syndrome:

- The Varicella Zoster Virus (VZV) is the same virus that **causes chickenpox and shingles.**
- According to the US Centre for Disease Control and Prevention, this virus belongs to the **herpesvirus group and can stay in the body as a latent infection.**
- The virus can stay dormant in a person's body and can reawaken to attack the nerves.
- When reactivated due to a weakened immune system, which may be caused by anything from stress to ageing, the VZV affects the nerves near the ear on one side of the face.

Treatment:

- It is treated using anti-viral drugs, steroids and physiotherapy.
- Steroids and anti-viral drugs are the cornerstone of the treatment.

Is Ramsay Hunt Syndrome contagious?

- The disease is not contagious but can lead to chickenpox in those not vaccinated for the disease.
- Till the blister scabs fall off, the patients are advised to avoid contact with those with low immunity and the ones who have not had chickenpox, or are not vaccinated against it.

WEB 5.0

◉ **CONTEXT:**   **Former Twitter CEO Jack Dorsey recently announced his vision for a new decentralized web platform that is being called Web 5.0.**

- **It is being built with an aim to return "ownership of data and identity to individuals".**

◉ **ABOUT**   **Web 5.0:**

- "Web5 is a Decentralized Web Platform that enables developers to leverage Decentralized Identifiers, Verifiable Credentials, and Decentralized Web Nodes to write Decentralized Web Apps, returning ownership and control over identity and data to individuals".
- Web 5.0 is **being developed by** former Twitter CEO Jack Dorsey's Bitcoin business unit, **The Block Head.**
- **Web 1.0** was the first generation of the global digital communications network.
- It is often referred to as the "read-only" Internet made of static web-pages that only allowed for passive engagement.
- **Web 2.0** was the "read and write" Internet.
- Users were now able to communicate with servers and other users leading to the creation of the social web.
- This is the World Wide Web that we use today.
- **Web 3.0** is an evolving term that is used to refer to the next generation of Internet – a "read-write-execute" web – with decentralization as its bedrock.
- **Web 5.0** is aimed at "building an extra decentralized web that puts you in control of your data and identity".
- Simply put, **Web 5.0 is Web 2.0 plus Web 3.0** that will allow users to 'own their identity' on the Internet and 'control their data'.
- Both Web 3.0 and Web 5.0 envision an Internet without threat of censorship – from governments or big tech, and without fear of significant outages.

The evolution:

- The term **Web 2.0** was coined for the first time by **Darcy DiNucci in 1999** when talking about the future of the Web.
- While Web 1.0 was the beginning of the internet where users could only engage with content in a passive way (reading or viewing), **Web 2.0 gave a path to a new way for people on the internet to engage in different activities.**

- For example, rather than simply reading a website, people could comment, give an opinion or interact with those creating content.

- Web 3.0 started when **blockchain technology** appeared, even without people, developers and companies knowing what was yet to come.

- The first time that the term Web3 was used was when the co-founder of **Ethereum**, the second largest cryptocurrency in the world, Gavin Wood talked about it in

- Compared to Web 2.0 where people were just uploading content to different centralized platforms, it is nowadays possible to earn digital things and prove ownership of these things.

- For example, non-fungible tokens are a clear example of this.

- NFTs, despite the fact that they were popularized with CryptoKitties and memes, are a clear example of how virtual things and objects can exist without the need of relying on centralized networks or parties.

- **Web5's goal** is to create a unique set of tools based on Bitcoin that would change the financial system as we know it today.

- This would not only allow investors and individuals to protect and own their data, but they would also keep control over all their interactions.

- The **pillars of Web5** include **self-owned identifiers** that enable **decentralized identity authentication and routing**, **verifiable credentials** as data formats and models for cryptographic presentation and verification of claims, and **decentralized web nodes** (data storage and message relay nodes).

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PART-C

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GS III	SCIENCE & TECHNOLOGY	- **India's first Dark Sky Reserve to soon come up in Ladakh**
		- **China launches third aircraft carrier in major military milestone**
		- **China to adopt genetically modified maize and soy**
		- **First grassroots innovation-based standards formulated by Bureau of Indian Standards**
		- **'Cosmic Cannibalism'**

Section - C: QUICK BYTE

Area of GS	Topics in News
Use of Drones in Planting Trees	
Lumpy skin disease in animals	
African snails turn a menace	
First Bharat Gaurav Train to run from June 21st	
Mawsynram sets new June rainfall record at 1003 mm in 24 hours	
ADP to be extended to block, city level: PM	
How marine heatwave fuelled super cyclone Amphan	
New species of bamboo dwelling bat found in Meghalaya	

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SECTION: A (MAINS)

CURRENT AFFAIRS

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A 'MAN'S PARLIAMENT' STRIVING FOR AN INCLUSIVE INDIA

CONTEXT

Despite the share of women legislators in the Lok Sabha peaking at 15.03% as of April 2022, India is still worse than 140 countries in the representation of women in Parliament.

◉ BACKGROUND

o The 21st century has inherited the unfinished agenda of globalizing democracy in a more vibrant form.

o In many instances there is a feeling of unease about the achievement of representative democracy because of the ongoing tendency of democratic nations to exclude or marginalized large sections of society.

o This is particularly the case for women right across the world, and especially India.

- The global average for the share of women parliamentarians stood at 24.6%.
- Rwanda has the highest proportion of women in Parliament (over 60%).
- India ranks 148 out of 191 nations.

o For democracy to be truly representative and inclusive all citizens must have equal opportunities to participate within democratic processes.

◉ ANALYSIS

What is actually mean by 'women empowerment'?

o Ideally, women empowerment is not about giving several ministerial berths in a government or giving 33 per cent job reservation.

o It's about enjoying equal rights and having the freedom to choose and prioritise their lives, which will enable them to:

  ➤ feel safe, be it in their homes, office or streets

  ➤ hold important positions and lead the society

  ➤ contribute to society and have people respect them for their capabilities

An Enlightening Example

- Recently, **Droupadi Murmu**, a tribal politician, has got herself registered as the candidate for the forthcoming presidential elections.

Why we need more women in politics?

o **Reflecting the overall sex ratio-** For a country whose sex ratio is tilted towards women (NFHS-5), it cannot cater to the majority of its population if the ratio in Parliament is not the same.

o **Women centric policies-**More women in Parliament would mean more women-centric issues could be raised. For a country like India, where **women's safety** is one of the biggest issues, perhaps more attention and empathy at the top would have an enormous impact.

  ➤ For example, in parliaments or during the process of policy-making, there are not enough conversations about menstrual health. There is a dire need for better solutions like tampons and menstrual cups to reach rural areas, too, but the lack of information and access is a stark contrast to the urban population. Even in a slum area of Delhi, families still use cloth.

o **Doing away with the discriminatory laws-** For centuries, women had been discriminated against, but as society developed, women could get to the table and raise their voices against the atrocities they faced. A broad representation of women in politics would allow the reformation of discriminatory laws against the gender too.

o **Providing will to report crimes-** Political representation of women led to higher rates of crime reporting. Also it is observed that women are willing to report crime in villages with female representation in the council. Moreover, the police force is more responsive to crimes against women in areas which have gender-based affirmative action policies.

o Women leaders' investments led to **improved human development outcomes and women's entrepreneurship.**

Barriers to women's participation

- The 64-year-old former teacher, who comes from Odisha (Orissa) state, has spent decades with the BJP and had a stint as a state governor.
- If elected, she would be the **country's first tribal leader** in the top post.

o Patriarchal Politics: Politics is often seen as a male bastion, and women are discouraged from entering it on the pretext that it is not a 'feminine' profession.

o Gender stereotypes -The biggest hurdle for women in politics is the gender stereotypes in society and a discriminatory attitude in general. Even though India has had a few prominent female political leaders, most have not been put on the kind of pedestals that males in similar roles have enjoyed.

> South Asia has had the largest number of women heads of state — including **Sirimavo Bandaranaike, Chandrika Kumaratunga, Indira Gandhi, Khaleda Zia, Sheikh Hasina, and Benazir Bhutto** — of any region in the world till recently.

o **Stigma attached with politics-**Even in the 21st century, politics is still considered dirty. The norms and perceptions of our society still want women to be saints, and saints don't tread muddy paths. Hence, politics is not considered the right choice of work for females.

o **Social Conditioning-**In India, the scales of household jobs are still tilted toward women, and hence, the disproportionate setting does not enable women to fully take over in their professional space.

o **Patriarchal mindset-**Under the canopy of patriarchy, women face a myriad of problems including backlash from family members, political parties ostracizing women candidates, character assault, harassing women on the basis of their clothing choices, etc.

o Language still not gender neutral - After 75 years of Independence, and 'Azdi ka Amrit Mahotsav', Parliament often refers to women in leadership positions as Chairmen and party men. In the Rjya Sabha, the Rules of Prcedure cotinue to refer to the Vice President of India as the ex-officio Chaiman, stemming from the lack of gender neutral language in the Constitution of India.

o **Less political will:** The bill to reserve 33 per cent seats for women in Parliament and state legislatures was passed in the Rajya Sabha in 2010, but it was never introduced in the Lok Sabha.

How to create an inclusive political space led by women?

o **Women inspire women-**The first step towards encouraging more women to join politics is to have more prominent female personalities at the top and decision-making levels in parties. A more inclusive society, in general, would see a ripple effect in politics, where women would be able to take center stage.

> **Honouring women**
>
> Paintings of **Draupadi, Sita, Razia Sultana, Akka Mahadevi, Ahilya Holkar** and other women from India's mythology and history are likely to grace the walls of the **new Parliament building** being built as part of the **Central Vista redevelopment project.**

o **Education not literacy-** Education and not just literacy would go a long way in creating an inclusive political space. At the moment, an institutional degree does not hold weightage in politics, but education allows individuals to be more broad-minded, secure, motivated, respectful and empathetic.

o **Safe political environment-**For women to feel safe in a political environment, their co-workers must be sensitive, and there has to be a level of respect at all times. Educated individuals would perhaps bring that to the table.

o **Enhancing inclusivity -**To encourage inclusivity, women must have easy access to public infrastructure and facilities. There has to be a clearly-defined pathway from entering a political party to making it to the top.

o **Social awareness campaigns:** Long held prejudices against women need to be dismantled through concerted social campaigns with help of educational institutions, media, religious leaders, celebrities, political leaders etc.

> Citizen activism like **Shakti** – Political Power to Women, National Association of Women's Organizations (NAWO) and others, exert public pressure towards policies requiring half the election tickets to be accorded to women or arming the ECI with disciplining capabilities.

⦿ CONCLUSION

At the macro level, there is a need for policy initiatives to empower women and tighter implementation of existing ones to reduce the gender disparity in India. But small steps also count. Higher representation of female leaders can be a source of inspiration for others to pursue their dreams and aspirations. A concerted effort between the local and national levels can drive change. Discriminatory attitude and gender stereotyping is the result of many years of social conditioning which can be broken with inspiring examples and political support.

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AGNIPATH SCHEME, RADICAL SCHEME TO RECRUITSOLDIERS

CONTEXT

The government unveiled its new Agnipath scheme for recruiting soldiers across the three services.

◉ ANALYSIS

What is the Agnipath scheme?

o Under the new scheme, **around 45,000 to 50,000 soldiers** (called as '**Agniveers**') will be recruited annually for a short period**,** and most will leave the service in just four years.

o Of the total annual recruits, only **25 per cent** will be allowed to continue for another **15 years under permanent commission**.

o **Eligibility Criteria**: The new system is only for personnel below officer ranks (those who do not join the forces as commissioned officers).

o **Age limit**: Aspirants between the ages of **17.5 years and 21 years** will be eligible to apply. The recruitment standards will remain the same, and recruitment will be done **twice a year** through **rallies.**

o **Training**: Once selected, the aspirants will go through training for **six months** and then will be deployed for three and a half years.

Salary allocation: During this period, they will get a starting salary of INR 30,000, along with additional benefits which will go up to INR 40,000 by the end of the four-year service.

o **Employee benefits:** 30% of their salary will be set aside under **a Seva Nidhi programme**, and the Government will contribute an equal amount every month, and it will also accrue interest.

➤ At the end of the four-year period, each soldier will get **INR 11.71 lakh** as a lump sum amount, which will be **tax-free.**

➤ They will also get a **INR 48 lakh life insurance cover** for the four years. In case of death, the pay-out will be over INR 1 crore, including pay for the unserved tenure.

o **Pension:** There shall be **no entitlement to gratuity and pensionary** benefits.

What is the significance of the Agnipath Scheme?

o **Employment for Youth**: As only 25% recruits will be allowed to continue for another 15 years under permanent commission.

➤ With the average age in the forces is 32 years today, It is expected to go down to **26 in 6 to 7 years with** the implementation of the scheme.

➤ Notably, the Indian army in 1978 was more youthful than at present at the level of **Other Ranks (ORs),** with **sepoys comprising 72.6%** of a total of 8,45,025 men. Today, the number of sepoys has **fallen below 40%**.

o **Reducing Defence Bill:** A leaner force and reduced benefits will considerably decrease the defence bill, which has been a major concern for governments for many years.

➤ This year's Budget estimate on defense pension is INR 1,33,826 Crore which is 4.4% of total expenditure (0.6% of the GDP).

Agnipath Scheme

- Age 17.5-21 years
- Duration of service is four years, including training period
- 1st year salary package of Rs. 4.76 lakh (approx..) with upgradation of up to Rs. 6.92 lakh (approx.) in 4th year
- Post release: Seva Nidhi package of approx. Rs. 11.71 lakh, including interest (tax free)
- Non-contributory insurance cover of Rs. 48 lakh
- Agniveer skill certificate will assist in post release job opportunities
- 46,000 Agniveers to be recruited this year

➤ Pensions made up 28.4% of this year's defense budget. Further, the saved money can be utilized to buy state-of-art technology and equipment which are the backbone of modern warfare.

o **All India, All Class Recruitment**: The scheme will ensure 'All India, All Class' recruitment to the services. This is significant for the Army, where the regiment system has region and caste bases. These would be eliminated with time to allow anybody from any caste, region, class or religious background to become part of existing regiments.

o **Trained buffer youth:** The ex-agniveers could act as an adhoc buffer force who may be called to serve again for boosting national security in times of **external/internal threats.**

o **Economic Benefits**: The skills and experience acquired during the 4-year service will allow the soldiers to get employment in various fields. This will also lead to availability of a higher-skilled workforce to the economy which will be helpful in productivity gain and overall GDP growth.

o **Global Parity**: All major militaries in the world are undergoing reform. There is a trend towards reduction in the number of personnel and emphasis on increasing capital expenditure on modern weapons and equipment.

> **Recent reform initiatives promulgated in defence sector**
>
> - appointment of the Chief of Defence Staff (CDS)
> - establishment of the Department of Military Affairs (DMA)
> - announcement of several domestic industries—friendly procurement measures, particularly the
>   - ➤ positive indigenisation list
>   - ➤ the corporatisation of the Ordnance Factories (OFs) into seven DPSUs

What are the challenges associated with the Agnipath Scheme?

o **Exclusion of many students**: The government hopes to hire 46,000 "agniveer" this year. Although with the age limits, the recruitment may not include those who have been waiting for the hiring freeze since 2020 to end. More than a lakh vacancies have built up in the Indian Army alone over the last two years, but under the new policy, not all may be filled.

o **Diversified regiments**: The Indian Army's experimentsso far with diversity in closed regiments have yielded mixed results. There is a probability that the new scheme may do more harm than good in diversifying the static regiments.

o **Post-retirement concerns**: The ex- agniveers may have to face hardships in getting employment after 4 years of service. Especially when meaningful employment opportunities in significant or adequate numbers still elude an ever-increasing number of graduates.

➤ Further, '**trained-to-kill'** soldiers being demobilized every year could prove dangerous if they **remain jobless and frustrated.**

➤ Many believe it may lead to **militarisation of society**.

o **Short-duration training**: Many experts believe that shorter duration service could compromise on training, morale and commitment in comparison to the permanent recruits. Critics argue that agniveers may turn out of to be risk-averse with the bulk looking to secure an alternate career.

