

Current Affairs MONTHLY



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By
CivilsTap Himachal



**For HPAS & Other
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GENERAL STUDIES 1.

GEOGRAPHY

UTTAR PRADESH PLANS ITS 4TH TIGER RESERVE IN BUNDELKHAND

- The Uttar Pradesh (UP) cabinet approved the notification of the state's fourth tiger reserve in the Ranipur Wildlife Sanctuary (RWS) in Chitrakoot district.

Ranipur Wildlife Sanctuary(RWS)

- Ranipur Wildlife Sanctuary(RWS) was founded in 1977.
- It has no tigers of its own.
- But pugmarks of the animals are frequently seen there as tigers from nearby Panna frequent it.
- According to the Status of tigers, co-predators and prey in India report by the National Tiger Conservation Authority(NTCA), RWS is an important corridor for the movement of tigers.
- Hence, Rani Tiger Reserve is being established there.

About Ranipur Tiger Reserve

- Ranipur Tiger Reserve will be the fourth in UP after Dudhwa, Pilibhit and Amangarh (buffer of Corbett Tiger Reserve).
- It will be the first in the state's portion of the Bundelkhand region which it shares with neighbouring Madhya Pradesh.
- The Tiger Reserve has tropical dry deciduous forests and is home to fauna such as tigers, leopards, sloth bears, spotted deer, sambhar, chinkara and a number of birds and reptiles.
- A Ranipur Tiger Conservation Foundation will also be established for the protection and conservation of tigers in the region.

National Tiger Conservation Authority

- The National Tiger Conservation Authority (NTCA) is a statutory body under the Ministry of Environment, Forests and Climate Change constituted under enabling provisions of the Wildlife (Protection) Act, 1972, as amended in 2006, for strengthening tiger conservation.
- The authority consists of the Minister in charge of the Ministry of Environment and Forests (as Chairperson), the Minister of State in the Ministry of Environment and Forests (as Vice-Chairperson), three members of Parliament, Secretary, Ministry of Environment and Forests and other members.
- The 'Project Tiger' is a Centrally Sponsored Scheme (CSS) of the Ministry of Environment, Forests and Climate Change, providing funding support to tiger range States for in-situ conservation of tigers in designated tiger reserves.

The objectives of NTCA are

- Providing statutory authority to Project Tiger so that compliance of its directives become legal.
- Fostering accountability of Centre-State in management of Tiger Reserves, by providing a basis for MoU with States within our federal structure.
- Providing for an oversight by Parliament.
- Addressing livelihood interests of local people in areas surrounding Tiger Reserves.

BASMATI RICE VARIETIES

- Five new Basmati varieties, developed by a group of scientists of Indian Agriculture Research Institute (IARI), in 2020 and 2021 are all set to bring revolutionary changes in the way this type of paddy is cultivated in the country.
- Three of the five varieties can resist two common diseases of paddy.
- The other two can save 35% of the water now required as the seeds can be directly sown, obviating the need for transplanting seedlings.
- These two seeds are resistant to herbicides too, helping the farmers control weeds more efficiently.
- All of the five seeds have the combined qualities of disease and herbicide resistance.

Basmati Rice

- It is one of the best known varieties of rice all across the globe.
- Basmati rice has a unique fragrance and flavour caused due to the presence of a chemical called 2-acetyl-1-pyrroline.
- Basmati rice needs specific climatic conditions to grow which is why it is cultivated in selected regions of India.
- India is the largest producer of Basmati rice with about 70 per cent share in global production.
- Basmati rice constitutes one of India's significant exports both in terms of soft power and hard money.
- It is cultivated in the states of Himachal Pradesh, Punjab, Haryana, Delhi, Uttarakhand, Madhya Pradesh, Jammu and Kashmir and western Uttar Pradesh.
- In May 2010, GI status was given to basmati grown only in Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand and parts of western Uttar Pradesh and Jammu & Kashmir.
- Major chunk of India's basmati rice is exported to Gulf countries viz. Saudi Arabia, Iran, United Arab Emirates, Iraq and Kuwait.

ICAR

- The Indian Council of Agricultural Research (ICAR) is an autonomous organisation under the Department of Agricultural Research and Education (DARE), Ministry of Agriculture and Farmers Welfare, Government of India.
- The Council is the apex body for coordinating, guiding and managing research and education in agriculture including horticulture, fisheries and animal sciences in the entire country.
- The institute was then known as Agricultural Research Institute (ARI) which functioned with five departments, namely Agriculture, Cattle Breeding, Chemistry, Economic Botany and Mycology. Bacteriology unit was added in 1907.
- The name of ARI was changed to Imperial Institute of Agricultural Research in 1911 and, in 1919 it was renamed as Imperial Agricultural Research Institute.
- Post-independence, the institute has been renamed as Indian Agricultural Research Institute (IARI).

HISTORY

SHYAMJI KRISHNA VARMA

- The Prime Minister has paid tributes to Shyamji Krishna Varma on his Jayanti.

About:

- Shyamji Krishna Varma (1857 – 1930) was an Indian freedom fighter, lawyer and journalist.
- Born in 1857 in modern-day Gujarat, Shyamji Krishna Varma completed his education in India, before moving on to teach Sanskrit at the Oxford University.
- **Indian Home Rule Society (IHR):** It was an Indian organisation founded in London in 1905 that sought to promote the cause of self-rule in British India. The organisation was founded by Shyamji Krishna Varma, with support from Bhikaji Cama, Dadabhai Naoroji and S.R. Rana.
- **India House:** He founded India House in London. It was a student residence that existed between 1905 and 1910 which was opened to promote nationalist views among Indian students in Britain.
- **Indian Sociologist:** He founded Indian Sociologist in London. The monthly Indian Sociologist became an outlet for nationalist ideas.
- Varma became the first President of Bombay Arya Samaj.
- He was an admirer of Dayanand Saraswati, and he inspired Veer Savarkar who was a member of India House in London.
- Varma also served as the Divan of a number of states in India.

A memorial called Kranti Teerth dedicated to him was inaugurated in 2010 near Mandvi, Kutch, Gujarat

BEGUM SAMRU

- The first week of October is said to mark the 200th anniversary of the completion of the Basilica of Our Lady of Graces, one of India's minor basilicas situated in Sardhana in Uttar Pradesh.
- It was constructed in 1822 by Begum Samru, a woman of humble origins that came to be popularly known as the only Catholic queen of India.

Begum Samru

- Begum Samru (1750's – 1836) was a figure that defied any fixed identity.
- She was a Muslim who converted to Catholicism, a nautch-girl (dancing girl) who became a warrior and an aristocrat, and was described by her contemporaries as dressing more like a man than a woman, sporting a dark turban and ever-puffing away at a hookah.
- She was a shrewd leader who was able to find a favourable position in the ever-dynamic political terrain of 18th century northern India.
- While she had first supported the waning Mughal empire, from the 1790's the Begum began to provide service to the rising Marathas, before joining the British to ensure that she could maintain her landholding rights if they emerged victorious.
- Some sources claim that Begum Samru, birth name Farzana, was born to a second wife of a poor nobleman in present day Meerut.
- In 1767, the teenage-Farzana became the much older Reinhardt's close companion, and remained so until his death, assuming the role of his wife and became known as Begum Samru.

The Basilica of Our Lady of Graces:

- It is one of the 23 minor basilicas of India, and the only one in the north, after the church was bestowed the status by Pope John XXIII in 1961.
- The architect was an Italian engineer, Antonio Reghellini.
- Completed in 1822, it is commonly believed that the church was built as a replica of St Peter's Basilica in Rome.

- The structure consists of a blend of architectural styles, of Indian and Islamic features added to a European cross-plan church.
- The church's domes lie next to large steeples reminiscent of Islamic minarets, while the central altar contains pietra dura or parchinkari designs that are found in the Taj Mahal and Red Fort.

NAVAYANA BUDDHISM

- On October 5, Mission Jai Bhim and The Buddhist Society of India organised a public meeting in Delhi to commemorate Buddhist Conversion Day.
- Every year Dussehra is also celebrated as Ashoka Vijaya Dashami to commemorate Buddhist Conversion day.
- On October 14, 1956, B. R. Ambedkar along with more than half a million followers had embraced Buddhism in Nagpur, Maharashtra.

Navayana Buddhism

- On October 13, 1935, Ambedkar, as president of the 'Yeola Conversion Conference' near Nasik, announced his decision to renounce Hinduism, as a path to contest the Hindu caste order.
- He asked the assembled members from the depressed castes to abandon struggles such as the temple-entry agitations and advised them to leave Hinduism entirely and embrace another religion.
- Ambedkar embraced Buddhism in a grand ceremony at Nagpur's Deekshabhoomi, where more than five lakh followers had assembled to follow his decision.
- Under the presence of monk Chandramani, Ambedkar and his wife took the Buddhist vows.
- He then recited the three jewels (Trisharan), five precepts (Panchsheel), pronounced the self-crafted 22 vows for the assembled people and renounced Hinduism.
- The event is marked as the renaissance of Buddhism in India.
- In the post-event deliberation, Ambedkar called his version of Buddhism Navayana (followers are called neo-Buddhists), differentiating it with the Mahayana and Vajrayana traditions of Buddhism.
- Every year in October, lakhs of people assemble at Nagpur's Deekshabhoomi to pay homage to Ambedkar and to celebrate the historic day.
- Navayana Buddhism differs with the Mahayana and Vajrayana traditions of Buddhism.
- The 22 vows are divided into three major sections.
- First part – to refuse to worship the Hindu pantheon or to follow Hindu religious dogmas
- Second – it challenges the authority of the Brahmin priest
- Third – promises to follow Buddhist principles.

Demographic status of neo-Buddhists in India

- The Buddhist population is a mere 0.70%, of which 87% are neo-Buddhists.
- Further, a large majority of it (around 80%) reside in Maharashtra (5.8% of the total population).
- However, it is mainly the Mahar caste that primarily converted to Buddhism. Some other converted communities include the Matang castes and some sections of Maratha castes.
- The rest are traditional Buddhists and are scattered mainly in north-eastern States like Sikkim, Arunachal Pradesh, Mizoram and Tripura, etc.
- There has been a decline in the growth rate of Buddhists in India in recent years.
- The neo-Buddhists of Maharashtra have established numerous viharas and meditation centres.