What lies ahead?

o **Proper reallocation of soldiers in alternate services**: The Government should help to rehabilitate soldiers who leave the services after four years. They can be provided with skill certificates and bridge courses that will help them in finding gainful employment.

o **Extension of Age-limit:** The age limit set up by the government is so less as it will leave many students preparing for army and other defense services for long time.

o **Sensitization of beneficiaries:** The society objects any sudden change and hence the government should handle this issue with care. The youth are future of our country and decisions related to them should be taken involving them and sensitize about the government's perspective.

◉ CONCLUSION

No reform can be fool-proof and without teething troubles. But as Agnipath Scheme concerns national defense and security, the Government will need to have a plan to anticipate and address the problems that lie beyond the bold step forward.

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DEMOLITION DRIVES MAY CHALLENGE THE RULEOF LAW

CONTEXT

Recent demolition drives in the aftermath of the Prophet Remarks row has challenged the certain basic tenets of law, including right of a person to be heard *fi*rst, and the non-arbitrary power of the state to deprive a person from his/her property.

◉ BACKGROUND

o The founder of the modern 'legal profession', **A. V. Dicey** believed that there were two principles in the British unconstitutional constitution:

➤ The sovereignty or supremacy of Parliament.

➤ The rule of law.

o Dicey therefore saw the rule of law as a barrier (though not total control) of unlimited state power over the individual.

The rule of law means that if **YOU BREAK A LAW**, you **FACE THE CONSEQUENCES**.
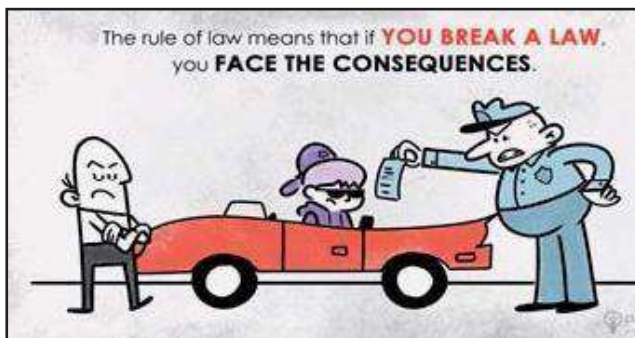
o For Dicey the law had **three key elements:**

➤ No one shall be held guilty of any penal offense on account of any act or omission which did not constitute a penal offense, under national or international law, at the time when it was committed. The power of choice can lead to thinking.

➤ No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence or to attacks upon his honor and reputation.

➤ The rule of law should not be based on any written constitution but on "common law"

o However the third aspect did not happen in India by adopting a Constitution that was made too foreign.

o In this regard not only India, many countries adopted a constitution based not on their traditional legal system but on the basis of western ideology of the 19th and 20th centuries.

o A total of three principles namely:

➤ Greatness of the Law

➤ Equality before the law and equal protection of the Act

➤ The rule of the spirit of Law or no Supreme Law other than human rights as determined by the Courts

◉ ANALYSIS

What is 'Rule of Law'?

o The rule of law is the legal principle that the law should govern the state and not by the arbitrary decisions of individual government officials.

o This is primarily related to the influence and authority of law in society, especially as a constraint on the actions of government officials.

o The rule of law doctrine begins in **England; A.V. Dicey** has three basic principles.

➤ No one is punished except for lack of arbitrariness, that is, for violating the law.

➤ **Equality under the Act:** All citizens (rich or poor, high or low, formal or informal) are equally subject to the common law of a country governed by a common court.

➤ **Personal rights advantage**, i.e. The Constitution is not the Constitution as a source of individual rights, but the result of individual rights defined and enforced by the courts.

Highlights of the issue

- **Principles of Law include:**

➢ The right of a person to be heard first, once

➢ That the state may deprive a person of his or her property only after due process and under the authority of applicable law as authorized under Section 300A of the Constitution.

- **Status of the Supreme Court:**
  ➢ Property rights under Article 300A are a human right.

  ➢ Article 300A is a powerful right. The demolition of houses was the result of political incitement by officials. Actions such as demolition were a nuclear holocaust held by problem makers.

o **Jamiat Ulama-i Hind's** application to the Supreme Court ruled that the retaliation by the Uttar Pradesh government for revenge was in violation of laws enacted by the state legislature itself.

  ➢ Refer to Section 10 of the **Uttar Pradesh Act (Building Performance Management Act) 1958** which stipulates that a building should not be demolished without giving the parties a "sound" opportunity.

  ➢ Section 27 of the Uttar Pradesh Urban Planning and Development Act, 1973 requires that the affected person be heard and given 15 days' notice before proceeding with the demolition.

  ➢ Apart from this, the Act allows a person who is dissatisfied with a severance order to lodge an appeal within 30 days.

o How they are violating several Rights of the People?

o Right to housing: The right to housing is a fundamental right recognised under Article 21 of the Indian Constitution.

o Further, it is also a well-documented right under the international human rights law framework, which is binding on India.

o As per UDHR; Article 25 of the Universal Declaration of Human Rights (UDHR) states that "everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care".

o Article 12 of UDHR prohibits arbitrary interference in an individual's right to property.

o It also stipulates that "everyone has the right to the protection of the law against such interference or attacks".

- **Supreme Court's stand:**
  ➢ The apex court in cases like **Bachan Singh vs State of Punjab, Vishaka vs State of Rajasthan, and in the Puttaswamy vs Union of India** has stated that the fundamental rights must be read and interpreted in a manner which would enhance their conformity with international human rights law.

o **International Human Rights Violation:** It is also a well-documented right under the international human rights law framework, which is binding on India.

o **Article 12** of the UDHR states that "no one shall be subjected to arbitrary interference with his privacy, family, home or correspondence or to attacks upon his honour and reputation".

What can be done further?

o **Judicial interference**: As the custodian of India's constitutional order, it is high time that the judiciary acted and imposed necessary checks on the unbridled exercise of power by the executive.

o **International agencies**: Courts should use international law to counter the nationalist-populist discourse.

o **Legal Provisions**: Any justification for a demolition drive, as a penal consequence to a criminal act is totally against established canons of criminal justice.

o **Saving the Basic structure**: The conduct of demolition drives, as a retaliatory measure, even with the avowed object to curb violence is a clear act of subversion of the principle of rule of law.

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CENTRE FOCUSES ON ACCESS TO ANGANWADI SERVICES FOR MIGRANTS

CONTEXT

The Centre has instructed state governments and their Women and Child Development (WCD) departments to ensure digitization of anganwadi services so that migrating families can continue accessing the government's Take Home Ration scheme even if they move to other states.

◉ BACKGROUND

o During the recent COVID pandemic, the country has seen unprecedented migration of workers andfamilies.

o WCD Ministry officials' says-"Migrating families often fall through the cracks and stop receiving benefits of anganwadi services when they relocate from one state to another or even between blocks and districts within a state".

◉ ANALYSIS

What are Anganwadi services?

o

Anganwadi is a type of rural mother and child care centre in India.

o They were started by the Indian government in 1975 as part of the Integrated Child Development Services program to combat child hunger and malnutrition.

o A typical Anganwadi center provides basic health care in Indian villages.

o It is a part of the Indian public health care system. Basic health care activities include contraceptive counseling and supply, nutrition education and supplementation, as well as pre-school activities.

o The centers may be used as depots for oral rehydration salts, basic medicines and contraceptives.

Grounds for migration of people

- **Economic migration** - moving to find work or follow a particular career path

- **Social migration** - moving somewhere for a better quality of life or to be closer to family or friends

- **Political migration** - moving to escape political persecution or war

- **Environmental** - causes of migration include natural disasters such as flooding, pandemic like COVID.

Challenges for migrants

o **Poor accommodation:** Vulnerable individuals, especially children, are prone to respiratory infections and gastrointestinal illnesses because of poor living conditions, suboptimal hygiene and deprivation during migration.

o **Gender specific**: Female migrants who do not have access to and are not informed about the availability of reproductive health services, including antenatal care, may receive late diagnoses, and their conditions may sometimes be life-threatening for women, mothers and their babies.

o **Susceptibility to diseases**: Migrants come from communities affected by war, conflict or economic crisis and undertake long, exhausting journeys often increase their risks for diseases, which include communicable diseases, particularly measles, and food- and waterborne diseases.

o **Lack of basic amenities:** Migrants are more likely to experience disrupted or uncertain supplies of safe food and water, especially under difficult and sometimes desperate circumstances. In these conditions, people may be more prone to use inedible or contaminated food ingredients, cook food improperly or eat spoilt food.

o **Hurdles in Inoculation:** Providing vaccination in migrants is a tremendous challenge in itself due to lack of awareness in migrants, inadequate documentation and vaccine hesitancy.

o **Political exclusion:** The political class ignores them because they don't count as votes, especially in the case of inter-state migrants.

Role of Anganwadi services in dealing these challenges

o **Anganwadi Workers will mobilize the community and facilitate them in accessing health and health related services available at the Anganwadi/sub-centre/primary health centers, such as immunization, ante natal** check-up, post-natal check-up, supplementary nutrition, sanitation and other services being provided by the government.

o Anganwadi Workers ensure that regular health and medical check-ups for women 15- to 49-years-old take place and that all women and children have access to these check-ups.

o Anganwadi Worker (AWW) guides **ASHA** in performing activities such as organizing Health Day once/twice a month at Anganwadi Centre and orientating women on health related issues such as importance of nutritious food, personal hygiene, care during pregnancy, importance of immunization etc.

o Anganwadi workers need to provide care for newborn babies and ensure that all children below the age of 6 are immunized.

o They are expected to provide antenatal care for pregnant women and ensuring that they are immunized against tetanus. In addition to this they provide post-natal care to nursing mothers.

o They make home visits for educating parents to enable mothers to plan an effective role in the child's growth and development and special emphasis on new born child.

o To identify the disability among children during her home visits and refer the case immediately to the nearest PHC or District Disability Rehabilitation Centre.

o Assist mothers to establish breastfeeding and overcome any difficulties, which is the best way to prevent malnutrition, some diseases and mortality among infants according to WHO.

o Anganwadi centers were allowed to inoculate the migrants with verification in the recent covid pandemic.

How the move will be advantageous?

o The complete digitization of the process of registration will allow the beneficiaries of one state to avail the aforesaid services in other states which will ensure that migrant families especially children can continue to get supplementary nutrition given by the government to curb the malnutrition.

◉ CONCLUSION

It's a praiseworthy move of the Centre the issues of migrants are real and undeniable. Government should ensure that each migrant must have full, uninterrupted access to a hospitable environment and, when needed, to high-quality health care, without discrimination on the basis of gender, age, religion, nationality or race.

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TRIBAL RIGHTS

CONTEXT

A public interest litigation before the Supreme Court seeks changes in two decades-old laws that restrict the sale of tribal land to non-tribal.

◉ BACKGROUND

o Ownership and access to land and forests has been critical to the tribal peoples' way of life as well, given the symbiotic relationship they share with **jal, jungle, aur jaanvar** (water, forests, and animals).

o In Jharkhand, there are two acts—**the Chhota Nagpur Tenancy Act, and the Santhal Pargana Tenancy Act**—which protect tribal peoples' right to their land, and hence **prohibit sale of their land to non-tribal populations.**

o However, over the years, there have been amendments to these acts that have weakened the position of tribal people in rural areas, and haven't helped those in urban areas either.

o At present, there are 64,000 litigations pending in the high court of Jharkhand, filed by tribal communities against these amendments.

Existing Acts in India

Chhota-Nagpur Tennacy Act

o It restricts transfer of tribal land to non-tribals.

o The CNT Act is effective in North Chhota Nagpur, South Chhota Nagpur and Palamau divisions, including areas under various municipalities and notified area committees.

o So far, the CNT Act has been amended as many as 26 times, latest in 1995.

o It is listed in the Ninth Schedule of the Constitution, so the act is beyond judicial review.

o It can only be repealed by the Parliament; the state government can only make amendments to it.

o In 1962 the Bihar government amended the CNT Act to include "economically weaker castes (EWCs)" belonging to the SC and OBC.

o The original Act applied only to the lands of Scheduled tribes (STs) and vested the power of land transfer on the plea of the right owner, with the deputy commissioner (DC).

o It notified a list of backward classes, the sale of whose land would be restricted as per the CNT Act.

Issues with the Act

- **No up-gradation of Land Rights:**

  ➤ There is poor mirroring of land records with the actual position on the ground.

  ➤ Almost nine decades after the survey and settlement of Santhal Parganas in 1932, there is no authentic record of who is currently in possession of the land.

  ➤ In case of land disputes, the standard procedure is to look up the record of rights of 1932 and deduce through the genealogy of the original tenant who the rightful possessor is today.

- **Illegal market of land:**

  ➤ Forces of demand and supply have led to the creation of an illegal market for land transfers and these cannot be legitimately recorded.

- **Fake documents:**

  ➤ Fake documents by themselves are not a problem unique to **Santhal Parganas**.

  ➤ However, what makes it especially dangerous is the fact that government records are not updated enough.

  ➤ Revenue courts cannot question the validity of a deed and this creates a huge roadblock in deciding cases since both parties produce seemingly legitimate deeds for the same piece of land in areas where transfers are allowed.

  ➤ In the absence of the transactional history of a land parcel, it becomes extremely complicated to detect forged documents.

- **Data generation:**

  ➤ There are problems with the process of data generation. Land records modernization is a brilliant tool for improving land governance however there are some nuances that ought to be noted.

  ➤ Despite extensive digitisation, land records still mirror only a tiny proportion of the actual landholdings.

- **Land mortagage:**

  ➤ Tribals not being able to mortgage their land since banks do not give loans for these lands as collateral owing to the provisions of the laws.

PUSH FOR CHOTANAGPUR AND SANTHAL

- Amendments proposed to section 21 of Chotanagpur Tenancy (CNT) Act, 1908, and section 13 of Santhal Pargana Tenancy Act, 1949

- Will allow a scheduled tribe member with agricultural land to use it for commercial purposes after following due procedure of the law

- The government will soon frame the rules of land conversion and tax, not exceeding 1% of land value

"Ratified by the tribal advisory council in January, the cabinet decision will be introduced in the state assembly for discussion. The bill will be sent to the President through the governor for assent to become law"

- Land rights will, however, remain intact, revenue and land reforms secretary KK Soan said on Tuesday. HT FILE

- **Exploitation and deprivation:**
  - ➤ The exclusion of division made exploitation of tribals in the region and even they are deprived of other governmental facilities.

- **Underdevelopment and poverty:**
  - ➤ Government schemes for development works cannot be implemented in these areas, due to which these areas remain underdeveloped and poor.

Constitutional provisions

Part X of the Constitution contains special provisions relating to administration of Scheduled Areas and tribal areas.

Article 244 (1) of the Constitution:

- Providethatthe Governormaymake regulations for the peace and good government of any area in a State which is for the time being a Scheduled Area.

- It also prohibits or restricts the transfer of land by or among members of the Scheduled Tribes in such area, regulates the allotment of land to members of the Scheduled Tribes in such area; regulate the carrying on of business as money-lender by persons who lend money to members of the Scheduled Tribes in such area.

The Panchayats (extension to the Scheduled Areas) Act, 1996:

- It provides for the extension of part IX of the Constitution relating to Panchayat to the Scheduled areas.

- The Act, inter-alia, provides that the Gram Sabha or Panchayats at the appropriate shall be consulted before making the acquisition of land in the scheduled areas for development projects and before resettling or rehabilitating persons affected by such projects in scheduled areas.

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006:

- Seeks to recognize and vest the forest rights and occupation in forest land in forest dwelling STs and OTFDs who have been residing in forests for generations.

- The responsibility for implementation of the Act lies with the States/UTs.

Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act, 2013:

- In order to ensure fair compensation and timely and proper rehabilitation of displaced tribal people across the country, adequate provisions has been made under the act.

- The Act also lays down procedure and manner of rehabilitation and resettlement (R&R) wherein R&R is an integral part of the land acquisition plan itself.

Suggestive measures

o Amendments in the act governing forest and tribal rights in the region will help.

o Control in Corruption and Strict administrative authorities can save tribal rights and their exploitation.

o Involvement of Civil societies in educating tribals.

◉ CONCLUSION

The acts were constituted in good faith and to protect the rights of the tribal peoples; however, urbanization has forced them to change their way of life to a certain extent. They are unable to unlock the potential of the land, and are being exploited by powerful elements—both within their community and outside of it. It might therefore be time to understand ground realities in greater detail, review existing provisions, and introduce amended laws that serve the interests of urban tribal peoples.

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HATE SPEECH

CONTEXT

The debate surrounding the comments by ruling party spokespersons have put the spotlight on the law that deals with criticism of or insult to religion.

◉ BACKGROUND

o India does not have a formal legal framework for dealing with hate speech.

o India prohibits hate speech through several sections of the Indian Penal Code, the Code of Criminal Procedure, and other laws which put limitations on the freedom of expression.

o Constitutionally, Article 19 gives all citizens the right to freedom of speech and expression but the said freedom of expression is subject to "reasonable restrictions" for preserving inter alia "public order, decency or morality".

What is hate speech?

o There is no international legal definition of hate speech, and the notion of what constitutes "hateful" speech is debatable.

o Hate speech is defined as any form of communication, whether spoken, written, or physical, that criticizes or discriminates against a person or a group based on their religion, ethnicity, nationality, race, color, descent, gender, or other identity factor.

Legal Provisions of Hate Speech in India

o Responsible speech is the essence of the liberty granted under **Article 21** of the Constitution.

o **Article 19(2)** of the Constitution guarantees freedom of speech and expression to all citizens of India.

o Hate speech has not been defined in any law in India. However, legal provisions in certain legislations prohibit select forms of speech as an exception to freedom of speech.

> **Legislations around Hate speech**
>
> The Indian Penal Code, 1860 (hereinafter IPC);
>
> - **Section 124A** IPC penalises sedition
> - **Section 153A** IPC penalises 'promotion of enmity between different groups on grounds of religion, race, place of birth, residence, language, etc., and doing acts prejudicial to maintenance of harmony'.
> - **Section 153B** IPC penalises 'imputations, assertions prejudicial to national-integration'.

> - **Section 295A** IPC penalises 'deliberate and malicious acts, intended to outrage religious feelings of any class by insulting its religion or religious beliefs'.
> - **Section 298** IPC penalises 'uttering, words, etc., with deliberate intent to wound the religious feelings of any person'.
> - **Section 505(1)** and **(2)** IPC penalises publication or circulation of any statement, rumour or report causing public mischief and enmity, hatred or ill-will between classes.

Some Supreme Court Judgements

- Rangila Rasool case

➤ Rangila Rasool was a tract brought out by a Hindu publisher — that had made disparaging remarks about the Prophet's private life.

➤ Cases against the first pamphlet, filed under Section 153A, were dismissed by the Punjab and Haryana High Court, which examined the question whether targeting religious figures is different from targeting religions.

➤ This debate in interpretation prompted the colonial government to enact Section 295A with a wider scope to address these issues.

Ramji Lal Modi v State of Uttar Pradesh

The constitutionality of Section 295A was challenged.

o The Supreme Court upheld the law on the grounds that it was brought in to preserve **"public order".**

o Public order is an exemption to the fundamental right to freedom of speech and expression and the right to religion recognised by the Constitution.

Ramlal Puri v State of Madhya Pradesh

o In 1973, the Supreme Court said the test to be applied is whether the speech in question offends the "ordinary man of common sense" and not the "hypersensitive man".

o However, these determinations are made by the court and the distinction can often be vague and vary from one judge to the other.

Baragur Ramachandrappa v State of Karnataka:

o A 2007 decision of the Supreme Court, "a pragmatic approach" was invoked in interpreting Section 295A.

o The state government had issued a notification banning Dharmakaarana, a Kannada novel on the ground that it was hate speech, invoking a gamut of provisions including Section 295A.

Concerns associated

o **Misuse of Laws**: Lower conviction rates for these provisions indicate that the process where a police officer can arrest without a warrant is often the punishment.

o **Violation of free speech**: Critics have pointed out that these laws are intended for the state to step in and restore "public order" rather than protect free speech.

o **Vague terms in the law**: The broad, vague terms in the laws are often invoked in its misuse.

o **Old-aged Laws**: Section 295A lie in the communally charged atmosphere of North India in the 1920s.

◉ WAY FORWARD

o Section 295A was passed in a different societal paradigm but as society has changed the law needs to change as well. If the law still reflects the ghosts of the past then there is no need for that law.

o Section 295A needs to change to accommodate both religious sentiments and freedom of expression in a harmonious manner.

o Rights of the individual need to be given the same importance as the right of the community.

◉ CONCLUSION

Hate speech needs to be understood as the starting point or origin of marginalizing a particular class of persons under 'fear of threat'. It should not be protected in the name of freedom of speech, otherwise it will lead to violation of principles on which Indian democracy is built on.

****

INTER-STATE COUNCIL

CONTEXT

Tamil Nadu CM has urged the central government to increase the frequency of Inter-state council meetings to strengthen the spirit of cooperative federalism.

⦿ BACKGROUND

o The Constitution of India provides for a polity, which clearly defines spheres of authority between the Union and the States to be exercised in the fields assigned to them.

o Consistent with this, the Constitution has made an elaborate distribution of powers between the Union and the States in the areas of legislative, administrative and financial powers.

o The Union Government, constituted a Commission in 1988 under the Chairmanship of Justice **R.S. Sarkaria** to review the working of the existing arrangements between the Union and the States.

o One of the important recommendations of **Sarkaria Commission** was for establishing a permanent Inter-State Council as an independent national forum for consultation with a mandate well defined in accordance with **Article 263** of the Constitution of India.

⦿ ANALYSIS

What is Inter-state Council?

o This is an established mechanism "to support coordination and cooperation between nations and between Indian nations".

o The Interstate Council was established in accordance with Article 263 of the Constitution, which states that the President may establish such an institution if the need arises.

o The council is basically intended to serve as a forum for discussions between different governments.

Important role

o The Intergovernmental Council is a counselling body empowered to study and discuss common concerns between federal and states, or between states.

o There are also recommendations for better coordination of policies and actions on these subjects, as well as advice on general concerns for the State, which may be delegated by the Chair.

o It also considers other matters of general interest to the State that the Chair may refer to the Board.

o The Council can meet at least three times a year. There is also a standing committee of the council.

What are the major objectives of the Council?

o **Spirit of Cooperative federalism:** Establish a strong institutional framework to promote and support national cooperative federalism and revitalize councils and zone councils by organizing regular meetings.

o **Facilitates discussions** by the Zone Council and the Interstate Council on all pending and new issues of interstate and interstate relations.

o **Develop a robust system** to monitor the implementation of the recommendations theymake.

Why this Council matters?

o The ISC is the only multilateral central national forum that operates directly within the framework of the **Constitution (Articles 263 (b) and (c)), issues such as GST, disaster management, terrorism, internal security, etc.**

o ISC's constitutional approval puts the state on a stronger foundation. This is an essential element in building the collaborative atmosphere needed to coordinate relations between the intermediaries. The

o Council helps fill the lack of trust between the center and the state. If it wasn't always the problem solver, it at least acted as a safety valve.

What are the major challenges and issues?

o **Advisory in nature:** Studying and discussing issues of common interest to some or all states or central governments is the only advisory body.

o **Non-permanent body; on President's discretion:** The Intergovernmental Council is not a permanent constitutional body for coordination between the state and the central government. Rather, the president can appoint him whenever he thinks it is in the public interest to establish such a council. The

o **Interstate Council** is to meet three times a year. The Inter-governmental Council has held only 12 meetings since its inception in 1990. Ten years have passed between the 10th meeting in 2006 and the 11th meeting in 2016, and the board reunited in November 2017.

o ISC also needs a **Secretary-General** to make regular meetings more fruitful.

◉ CONCLUSION

Inter-State Council is a recommendatory body with duties to investigate and discuss the subjects of common interest between the Union and State(s)

or among the States, making recommendations particularly for better coordination of policy and action on these subjects and deliberating upon such other matters of general interest to the States which may be referred to it by its Chairman. The Council also deliberates upon such other matters of general interest to the States as may be referred by the Chairman to the Council.

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FREEBIES ARE GOOD OR BAD

CONTEXT

The newly elected Punjab government's announcement of providing up to 300 units of free power to every household has again raised questions—whether freebies are 'good or bad' for the economy.

◉ **BACKGROUND**

o The freebie culture was started by the Tamil Nadu state government, where the government promised free sarees, pressure cookers, television, washing machines and more.

o The **Amma Canteen** was also a huge success.

o In the north, it all started from Delhi, where the government promised free electricity, water, bus travel.

◉ **ANALYSIS**

What are freebies?

Freebies can be defined as something without charge or cost. It is a very well-known and widespread practice during election.

o Freebies that are usually distributed include **goods** like bicycles, smart phones, TVs, Laptops and **waivers** on bills (water, electricity, etc.)

> **Merit good vs public goods**
>
> - There is need to distinguish between the concept of merit goods and public goods on which expenditure outlays have overall benefits.
>
> - Public goods are provided to the entire society. Merit goods are provided to targeted individuals. Hence in the case of merit goods, there is exclusion. On the other goods, there is no exclusion under public goods.

Are freebies and subsidies needed for developing nations like India?

Despite several impacts on the fiscal management of the government, it becomes very important for the developing nation to incentivize such subsidies and freebies because of various reasons:

o **Food security:** To ensure proper Food Security and the **Right to Food** as a fundamental right under **Article 21** of the constitution it becomes mandatory for the government to implement schemes for subsidized food.

o **Better Demography**: Ensuring nutritious food to the citizens can create healthy and productive demography and help in the creation of Human Capital.

o **SDG goals:** Sustainable Development Goals have objectives to eradicate hunger (SDG-2) and good health and wellbeing (SDG-3) which can be achieved by the subsidized food schemes in developing nations.

o **Farmers Welfare:** India faces severe cases of farmers' distress; to improve the condition of the rural economy government needs to ensure schemes and freebies.

o **Social Welfare and security**: The welfare principle of the state encourages the states to introduce such schemes to promote social welfare and reduce inequality in society.

o **Reducing social inequality**: Providing food for all can reduce the prevailing social inequalities on various grounds.

o **Gender Equality (SDG-5)**: To reduce gender inequality and provide a secure social status and recognize all the gender and their sexual orientation it becomes a compulsory step for the government to take such steps.

o **Induce demand**: During the slowdown and low demand phase these subsidies and freebies can induce demand in the market that can bring up the growth at a certain level.

> **Obligation on State**
>
> - In India, every citizen has a divine right to produce children and Government has the unlimited duty and responsibility to feed, educate, provide education, health, employment to each of the children.
>
> - The sole responsibility for bringing the population to this passe lies with the politicians.

Arguments in support of freebies

o **Ensuring basics:** The very basic argument in favor of freebies is that it the prime duty of the government to ensure basic needs like food, electricity, water etc. of the citizens, specially the underprivileged section.

o **Helping the marginal section:** Freebies enable

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the government to address the concerns of marginalized sections of the society.

o **Revival of economy:** Freebies, at times, have the potential to boost consumption and ultimately help in reviving the economy.

o **Mitigation of income gaps; reducing inequality:** Freebies assist in mitigating the income gap between the rich and the poor in the same manner the methods like 'progressive taxation' do.

Arguments in against of freebies; the dangerous nature of freebies

o **Distorted expenditure priorities:** Freebies undercut the basic framework of macroeconomic stability. The politics of freebies distorts expenditure priorities.

o **Fiscal deficit:** Freebies accounts for the economic burden on public exchequer and may lead to fiscal deficit.

o **Not 'actually' free:** Freebies are not free i.e. be it today or tomorrow ultimately tax payers have to bear the brunt

o **Tax avoidance:** People are generally become motivated to conceal their income in order to get freebies, also tax avoidance will happen that ultimately lead to revenue loss for the state.

o **Exploitation of resources:** Resources, provided for free are generally not valued as precious and won't be exploited optimally.

o **Inefficiency and corruption:** Freebies are accused of bringing down the productivity of masses and make them inefficient and reduce them to put minimal effort. At times lead to corruption in government offices.

Can the Election Commission regulate freebies?

o Offering freebies either before or after elections is a policy decision of a political party, and it cannot regulate state policies and decisions taken by the parties.

◉ WAY FORWARD

o Culture of freebies is neither sustainable nor beneficial for the society at large. However, certain leverages and economic assistance are always welcomed for the upliftment of the marginalized section of the society and the people living below poverty line. It can be done through the schemes like MANERGA, direct benefit transfers; PDS so on and so forth.

o Government should use the money spent on freebies in employment generation and infrastructural development as advised by Madras HC which will lead to fiscal stimulus and capacity building of masses.

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THE WORLD COMPETITIVENESS INDEX 2022

CONTEXT

Recently, the annual World Competitiveness Index was released by the Institute for Management Development (IMD).

⦿ BACKGROUND

o The **World Competitiveness Index** is a comprehensive annual assessment that serves as a global benchmark for country competitiveness.

o Global Indices and India's Rankings represent the country's performance on indicators that range from social to economic factors along with political indicators as well.

o IMD is a **Swiss foundation**, based in Switzerland, dedicated to the development of international business executives at each stage of their careers.

o The IMD **World Competitiveness Yearbook (WCY),** first published in 1989, is a comprehensive annual report and worldwide reference point on the competitiveness of countries.

Key Highlights of the Report

- **Top Global Performers:**

  ➤ **Europe: Denmark has moved to the top of the 63-nation list** from the third position last year, while Switzerland slipped from the top ranking to the second position and Singapore regained the third spot from fifth.

  ➤ **Asia**: The top-performing Asian economies are Singapore (3th), Hong Kong (5th), Taiwan (7th), China (17th) and Australia (19th).

  ➤ **Others**: Both Russia and Ukraine were not assessed in this year's edition due to the limited reliability of data collected.

- **India's Performance: Performance on four Parameters:**

  ➤ **Economic performance**: It has improved from **37th** in 2021 to **28th** in 2022.

  ➤ **Government efficiency**: It has improved from **46th** in 2021 to **45th** in 2022.

  ➤ **Business efficiency**: It saw a huge improvement from 32nd rank in 2021 to 23rd in 2022.

  ➤ **Infrastructure:** It on the other hand, saw no change at **49.**

⦿ ANALYSIS

How are rankings computed?

o The essential building block for the rankings is the **standardized value for all the criteria** (i.e., STD value).

o The first step is to compute the STD value for

WORLD COMPETITIVENESS RANKING 2022
Asia-Pacific economies' 2022 Competitiveness Scores and Ranking

each criterion using the data available for all the economies.

o Then they rank the economies based on the criteria that are used in the aggregation: **a combination of hard and survey data.**

Reasons for India's Good Performance

o Major improvements in the context of retrospective taxes in 2021

o Re-regulation of a number of sectors, including drones, space and geo-spatial mapping.

o Significant improvement in the competitiveness of the Indian economy

o India as a driving force in the global movement to fight climate change and India's pledge of net-zero by 2070 at the COP26 summit also sits in harmony with its strength in environment-related technologies in the ranking.

What are the recent steps taken by India to increase its Competitiveness?

o **Towards Increasing Manufacturing Capacity**: India has made appreciable efforts to ensure resilience in manufacturing capacity such as via **Atmanirbhar Bharat** and **Make in India** initiatives which are aimed at domestic supply chains and heavy investment in manufacturing hubs.

o **The government has introduced the Production-Linked Incentive (PLI)** Scheme in various sectors for enhancing India's manufacturing capabilities and exports.

o **Technological Advancement**: To facilitate technological advancement for increasing competitiveness, India's Department of Telecom (DoT) has constituted six task forces on 6G technology.

o The **Ministry of External Affairs**, through its **New, Emerging And Strategic Technologies (NEST) division** is also ensuring India's active participation in international forums on technology governance.

o It acts as the nodal division within the ministry for issues pertaining to new and emerging technologies and assists in collaboration with foreign partners in the field of technology.

India's strength

o The top five attractive factors of India's economy for business are –

➤ A skilled workforce

➤ Cost competitiveness

➤ dynamism of the economy

➤ high educational level

➤ Open and positive attitudes

Weaknesses

o The challenges that India faces include;

➤ Managing trade disruptions and energy security

➤ Maintaining high GDP growth post the pandemic

➤ Skill development and employment generation

➤ Asset monetisation and resource mobilisation for infrastructure development

◉ WAY FORWARD

o A nation that ensures balance between economic and social progress can enhance its productivity, followed by creating competitiveness and thus, prosperity.