100 YEARS OF SAKA PANJA SAHIB

- The gurdwara management bodies from both sides of the border — Amritsar-based Shiromani Gurdwara Parbandhak Committee (SGPC) and Pakistan Sikh Gurdwara Parbandhak Committee (PSGPC) — will jointly observe the centenary of Shaheedi Saka Panja Sahib (martyrdom massacre), at Hasan Abdal city of Attock district, Punjab province of Pakistan.

- The main commemoration event will be held at Gurdwara Sri Panja Sahib on October 30. However, a day before, on October 29, Gurbani kirtan will also be held near rail tracks at Hasan Abdal railway station.

What is Saka Panja Sahib?

- On October 30, 1922 two Sikhs died and several other Sikh protesters, including women, were injured at Hasan Abdal railway station after the railway authorities under the then-British government refused to stop the train ferrying Sikh prisoners from Amritsar to Attock.
- The Sikhs from nearby Panja Sahib wanted to serve langar (community kitchen food) to the Sikh prisoners but were told by the station master at Hasan Abdal station that the train would not stop at the station.
- In protest, the Sikhs squatted on the railway tracks and as the train approached, the Sikhs, who were determined to halt the train, continued to stay put, demanding their right to serve langar to the Sikh prisoners.
- The train finally came to a screeching halt, but only after crushing many of Sikh protesters — of whom Bhai Karam Singh and Bhai Partap Singh died after sustaining serious injuries.
- Since then, both Sikhs are hailed as martyrs of Saka Panja Sahib who sacrificed their lives fighting for rights of Sikhs against the British.

Gurdwara Panja Sahib: Guru Nanak's visit

- The history of the shrine Gurdwara Panja Sahib, in Hasan Abdal of Pakistan, is far older than the Saka Panja Sahib incident.
- The gurdwara was built on the site believed to be visited by Sikhism's founder Guru Nanak Dev, along with his companion Bhai Mardana.
- "It is believed that a local saint Wali Qandhari was rude towards Nanak and refused to give water to Bhai Mardana who was extremely thirsty, from a natural fountain near his dera.
- He also threw a boulder towards Nanak, but Nanak stopped it with his panja (hand) and a spring of water appeared there miraculously.
- The boulder with Nanak's handprint is still there.
- Later Maharaja Ranjit Singh and his general Hari Singh Nalwa got the gurdwara building constructed to commemorate Nanak's visit.
- "Gurdwara Panja Sahib is of extreme importance because of the visit of Guru Nanak and Bhai Mardana.
- The Saka Panja Sahib which happened later in 1922 was a watershed moment in Sikh history which made the British realize that Sikhs cannot be suppressed in the fight for the right over their gurdwaras and Guru's langar.

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CULTURE OF INDIA

BATHUKAMMA FESTIVAL

- Bathukamma festival will be celebrated at the India Gate with the Telugu people living in the nation's capital, prominent personalities and even lady officers under the aegis of the Culture Ministry.

Bathukamma Festival

- Bathukamma festival is celebrated for nine days during Durga Navratri.
- It comes during the latter half of monsoon, before the onset of winter. It falls two days before Dassera.
- The most abundant of these flowers are – 'gunuka' and 'tangedu'.
- The 'shilpakka pandlu' (or 'sitaphalalu'), custard apples or 'poor man's apple', are great attraction during this season.
- The word Bathukamma means- 'Mother Goddess come to life'.
- The festival represents cultural spirit of Telangana. It is the state festival of Telangana.
- The festival is celebrated to pray to the Goddess for health and achievements of each family.
- During the festival, flowers arranged and decorated on a big plat in conical shape in seven layers and this arrangement is called as Bathukamma.
- The flowers are carefully arranged row after row in a brass plate (called 'taambalam') in circular rows and in alternate colours.
- All the women are dressed colorfully and form a circle around 'Bathukamma' and dance before immersing it to the nearest water body.

50 ICONIC INDIAN HERITAGE TEXTILES BY UNESCO

- UNESCO has released a list of 50 exclusive and iconic heritage textile crafts of India under the title "Handmade for the 21st Century: Safeguarding Traditional Indian Textile".

What are the textiles listed in the UNESCO document?

- The UNESCO document lists the histories and legends behind the textiles, describes the complicated and secret processes behind their making, mentions the causes for their dwindling popularity, and provides strategies for their preservation.

Some of the textiles mentioned are:

- Khes from Panipat, Chamba rumals from Himachal Pradesh, Thigma or wool tie and dye from Ladakh and Awadh Jamdani from Varanasi.
- Ilkal and Lambadi or Banjara embroidery from Karnataka, Sikalnayakanpet Kalamkari from Thanjavur, Toda embroidery and Sungadi from Tamil Nadu and Himroo weaves from Hyderabad.
- Kunbi weaves from Goa, Mashru weaves and Patola from Gujarat, Himroo from Maharashtra and Garad-Koirial from West Bengal and Bandha tie and dye weaving from Sambalpur in Odisha.

Significance of this document:

- This list by UNESCO is significant as one of the major challenges to the safeguarding of Intangible Cultural Heritage in South Asia is the lack of proper inventory and documentation.

Lists by UNESCO

- The Representative List of the Intangible Cultural Heritage of Humanity – Includes cultural practices and expressions that assist to highlight the variety of this heritage and raise awareness of its significance.
- The List of Intangible Cultural Heritage in Need of Urgent Safeguarding – Is made up of cultural aspects that concerned groups and countries consider vulnerable and in need of immediate protection.

UNESCO's Intangible Cultural Heritage

- **Aim:** Ensuring the better protection of important intangible cultural heritages worldwide and creating awareness of their significance.

This list has been classified into five broad domains in which intangible cultural heritage is manifested:

- Oral traditions and expressions, including language as a vehicle of the intangible cultural heritage
- Performing arts
- Social practices, rituals and festive events
- Knowledge and practices concerning nature and the universe
- Traditional craftsmanship

G20 CULTURE TRACK

- Hampi, Khajuraho on list for G20 culture track.
- As part of India's G20 Presidency between December 2022 and November 2023, the Government is planning to host five key meetings focusing on the "culture track" at Khajuraho, Bhubaneswar, Hampi and Agra.
- These cities have been chosen mainly for well-known monuments and UNESCO World Heritage Sites such as Taj Mahal and Agra Fort (UP), the Hindu and Jain temples of Khajuraho (Madhya Pradesh), the Konark Sun Temple around 65 km from Bhubaneswar (Odisha), and the sites at Hampi (Karnataka).
- For the culture track, a G20 Secretariat has been set up in the Ministry of Culture, which will hire a professional agency "for research, documentation and coordination work for the G20 work-stream of culture.
- G20 presidency also provides a fantastic opportunity for India to shape the global agenda on culture across multiple work streams and engagement areas. These include:
 - Protection and restitution of cultural property
 - Advancement of traditional cultural practices for sustainable living
 - Promotion of cultural and creative industries for livelihood generation
 - Preservation and dissemination of culture by leveraging technology.

UNESCO

- The United Nations Educational, Scientific and Cultural Organization (UNESCO) is a specialized agency of the United Nations (UN) that was outlined in a constitution signed November 16, 1945. It promotes international collaboration in education, science, and culture to promote peace.

UNESCO World Heritage Site

- A World Heritage Site is a place that is listed by UNESCO for its special cultural or physical significance.
- The list of World Heritage Sites is maintained by the international 'World Heritage Programme', administered by the UNESCO World Heritage Committee.
- There are 40 UNESCO World Heritage Sites in India.
- Dholavira and Ramappa Temple are the latest addition to the list under the 'Cultural' category. There are two more categories Natural and Mixed.

HERITAGE COMPLEX

- Prime Minister reviewed the construction of the National Maritime Heritage Complex (NMHC) site at Gujarat's Lothal.
- Lothal was not only a major trading centre of the Indus Valley Civilisation, but it was also a symbol of India's maritime power and prosperity.

Where is Lothal?

- Lothal was one of the southernmost sites of the Indus Valley civilization, located in the Bhāl region of what is now the state of Gujarat.
- The port city is believed to have been built in 2,200 BC.
- Lothal was a thriving trade centre in ancient times, with its trade of beads, gems and ornaments reaching West Asia and Africa.
- The meaning of Lothal (a combination of Loth and (s) thal) in Gujarati is “the mound of the dead”.
- Incidentally, the name of the city of Mohenjo-daro (also part of the Indus Valley Civilisation, now in Pakistan) means the same in Sindhi.
- Indian archaeologists started the search for cities of the Harappan Civilisation post-1947 in Gujarat’s Saurashtra.
- Archaeologist SR Rao led the team which discovered a number of Harappan sites at the time, including the port city of Lothal.
- Excavation work was carried out in Lothal between February 1955 and May 1960.
- According to the Archaeological Survey of India (ASI), Lothal had the world’s earliest known dock, connecting the city to an ancient course of the Sabarmati river.
- Additionally, the National Institute of Oceanography in Goa discovered marine microfossils and salt, gypsum crystals at the site, indicating that sea water once filled the structure and it was definitely a dockyard.
- In later excavations, ASI unearthed a mound, a township, a marketplace, and the dock.
- Adjacent to the excavated areas stands the archaeological site museum, where some of the most prominent collections of Indus-era antiquities in India are displayed.

Heritage Value

- Lothal was nominated in April 2014 as a UNESCO World Heritage Site,.
- The excavated site of Lothal is the only port-town of the Indus Valley Civilisation.
- A metropolis with an upper and a lower town had in on its northern side a basin with vertical wall, inlet and outlet channels which has been identified as a tidal dockyard.
- Satellite images show that the river channel, now dried, would have brought in considerable volume of water during high tide, which would have filled the basin and facilitated sailing of boats upstream.
- Its heritage value is comparable to other ancient port-towns around the world – including Xel Ha (Peru), Ostia (Port of Rome) and Carthage (Port of Tunis) in Italy, Hepu in China, Canopus in Egypt, Gabel (Byblos of the Phoenicians), Jaffa in Israel, Ur in Mesopotamia, Hoi An in Vietnam, as per the dossier. In the region, it can be compared with other Indus port towns of Balakot (Pakistan), Khirasa (in Gujarat’s Kutch) and Kuntasi (in Rajkot).