➤ Therefore, it is necessary to create an environment which not only pushes the businesses to compete successfully in local as well as international markets but ensures that the average citizen's standard of living also improves.

o Governments need to provide an environment characterized by efficient infrastructures, institutions and policies that encourage sustainable value creation by the enterprises.

◉ CONCLUSION

An economy's competitiveness cannot be reduced only to GDP and productivity because enterprises also have to cope with political, social and cultural dimensions. Governments therefore need to provide an environment characterized by efficient infrastructures, institutions and policies that encourage sustainable value creation by the enterprises.

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CABINET APPROVES MEGA 5G AUCTION

CONTEXT

The Union Cabinet has approved the auction of airwaves capable of offering *fi*fth generation, or 5G, telecom services, including ultra-high-speed Internet, and gave its nod for setting up of captive 5G networks by big tech *fi*rms.

a **The auction of over 72 GHz of the spectrum will be held by 2022 July-end.**

◉ BACKGROUND

o Devices such as cell phones and wire line telephones require signals to connect from one end to another.

o These signals are carried on airwaves, which must be sent at designated frequencies to avoid any kind of interference.

o The **Union government** owns all the publicly available assets within the geographical boundaries of the country, which also include **airwaves.**

o With the expansion in the number of cell phone, wire line telephone and internet users, the need to provide more space for the signals arise from time to time.

o To sell these assets to companies willing to set up the required infrastructure to transport these waves from one end to another, the central government through the **DoT auctions these airwaves.**

o These airwaves are called **spectrum,** which is subdivided into bands which have varying frequencies.

o All these airwaves are sold for a certain period of time, after which their validity lapses, which is generally set at **20 years.**

5G Spectrum

- **About 5G Technology:**

➤ It is the latest upgrade in the Long-Term Evolution (LTE) mobile broadband networks with reduced latency than 4G.

➤ 5G technologies offer an extremely low latency rate, the delay between the sending and receiving information.

➤ From 200 milliseconds for 4G, 5G brings it down to 1 millisecond (1ms).

➤ It works in three bands of the spectrum with their respective pros and cons.

- **Low Band Spectrum:**

➤ It shows great promise in terms of coverage and speed of internet and data exchange with a maximum speed limited to 100 Mbps (Megabits per second).

➤ Telcos can use and install it for commercial

Need for speed

A look at how 5G compares to previous technologies. 5G's maximum data speed is 10 times higher than the presently used 4G

Year	Generation	Maximum data speed
1979	1G	none (voice only)
1991	2G	14.4 Kbps
2000	2.5G	53.6 Kbps
2001	3G	384 Kbps
2010	4G	100 Mbps
2020	5G	1 Gbps

SOURCE: GRAPHIC NEWS

cellphone users who may not have specific demands for very high-speed internet.

➤ It may not be optimal for the specialised needs of the industry.

- **Mid-Band Spectrum:**
  - ➤ It offers higher speeds compared to the low band but has limitations in terms of coverage area and penetration of signals.
  - ➤ It may be used by industries and specialised factory units for building captive networks that can be molded into the needs of that particular industry.

- **High-Band Spectrum:**
  - ➤ It offers the highest speed of all three bands, but has extremely limited coverage and signal penetration strength.
  - ➤ Internet speeds have been tested to be as high as 20 Gbps (gigabits per second).

o **Importance:** Operators will use a combination of different spectrum bands to deliver 5G services, and it will play a critical role in determining the speed and range of coverage.

Benefits of 5G Technology:

o **Healthcare:** Healthcare providers can create sensor networks to track patients and share information faster than ever before.

o **Public Safety:** A vast network and rapid response times mean that public works can respond to incidents and emergencies in seconds rather than minutes, and municipalities can react fast and with reduced costs.

o **Autonomous Vehicles:** 5G will allow vehicles to communicate between them and with infrastructure on the road, improving safety and alerting drivers to travel conditions and performance information.

o

Regulating Body: Telecom Regulatory Authority of India (TRAI)

- **Need**: The entry of private service providers brought with it the inevitable need for independent regulation.

- TRAI was, thus, established with effect from 20th February 1997 by an Act of Parliament, called the **Telecom Regulatory Authority of India Act, 1997.**
  - ➤ It was made to regulate telecom services, including fixation/revision of tariffs for telecom services which were earlier vested in the Central Government.

➤ TRAI's mission is to create and nurture conditions for growth of telecommunications in the country in a manner and at a pace which will enable India to play a leading role in emerging global information society.

- **Objective:** One of the main objectives of TRAI is to provide a fair and transparent policy environment which promotes a level playing field and facilitates fair competition.

- **Regulations issued**: In pursuance of above objective TRAI has issued from time to time a large number of regulations, orders and directives to deal with issues coming before it and provided the required direction to the evolution of Indian telecom market from a Government owned monopoly to a multi operator multi service open competitive market.

- **Role and functions:** The directions, orders and regulations issued cover a wide range of subjects including tariff, interconnection and quality of service as well as governance of the Authority.

- The TRAI Act was amended by an ordinance, effective from 24 January 2000, establishing a Telecommunications **Dispute Settlement and Appellate Tribunal (TDSAT)** to take over the adjudicatory and disputes functions from TRAI.

Global scenario

o More than governments, global telecom companies have started building 5G networks and rolling it out to their customers on a trial basis.

o In countries like the US, some companies have taken the lead when it comes to rolling out commercial 5G for their users.

o A South Korean company, which had started researching on 5G technology way back in 2011, has, on the other hand, take the lead when it comes to building the hardware for 5G networks for several companies.

Where does India stand in the 5G technology race?

o On par with the global players, India had, in 2018, planned to start 5G services as soon as possible, with an aim to capitalize on the better network speeds and strength that the technology promised.

o Indian private telecom players have been urging the DoT to lay out a clear road map of spectrum allocation and 5G frequency bands so that they would be able to plan the rollout of their services

accordingly.

- One big hurdle, however, is the lack of flow of cash and adequate capital with some companies due to their AGR dues.

Benefits for India after auction of 5G services

o **Revenue generation:** The auction process will generate revenue for the government as well as make companies to involve in contributing for societal benefits.

o **Less departmental burden:** Work load of technological advancements in every field has made the departments full with less time for other developmental projects.

o **Privatization of Infrastructure**

o **More Bidders availability**

o **More efficient services of 5G**

o **Better implementation:** The implementation of 5G technologies will now be included to rural areas also with the help of private players.

◉ CONCLUSION

The decision to auction spectrum by the government is determined by various factors- technological, regulatory as well as economic factors. It can be influenced by the prevailing policy conditions, advances in the technology, the conditions associated with auction and the price of the spectrum. The auction therefore can be graded successful or failure due to many attributes.

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WATER RESOURCE MANAGEMENT IN INDIA

CONTEXT

Bangladesh and India has agreed to boost cooperation in the areas of common rivers and water resource management.

◉ BACKGROUND

o India has only 4% of the World's freshwater, but 18% of the world's population.

o The main source of freshwater is the monsoon, with annual rainfall of approximately 4000 BCM (1 billion cubic meters), equivalent to 1170 mm of rainfall.

o Most of the Indian states depend upon monsoon for its water requirements. At the same time, some northern states have excess water, while some states such as Maharashtra, Tamil Nadu, and Rajasthan are short of water.

o In 1951, India's per capita water availability was 5177 cubic meters, but in 2011 it was reduced to 1545 cubic meters and is expected to decrease further to 1300 cubic meters by 2030.

◉ ANALYSIS

What is water resource management?

o Water Resources Management (WRM) is the process of planning, developing, and managing water resources, in terms of both water quantity and quality, across all water uses.

o It includes the institutions, infrastructure, incentives, and information systems that support and guide water management.

What are major driving factors behind such vulnerability?

o **Resource exploitation**: Excessive use of groundwater for irrigation in agriculture also puts pressure on resources.

o **Consumption through agriculture**: India is one

Where is Earth's Water?

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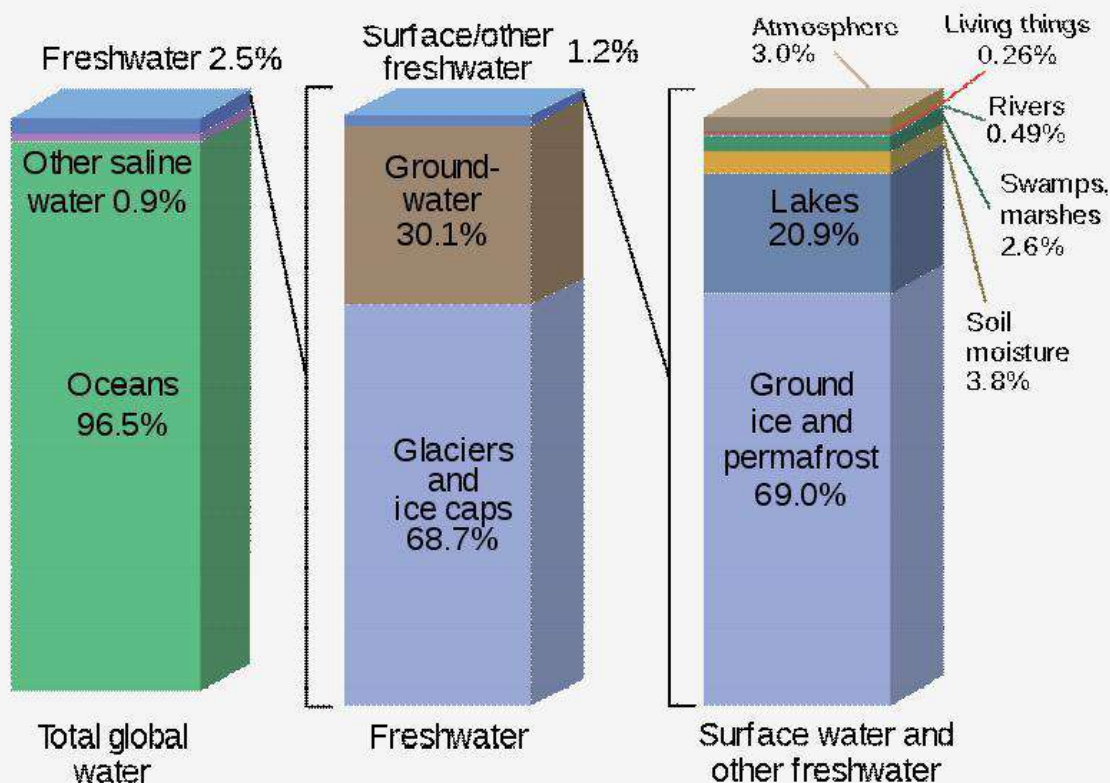
of the world's leading agricultural producers, so it is also one of the countries with the highest water consumption of land and crops. The water source of is contaminated with biological pollutants. The amount of solid waste is also increasing in the waters of India.

o **Lack of traditional conservations methods**: The decline in traditional water reclamation areas, and the discharge of sewage and sewage into traditional waters, exacerbates the country's water scarcity situation.

o **Increasing Population**: The demand for water is further increasing due to the increase in demand due to population growth, industrialization and rapid urbanization.

What are the major issues?

o Freshwater shortage: India's waterdemanddepends primarily on the monsoon. Environmental changes and population growth are of concern, coupled with the general lack of long-term availability of water resources.

o Unsafe and poor quality: Despite improved drinking water, many other water sources are contaminated with both biological and chemical pollutants, with more than 21% of national illnesses associated with water. Also, only 33% of the country has access to traditional hygiene. This makes clean drinking water unavailable and jeopardizes the health of Indians.

o Groundwater Stress: Many rural communities in India around urban sprawl also have no choice but to drill wells to access groundwater sources. There is no easy answer for India, which needs to develop water sources for food and human consumption, but India's overall water availability is very tense.

o Demographic Needs: Children in 100 million households across the country are short of water and every one in two children is malnourished. Environmental justice needs to be restored in India so that families can raise their children with dignity. Providing water to the community is one way to ensure that opportunity.

o Corruption and Lack of Planning: India's water crisis is often blamed on lack of government planning, increased privatization of businesses, industrial and human waste, and government corruption.

Improvements in Water resource management

o Water availability does not depend solely on ecological conditions. The river was tamed, managed and managed here to serve the economy, people and states. However, management and exploitation (i.e., management patterns of

these rivers) have created social and economic inequalities, and sometimes even dramatic ecological consequences.

o **Corporate social/Environmental responsibility:** Due to heightened tensions at various levels, government agencies are new to water management to better integrate stakeholders and users in different countries, regions and regions of the agricultural, industrial and drinking water sectors.

o **Integrated water management:** The new approach needs to focus on integrated water management, which is closely related to river basins. Water flows according to the nature of river's regime and earth's topography and does not respect administrative boundaries, so water must be managed in an integrated, science-based manner.

o **Harvesting techniques:** Most water is moved or dried instead of being used, so a rainwater harvesting program needs to be devised and implemented. The collected water can be used immediately for agriculture and can be consumed immediately by humans with improved filtration methods to reduce aquatic pathogens.

o **Eliminate the root causes**: Rather than relying on quick fixes based on flawed logic, city and state agencies need to focus on addressing the root of the problem. Depletion of reservoirs in general, especially deterioration of water table. Government regulations are needed to limit the amount of groundwater that households can extract. This water should be weighed and priced.

Other government measures

- River basin planning
- Interlinking of Rivers
- Watershed management program
  ➤ PM Krishi Sinchai Yojana
  ➤ Neeranchal Watershed Management

⦿ CONCLUSION

The most important crops of India — rice, wheat and sugarcane, are the most water consuming crops. Rice which is a major export crop consumes about 3,500 liters of water for a kilogram of grain produced. Further with constant population increase and depletion in water resources water management will increasingly become more difficult in future. The picture of the same is visible in precipitating crisis of water in southern states. Water management needs to be the central focus of efforts in the agriculture sector and the environment improvement.

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SECTION: B
(PRELIMS)

CURRENT AFFAIRS

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NEW MAP OF EARTH'S TECTONIC PLATES

◉ **CONTEXT:**   Researchers have carried out a new study that includes an updated map of the earth's tectonic plates.

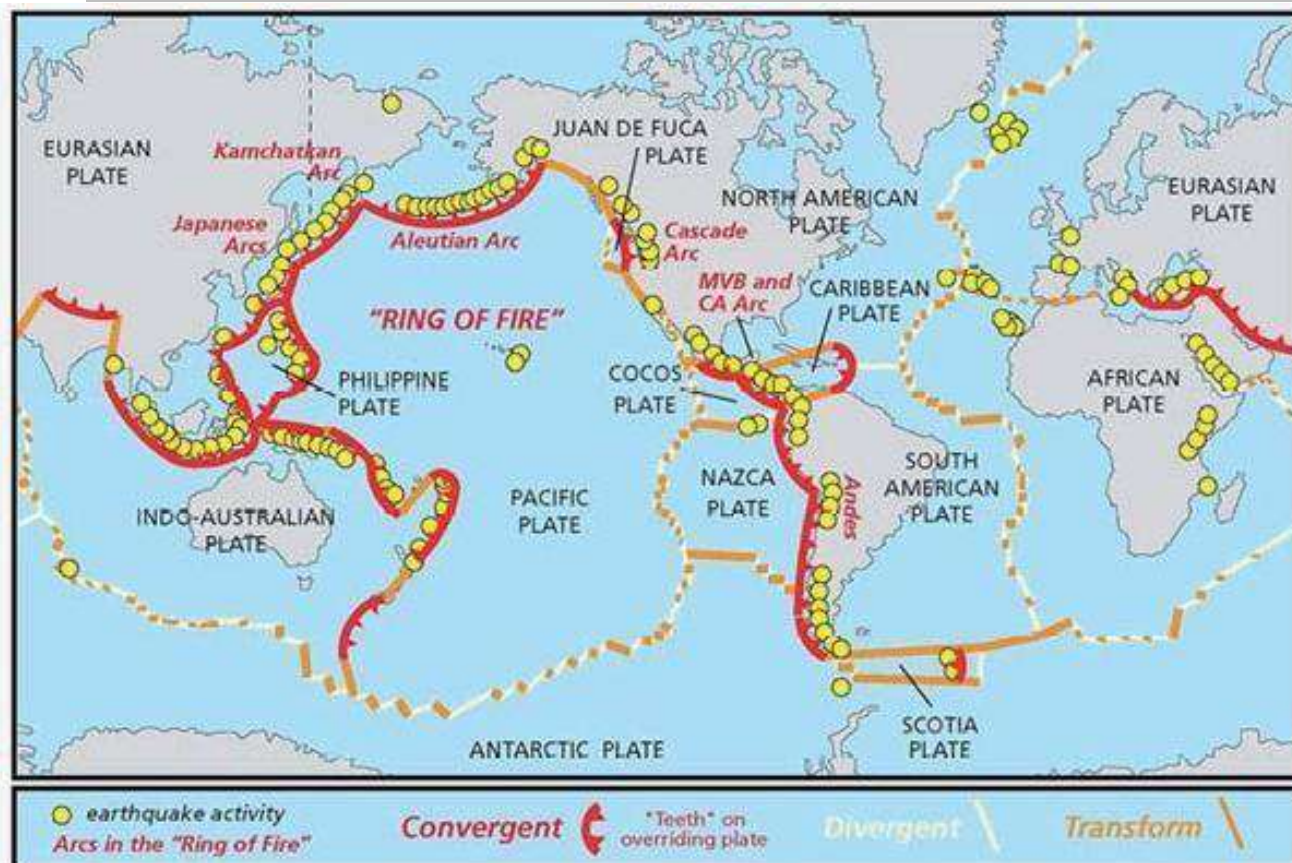- **It sheds light on how past continents were formed by tectonic movements; new micro plates have been added with existing plates.**

◉ **BACKGROUND:** **Background**

- The plate models are used to evaluate risks from natural hazards whereas the province model can be used for further exploration of minerals and the orogeny model for a better understanding of the evolution of the earth.
- There is a need for re- mapping the tectonic plate boundaries to redefine the present day movements and plate behaviour.
- The last study regarding the maps where done in 2003.