SWADESH DARSHAN 2.0

- The government recently revamped the scheme as Swadesh Darshan 2.0 (SD2.0) to develop sustainable and responsible destinations with tourist and destination centric approach.
- 15 states with two or three destinations each have been identified to be developed under the scheme which seeks to provide financial support to strengthen tourist infrastructure

Swadesh Darshan 2.0

- Fifteen States are part of the first phase which include Madhya Pradesh, Karnataka, Tamil Nadu, Uttar Pradesh, and Maharashtra.
- Two destinations from each State have been identified
- Some of the prominent places identified are Jhansi and Prayagraj in Uttar Pradesh, Gwalior, Chitrakoot and Khajuraho in Madhya Pradesh and Ajanta and Ellora in Maharashtra.
- The Swadesh Darshan scheme is 100% centrally funded.
- The government recently revamped the scheme as Swadesh Darshan 2.0 (SD2.0) to develop sustainable and responsible destinations with tourist and destination centric approach.
- The scheme has been revamped with the mantra of “vocal for local”.

- According to the Ministry, domestic tourist visits in 2021 were around 677 million and in 2022 (data available till date) is 572 million.

Significance

- This is a very positive step as it has made State government as well as the local government as stakeholders.
- Local community would immensely benefit as It would help create jobs and that would lead to skill development among the natives.
- This shall directly boost the economy of the region.
- Further destination division as adventure tourism, beach tourism, wellness tourism, Eco-tourism and several other categories would help segregate the tourists as per their preference.

The Swadesh Darshan Scheme

- It was launched by the Centre in 2014-15 for the integrated development of theme-based tourist circuits.
- Under the scheme, the Ministry of Tourism provides financial assistance to State governments, Union Territory Administrations or Central Agencies for development of tourism infrastructure in the country.
- The scheme was envisioned to synergise with other government schemes such as Swachh Bharat Abhiyan, Skill India, and Make in India with the idea of positioning the tourism sector as a major engine for job creation, driving force for economic growth, building synergy with various sectors to enable tourism to realise its potential.
- Some of the prominent circuits launched under this were the Buddhist tourist circle, Ambedkar Tourist Circle and the North-East Tourist Circle.
- Part 1 of Swadesh Darshan had faced some criticism mainly pertaining to “resources being spread thin due to the many destinations being covered and too many stakeholders being involved”.
- Out of the 76 projects sanctioned under the scheme, 52 have been completed.

SAMBURU WARRIORS ROCK ART TRADITION

- The Samburu people in northern Kenya’s Marsabit county are pastoralists. They migrate from place to place in search of pasture and water for their cattle, goats, sheep and camels.
- Young warriors called Imurran express themselves by painting images on the rocks.
- This is one of very few ongoing rock art traditions in the world, but it has gained almost no attention among rock art researchers.
- Linnaeus University in Sweden and the University of Western Australia initiated a community-led project together with the Samburu to learn about their rock art tradition.

About

- This is one of very few ongoing rock art traditions in the world and therefore, presents a unique chance to know where, when, and why rock art was created.
- Samburu rock art tradition commemorates real-life events related to the warrior life-world. They express the wishes and expectations of the young men and is made as a leisure activity.
- Dancing is an important part of Samburu culture and some paintings depict boys and girls dancing together.
- While there are indeed many rituals in Samburu culture, rock art is not part of such practices.
- Certainly, there are norms guiding the creation of the rock art, but the artist is free to express himself if the images reflect young men’s experiences.

About Samburu Art

- The images are made using red, white, yellow and black paint.
- Before the arrival of Europeans in the 1940s the artists preferred a pigment of red ochre, which was also used for smearing their hair and bodies.
- The white colour was animal fat, which turns light when it dries. To make black paint they used charcoal.

- As a binder, all pigments were mixed with fat from slaughtered animals.
- Today, commercial paint is also used along with more traditional pigments.
- The oldest rock art the elders remembered was more than 150 years old.
- When visiting the rock art sites, we saw an intriguing relationship between rock art made by different generations of warriors. Present warriors are inspired by older art, but add their own memories and style and sometimes also the names of the artists.
- The images become an inter-generational visual culture that reflects and recreates a warrior identity and lifestyle.
- The artists always have specific people, animals and objects in mind when making their drawings. This is not clearly expressed in the drawings as they lack identifying details.
- Studying the images doesn't reveal the artist's intention. Many of the artworks reflect first hand experiences of the warriors. A bull figure, for example, depicts a bull they slaughtered and ate.

TOMBS OF RASKHAN AND TAJ BIBI

- U.P. promotes tombs of Muslim devotees of Krishna for tourism.

Raskhan or Syed Ibrahim Khan

- He was a 16th century Sufi Muslim poet born either in Amroha or Hardoi in Uttar Pradesh.
- He became a follower of Krishna and spent his life in Vrindavan.
- He accepted Krishna as the supreme god (Svayam Bhagavan) and became a Vaishnava.
- He died in 1628 AD.
- His samadhi is at Mahaban, about six miles east of Mathura.
- He translated Bhagavata Purana into Persian.
- The poetry of Raskhan focuses on Lord Krishna.
- Rachnavali is the collection of Raskhan's poetry
- His poetry is in the form of Doha, Padawali and Savayya.
- Raskhan's Khariboli writings are numerous, the five most important being the Sujana Raskhana, the Premavatika, the Danalila, the Astayama and a collection of Padas (rhymed couplets).

Taj Bibi,

- She is also known as the '**Mughal Mirabai**', was the daughter of a Muslim nobleman, appointed by the Mughals to protect the Gokul area.
- Taj Bibi wrote poetry during the Mughal time when the ruling class belonged to the Muslim religion.
- She had shown great courage by giving up recitation of Kalma Quran and announcing that she was a Hindu devotee.
- Taj Bibi was married to Emperor Akbar.
- Emperor Akbar had great reverence for Gusain Shri Vitthalnath Ji and he used to come to Govardhan from time to time to have darshan of Gusain Ji.
- Once Taj Bibi came to Govardhan to see Gusain Ji with permission from Akbar.
- Taj Bibi returned to Delhi after a few days as per Akbar's orders.

SOCIAL ISSUES

CONTAMINATED MEDICINES

- Following the death of 66 children in Gambia, the World Health Organization (WHO) has raised an alert over four fever, cold and cough syrups made by an Indian company, urging people to not use them. All the four syrups
- Promethazine Oral Solution,
- Kofexmalin Baby Cough Syrup,
- Makoff Baby Cough Syrup and
- Magrip N Cold Syrup
- All are made by Haryana-based Maiden Pharmaceuticals.

- Laboratory analysis of samples of each of the four products confirms that they contain unacceptable amounts of diethylene glycol and ethylene glycol as contaminants.
- India's apex drug regulatory authority – the Central Drugs Standard Control Organisation (CDSCO) – has already launched an investigation into the matter.
- Diethylene glycol and ethylene glycol can cause toxic effects, including abdominal pain, vomiting, diarrhoea, inability to pass urine, headache, altered mental state, and acute kidney injury that may lead to death.
- These medicinal products are substandard and unsafe for use, especially in children, and may result in serious injury or death, as per WHO.

Measures to be taken

- Individuals are advised to seek immediate medical advice from a qualified healthcare professional and report the incident to the National Regulatory Authority or National Pharmacovigilance Centre.
- Countries should increase surveillance of the supply chains to detect and remove the substandard products including surveillance of informal or unregulated markets.

About CDSCO

- The Central Drugs Standard Control Organization (CDSCO) is the Central Drug Authority for discharging functions assigned to the Central Government under the Drugs and Cosmetics Act. CDSCO has six zonal offices, four sub-zonal offices, 13 port offices and seven laboratories under its control.

Major functions of CDSCO

- Regulatory control over the import of drugs
- approval of new drugs and clinical trials
- meetings of Drugs Consultative Committee (DCC) and Drugs Technical Advisory Board (DTAB)
- approval of certain licenses as Central License Approving Authority is exercised by the CDSCO headquarters.

AGRICULTURE

SUGAR PRODUCTION IN INDIA

- India also produced a record 5,000 lakh metric ton of sugarcane during the October-September season, emerging as the world's largest producer of the sweetener as well as the world's 2nd largest exporter of sugar.
- Sugar exports also rose to 109.8 LMT. In sugar seasons 2017-18, 2018-19 & 2019-20, only about 6.2 LMT, 38 LMT & 59.60 LMT of sugar was exported.
- Maharashtra emerged as the highest sugar exporter and producer in India in 2021-22 Sugar Season (SS) exporting almost 60 per cent of total exports in India.
- Supportive international prices and Indian Government Policy led to this feat of Indian Sugar Industry.
- The exports earned foreign currency of about Rs. 40,000 crores for the country.

Factors that led to largest Producer of Sugar:

- Collaborative efforts of Central and State Governments, farmers, sugar mills, ethanol distilleries with very supportive overall ecosystem for business in the country led to this feat.
- During 2021-22, sugar mills procured sugarcane worth more than 1.18 lakh with no financial assistance (subsidy) from Government of India.
- 95% of cane dues have already been cleared.
- In 2020-21, more than 99.9% cane dues are cleared.
- Scheme for Extending Financial Assistance to Sugar Undertakings (SEFASU) and National Policy on Biofuels are two of the government initiatives to support sugarcane production and the sugar industry.

Ethanol Production

- Growth of ethanol as biofuel sector in last 5 years has amply supported the sugar sector as use of sugar to ethanol has led to better financial positions of sugar mills due to:
 - faster payments,
 - reduced working capital requirements and
 - less blockage of funds due to less surplus sugar with mills.
- During 2021-22, sugar mills/distilleries made Rs. 18,000 crores from the sale of ethanol.
- The ethanol production capacity of molasses/sugar-based distilleries has increased to 605 crore liters per annum.
- The progress aims to meet the target of 20% blending by 2025 under Ethanol Blending with Petrol (EBP) Programme.
- The diversion of sugar to ethanol is expected to increase from 35 LMT to 50 LMT which will generate Rs. 25,000 crores for the sugar mills,"

Sugarcane Crop

- Sugarcane is grown as a Kharif Crop.
- It needs a hot and humid climate with an average temperature of 21 °C to 27 °C and about 75-150 cm rainfall.
- Sugarcane is a water-intensive crop.
- Sugarcane can grow in any soil which can retain moisture, however deep rich loamy soil is considered ideal for sugarcane.
- Top Sugarcane Producing States: Maharashtra>Uttar Pradesh > Karnataka
- It is the main source of sugar, Gur (jaggery), khandsari and molasses.