What is plate tectonics?

- In plate tectonics the outermost part of the Earth – the crust and uppermost mantle – are viewed as acting as a single mechanical layer, the lithosphere.
- The lithosphere is divided into separate "plates" that move relative to each other on the underlying, relatively weak asthenosphere in a process ultimately driven by the continuous loss of heat from the Earth's interior.
- There **are three main types of plate boundaries**:
  o Divergent, where plates move apart from each other and new lithosphere is formed in the process of sea-floor spreading;
  o Transform, where plates slide past each other, and
  o Convergent, where plates converge and lithosphere is "consumed" by the process of subduction.
- This is a list of the **15 major tectonic plates**:
  o African Plate
  o Antarctic Plate
  o Arabian Plate
  o Australian Plate
  o Caribbean Plate
  o Cocos Plate
  o Eurasian Plate
  o Indian Plate
  o Juan de Fuca Plate
  o Nazca Plate
  o North American Plate
  o Pacific Plate
  o Philippine Plate
  o Scotia Plate
  o South American Plate

New Vs Old Model of Mapping

- The new model for tectonic plates better explains the spatial distribution of 90 per cent of earthquakes and 80 per cent of volcanoes from the past two million years whereas existing models only capture 65 per cent of earthquakes.

- The continents were assembled a few pieces at a time, a bit like a jigsaw.

- But each time the puzzle was finished, it was cut up and reorganised to produce a new picture. The study helps illuminate the various components so geologists can piece together the previous images.

- The researchers combined three models to map the new geological provinces and tectonic plates:
  o A plate model based on the existing knowledge of tectonic plates
  o A province model based on the geological information of the earth's surface
  o An orogeny model based on the process of mountain formation which is triggered when two tectonic plates collide.

- There **are 26 orogenies** (the process of mountain formation) that have left an imprint on the present-day architecture of the crust.

- Many of these are related to the formation of supercontinents.

- The new study added several new microplates to the existing tectonic plate model like the Macquarie microplate which sits south of Tasmania and the Capricorn microplate that separates the Indian and Australian plates.

- The biggest update to the existing plate model has been in western North America. The newly delineated boundary is much wider, approximately 1,500 km, than the previously drawn narrow zone.

- The other large change is in central Asia. The new model now includes all the deformation zones **north of India** as the plate bulldozes its way into Eurasia.

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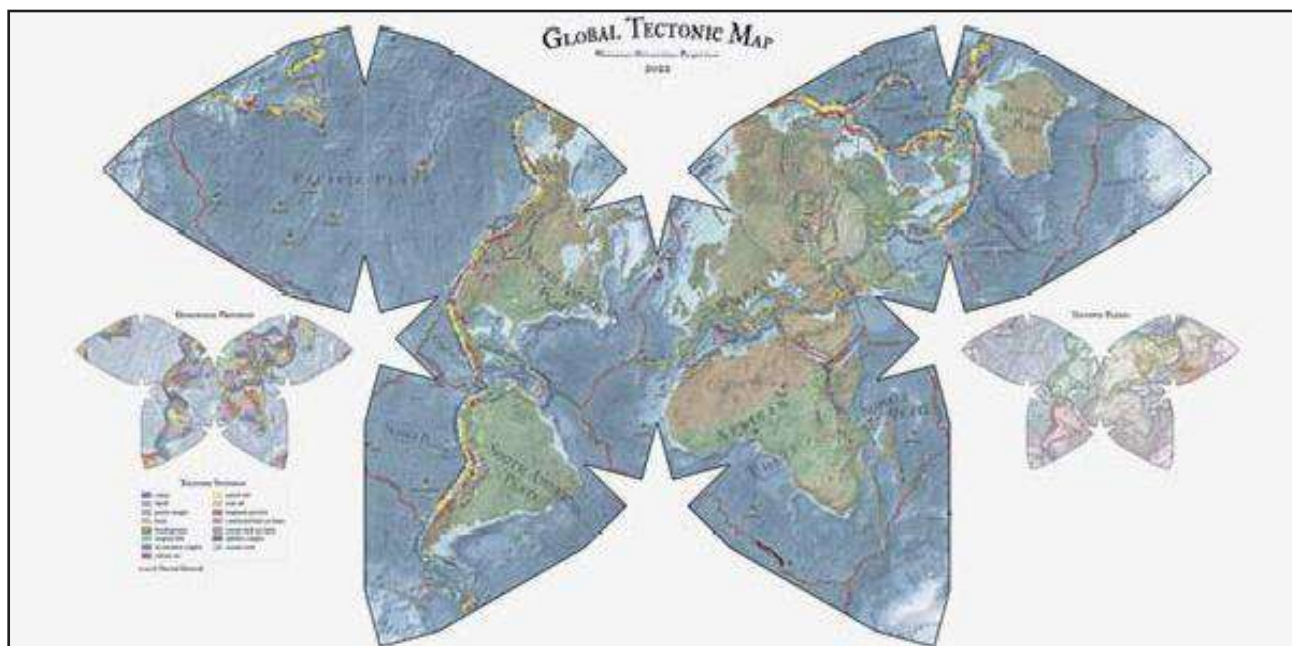
Fig. The New Mapping

WHAT WEST SETI POWER PROJECT CAN MEAN FOR INDIA-NEPAL TIES

◉ **CONTEXT:** **India will be taking over an ambitious hydropower project in Nepal, West Seti, nearly four years after China withdrew from it.**

About:

- The Government of Nepal has decided to hand over the agreement of the 750-megawatt (MW) West Seti Hydropower Project and 308 MW SR6 Storage Hydroelectric Project to India's National Hydro Power Company Limited (NHPC).
- West Seti is a 750MW hydro power project.
- It is planned on West Seti river/basin in Seti, Nepal.
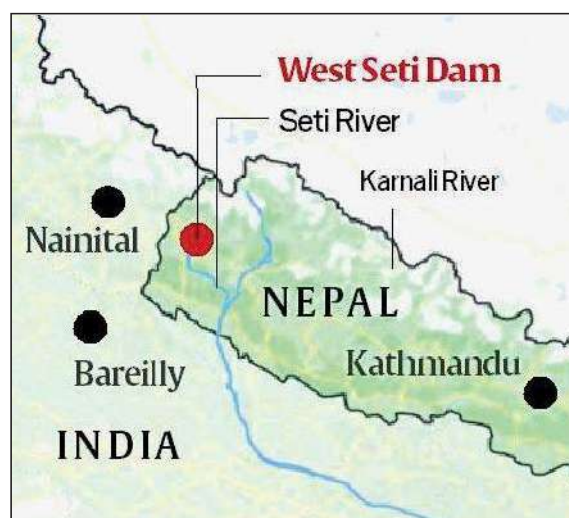
Six decade wait:

- West Seti Hydropower Project, which is to be built on the Seti River in far-western Nepal, has remained on the drawing board for the last six decades.

- China's Three Gorges Corporation had informed the Nepal Government in August 2018 that it would not be able to execute the 750-MW West Seti Hydropower Project.

- Prior to that, the Snowy Mountain Engineering Corporation (SMEC) had been refused renewal of its licence following its failure to begin the work "convincingly" during an entire decade from the mid-1990s.

- The Australian company had been given a generation licence for 30 years under a Build, Own, Operate and Transfer (BOOT) scheme.

India -Nepal power relations:

- Nepal is rich in power sources with around 6,000 rivers and an estimated potential for 83,000 MW. India has formally approached Nepal on many occasions.

- India is viewed as a feasible market for Nepal, but there has been some uncertainty in Nepal over India's inability to deliver projects on time. India has undertaken to harness or expressed intent to harness major rivers in the north.

- An ambitious Mahakali treaty was signed back in 1996, to produce 6,480 MW, but India has still not been able to come out with the Detailed project Report.

- The Upper Karnali project, for which the multinational GMR signed the contract, has not made any headway for years.

- West Seti, therefore, has the potential to be a defining model for Nepal India's power relations in future.

A CLOSER LOOK AT THE REUTERS INSTITUTE DIGITAL NEWS REPORT 2022

◉ **CONTEXT:** **According to the 2022 Reuters Institute Digital News Report, trust in news is falling in nearly half the countries surveyed, with significant proportions of the public, especially younger age groups, beginning to turn away from news.**

About the report:

- It is an annual report commissioned by the Reuters Institute for the Study of Journalism, which tracks how news is consumed in different countries.

- The 2022 report (11th edition) is based on a survey (online questionnaires), covering 46 markets in six continents.

- Because it is based on online questionnaires, the results may not be nationally representative, particularly in countries with low internet penetration.

- The 2022 report flags six major trends which could have wider socio-political implications.

Key findings of the Digital News Report

- People are trusting news content less and less.

- Consumption of traditional news media declined in nearly all the countries surveyed.

- The proportion of news consumers who say that they "avoid news" has risen sharply across countries with the report describing the phenomenon as "selective avoidance".

- Despite small increases in the proportion of people willing to pay for online news (mostly in richer countries), the growth in digital subscriptions for news content seems to be levelling off.

- Smartphones have become the dominant way in which most people first access news in the morning.

- Facebook remained the most-used social network for news. But it is TikTok that has become the fastest-growing network. However, TikTok is currently banned in India.

Key findings about India:

- In India, the **data is more representative of younger English speakers rather than the general population.**

- India saw a slight increase in trust, with **41% trusting news in general**.

- The top social media platforms for sourcing news were **YouTube (53%) and WhatsApp (51%).**

- India is a **heavily mobile-focused market**, with **72% of survey respondents accessing news via smartphone**s and 35% via computers.

- In addition, **84% of Indian respondents got their news from the internet**, 63% from social media, 59% from television and 49% from print.

NEW MATERNAL NUTRITION SCHEME LAUNCHED INGUJARAT

◉ **CONTEXT:**	Two maternal nutrition schemes have been launched by the Prime Minister in Gujarat as 'Mukhyamantri Matrushakti Yojana' and 'Poshan Sudha Yojana'.
◉ **ABOUT:**	**Key Highlights of the scheme**

- **Objective**: To provide nutritious food to **pregnant and lactating women** and their **new born children** during the first **1000 days**.
- **Scope**: It is a pilot project **for 10 talukas of five tribal dominated**
- **Fund allocation**: **800 crores** will be spent under the scheme.
- **Components**: Under this scheme, pregnant and lactating mothers, free of cost, will be given:
  - o Two kg gram
  - o One kg tur dal
  - o One kg edible oil
- It will be distributed every month from the Anganwadi centers.
- **Extended to tribal districts:** The scheme has been extended up to **14 tribal dominated districts,** which will help tribal women to curb from maternal mortality and Infant mortality in the state.
- Under this, they provide **iron and calcium tablets** to pregnant and lactating mothers of tribal districts and to educate them on nutrition.
- **Mandate for benefits:** Under this scheme, pregnant and lactating mothers **registered in Anganwadis** are provided complete **nutritious food**.

What is maternal mortality and Infant mortality Rate?
- Maternal Mortality Ratio (MMR) is defined as the number of maternal deaths during a given time per 1,00,000 live births during the same time.
- **Causes of MMR:** The major causes for maternal mortality are
  - ➤ severe bleeding
  - ➤ infections
  - ➤ high blood pressure during pregnancy
  - ➤ anaemia
  - ➤ complications from delivery, and unsafe abortions
- Seven Indian states have very high maternal mortality: Rajasthan, Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Bihar, Odisha and Assam.
- **Infant Mortality Rate (IMR):** This rate for a region is calculated by dividing the number of deaths of children less than **1 year old** by the number of live births in a **year times 1000.**

Impact of poor maternal health

- **Malnutrition** and **Anemia** during pregnancy can hinder the development of the foetus and the health of the baby can deteriorate.
- **Spread of diseases:** Diseases like Uterus cancer, Haemorrhage, Infections and even loss of life can be experienced if proper care is not taken during or after pregnancy.
- **Lack of nutrition and unhealthy livelihood** is major reason for most of the deaths recorded after giving birth.

Precautions to be taken

- Proper **Hygiene and Sanitation** is important.
- **Nutritious food** during and after pregnancy is must.
- Nutrition supplements like **Iron Folic Tablets and Calcium tablets** can help to recover from Anemia and Weakness.

Other Central scheme for Maternal Health and children

- **Janani Suraksha Yojana** under the National Health Mission to link cash assistance to institutional deliveries
- The **Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA)** provides a fixed day for assured, comprehensive and quality antenatal care free of cost to pregnant women on 9th of every month
- **Pradhan Mantri Matru Vandana Yojana**
- **Poshan Abhiyan**
- LaQshya Guidelines
- SUMAlV- Surakshit Matritva Aashwasan
- Reproductive, Maternal, New-born, Child and Adolescent Health (RMNCH+A) framework

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BALIKA PANCHAYAT

◉ **CONTEXT:** **Gujarat is the first state in the country to launch Balika Panchayat.**

Balika Panchayat:

- The initiative aims to promote the **social and political development of the girls** and ensure their active participation in politics.
- It is a new initiative has been started in **Kutch under Beti Bachao Beti Padhao**.
  o The main objective of panchayat is that the girls should move forward in politics.
  o In Balika panchayat, the member is **nominated just like Gram panchayat**.
- This initiative has been taken by the **Women and Child Development Welfare Department of the Gujarat Government** under the 'Beti Bachao Beti Padhao' campaign.
- 'Balika Panchayat' is managed by people in the **11-21 age group and its main objective is to promote the social and political development of the girl** child and to remove the evil practices from the society such as child marriage, and the dowry system.

Significance:

- It focuses on **women- led development** instead of women's development.
- It's a **replicable model** for other states where child marriage is prevalent or girls education is on the decline.
- Balika Panchayat have **made girls vocal**, which is proven by the Gujarat model.

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ALL-FEMALE AFFAIR

➤ Members of 'Balika Panchayat' will be elected from six wards

➤ This is the first-ever election of this kind

➤ Six members have been unanimously elected uncontested

➤ Contestants are young females aged between 10 and 21 years

➤ Post of sarpanch will be a contest between four candidates

➤ Aims to develop leadership qualities in girls for future Panchayat polls

HOW DID THE IDEA COME ABOUT?

This idea of Balika Panchayat came from a gram sabha meeting that was organized to discuss a cricket tournament for boys. The girls raised demands that some form of activity should be done for the girls too. "I read in the newspapers that in foreign countries there is a concept of youth parliament/forum. From there we have taken this concept. We will provide a separate sitting arrangement to these elected girls in the Panchayat building and we will give them to use the budget of gender sensitivity for the development work they choose to do," said village chief, Suresh Chhanga

USE OF ICT IN SCHOOL EDUCATION IN INDIA RECEIVES UNESCO'S RECOGNITION

◉ **CONTEXT:** The **Central Institute of Educational Technology (CIET)**, part of National Council for Educational Research and Training (NCERT) of the Ministry of Education (MoE), Government of India, has been awarded UNESCO's King Hamad Bin Isa Al-Khalifa Prize for the Use of ICT in Education for 2021.

About:

- The Ministry of Education initiative to **use ICT under the "PM eVidya" scheme** during the Covid pandemic has won UNESCO's recognition.

- The CIET was proactive in bringing learning to children's doorsteps.
  o These efforts were especially helpful in pandemic situations, when schools were closed, in reaching out to students.
  o These efforts helped in arresting the learning hiatus to a large extent.

- It used 12 PM eVidya DTH TV channels and nearly 397 radio stations, including community radio stations under the PM eVidya program.

PM eVIDYA:

• The PM eVIDYA was **initiated as part of Atmanirbhar Bharat Abhiyan by the Ministry of Education in 2020.**

- It unifies all efforts related to digital/online/on-air education to enable multi-mode access for imparting education by using technology to minimise learning losses.

UNESCO's King Hamad Bin Isa Al-Khalifa Prize

- It was **established in 2005** with the support of the Kingdom of Bahrain.
- The Prize rewards individuals and organizations that are implementing outstanding projects and promoting the creative use of technologies to enhance learning, teaching and overall educational performance in the digital age.
- An **international Jury selects the two best projects** annually.
- Each prize winner receives **USD 25,000, a medal and a diploma** during a ceremony at UNESCO Headquarters in Paris.
- This award recognizes **innovative approaches** to leveraging new technologies to expand educational and lifelong learning opportunities for all, in line with the 2030 Agenda for sustainable development and its goal 4 on Education.

INDIA BACKS CHINA'S PLAN FOR JOINT BORDER ACTIVITY

⊙ **CONTEXT:** **India has supported an initiative by China for all SCO (Shanghai Cooperation Organization) member states, including Russia, Pakistan and Central Asian countries, to conduct "joint border operations" in 2023.**

About:

- India has supported an initiative by China to conduct a "joint border operation" in 2023 of all member countries of SCO
- The border operation called "Solidarity-2023" will be organised by China
- The Border Security Force (BSF) hosted the 21st meeting of Experts' Group and Border Security Conference of SCO countries
- At the meeting participants exchanged information reflecting assessments of the situation on the State borders of the SCO member states, trends and forecasts of its development.
- The results of the Joint Border Operation "Solidarity-2019-2021" carried out in 2021 by the border services of the competent authorities of the SCO member states were discussed and highly appreciated.
- The plan for the preparation and conduct of the Joint Border Operation "Friendship Border – 2022, this year was reviewed and approved.

What is SCO?

- The SCO is an economic and security grouping and has emerged as one of the largest trans-regional international organisations to ensure security and maintain stability across the vast Eurasian region.
- The member-states of SCO:
  o Russia,
  o China,
  o India,
  o Pakistan,
  o Kyrgyz Republic,

o Kazakhstan,

o Tajikistan and

o Uzbekistan

The main objectives of the SCO are to:

- strengthen relations among member states

- promote cooperation in political affairs, economics and trade, scientific-technical, cultural, and educational spheres as well as in energy, transportation, tourism, and environmental protection;

- safeguard regional peace, security, and stability

- create a democratic, equitable international political and economic order

FATF DECISION ON REMOVING PAKISTAN FROM GREY LIST BY OCTOBER

◉ **CONTEXT:**   **Ahead of the plenary session of the Financial Action Task Force (FATF), the global financial crime watchdog, from June 14 to 17 in Berlin, Pakistan which continues to face an economic crunch, is hoping for some respite in the form of its removal from the FATF's 'grey list' or the list of countries presenting a risk to the global financial system.**

What is the FATF?

- International watchdog for financial crimes -The Financial Action Task Force is an international watchdog for financial crimes such as money laundering and terror financing.

- Address loopholes in the global financial system -It was established at the G7 Summit of 1989 in Paris to address loopholes in the global financial system after member countries raised concerns about growing money laundering activities.

- Sets standards or recommendations for countries -The FATF sets standards or recommendations for countries to achieve in order to plug the holes in their financial systems and make them less vulnerable to illegal financial activities.

What are FATF's 'grey' and 'black' lists?

- Reason for the list- While the words 'grey' and 'black' list do not exist in the official FATF lexicon, they designate countries that need to work on complying with FATF directives and those who are noncompliant, respectively.

- Grey list- The grey countries are designated as "jurisdictions under increased monitoring", working with the FATF to counter criminal financial activities. For such countries, the watchdog does not tell other members to carry out duediligence measures visavis the listed country but does tell them to consider the risks such countries possess. Currently, 23 countries including Pakistan are on the grey list.

- Black list- As for the black list, it means countries designated as 'highrisk jurisdictions subject to call for action'. In this case, the countries have considerable deficiencies in their AML/CFT (antimoney laundering and counter terrorist financing) regimes and the body calls on members and nonmembers to apply enhanced due diligence. In the most serious cases, members are told to apply countermeasures such as sanctions on the listed countries. Currently, North Korea and Iran are on the black list.

Why is Pakistan on the grey list?

- **Terror Financing**- Pakistan was retained on the grey list in March as it was yet to address concerns on the front of terror financing investigations and prosecutions targeting senior leaders and commanders of UN designated terrorist groups.

- **Progression so far**-It was taken off the list in 2015 owing to its progress but was put back on it in 2018. It was given a 27point action plan to restrict terror financing activities. After warnings and two deadline extensions on the first plan, Pakistan was prescribed another sevenpoint action plan by the APG in 2021.

- **Current situation**- Pakistan is currently banking on its potential exclusion from the grey list to help improve the status of tough negotiations with the International Monetary Fund to get bailout money.

COAL INDIA EXPLORES GREEN MINING BETS

◉ **CONTEXT:** **Coal India Ltd (CIL) recently said that it is looking at green mining options to lessen any adverse environmental impact by leveraging a slew of eco-friendly technologies in both underground and open cast mining.**

About:

- The state-run miner is exploring the feasibility of sharply ramping up its underground mining production to 100 million tonnes (MT) by FY30 from 25.6 MT in FY22. Underground mining is minimally invasive on land degradation.

- Around 70% of the country's coal reserves are conducive for underground mining.

What is green technology?

- Green technology refers to technology that limits or reverses the effects of human activity on the planet.

- In mining, green technology refers to technology that will reduce carbon emissions in operations and mitigate adverse environmental impacts.

- It includes the use of minerals and metals that support a transition to low-carbon technologies such as solar panels or wind power.

How does technology impact mining operations?

- Technology can have a number of impacts on mining operations, including safety and productivity, environmental protection and opportunities for women.

- Safer working conditions through improved underground communication, automation, more sophisticated mineral and metal transportation, and emergency response measures are achieved by integrating technology into mining projects.

How can developing countries improve environmental sustainability through tech in mining?

- Developing countries often receive foreign direct investment for large-scale mining operations.

- This foreign investment is arriving with more technology to increase productivity during the mining concession period.

- Governments need to remain up to date in the latest innovations and changes brought to their jurisdictions to ensure that increased productivity comes with balanced with economic and social benefits over the life of the mine.

About Coal India Limited (CIL):

- Coal India Limited (CIL) the state-owned coal mining corporate came into being in November 1975.

- With a modest production of 79 Million Tonnes (MTs) at the year of its inception CIL, today is the single largest coal producer in the world and one of the largest corporate employer.

- Indian Institute of Coal Management (IICM) as a state-of-the-art Management Training 'Centre of Excellence', the largest Corporate Training Institute in India operates under CIL and conducts multi-disciplinary programmes.

- CIL is a Maharatna company is a privileged status conferred by the Government of India to select state-owned enterprises in order to empower them to expand their operations and emerge as global giants.

THERE IS A DESERT IN TAMIL NADU AND THE DUNES ARE RED

◉ **CONTEXT:**   **A Small desert in the state of Tamil Nadu's Thoothukudi district has been identified, that consists of red sand dunes.**

- **The colour of these dunes says about the regions geological history and its semi-arid climate.**

◉ **ABOUT:**   **What are dunes?**

- A duneis a landform composed of wind- or water-driven sand.

- It typically takes the form of a mound, ridge, or hill and occurs in different shapes and sizes.

- Dunes are made of sand-sized particles, and may consist of quartz, calcium carbonate, snow, gypsum, or other materials.

- Dunes are most common in **desert environments**, where the lack of moisture hinders the growth of vegetation that would otherwise interfere with the development of dunes.

- However, sand deposits are not restricted to deserts, and dunes are also found along sea shores, along streams in semiarid climates, in areas of glacial outwash, and in other areas where poorly cemented sandstone.

About Red dunes

- The red dunes are called *theri* in Tamil.
- They consist of sediments dating back to the Quaternary Period and are made of marine deposits.
- They have very low water and nutrient retention capacity and are susceptible to aerodynamic lift.
- The iron-rich heavy minerals like ilmenite, magnetite, garnet, hypersthene and rutile present in the soil.
- They had undergone leaching by surface water and were then oxidised because of the favourable semi-arid climatic conditions.

Significance

- **Helps in studying rocks**: The lithology of the area shows that the area might have been a **paleo (ancient) coast** in the past.
- The presence of limestone in many places indicates **marine transgression.**
- **Ancient Coastal evidences**: The present-day *theris* might have been formed by the confinement of beach sand locally. These are geological formations that appeared in a period of a few hundred years.

How they are formed?

- The red sand is brought from the surface of a broad belt of red loam in the plains of the Nanguner region) by **south west monsoon winds** during **May-September.**
- The south west monsoon winds, after draining the moisture behind the Mahendragiri hill and the **Aralvaimozhi gap** of the Western Ghats become dry and strike the plains in the foothills, where vegetation is sparse.
- Deforestation and absence of vegetative cover in the **Aralvaimozhi gap** and the Nanguneri plains are considered to be the major causes of wind erosion.
- Hence the fine materials with light weight are picked up, suspended in the air and carried away.
- These processes of erosion, transport and deposit of sediments that are caused by wind at or near the surface of the earth, are called **Aeolian processes.**
- They lead to continual sand redistribution. The sand deposited thus also forms a further obstruction, causing more sand to be deposited and the process goes on.

Concerns

- **Illegal sand mining** in the region is prevalent due to high mineral and fine grained sand.

NICOTINE RISES GRADUALLY IN BRAIN

◉ **CONTEXT:**   **A recent study had showed how cigarette smokers kicked the habit spontaneously after they suffered a brain stroke or injury.**

- **It shows effects to map regions in the brain that control addiction of any kind.**

Background

- Nicotine is an alkaloid that is found in certain plants, such as the **Nicotiana tabacum** plant that is used to **produce tobacco products.**

THE SAND DUNE LIFECYCLE

· Dunes protect and support the environment where we live, work and play.

· It's important they continue to stand strong between us and the sea.

· We can help by **staying off the dunes** and only using the marked public tracks with blue posts.

HIGH TIDE

LOW TIDE
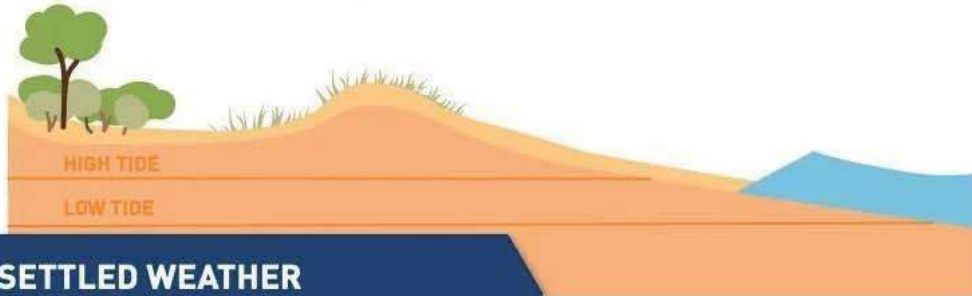
SETTLED WEATHER
Sand builds up on the beach and dunes.

Dune face erosion

Offshore bar

Original beach level

HIGH TIDE

LOW TIDE
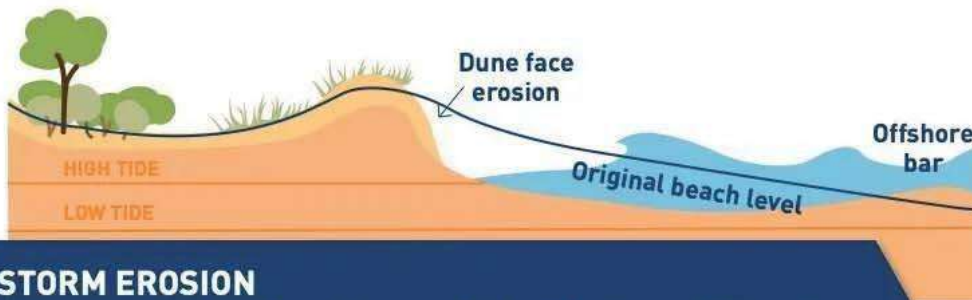
STORM EROSION
Waves erode the beach and dune, eroded sand forms an offshore bar.

Plants grow down dune

HIGH TIDE

LOW TIDE
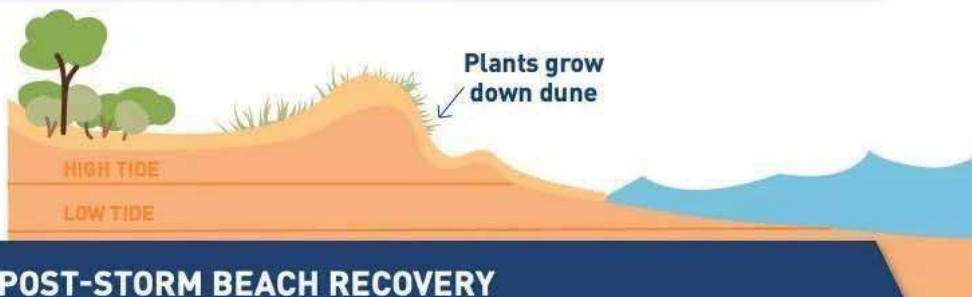
POST-STORM BEACH RECOVERY
Sand moves onshore and rebuilds the beach.
Dune plants grow seaward down the eroded dune face.

Plants trap sand

HIGH TIDE

LOW TIDE

Sand moves up beach

POST-STORM DUNE RECOVERY
Dune plants trap sand, gradually rebuilding the dune.

- Nicotine dependence is a chronic, relapsing disease defined as a compulsive craving to use the drug, despite social consequences, loss of control over drug intake, and emergence of withdrawal symptoms.
- **Tolerance** is another component of drug dependence.
- The most commonly used tobacco product is **cigarettes,** but all forms of tobacco use can cause dependence.
- Nicotine dependence is a serious **public health problem** because it leads to continued tobacco use and is one of the leading preventable causes of death worldwide, causing more than **8 million deaths per year**.

How Brain Networks are linked with Nicotine dependence?

- Repeated exposure to nicotine can cause an increase in the number of **nicotinic receptors**, which is believed to be a result of receptor desensitization and subsequent receptor upregulation.
- This upregulation or increase in the number of nicotinic receptors significantly alters the functioning of the brain reward system.
- When these receptors are not occupied by nicotine, they are believed to produce **withdrawal symptoms.**
- These symptoms can include **cravings for nicotine, anger, irritability, anxiety, depression, impatience, trouble sleeping, restlessness, hunger, weight gain, and difficulty concentrating.**
- **Neuroplasticity** within the brain's reward system occurs as a result of **long-term nicotine use, leading to nicotine dependence.**
- There are genetic risk factors for developing dependence also.

What is Neuroplasticity?

- Neuroplasticity, also known as neural plasticity, or brain plasticity, is the ability of neural networks in the brain to change through **growth and reorganization.**
- It is when the brain is rewired to function in some way that differs from how it previously functioned.
- These changes range from individual neuron pathways making new connections, to systematic adjustments like cortical remapping.
- Examples of neuroplasticity include circuit and network changes that result from learning a new ability, environmental influences, practice, and psychological stress.