ODISHA MILLET MISSION

- Odisha Millet Mission was launched to promote seven millet crops, ragi dominates production and procurement.

- In 2017, the state launched the Odisha Millet Mission (OMM), which aims to bring millets back to its fields and food plates by encouraging farmers to grow the crops that traditionally formed a substantial part of the diet and crop system in tribal areas.
- To improve nutritional security and promote sustainable agricultural practices
- OMM also sells millet products, such as cookies, savoury snacks, vermicelli and processed millets, under a brand called “Millet Shakti” through food trucks, cafés, kiosks and other outlets.
- Women self-help groups (SHGs) have been kept at the centre of the programme.

Green Revolution

Green Revolution of 1960s and 1970s made India self-sufficient in food grain production. Government provided several policy incentives to farmers, like:

- Price support for crops
- High-yielding seeds
- Expanded irrigation:
- Increased use of fertilizers, pesticides and weedicides in order to reduce agricultural losses
- Introduction of combine harvesters

Significance

- Increase in food grain production, especially in Punjab, Haryana, and Uttar Pradesh.
- Development of high-yielding varieties of wheat and rust resistant strains of wheat.
- The Green Revolution has transformed India to a food grain surplus country from a deficit one.

POKKALI RICE

- Pokkali farmers met on the sidelines of a pokkali rice harvest festival organised under the aegis of Kadamakudy panchayat, on the outskirts of Kochi, and Pokkali Cooperative with sustainability dominating sessions addressed by agricultural officers and farmers.
- The cultivation of the rice variety, which is part of the ‘one fish and one rice’ annual cycle, had been strained over recent years with a tendency among farmers in most parts of the coastal areas of Alappuzha, Ernakulam and Thrissur districts of Kerala to give it up entirely.
- The farmers were worried about impact of climate change with unseasonal rain flooding fields.

Pokkali Rice

- It is a unique variety of rice known for its saltwater resistance and is cultivated in the districts of Alappuzha, Thrissur and Ernakulam districts of Kerala.
- **GI Tag:** The brand Pokkali has received a GI tag from the Geographical Indications Registry Office, Chennai.
- **Vyttila-11:** It is the latest variety of pokkali developed by the Kerala Agricultural University.
- It is a salt water-resistant variety that grows tall.
- It is cultivated in the coastal regions of Kerala.
- The prawn seedlings feed on the leftovers of the harvested crop, while the rice crop, which gets no other fertiliser or manure, draws nutrients from the prawns’ excrement and other remnants.
- Rice farming and prawn farming are mutually complementary.
- They are useful in climate- resilient agriculture as they can withstands flooding.
- A storehouse of nutrition, they are rich in fibre and protein content, antioxidants with benefits of vitamin E, and minerals such as iron, boron and sulphur.

GENERAL STUDIES 2.

POLITY

ABORTION RIGHTS AND MARITAL RAPE

- In a significant ruling on reproductive rights, the Supreme Court extended the right to safe and legal abortion up to 24 weeks of pregnancy to unmarried and single women, saying it is the “right of every woman to make reproductive choices without undue interference from the State”
- Now, all women in the country, regardless of marital status, can undergo an abortion up to 24 weeks into pregnancy.

Ruling

- The bench ruling on a plea by an unmarried pregnant woman who had been in a consensual relationship but was denied the right to abortion because she was past the 20-week limit.
- The bench made it clear that provisions of the Medical Termination of Pregnancy Act cannot be interpreted to deny that right to single women beyond 20 weeks of pregnancy.

Bench Arguments

- The bench ruled pregnancy is the sole prerogative of a woman and the circumstances are unique and may vary for each with regard to economic, cultural or social factors.
- The bench said, were “to be interpreted such that its benefits extended only to married women, it would perpetuate the stereotype and socially held notion that only married women indulge in sexual intercourse, and that consequently, the benefits in law ought to extend only to them”.
- “This artificial distinction between married and single women is not constitutionally sustainable. The benefits in law extend equally to both single and married women,”.
- Article 21 of the Constitution “recognises and protects the right of a woman to undergo termination of pregnancy if her mental or physical health is at stake.
- Importantly, it is the woman alone who has the right over her body and is the ultimate decision-maker on the question of whether she wants to undergo an abortion.
- Depriving women of autonomy not only over their bodies but also over their lives would be an affront to their dignity.
- Right to bodily autonomy of the pregnant woman will ensure social justice.
- Complicated life circumstances play a part in decision of abortion which only the woman can choose on her own terms without external interference or influence.

Constitutionality

- Article 21 of the Constitution “recognises and protects the right of a woman to undergo termination of pregnancy if her mental or physical health is at stake.
- Article 51A states to renounce practices derogatory to the dignity of women. Depriving women of autonomy not only over their bodies but also over their lives would be an affront to their dignity.

Medical Termination of Pregnancy Act, 1971

- In 1971, the Medical Termination of Pregnancy (MTP) Act was enacted.
- An Act to provide for the termination of certain pregnancies by registered Medical Practitioners and for matters connected therewith or incidental thereto.
- It allowed abortion within 12 weeks of pregnancy requiring the opinion of one doctor and between 12 and 20 weeks requires opinion of two doctors.
- This law has been amended twice since and the 2021 amendment has expanded the scope of the law.

- The law provides for a set of reasons based on which abortion can be accessed.
- **Increased gestation limit:** The bill has enhanced the upper gestation limit from 20 to 24 weeks for special categories of women.
- **Opinion of professional:** Bill has proposed a requirement of the opinion of one doctor for termination of pregnancy, up to 20 weeks of gestation and introducing the requirement of opinion of two doctors for termination of pregnancy for 20-24 weeks of gestation.
- **Medical board:** The composition, functions and other details of the Medical Board to be prescribed subsequently in Rules under the Act.
- **Identity protection:** Name and other particulars of a woman whose pregnancy has been terminated shall not be revealed.

Abortion laws around the world:

- Abortions are illegal in 24 countries –where about 90 million or 5 per cent of women of reproductive age reside.
- Some of these include Senegal, Mauritania, Egypt, Laos, Philippines, Honduras and Poland. In El Salvador, women undergoing abortions have been found guilty of “aggravated homicide”, including miscarriages.
- The Judgment struck down the laws that made abortion illegal in several US States. It ruled that abortion would be allowed up to the point of ‘foetal viability’, that is, the time after which a foetus can survive outside the womb. The Judgment tried to establish a balance between the Right of Women to ‘bodily autonomy’ vis-a-vis the ‘Right to Life’ of the foetus. (Pro-choice vs Pro-life debate).
- Canada: The court ruled that the restriction to abortion law violated a woman’s right to “life, liberty and security of the person” that was enshrined in Canada’s Charter of Rights and Freedoms.
- New Zealand decriminalised abortions in 2020, extending the legal period to 20 weeks of pregnancy
- In 2021, in Colombia, the Constitutional court voted to legalise abortion before 24 weeks of pregnancy as a result of efforts from human rights and civil society groups.

Marital Rape

- The term marital rape (also referred to as spousal rape) refers to unwanted intercourse by a man on his wife obtained by force, threat of force or physical violence or when she is unable to give consent. The words unwanted intercourse refers to all sorts of penetration (whether anal, vaginal or oral) perpetrated against her will or without her consent.
- The bench also said that the meaning of rape must include marital rape for the purpose of the MTP Act.
- Marital rape is the act of sexual intercourse with one’s spouse without the spouse’s consent. The lack of consent is the essential element and need not involve physical violence.
- Any other interpretation would have the effect of compelling a woman to give birth to and raise a child with a partner who inflicts mental and physical harm upon her.
- **Section 375:** This section provides the definition of rape. Under this, a man is said to commit “rape” who had sexual intercourse with a woman under certain circumstances. This section also specifies the circumstances like against her will, without her consent, etc.

Way forward

- Law must not remain static and its interpretation should keep in mind the changing social context and advance the cause of social justice. The interpretation of the MTP Act and Rules must evolve and consider the social realities of today.
- Transformative constitutionalism promotes and engenders societal change by ensuring that every individual is capable of enjoying the life and liberties guaranteed under the Constitution
- The law must remain cognizant of the fact that changes in society have ushered in significant changes in family structures.

- The National Disaster Management Authority (NDMA) celebrated its 18th Formation Day on September 28, 2022, in New Delhi.
- The theme for this year's Foundation Day was "Volunteerism in Disaster Management".

What is NDMA?

- The National Disaster Management Authority (NDMA) is India's apex statutory body for disaster management.
- The NDMA was formally constituted on 27th September 2006, by the Disaster Management Act, 2005.
- The Prime Minister is its chairperson and it has nine other members. One of the nine members is designated as Vice-Chairperson.
- Disaster Management Act also envisaged the creation of State Disaster Management Authorities (SDMAs) headed by respective Chief Ministers and the District Disaster Management Authorities (DDMA) headed by the District Collectors/ District Magistrate and co-chaired by Chairpersons of the local bodies.
- The primary responsibility for the management of disaster rests with the State Government concerned. However, the National Policy on Disaster Management puts in place an enabling environment for all i.e., the Centre, state and district.
- India is also a signatory to the Sendai Framework for Disaster Risk Reduction (SFDRR) that sets targets for disaster management.

How has NDMA evolved?

- NDMA has also gone through the same stages. The Government of India (GOI), in recognition of the importance of Disaster Management as a national priority, set up a High-Powered Committee (HPC) in August 1999 and a National Committee after the Gujarat earthquake, for making recommendations on the preparation of Disaster Management plans and suggesting effective mitigation mechanisms.
- The tenth Five-Year Plan document also had, for the first time, a detailed chapter on Disaster Management. The Twelfth Finance Commission was also mandated to review the financial arrangements for Disaster Management.
- On December 23, 2005, the Government of India enacted the Disaster Management Act, which envisaged the creation of National Disaster Management Authority (NDMA), headed by the Prime Minister, and State Disaster Management Authorities (SDMAs) headed by respective Chief Ministers, to spearhead and implement a holistic and integrated approach to Disaster Management in India.

What are the functions and responsibilities of NDMA?

- NDMA, as the apex body, is mandated to lay down the policies, plans and guidelines for Disaster Management to ensure a timely and effective response to disasters. Towards this, it has the following responsibilities:
- Lay down policies on disaster management.
- Approve the National Plan.
- Approve plans prepared by the Ministries or Departments of the Government of India in accordance with the National Plan.
- Lay down guidelines to be followed by the State Authorities in drawing up the State Plan.
- Lay down guidelines to be followed by the different Ministries or Departments of the Government of India for the Purpose of integrating the measures for prevention of disaster or the mitigation of its effects in their development plans and projects.
- Coordinate the enforcement and implementation of the policy and plans for disaster management.
- Recommend provision of funds for the purpose of mitigation.
- Provide such support to other countries affected by major disasters as may be determined by the Central Government.
- Take such other measures for the prevention of disaster, or the mitigation, or preparedness and capacity building for dealing with threatening disaster situations or disasters as it may consider necessary.
- Lay down broad policies and guidelines for the functioning of the National Institute of Disaster Management.

“Volunteerism in Disaster Management”: Apda Mitra Scheme

- The National Disaster Management Authority of India (NDMA), started a scheme to train community volunteers in disaster response in selected flood-prone districts of India. The scheme was started by NDMA to train community volunteers in disaster response in selected flood-prone districts of India.
- More than 5500 volunteers have been trained under the pilot scheme.
- “Sewa, Samarpan & Paropkar” is the identity of Aapda Mitras.
- Significance: In any disaster, however quick the government machinery may be, volunteers from the affected community are normally the first to act, external help takes time to reach the affected people, and this time lag is very crucial in saving lives and livelihood.
- National Disaster Response Force (NDRF) conducts community awareness programmes for the capacity building of community in disaster management.
- NDRF is also conducting School Safety Programme (SSP) and imparting basic training to school children as well as teachers to evacuate themselves during an earthquake.
- NDMA runs awareness generation campaigns through electronic and print media, including social media, on various disasters, from time to time. These campaigns include Do’s & Don’ts, Audio-Visual films, messages containing preparedness before, during and after disaster events.
- Example of Kerala Floods 2018: A team of 30 volunteers, comprising journalists, lawyers, fishermen and IT workers, managed several operations like supplying food, taking control of the Rescue Operation Centre of the district disaster management authority, handling distress calls and coordinating rescue effort with several choppers through personal contacts in Air Force and NDRF.

THE MEDIATION BILL, 2021

- The Mediation Bill, 2021 was introduced in the Rajya Sabha in December, 2021, with the Parliamentary Standing Committee being tasked with a review of the Bill.
- The Bill aims at institutionalisation mediation and establishing the Mediation Council of India.
- In its report, submitted to Rajya Sabha, the Committee recommends substantial changes to the Mediation Bill.

Need for Mediation Bill

- The Mediation and Conciliation Project Committee of the Supreme Court of India describes mediation as a tried and tested alternative for conflict resolution.
- While there is no standalone legislation for mediation in India, there are several statutes containing mediation provisions. This includes:
 - Code of Civil Procedure, 1908,
 - Arbitration and Conciliation Act, 1996,
 - Companies Act, 2013,
 - Commercial Courts Act, 2015, and
 - Consumer Protection Act, 2019.
- India is a signatory to the Singapore Convention on Mediation (formally the United Nations Convention on International Settlement Agreements Resulting from Mediation).
- Hence, it is appropriate to enact a law governing domestic and international mediation.

Key Features of the Bill:

- **Pre-litigation mediation:** Parties must attempt to settle civil or commercial disputes by mediation before approaching any court or certain tribunals.

Disputes not fit for mediation:

- The Bill contains a list of disputes which are not fit for mediation.
- These include disputes: (i) relating to claims against minors or persons of unsound mind, (ii) involving criminal prosecution, and (iii) affecting the rights of third parties. The central government may amend this list.

Applicability:

- The Bill will apply to mediations conducted in India: (i) involving only domestic parties, (ii) involving at least one foreign party and relating to a commercial dispute (i.e., international mediation), and (iii) if the mediation agreement states that mediation will be as per this Bill.
- If the central or state government is a party, the Bill will apply to: (a) commercial disputes, and (b) other disputes as notified.

Mediation process:

- Mediation proceedings will be confidential, and must be completed within 180 days (may be extended by 180 days by the parties).
- A party may withdraw from mediation after two sessions.
- Court annexed mediation must be conducted as per the rules framed by the Supreme Court or High Courts.

Mediators:

- Mediators may be appointed by: (i) the parties by agreement, or (ii) a mediation service provider (an institution administering mediation).
- They must disclose any conflict of interest that may raise doubts on their independence.
- Parties may then choose to replace the mediator.

Mediation Council of India:

- The central government will establish the Mediation Council of India.
- The Council will consist of a chairperson, two full-time members (with experience in mediation or ADR (Alternative dispute resolution)), three ex-officio members (including Law Secretary, and Expenditure Secretary), and a part-time member from an industry body.
- Functions of the Council include: (i) registration of mediators, and (ii) recognising mediation service providers and mediation institutes (which train, educate, and certify mediators).

Mediated settlement agreement:

- Agreements resulting from mediation (other than community mediation) will be final, binding, and enforceable in the same manner as court judgments.
- They may be challenged on grounds of: (i) fraud, (ii) corruption, (iii) impersonation, or (iv) relating to disputes not fit for mediation.

Community mediation:

- Community mediation may be attempted to resolve disputes likely to affect the peace and harmony amongst residents of a locality.
- It will be conducted by a panel of three mediators (may include persons of standing in the community, and representatives of resident welfare associations).

Concerns with the Bill

- **Pre-litigation mediation:** According to the Bill, pre-litigation mediation is mandatory for both parties before filing any suit. Parties who fail to attend pre-litigation mediation without a reasonable reason may incur a cost.
- **Cross-border mediation in India**
- The Bill considers international mediation to be domestic when it is conducted in India and the settlement under the latter is given the status of a judgment or decree of a court.
- It will be disastrous when one party is foreign because the Singapore Convention does not apply to settlements which already have the status of a judgment or decree.
- As a result, conducting cross-border mediation in India will exclude the tremendous benefits of worldwide enforceability.
- **Controversy around Clause 26 of the bill**

- According to Clause 26 of the Bill, court-annexed mediation, including pre-litigation mediation, will be conducted in accordance with the directions or rules framed by the Supreme Court or High Courts.
- However, the Parliamentary Committee found this provision as against the spirit of the Constitution.
- In countries that follow the Common Law system, it is a healthy tradition that in the absence of statutes, apex court judgments and decisions carry the same weight.
- However, the moment a law is passed, it becomes the guiding force rather than the instructions or judgments given by the courts.
- Therefore, Clause 26 is unconstitutional.
- **Non-Applicability to Non-Commercial Disputes:**
- The members questioned the non-applicability of the provisions of the Bill to disputes/matters of non-commercial nature involving the Government and its agencies.

THE CRITERION FOR SC STATUS

- The Supreme Court of India has sought the most recent position of the Union government on a batch of petitions challenging the Constitution (Scheduled Castes) Order of 1950, which allows only members of Hindu, Sikh and Buddhist religions to be recognised as Scheduled Castes.

Who all are included in the Constitution Order of 1950?

- When enacted, the Constitution (Scheduled Castes) Order of 1950, initially provided for recognising only Hindus as SCs, to address the social disability arising out of the practice of untouchability.
- The Order was amended in 1956 to include Dalits who had converted to Sikhism and once more in 1990 to include Dalits who had converted to Buddhism.
- Both amendments were aided by the reports of the Kaka Kalelkar Commission in 1955 and the High Powered Panel (HPP) on Minorities, Scheduled Castes and Scheduled Tribes in 1983 respectively.
- On the other hand, the Union government in 2019 rejected the possibility of including Dalit Christians as members of SCs, rooting the exclusion on an Imperial Order of 1936 of the then colonial government
- It had first classified a list of the Depressed Classes and specifically excluded “Indian Christians” from it.

Why are Dalit Christians excluded?

- Ever since the amendment to include Sikhs as SCs in 1956, the Office of the Registrar General of India (RGI) has been reluctant in expanding the ambit of the Order beyond members of Hinduism or Sikhism.
- The RGI had cautioned the government that SC status is meant for communities suffering from social disabilities arising out of the practice of untouchability, which it noted was prevalent in Hindu and Sikh communities.
- It also noted that such a move would significantly swell the population of SCs across the country.
- However, the amendment to include Buddhist converts as SCs was passed in 1990, which at the time did not require the approval of the RGI — a mandate introduced in the rules for inclusion framed in 1999. RGI said that like Dalit Buddhists, Dalits who converted to Islam or Christianity belonged to different sets of caste groups and not just one, as a result of which they cannot be categorized as a “single ethnic group”, which is required by Clause (2) of Article 341 for inclusion.
- The RGI opined that since the practice of “untouchability” was a feature of Hindu religion and its branches, allowing the inclusion of Dalit Muslims and Dalit Christians as SCs could result in being “misunderstood internationally” as India trying to “impose its caste system” upon Christians and Muslims.
- It also stated that Christians and Muslims of Dalit origin had lost their caste identity by way of their conversion and that in their new religious community, the practice of untouchability is not prevalent.

Is there a case for inclusion?

- The petitions arguing for inclusion have cited several independent Commission reports that have documented the existence of caste and caste inequalities among Indian Christians and Indian Muslims
- This was substantiated in the
- First Backward Classes Commission’s report in 1953,

- The Report of the Committee on Untouchability Economic and Educational Development Of the Scheduled Castes in 1969,
- The HPP report on SCs, STs, and Minorities in 1983,
- The Mandal Commission Report,
- The report of the Prime Minister's High-Level Committee formed in 2006,
- A 2008 study conducted by the National Commission for Minorities,
- The Ranganath Misra Commission Report and several other studies.
- In addition to this, the petitions have argued against the proposition that caste identity is lost upon conversion, noting that even in Sikhism and Buddhism, casteism is not present and yet they have been included as SCs.
- The above-mentioned reports argue that caste-based discrimination continues even after conversion, hence entitling these communities to SC status. However, the Union government refuses to accept the reports of the Commissions on the basis that these reports do not have enough empirical evidence to support their claims.