Concern with Nicotine

- Nicotine dependence results in substantial mortality, morbidity, and socio-economic impacts.

INDIA'S FIRST DARK SKY RESERVE TO SOON COME UP IN LADAKH

◉ **CONTEXT:**   **The Hanle in Ladakh is all set to become India's first Dark Sky Reserve.**

- **The site is going to promote astronomy-tourism, giving a boost to local tourism through science.**

◉ **ABOUT:**   **What is a dark-sky reserve (DSR)?**

- A **dark-sky Reserve (DSR)** is an area, usually surrounding a park or observatory that restricts **artificial light pollution.**

- The International Dark-Sky Association (IDA) is associated with the International Dark Sky Reserve (IDSR) and International Dark Sky Park (IDSP).

- An **International Dark-Sky Association (IDA)** was founded in 1988 to reserve **public or private land** for an exquisite outlook of nocturnal territories and **starry night skies.**

- In 1993, Michigan became the first state in the **United States** to designate a tract of land as a "**Dark Sky Reserve"** at the Lake Hudson State Recreation Area.

- It is generally understood that a dark-sky reserve, should be sufficiently dark to promote astronomy.

- However, this is not always the case. The lighting protocol for a dark-sky reserve is based on the sensitivity of wildlife to **artificial light at night.**

What is the objective of these reserves?

- The purpose of the dark-sky movement is generally to promote astronomy.

- However, astronomy is certainly not the only objective of conserving a dark sky.

- A dark night sky is associated with so many facets of history, philosophy, religion, societal development, poetry, song, mathematics, and science.

- The preservation of a DSR is necessary to understand our environmental history.

India's first site for dark reserve

- A part of **Changthang Wildlife Sanctuary** at Hanle in Ladakh is all set to become India's first Dark Sky Reserve.

- The site will also promote **astronomy tourism**, giving a boost to local tourism through science.

- The reason for selecting site for the programme:

- Ladakh holds great potential for undertaking uninterrupted astronomical observations.

- At a height of 4,500 metres, Hanle is already home to optical, gamma ray and infrared telescopes for Space exploration.

- It is pristine for the dry weather for most months of the year, remains cloudless during nights and offers dark skies, making it a perfect natural setup for sky gazing.

About the Hanle Dark Sky reserve (HDSR)

- The HDSR will be an area spanning **22 km** in radius centred around the Hanle observatory.

- Both **locals and tourists both** have to follow regulations that will be imposed on the outdoor lighting, use of high beam vehicle headlights, light shields and curtains, among other measures to cut down light pollution.

- Under the observatory the **administration, local council members along with the scientists** will collectively work towards preservation of the night sky from unwanted light pollution and illumination.

CHINA LAUNCHES THIRD AIRCRAFT CARRIER IN MAJOR MILITARY MILESTONE

◉ **CONTEXT:** **China recently launched its third aircraft carrier, the country's most advanced.**

About:

- China's**firstaircraftcarrier, the Liaoning**, wasarefitof the Soviet-era shipcommissioned in 2012, followed by the indigenously **built 2nd aircraft carrier Shandong in 2019.**
  - China plans to have around five aircraft carriers.

- The aircraft carrier named Fujian was launched at a brief ceremony held at Shanghai's Jiangnan Shipyard.

- The Fujian is China's first domestically designed and built catapult aircraft carrier.
  - The launch was delayed by two months due to the COVID lockdown of Shanghai.

- The third aircraft carrier built by China State Shipbuilding Corporation Limited has a displacement of more than 80,000 tonnes and is equipped with electromagnetic catapults and arresting devices.

- The Fujian, which is the **"first fully domestically developed and constructed" aircraft carrier with an electromagnetic aircraft launch system (EMALS)**, has a flat, straight flight deck and arresting device.

  - It has a full displacement of more than 80,000 tonnes, as much as 20,000 tonnes more than the other two aircraft carriers.

  - Fujian is the name of China's eastern coastal province of Fujian.

CHINA TO ADOPT GENETICALLY MODIFIED MAIZE AND SOY

⊙ **CONTEXT:** **The Chinese National Crop Variety Approval Committee cleared the path for cultivating genetically modified (GM) crops.**

About:

- China released two standards that clear the path for the cultivation of genetically-modified (GM) crops in China.

- In China, GM crop varieties need to receive both a safety certificate and a "variety approval" before they can be commercially cultivated.

- Various genetically modified maize and soybean varieties have received the safety certificate since 2019.

- But none has yet received variety approval due to the absence of standards. Now these are available, the approval and commercialisation of such GM crops are on the horizon.

Impact of such a move:

- **Improvement in yields:** The change in regulations would potentially lead to an improvement in yields. This is aligned with China's ambition of becoming self-sufficient in essential grains and oilseeds in the coming years. There are specific targets in products like pork, where the country wants to produce 95% of its consumption by 2025.

- **Pressure on global prices:** China is one of the world's largest maize and soybean importers. The country accounted for 13% of global maize imports in 2021 and roughly 60% of the world's soybean imports. Reducing import volumes is likely to lead to downward pressure on global prices.

- **Impact on South Africa:** It will have an impact on the long-term growth of the South Africa's agricultural sector. South Africa is a net exporter of maize, and increase in production in other parts of the world could bring increased competition and downward pressure on prices in the medium term.

- **Positive impact on consumers:** A reduction in the global maize and soybeans prices would be positive for consumers and the livestock and poultry sectors.

GM Crops:

- A GM or transgenic crop is a plant that has a novel combination of genetic material obtained through the use of modern biotechnology.

- For example, a GM crop can contain a gene(s) that has been artificially inserted instead of the plant acquiring it through pollination.

What are the potential benefits of GM Plants?

In the developed world, there is clear evidence that the use of GM crops has resulted in significant benefits. These include:

- Higher crop yields

- Reduced farm costs

- Increased farm profit

- Safer environment

- More nutritious food

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How are GM Crops made?

- GM crops are made through a process known as genetic engineering.
- Genes of commercial interest are transferred from one organism to another.
- Two primary methods currently exist for introducing transgenes into plant genomes-:
  - ➤ The first involves a device called a 'gene gun'. The DNA to be introduced into the plant cells is coated onto tiny particles of gold or tungsten. These particles are then physically shot onto plant cells and incorporated into the genomic DNA of the recipient plant.
  - ➤ The second method uses a bacterium to introduce the gene(s) of interest into the plant DNA.

FIRST GRASSROOTS INNOVATION-BASED STANDARDS FORMULATED BY BUREAU OF INDIAN STANDARDS

◉ **CONTEXT:** The first official standard for a grassroots innovation has been set up for clay cooling cabinet "Mitticool".

Non-electric cooling cabinet:

- It has been developed by **Mansukhbhai Prajapati, from Wankaner, from Gujarat**.
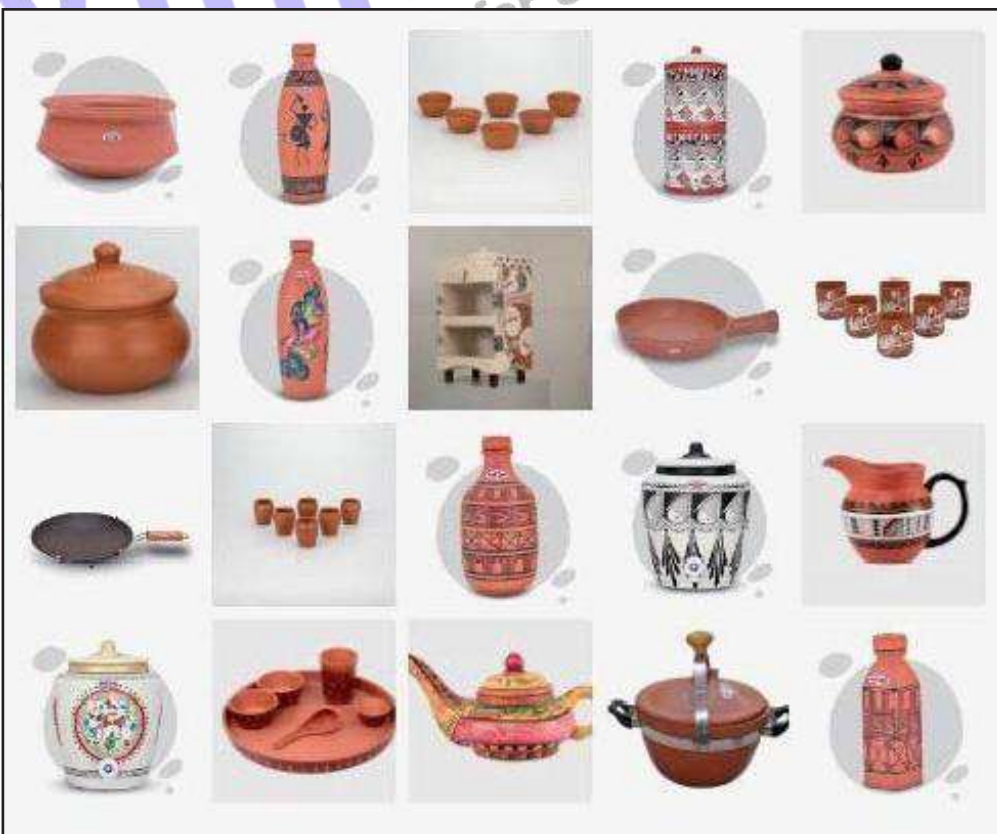
- The IS 17693: 2022 - given to the non-electric cooling cabinet made of clay is the first standard rooted in a grassroots innovation - 'Mitticool Refrigerator'.
- The **standard set up by the Bureau of India Standards is necessary after a particular stage for scaling up and entering the cross-border markets.**
- The standard specifies the **construction and performance requirements** of a cooling cabinet of the natural refrigerator made out of clay which operates on the principle of evaporative cooling.
- These cabinets may be **used to store perishable foodstuff** without the need of electricity.
- It provides a **natural coldness to foodstuffs** so that they remain fresh without deteriorating their quality.
- The standard can help grassroots innovations march hand-in-hand with innovations in the formal sector.

Significance:

- The standard helps in the endeavour of BIS to fulfil 6 of out 17 United Nations Sustainable Development Goals (SDGs), namely 1 (No poverty), 2 (Zero hunger), 5 (Gender equality), 7 (Affordable and clean energy), 9 (Industry, innovation, and infrastructure), and 12 (Responsible consumption and production).

Impact:

- The impact of the 'Mitticool Refrigerator' has already been exponential, and it is poised to grow by attaining this significant milestone of setting standards.
- It is already playing a lead role in:
  - o reviving the pottery culture, tradition, and heritage;
  - o connecting people back to roots in better,
  - o healthier ways;
  - o promoting sustainable consumption;
  - o economically empowering the indigent community;
  - o working towards green and cool earth, economic development and employment generation; and
  - o contributing towards rural women upliftment and making them financially independent

'COSMIC CANNIBALISM'

◉ **CONTEXT:**   **Astronomers have observed a phenomenon, called, "cosmic cannibalism," a dead star is ripping apart its planetary system.**

About:

- A **white dwarf is ripping up an entire planetary system** with its death throes.
- A **star is ending its life** so violently that the dead star left behind, called a white dwarf, is disrupting an entire planetary system by sucking in debris from both its inner and outer reaches.
- This **cosmic phenomenon is the first time that astronomers have observed**.
- The **white dwarf star is consuming the rock-metallic** and icy material, both of which are the "ingredients of planets".

- This case of cosmic cannibalism was diagnosed with the help of archival data from the Hubble Space Telescope and other NASA observatories.
- The researchers obtained the findings based on the analysis of material captured by the atmosphere of the nearby **white dwarf star G238-44.**

White Dwarf:

- A white dwarf is formed when a **low-mass star like our sun exhausts most of its nuclear fuel**.
- It is usually **very dense** and about the size of a planet.
- They are dense, **dim, stellar corpses** — the last observable stage of evolution for low- and medium-mass stars.
- Compared to our sun, a white dwarf has a similar carbon and oxygen mass though it is much smaller in size — similar to Earth.
- White dwarf temperatures can exceed 100,000 Kelvin according to NASA (that's about 179,500 degrees Fahrenheit).
    - Despite these sweltering temperatures, white dwarfs have a low luminosity as they're so small in size.
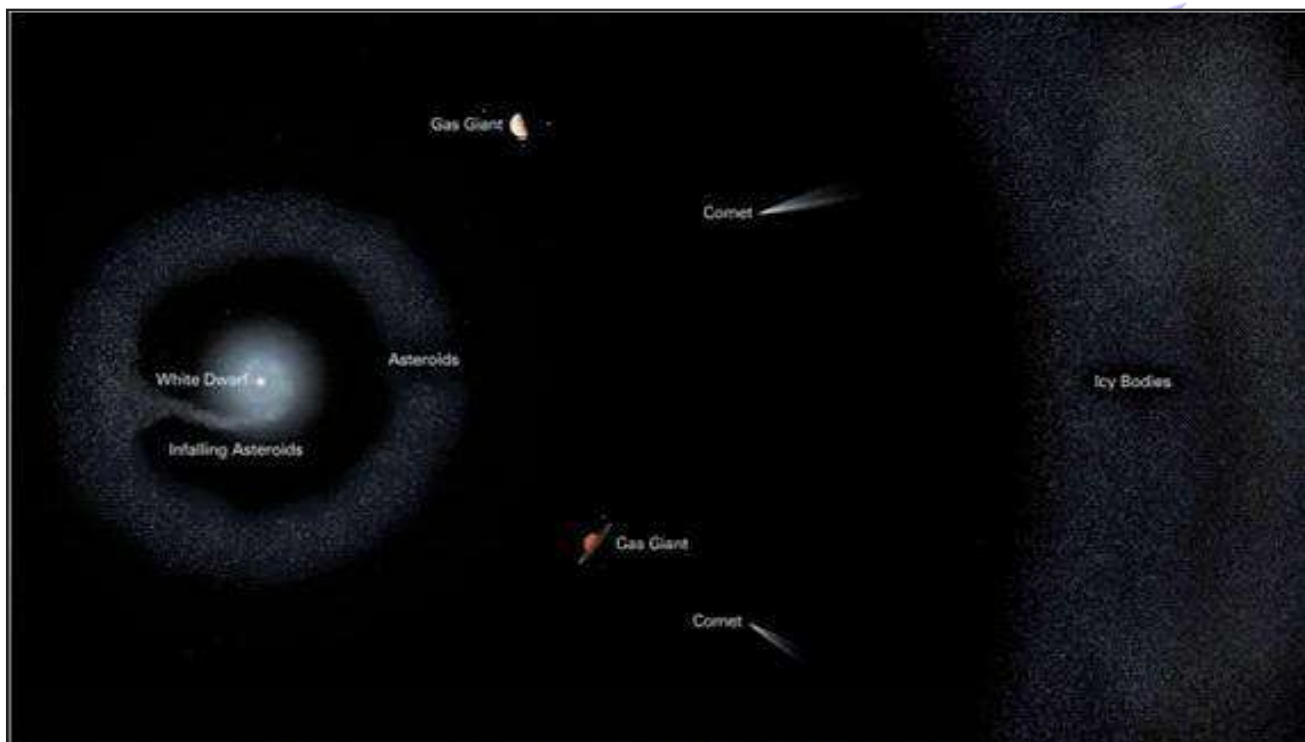
This illustrated diagram of the planetary system G238-44 traces its destruction. The tiny white dwarf star is at the center of the action. A very faint accretion disk is made up of the pieces of shattered bodies falling onto the white dwarf. The remaining asteroids and planetary bodies make up a reservoir of material surrounding the star. Larger gas giant planets may still exist in the system. Much farther out is a belt of icy bodies such as comets, which also ultimately feed the dead star.
Credit: NASA, ESA, Joseph Olmsted (STScI)

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USE OF DRONES IN PLANTING TREES

◉ **CONTEXT:**

- **In a bid to increase the 'green space', a whopping 11 lakh seeds are set to be sown on the hillocks abutting the Rayalacheruvu tank, 20 km south of Tirupati, Andhra Pradesh.**

- **This initiative is with the aim of planting trees in the Dry areas in the region.**

What is a Seed ball?