UNITED NATIONS WORLD GEOSPATIAL INFORMATION CONGRESS

- PM recently addressed 2nd UN World Geospatial International Congress. It is being held in Hyderabad.
- The goal of this year's UNWGIC is to promote a broad dialogue on global geospatial information management with all relevant governments, non-governmental organisations, academia, and the private sector.
- **Theme:** The theme of UNWGIC 2022 is 'Geo-Enabling the Global Village: No one should be left behind'.
- It was hosted by the ministry of science and technology of the government of India.

United Nations World Geospatial Information Congress (UNWGIC)

- The United Nations Global Geospatial Information Management (UN-GGIM) convened the conference on UNWGIC 2022 and was organised by the United Nations Department of Economic and Social Affairs.
- It is conducted every four years with the objectives of enhancing international collaboration among the Member States and relevant stakeholders in Geospatial information management and capacities.
- The first UNWGIC was organized by China in October 2018.

THE COURT AND THE PROBLEM WITH ITS COLLEGIUM

- The incumbent Chief Justice of India (CJI), Justice U.U. Lalit, had set in motion the procedure contemplated for the collegium of the Supreme Court which is enshrined in the Memorandum of Procedure of 1999.
- He also forwarded the name of Justice D Chandrachud as his successor. This has again put in focus the institution of the 'collegium' system that rules the appointments in higher judiciary.

The Collegium System

- It was introduced in response to the executive interference in judicial appointments. However, this system has failed to protect judicial appointments from executive interference. It is due to the reasons like Post-retirement appointments of judges.
- At present, the collegium comprises of CJI (Chief Justice of India) and 4 senior-most judges of the Supreme Court. Despite various criticisms and attempts to reform the appointments and transfers process, the collegium system still persists and remains stronger.

Evolution of Collegium System

- **Article 124(2)** of the Indian Constitution provides that the Judges of the Supreme Court are appointed by the President. He/she should consult such a number of the Judges of the Supreme Court and of the High Courts in the States as he/she may deem necessary for the purpose.
- **Article 217** of the Indian Constitution states that the Judge of a High Court shall be appointed by the President in consultation with the Chief Justice of India and the Governor of the State. Further, the Chief Justice of the High Court should also be consulted except in case of his/her own appointment.

- **In First Judges Case (1981)** – The court said consultation under Article 124 doesn't mean concurrence (unanimity). Based on this judgement, the President is not bound by CJI's advice.
- **In Second Judges Case (1993)** – The court overruled its previous decision and said CJI's advice is binding. Further CJI is required to formulate its advice based on a collegium of judges consisting of CJI and two senior-most SC judges.
- **In Third Judges Case (1998)** – The court expanded the collegium to a five-member body to include the CJI and the four senior-most judges of the court after the CJI.
- **In the Fourth Judges Case (2015)**– The SC upheld the primacy of the collegium. Further, the court strikes down the NJAC (National Judicial Appointments Commission) Act as unconstitutional. The Court held that the Act gave the government significant powers to appoint Judges. The Court held the Act encroached upon the judiciary's independence and undermined the basic structure.
- The NJAC comprised of 3 judges of SC, a central law minister, and 2 civil society experts.
- A person would not be recommended by NJAC if any 2 of its members did not accept such recommendation, making the appointment process more broad-based.

Criticisms of the Collegium System

- It gives enormous power to judges that can be easily misused. The collegium system has made India, the only country where judges appoint judges.
- The selection of judges by collegium is undemocratic. Since judges are not accountable to the people or representative of peoples i.e. executive or legislative.
- There is no official procedure for selection or any written manual for functioning. This creates an ambiguity in the collegium's functioning.
- Sons and nephews of previous judges or senior lawyers tend to be popular choices for judicial roles. Thus, it encourages mediocrity in the judiciary by excluding talented ones and breeds nepotism.
- The delays over the appointment are still persistent. The Supreme Court last appointed a judge in September 2019, and it currently has four vacancies, which is expected to be increased further this year.
- The procedure lacks uniformity- Sometimes a judge of HC is elevated as chief justice of the same HC while in other cases he/she is made chief justice of some other high court.
- Proactive decisions on improving transparency were rolled back to secrecy. This includes the practice of disclosing the reasons while announcing the collegium's decision.

National Judicial Appointments Commission

- The National Judicial Appointments Commission (NJAC) is a constitutional body proposed to replace the present Collegium system of appointing judges.
- It will consist of six people — the Chief Justice of India, the two most senior judges of the Supreme Court, the Law Minister, and two 'eminent persons'. These eminent persons are to be nominated for a three-year term by a committee consisting of the Chief Justice, the Prime Minister, and the Leader of the Opposition in the Lok Sabha, and are not eligible for re-nomination.
- The NJAC was established by amending the Constitution [Constitution (Ninety-Ninth Amendment) Act, 2014] passed by the Lok Sabha on August 13, 2014 and by the Rajya Sabha on August 14 2014.
- The Supreme Court rejected the National Judicial Appointments Commission (NJAC) Act and the 99th Constitutional Amendment.

Way Forward

- In recent times, the Government seems to have given up on pursuing the commission for judicial appointments. It is time to revisit this question and secure a better, broad-based and transparent method of appointing senior judges to the High Courts and the Supreme Court.
- While doing so, we may also ask why there have been no appointments from the category of distinguished jurists which Article 124 of the Constitution contemplates. Appointments to the top court seem to be the preserve of judges from the High Courts with a handful of appointments from the Bar.
- Filling up of vacancies is a continuous and collaborative process involving the executive and the judiciary, so it is time to think of a permanent, independent body to institutionalize the process with adequate safeguards to preserve the judiciary's independence guaranteeing judicial primacy but not judicial exclusivity.

- The mechanism for judicial appointments and transfer should ensure judicial independence, reflect diversity, demonstrate professional competence and integrity.
- Instead of selecting the number of judges required against a certain number of vacancies, the collegium must provide a panel of possible names to the President to appoint in order of preference and other valid criteria.
- Apart from the above suggestions, government may also examine the feasibility of reviving the idea of a National Judicial Oversight Committee (NJOC) that gives executive greater role in ensuring transparency and efficiency in higher judiciary of India.



GOVERNANCE

GLOBAL INNOVATION INDEX

- The World Intellectual Property Organization (WIPO) released the Global Innovation Index (GII) 2022 in which Switzerland has emerged as the world's most innovative economy for the 12th consecutive year.
- Switzerland remains the world's leader in innovation for the 12th consecutive year.
- It leads globally in innovation outputs, and specifically in patents by origin, software spending, high-tech manufacturing and production and export complexity.
- The second position was secured by the United States (US) followed by Sweden, the United Kingdom (UK) and the Netherlands.
- The rankings were based on the areas of
 - Human and capital research,
 - Business sophistication,
 - Infrastructure and
 - Technology outputs among others.
- India secured the 40th position in the Global Innovation Index. This is the first time the country entered the top 40. Last year, India was at the 46th position.
- India is the innovation leader in the lower middle-income group, and continues to lead the world in ICT services exports and holds top rankings in other indicators, including venture capital receipt value, finance for startups and scaleups, graduates in science and engineering, labour productivity growth and domestic industry diversification."

PRADHAN MANTRI AWAS YOJANA (GRAMIN)

- According to the government data, 69% houses under PMAY in rural India are owned by women.
- Over 69% of houses constructed under the Prime Minister's special housing scheme are either wholly or jointly owned by women in rural areas.
- A total of two crore houses had been constructed out of the 2.46 crore houses that were sanctioned.
- The Pradhan Mantri Awas Yojana (Gramin) was launched by the Prime Minister in 2016 with the aim of constructing 2.95 crore houses.
- Beneficiaries are identified using parameters from Socio-Economic and Caste Census (SECC) 2011 data and verified by Gram Sabhas.
- Concerned Ministry: Ministry of Rural Development.

About Pradhan Mantri Awas Yojana-Gramin:

- Ministry of Rural Development in 2016 launched it.
- The aim is to provide a pucca house with basic amenities to all rural families by the end of March 2022. People who are homeless or living in kutcha or dilapidated houses are eligible for benefits.

Key Features of the Scheme:

- Beneficiaries are identified as per the housing deprivation parameters and exclusion criteria prescribed under Socio-Economic Caste Census (SECC) 2011. Gram Sabha verifies the eligible beneficiaries.
- The scheme had a target of construction of 2.95 crore pucca houses for eligible rural households by March 2022.
- The Centre and the states share the grants under the scheme in the ratio of:
 - 90:10 in case of NE States, Himalayan States & Himalayan UTs.
 - For all other States, funds are shared in the ratio of 60:40 by the Centre and the States.
 - In cases of other UTs, entire funds are provided by the Centre.

- The programme implementation is being monitored not only electronically but also through community participation (Social Audit), Member of Parliament (DISHA Committee), Central and State Government officials, National Level Monitors, etc

'HERSTART' PLATFORM

- President Murmu launches startup platform 'herStart' for women entrepreneurs which is an initiative of the Gujarat University.
- The initiative of Gujarat University Startup and Entrepreneurship Council aims at supporting women-led startups.
- The platform has been launched with the aim that it will not only boost innovation and start-up efforts of women entrepreneurs but also help them connect with government as well as private enterprises.
- Through this platform, free resources and training modules free will be provided to aspiring women entrepreneurs.
- It will build a digital community and also a digital publication to spread their success stories.
- The Platform encompasses the herSTART Incubator, a dedicated full-fledged Startup incubator for women entrepreneurs and innovators, and the herSTART Accelerator, a round-the-year accelerator programme for high-impact women-led startups.
- Gujarat is the first state in the country to form the Garima Cell with the aim of giving new energy and direction to the higher education system of the state.
- Employment generation: through 450 Startup projects operational in Gujarat University. Of these, 125 startups specially inspired by entrepreneurial women are giving a new direction to the entrepreneurship and innovative ideas in women.
- India has moved from 81st position to 40th position in the Global Innovation Index (GII) of 2022 as a result of the Startup program.
- Reduction in the drop-out rate among the students of the tribal community due to Vanabandhu Kalyan Yojana, Eklavya Model Residential School and Kanya Nivasi Shala.
- Real-time monitoring of the education system of more than 55,000 schools in the state by the Vidya Review Centre.
- Upgrading the infrastructure of about 20,000 schools of the state through Mission School of Excellence.

QUALITY COUNCIL OF INDIA (QCI)

- Union Minister of Commerce and Industry, Consumer Affairs, Food and Public Distribution and Textiles asked the Quality Council of India (QCI) to strive to bring about convergence of all the various quality and standards organizations in the country so that they may work in tandem towards building a world-class quality system in India and make quality a national mission.

The Quality Council of India (QCI)

- The Quality Council of India (QCI) is a pioneering experiment of the Government of India in setting up organizations in partnership with the Indian industry.
- A committee which included various interested ministries and stakeholders including industries were constituted to make suitable recommendations. The work of the committee was coordinated by the then Department of Industries (Department of Industrial Policy and Promotion) and the recommendations were submitted to the Cabinet in 1996.
- Quality Council of India(QCI) in 1997 as a non-profit autonomous society registered under Societies Registration Act XXI of 1860.
- Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry is the nodal department for QCI.
- The Chairman of QCI is appointed by the Prime Minister on the recommendation of the industry to the government.
- Quality Council of India publishes a quarterly magazine known as "Quality India"

- Quality Council of India aims to establish an accreditation structure in the country and to spread quality movement in India by undertaking a National Quality Campaign.
- Quality Council of India is governed by a Council comprising of 38 members including the Chairman and Secretary General.
- The Council has an equal representation of Government, Industry and other Stakeholders.

Key Objectives

- QCI has been established to create a mechanism for independent third party assessment of products, services and processes.
- It plays a pivotal role at the national level in propagating, adoption and adherence to quality standards in all important spheres of activities including education, healthcare, environment protection, governance, social sectors, infrastructure sector and such other areas of organized activities that have significant bearing in improving the quality of life and wellbeing of the citizens of India.

Open Network for Digital Commerce (ONDC)

- ONDC is in an early stage of formation that been incorporated as a Section 8 company in December 2021 with the Quality Council of India and Protean eGov Technologies Limited as initial promoters.
- ONDC is an initiative aiming at promoting open networks for all aspects of exchange of goods and services over digital or electronic networks.
- The foundations of ONDC are to be open protocols for all aspects in the entire chain of activities in exchange of goods and services, similar to hypertext transfer protocol for information exchange over internet, simple mail transfer protocol for exchange of emails and unified payments interface for payments.

PRIME MINISTER'S DEVELOPMENT INITIATIVE FOR NORTH EAST REGION (PM-DevINE)

- The Union Cabinet has approved the Prime Minister's Development Initiative for North East Region (PM-DevINE) – a new scheme for the Northeastern states.
- The scheme will be operational for the remaining four years of the 15th Finance Commission, from 2022-23 to 2025-26, and will have an outlay of Rs 6,600 crore.

What is PM-DevINE?

- The new scheme, PM-DevINE, is a Central Sector Scheme with 100% Central funding and will be implemented by Ministry of Development of North Eastern Region (DoNER) through North Eastern Council or Central Ministries/ agencies.
- The PM-DevINE Scheme will have an outlay of Rs.6,600 crore for the four year period from 2022-23 to 2025-26 (remaining years of 15th Finance Commission period).
- PM-DevINE will lead to creation of infrastructure, support industries, social development projects and create livelihood activities for youth and women, thus leading to employment generation.
- Measures would be taken to ensure adequate operation and maintenance of the projects sanctioned under PM-DevINE so that they are sustainable.
- To limit construction risks of time and cost overrun, falling on the Government projects would be implemented on Engineering-procurement-Construction (EPC) basis, to the extent possible.
- Efforts will be made to complete the PM-DevINE projects by 2025-26 so that there are no committed liabilities beyond this year, said DoNER officials.

Objectives of PM-DevINE

- Fund infrastructure convergently, in the spirit of PM Gati Shakti;
- Support social development projects based on felt needs of the NER;
- Enable livelihood activities for youth and women;
- Fill the development gaps in various sectors.

MDoNER

- The Ministry of Development of North Eastern Region (MDoNER) is responsible for the matters relating to the planning, execution and monitoring of development schemes and projects in the North Eastern Region.
- Its vision is to accelerate the pace of socio-economic development of the Region so that it may enjoy growth parity with the rest of the country.

Initiatives/activities of MDoNER:

- **NESIDS:** North East Special Infrastructure Development Scheme" (NESIDS) was approved by the Government of India as a Central Sector Scheme.
- **NLCPR:** The Non Lapsable Central Pool of Resources (NLCPR) Scheme came into existence in 1998 under then Planning Commission. Subsequently, it was transferred to DoNER in 2001.
- The objective of NLCPR Scheme is to fill up the gap in infrastructure sector of the North Eastern Region through sanctioning the projects prioritised by the State Governments.
- **SIDF:** Social and Infrastructure Development Fund (SIDF). It is a one-time package that covers projects, prioritized by the State Governments as per their requirement, which, inter alia, include construction of new roads and bridges, re-establishment of new sub-stations/transmission lines, construction/upgradation of hospitals, establishment of schools, water supply projects etc.
- **NITI Forum for North East:** In collaboration with the NITI Aayog, the 'NITI Forum for North East' constituted for accelerated, inclusive and sustainable development in the North East Region has identified 5 focus sectors, viz. Tea, Tourism, Bamboo, Dairy and Pisciculture.
- **Mission Organic Value Chain Development (MOVCD-NER):** The program has been implemented in the North-Eastern states since 2017. The aim of the mission is to promote organic farming in the region. It seeks to replace traditional subsistence farming with a cluster-based approach.
- **Sub Mission on Seeds and Planting Material (SMSP):** It aims to increase the availability of seeds of the High Yielding Varieties of crops. The overall objective is to double farmers' income by 2022, as envisioned by the Government. The scheme is run alongside other support programs like Krishi Vigyan Kendras (KVKs), integrated farming systems etc.
- **Connectivity Projects:** To create alternate routes to the region and decrease its dependence on the Chicken's Neck, the Indian government has planned additional routes through South East Asia like Kaladan Multi-Modal Transit Project, Bangladesh-China-India-Myanmar (BCIM) Corridor, etc.
- India's Look-East connectivity projects connect Northeast India to East Asia and ASEAN.
- **NEHHDC:** Home Minister recently launched the North Eastern Handicrafts & Handlooms Development Corporation Limited (NEHHDC) Mobile Application during the session.
- The NEHHDC would help register artisans and weavers online and collect authentic data through the app. It is expected to provide training through specially designed online courses and help the beneficiaries and redress grievances.
- **NESAC:** North Eastern Space Applications Centre (NESAC) was established as a joint initiative of Department of Space (DOS) and the North Eastern Council (NEC) and came into being on 5th of September, 2000.
- The Centre helps in augmenting the developmental process in the region by providing the advanced space technology support.

External aided projects for NER:

- North Eastern States Roads Investment Programme (NESRIP) assisted by Asian Development Bank (ADB):
- The scheme envisaged construction/up-gradation of total 433.425 km long roads in 6 North Eastern States of Assam, Manipur, Meghalaya, Mizoram, Sikkim and Tripura.

Challenges to the Development of the NER:

Difficult Terrain

- North Eastern Region is majorly a mountainous region, except the state of Assam, which has plains as a major part of its area.
- This makes it difficult for the government schemes to be implemented in the area, because of the problem of access to the remote areas.

Backward Areas

- Unlike the mainland, people of the North East Region are still content with a simple lifestyle and lack of technology in their day-to-day lives. The standard of living continues to be low, due to the absence of high-income generation opportunities.
- For e.g., the farmers practice primitive methods of agriculture, with the tribals still practising Shifting agriculture in the country.

Connectivity

- As stated above, the North Eastern Region is a landlocked region. Therefore, it has limited access to the sea. Similarly, it has a difficult terrain that renders expressways and wider roads infeasible. This is complicated by the absence of railway infrastructure in the region.

Insurgencies

- One of the major reasons for the lack of development in the region is the lack of political and social stability in the country.
- The artificial boundaries of the British legacy have not been fully accepted by the tribal communities of the region, which is compounded by political opportunism.
- The region is still caught in the vicious circle of violence due to political reasons and the diversion of youth towards the insurgent groups, which leads to a lack of skill enhancement and consequent lack of opportunity.

GLOBAL HUNGER INDEX

- India ranks 107 out of 121 countries on the Global Hunger Index in which it fares worse than all countries in South Asia barring war-torn Afghanistan.
- The Global Hunger Index (GHI) is a tool for comprehensively measuring and tracking hunger at global, regional, and national levels.
- GHI scores are based on the values of four component indicators - undernourishment, child stunting, child wasting and child mortality.
- The GHI score is calculated on a 100-point scale reflecting the severity of hunger, where zero is the best score (no hunger) and 100 is the worst.

Global Hunger Index

- The Global Hunger Index (GHI) is a tool for comprehensively measuring and tracking hunger at global, regional, and national levels.
- Annual Report: Jointly published by Concern Worldwide and Welthungerhilfe.
- It was first produced in 2006. It is published every October. The 2022 edition marks the 17th edition of the GHI.
- It's aim to comprehensively measure and track hunger at the global, regional, and country levels.

Indicators: The four indicators for the index are:

- **Undernourishment** (share of the population with insufficient caloric intake),
- **Child Wasting** (low weight for height, reflecting acute undernutrition)
- **Child Stunting** (low height for age, reflecting chronic undernutrition) and
- **Child Mortality** rate under 5 years of age.

India's Scenario

- India ranks 107 out of 121 countries on the Global Hunger Index in which it fares worse than all countries in South Asia barring war-torn Afghanistan.
- India's score of 29.1 places it in the 'serious' category. India also ranks below Sri Lanka (64), Nepal (81), Bangladesh (84), and Pakistan (99).
- Afghanistan (109) is the only country in South Asia that performs worse than India on the index.
- India's score of 29.1 places it in the 'serious' category.
- **India's child wasting rate** (low weight for height), at 19.3%, is worse than the levels recorded in 2014 (15.1%) and even 2000 (17.15). This is the highest for any country in the world and drives up the region's average owing to India's large population.
- **Prevalence of undernourishment** has also risen in the country from 14.6% in 2018-2020 to 16.3% in 2019-2021. This translates into 224.3 million people in India considered undernourished.
- **Child stunting and child mortality:** India has shown improvement in child stunting, which has declined from 38.7% to 35.5% between 2014 and 2022. Similarly, child mortality has also dropped from 4.6% to 3.3% in the same comparative period.
- Overall, India has shown a slight worsening with its GHI score increasing from 28.2 in 2014 to 29.1 in 2022.