- Seed ball is a seed wrapped in clay with some nutrients like coco peat, or moss.

- It is a man-made method to spread colonies of trees and plants by broadcasting seeds after giving them protection of clay and an additional dose of nutrients.

- In humid and conducive conditions, the seed balls sprout. They are dried before they are sprinkled. They are also known as seed bombs.

- Seed bombing is a farming technique of introducing vegetation to a land by throwing or dropping the seed balls.

SEED BOMB

Organic seed balls that are embedded in open ground to grow trees. The process is known as seed bombing or aerial reforestation.

How to prepare 'seed bombs'

1 Wash and dry seeds. However, moisture is needed for germination

2 - Make a paste of soil and cow dung in 3:1 ratio
- Cover seeds with paste
- Dry in air

3 Seed 'bombs' are embedded partially in the ground

4 The process is productive during rainy season

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Benefits of Seed Ball:

- Increase green space
- Effective for inaccessible places
- Safe method
- Sustainable method
- Increase Tourism
- Help to curb climate change
- Provide ground for research and development

LUMPY SKIN DISEASE IN ANIMALS

◉ **CONTEXT:** **Some 1,229 cattle across five districts of Gujarat have been infected with Lumpy Skin Disease (LSD), an infectious viral disease.**

Background

- LSD is endemic to Africa and parts of West Asia, where it was first discovered in 1929.
- In Southeast Asia the first case of LSD was reported in Bangladesh in July 2019.
- In India, which has the world's highest 303 million heads of cattle, the disease has spread to 15 states within just 16 months.
- In India it was first reported from Mayurbhanj, Odisha in August 2019.

Key Points

- Cause: The LSD is caused by infection of cattle or water buffalo with the poxvirus Lumpy skin disease virus (LSDV).
  - o The virus is one of three closely related species within the genus capripoxvirus, the other two species being Sheep pox virus and Goat pox virus.

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Symptoms:

- It appears as nodules of two to five centimetre diameter all over the body, particularly around the head, neck, limbs, udder (mammary gland of female cattle) and genitals.

- The lumps gradually open up like large and deep wounds.

- Other clinical signs include general malaise, ocular and nasal discharge, fever, and sudden decrease in milk production.

Effect:

- According to the Food and Agriculture Organization (FAO) the mortality rate is less than 10%.

- Vectors:

- It spreads through mosquitoes, flies and ticks and also through saliva and contaminated water and food.

Prevention:

- Control and prevention of lumpy skin disease relies on four tactics - movement control (quarantine), vaccination, slaughter campaigns and management strategies.

Treatment:

- There is no treatment for the virus, so prevention by vaccination is the most effective means of control.

- Secondary infections in the skin may be treated with Non-Steroidal Anti-Inflammatories (NSAIDs) and also antibiotics when appropriate.

Implications:

- This will have a devastating impact on the country, where most dairy farmers are either landless or marginal landholders and milk is among the cheapest protein sources.

AFRICAN SNAILS TURN A MENACE

◉ **CONTEXT:**

- **Farmers of kerela's Idukki district abandoned cultivation as African snail species destroys crops.**

- **Inadequate monsoon and improper cleaning works during the pandemic had intensified their habitation in the region.**

◉ **ABOUT:**   **Important facts about the species**

- The Giant African Snail Achatina fulica is an exotic pest introduced from East Africa to India in 1847 itself.

- This is the biggest land snail having a protective shell, measuring about 19 cm in length.

- This snail is a hermaphrodite and lays 50-200 yellowish eggs on soil surface.

- Hatching takes place in about a week's period and the young ones grow up to a year and reach sexual maturity.

- The life span of this snail is 3-5 years. And those hatching towards the end of rainy season take a long time to mature as they undergo hibernation and aestivation for up to two years without food.

- It can cause Eosinophilic meningitis in Humans.

How does it cause menace?

- It is very active during monsoon, nocturnal in behaviour and damages crops like papaya, brinjal, beans, okra, cole crops, areca nut, rubber buds, coffee seedlings, orchids, etc.
- The snail eats the leaves, stems, fruits and flowers of host plants causing severe damage to the young saplings especially in nurseries.
- It also contaminates leafy vegetables with its excrement.

FIRST BHARAT GAURAV TRAIN TO RUN FROM JUNE 21st

◉ **CONTEXT:**   **The Indian Railways' Southern Railway zone began the maiden service of privately-run Bharat Gaurav Trains.**

Key-features

- Route: The Bharat Gaurav Train from Coimbatore North to Sainagar Shirdi with stoppages at Tiruppur, Erode, Salem, Yelahanka, Dharmavaram, Mantralayam Road and Wadi.
- There will be a Doctor on board to attend any emergency.
- There are Private securities engaged along with the Railway Police Force to protect the train from any kind of harm.
- There will be on board electricians and AC Mechanic and Fire and Safety Officers.
- The train is maintained by branded housekeeping service providers who will clean the utility areas on frequent intervals and the caterers are experienced and rich in holding the traditional vegetarian menus.
- The coaches are fitted with high bass-sounding speakers and an on-rail Radio Jockey to keep the passengers entertained during the journey. There will be devotional songs, spiritual stories and live interviews to keep the journey pleasant.
- *Completely Toxic-free and Smoke-free*

About the Bharat Gaurav Trains

- Indian Railways had launched the operation of theme-based Bharat Gaurav train in the month of November 2021.

- Under this Scheme, theme-based tourist circuit trains, on the lines of the Ramayana Express, can be run either by private or State-owned operators.

- The objective of this theme is to showcase India's rich cultural heritage and magnificent historical places to the people of India and the world, through Bharat Gaurav Trains.

- This scheme also aims to leverage the core strengths of the professionals of the tourism sector to run theme-based trains to tap the vast tourist potential of India.

MAWSYNRAM SETS NEW JUNE RAINFALL RECORD AT 1003 MM IN 24 HOURS

◉ **CONTEXT:** **Meghalaya's Mawsynram, the world's wettest place, rewrote its June rainfall records held since 1940.**

About:

- The 24-hour rainfall recorded recently was a whopping 1003.6mm, surpassing the previous record of 945.4mm of 1966.

- The second closest rainfall record was held by nearby Cherrapunji, another wet place, where the 24-hour rainfall was 972mm.

About Mawsynram:

- Mawsynram is situated in East Khasi Hill district of Meghalaya, 15 km west of Cherrapunji, Mawsynram is 1400 m above sea level.

- The 'Maw' in Mawsynram is a Khasi word which means 'stone', thus referring to certain megaliths found in the Khasi Hill area.

  o The village is most famous for the gigantic formation of a stalagmite, which resembles the shape of a 'shivling'.

- With 11,872 mm of rainfall received annually, Mawsynram beats Cherrapunji by a slender margin.

  o Cherrapunji receives 11,777 mm of rainfall.

- The rains are so intense in Mawsynram that the villagers use thick grass to sound-proof their huts from the deafening rain.

- The women of Mawsynram use rain covers known as 'knups', using bamboo slivers, plastic sheets and broom grass to create a rain shield that resembles a turtle shell, which is then worn on the head.

  o The knups are large enough to keep rain off the whole body right up to the knees.

- Meteorologists believe Mawsynram's location plays a huge part in it receiving huge amount of rainfall.

- Moisture gathers over the Bay of Bengal, it causes precipitation over Mawsynram, leading to a heavy and very long monsoon season.

Rainfall at Mawsynram:

- Since northeast India is mostly hilly and is an extension of the Indo-Gangetic Plains, the region is highly sensitive to changes in regional and global climate.

- Pre-monsoon and monsoon are the rainy seasons of northeast India.

- Rain-bearing summer air currents (the Bay of Bengal branch of monsoons) that move north from Bangladesh's hot and humid floodplains hit the funnel-shaped relief of the Meghalaya hills with deep valleys and gorges.

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- The steep parallel mountains (Garo, Khasi and Jaintia hills) in Meghalaya block the movement of the clouds to the north

- They are squeezed in through the gorges and then forced to ascend the steep slopes and shed most of their rainfall in the region.
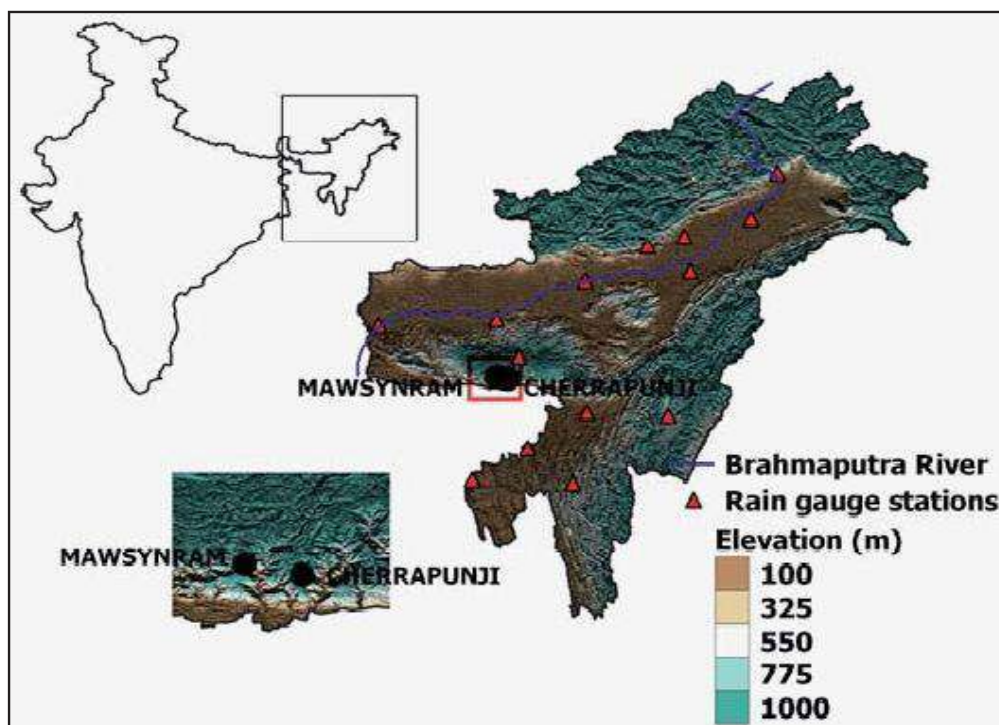
About knups:

- Knups are made from banana leaves lashed to a frame of bamboo.

- They are worn rather than carried, which allows you to use your hands. And if you lean into the wind, they won't blow inside out, or away.

- Knups are the traditional umbrellas of Northeastern India, and are here being used in the wettest place on earth, Mawsynram, which has over 38 feet of rain a year.

ADP TO BE EXTENDED TO BLOCK, CITY LEVEL: PM

◉ **CONTEXT:** **The PM has hoped to extend the Aspirational District Programme (ADP) to block and city levels.**

About Aspirational Districts Programme (ADP)

- The Programme was launched in January 2018.

- Objectives: The 'Transformation of Aspirational Districts' initiative aims to remove heterogeneity through a mass movement to quickly and effectively transform these districts.

- The broad contours of the program are Convergence (of Central & State Schemes), Collaboration (of Central, State level 'Prabhari' Officers & District Collectors), and Competition among districts driven by a spirit of mass Movement.

- With States as the main drivers, this program will focus on the strength of each district, identify low-hanging fruits for immediate improvement, measure progress, and rank districts.

❚ **The three core principles of the programme are:**

o Convergence of Central & State Schemes, which brings together the horizontal and vertical tiers of the government.

o Collaboration among citizens and functionaries of Central & State Governments, including district teams. This will enable impactful partnerships between government, market, and civil society.

o Competition among districts driven by a spirit of the mass movement.

Selection of districts

- A total of 117 Aspirational districts have been identified by NITI Aayog based upon composite indicators.

- The objective of the program is to monitor the real-time progress of aspirational districts based on 49 indicators (81 data points) from the 5 identified thematic areas.

- Each district is ranked based on 49 performance indicators identified across the 5 core themes. This includes-

o Health & Nutrition (30% weightage)

o Education (30% weightage)

o Agriculture & Water Resources (20% weightage)

o Financial Inclusion & Skill Development (10%)

o Basic Infrastructure (10%)

HOW MARINE HEATWAVE FUELLED SUPER CYCLONE AMPHAN

◉ **CONTEXT:** **A new study has suggested that warm subsurface waters in the Bay of Bengal likely helped fuel the 2020 Amphan super cyclone.**

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Marine heatwaves:

- First described in 2011: The term "marine heatwave" was initially used to describe an extreme surface warming event off the west coast of Australia during 2010-11 austral summer.

- Marine heatwaves like The Blob has resulted in mass mortalities in marine mammals and birds, and collapse of fisheries and aquaculture in the US, Korea, etc.

- Marine heatwaves are periods of extremely high temperatures in the ocean (above the 90th percentile).

- These events cause marine habitat destruction due to coral bleaching, seagrass destruction, and loss of kelp forests, affecting the fisheries sector adversely.

▌ Impact on the Monsoon

- o The marine heatwaves in the western Indian Ocean and the Bay of Bengal are found to result in dry conditions over the central Indian subcontinent.

- o There is an increase in rainfall over south peninsular India in response to the heatwaves in the Bay.

What causes marine heatwaves?

- Marine heatwaves can be caused by a whole range of factors, and not all factors are important for each event.

- The most common drivers of marine heatwaves include ocean currents which can build up areas of warm water and air-sea heat flux, or warming through the ocean surface from the atmosphere.

- Winds can enhance or suppress the warming in a marine heatwave, and climate models like El Niño can change the likelihood of events occurring in certain regions.

Trends:

- Bay of Bengal recorded surface temperatures of 32-34°C, before Cyclone Amphan.

- 93% of the heat from global warming goes into the oceans.

  o Warm waters are an energy source for cyclones.

- As the Arabian Sea warms, the number and intensity of cyclones and heavy rains increase.

- Over the Arabian Sea,

  o 150% rise in the number of very severe cyclones

  o 80% rise in the total duration of cyclones

  o 20%-40% rise in the intensity of cyclones Over the Bay of Bengal, rapid intensification may be occurring more.

Key findings about Marine heatwave and Cyclone:

- The heat content in the subsurface ranged between 135 and 150 kilojoules per square centimetre before the cyclone.

- Warm subsurface waters could intensify cyclones by allowing heat to flow between the sea and atmosphere. Warmer waters fuel cyclones.

- The subsurface water may have warmed because of the high sea level anomaly, which is the difference between the total and average sea level.

- An increase in sea level is brought about by anticyclonic eddies, which is a circular movement of water.

Climate change is not the only culprit

The floodplain gives room for the river to fill, sink in, and move

Once this space is encroached, largescale floods occur

NEW SPECIES OF BAMBOO-DWELLING BAT FOUND IN MEGHALAYA

◉ **CONTEXT:**   **A team of scientists has discovered a new species of thick-thumbed bat from a bamboo forest in Meghalaya and named it after the state, which is celebrating its 50 years of statehood.**

Key-highlights of the new species

- The scientists have named the new species as Glischropus meghalayanusin honour of the state from where it was discovered and also in celebration of the 50th anniversary of statehood of Meghalaya in 2022.

- The new species is reported from a bamboo forest near Lailad in Ri-Bhoi district in Meghalaya, which is adjoining to Nongkhyllem Wildlife Sanctuary.

- This genus Glischropus (thick thumbed bat) is the first report from South Asia; the only new discovery from India in over a decade.

- The discovery of Glischropus meghalayanus from a forest patch adjacent to Nongkhyllem Wildlife Sanctuary from where another specialized bamboo- dwelling species (Eudiscopus denticulus) was reported recently also underscore the importance of the area from a conservation point of view.

- With this new discovery, the total number of bat species known from India stands at 131 species with Meghalaya harbouring the highest bat diversity in any Indian state with 67 species.

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Bat species in India

- The bat is something of a chimera: it has wings like a bird, the furry face of a mouse, it often flies zigzag or flits giddily like a moth.
- It belongs to the taxonomic order 'Chiroptera', derived aptly from the Greek words for 'hand' and 'wing'.
- India has no less than 131 species of bats — yet very little is known about their population status, their behaviour, or their role in the spread of zoonotic disease.
    o Most species are listed as 'data deficient' in the IUCN Red List of Threatened Species.

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