FIRST INDIGENOUSLY MANUFACTURED ALUMINIUM FREIGHT TRAIN RAKE

- Recently the union minister for Railways recently launched India's first all-aluminium freight rail rakes.

Aluminium Freight

- Lighter than its predecessors, but with more freight-carrying capacity, the Railways' first indigenously manufactured aluminium goods train rake.
- Made in collaboration with Besco Limited Wagon Division and aluminium major Hindalco, it also has a lower carbon footprint for every 100 kg of weight reduction in wagons.
- The rake was 180 tonnes lighter than existing steel rakes, resulting in increased speed and lower power consumption for the same distance.
- These wagons save 14,500 tonnes of CO2 emissions, have more carrying capacity, consume less energy and are corrosion-resistant.
- They are 100% recyclable and even after 30 years.
- The new rake can carry 180 tonnes extra payload per trip over conventional rakes and being corrosion-resistant, will reduce maintenance costs.

Significance of using Aluminium

- Aluminium trains command a lion's share in the United States, Europe and Japan.
- This is because of its attributes such as sleek, aerodynamic designs.
- They also have an ability to tilt at high speeds without going off the rails.
- Aluminium is the preferred choice for metro trains worldwide for their durability and most importantly – passenger safety, as it has improved crash worthiness or superior crash absorption capability.
- Indian Railways have already announced their plans to make aluminium bodied Vande Bharat train sets.

PROGRAMME TO STRENGTHEN KASHI-TAMIL NADU BOND

- Union Government announced a month-long programme to "strengthen" and "rekindle" the cultural and civilisational bond between Tamil Nadu and Varanasi. Named the 'Kashi-Tamil Sangamam'.
 - The period will cover the Tamil month of Karthikeya during which all Tamil households go pray to Lord Shiva.
 - This programme, which would be a part of the Ek Bharat Sreshtha Bharat initiative, is aimed at rekindling the civilisational link between the new Kashi and Tamil Nadu — both deep centres of knowledge.
 - As part of the programme, a total of 2,500 people divided into 12 groups would be travelling to Varanasi by train during the month-long period.
 - The journey points in Tamil Nadu would be Chennai, Rameswaram and Coimbatore.
- +The groups would include students, teachers, artisans and people from various walks of life.

FOREIGN CONTRIBUTION (REGULATION) ACT & NGO'S

- The Ministry of Home Affairs has cancelled the Foreign Contribution (Regulation) Act (FCRA) licence of Rajiv Gandhi Foundation (RGF) and Rajiv Gandhi Charitable Trust (RGCT), organisations that are associated with the Nehru-Gandhi family, for alleged violations of the provisions of the Act.

FCRA (Foreign Contribution Regulation Act)

- Foreign Contribution (Regulation) Act: It is an act of Parliament enacted in 1976 and amended in 2010 to regulate foreign donations and to ensure that such contributions do not adversely affect internal security.
- It is applicable to all associations, groups, and NGOs which intend to receive foreign donations.
- Members of the legislature and political parties, government officials, judges, and media persons are prohibited from receiving any foreign contribution.
- However, in 2017 the FCRA was amended through the Finance Bill to allow political parties to receive funds from the Indian subsidiary of a foreign company or a foreign company in which an Indian holds 50% or more shares.
- **Registration:** It is mandatory for all such NGOs to register themselves under the FCRA. The registration is initially valid for five years and it can be renewed subsequently if they comply with all norms.
- **Purpose of Foreign contribution:** Registered associations can receive foreign contributions for social, educational, religious, economic, and cultural purposes. The filing of annual returns on the lines of Income Tax is compulsory.

Provisions of the Act:

- Every person or NGO wishing to receive foreign donations to be registered under the Act,
- To open a bank account for the receipt of the foreign funds in State Bank of India, Delhi.
- To utilise those funds only for the purpose for which they have been received, and as stipulated in the Act.
- They are also required to file annual returns, and they must not transfer the funds to another NGO.
- The Act prohibits receipt of foreign funds by candidates for elections, journalists or newspaper and media broadcast companies, judges and government servants, members of legislature and political parties or their office-bearers, and organisations of a political nature.

Ministry of Home Affairs (MHA) New Rules:

- In 2015, the MHA notified new rules which required NGOs to give an undertaking that the acceptance of foreign funds is not likely to prejudicially affect the sovereignty and integrity of India or impact friendly relations with any foreign state and does not disrupt communal harmony.
- It also said all such NGOs would have to operate accounts in either nationalized or private banks which have core banking facilities to allow security agencies access on a real-time basis.

Registration under FCRA

- NGOs that want to receive foreign funds must apply online in a prescribed format with the required documentation.
- The registrations are granted to individuals or associations that have definite cultural, economic, educational, religious, and social programmes.
- Post application, the MHA makes inquiries through the Intelligence Bureau into the antecedents of the applicant, and accordingly processes the application.
- The MHA is required to approve or reject the application within 90 days — failing which it is expected to inform the NGO of the reasons for the same.

Cancellation of approval

- The government reserves the right to cancel the FCRA registration of any NGO if it finds it to be in violation of the Act.
- Registration can be cancelled for a range of reasons including, if “in the opinion of the Central Government, it is necessary in the public interest to cancel the certificate”.
- Once the registration of an NGO is cancelled, it is not eligible for re-registration for three years.

- All orders of the government can be challenged in the High Court.

Foreign Contribution Regulation (Amendment), Act 2020

- **Transfer of foreign contribution:** Under the Act, foreign contribution cannot be transferred to any other person unless such person is also registered for that purpose. The amendment also forbids sub-granting by NGOs to smaller NGOs who work at the grassroots.
- **Single FCRA account:** The act states that foreign contributions must be received only in an FCRA account opened in the State Bank of India, New Delhi Branch. No funds other than the foreign contribution should be received or deposited in this account.
- **Regulation:** The Act states that a person may accept foreign contributions if 1. They have obtained a certificate of registration from the central government or 2. They have taken prior permission from the government to accept foreign contributions.
- **Aadhaar usage:** The act makes it compulsory for all trustees to register their Aadhaar card with the FCRA account.
- **Reduction in use of foreign contribution for administrative purposes:** The Act decreases administrative expenses through foreign funds by an organisation to 20% from 50% earlier.

Criticisms about Amendment

- Significantly all the NGOs on the latest list work on climate change and environmental projects and/or child rights and slavery projects.
- These are the subjects where the government has been sensitive to international criticism.
- International Pressure regarding Law Making and over-compliance:
- Despite India's record in complying with the Paris agreement, global pressures are intensifying on India to raise the Nationally Determined Contributions.
- It is detrimental to the Indian image and poverty reduction plans.

CivilsTap Hlmachal

INTERNATION RELATIONS

UNCTAD & TRADE AND DEVELOPMENT REPORT 2022

- India's economic growth is expected to decline to 5.7% this year from 8.2% in 2021, the United Nations Conference on Trade and Development (UNCTAD) Trade and Development Report 2022 projected citing higher financing cost and weaker public expenditures.
- The UNCTAD report on India's GDP estimate for 2022-23 makes for disturbing news as India's economic growth is expected to decline to a shocking 5.7% this year from 8.2% from last year.

Concerns

- Higher financing cost and weaker public expenditures
- High level of joblessness and distress – 5,907 MSMEs have shut shop in the last two years.
- Lack of contribution by the informal sector – 2017-18 contribution was as much as 52% which has now plummeted to less than 20%.
- Unemployment levels have consistently remained well above 8% for the past two years.

UNCTAD

- It is a permanent intergovernmental body established by the United Nations General Assembly in 1964.
- It is part of the UN Secretariat and also the United Nations Development Group (UNDP).
- It reports to the UN General Assembly and the Economic and Social Council but has its own membership, leadership, and budget.
- Headquarters: Geneva, Switzerland

Reports

- The Trade and Development Report
- The World Investment Report
- Technology and Innovation Report
- Digital Economy Report

THE NO OIL PRODUCING AND EXPORTING CARTELS (NOPEC) BILL

- The No Oil Producing and Exporting Cartels (NOPEC) bill, which passed a Senate committee 17-4 on May 5, is intended to protect U.S. consumers and businesses from engineered oil spikes.

What is the NOPEC bill?

- The bipartisan NOPEC bill would tweak U.S. antitrust law to revoke the sovereign immunity that has protected OPEC+ members and their national oil companies from lawsuits.
- If signed into law, the U.S. attorney general would gain the option to sue the oil cartel or its members, such as Saudi Arabia, in federal court.
- It is unclear exactly how a federal court could enforce judicial antitrust decisions against a foreign nation.
- The United States could also face criticism for its attempts to manipulate markets by, for example, its planned release of 165 million barrels of oil from the emergency oil reserve between May and November.
- But several attempts to pass NOPEC over more than two decades have long worried OPEC's de facto leader Saudi Arabia, leading Riyadh to lobby hard every time a version of the bill has come up.
- With the Senate Judiciary Committee passing the bill in May, it needs to pass the full Senate and House and be signed by the president to become law.
- ClearView Energy Partners, a nonpartisan research group, said NOPEC, if introduced to the Senate floor, would likely get the 60 votes needed to pass the 100-member chamber.

Concerns about the bill

- One industry concern is that NOPEC legislation could ultimately lead to overproduction by OPEC, bringing prices so low that U.S. energy companies have difficulty boosting output.
- Saudi Arabia and other OPEC countries have some of the world's cheapest and easiest reserves to produce.
- A wave of oil from OPEC producers, even at a time of concerns about Russian supply could chill U.S. drillers, some of which are already reluctant to boost output despite the cut.
- Some analysts have said that NOPEC could lead to unintended blowback, including the possibility that other countries could take similar action on the United States for withholding agricultural output to support domestic farming, for example.
- OPEC nations could also strike back in other ways.
- In 2019, for example, Saudi Arabia threatened to sell its oil in currencies other than the dollar if Washington passed a version of the NOPEC bill.
- Doing so would undermine the dollar's status as the world's main reserve currency, reduce Washington's clout in global trade, and weaken its ability to enforce sanctions on nation-states.
- The kingdom could also decide to buy at least some weapons from countries other than the United States, hitting a lucrative business for U.S. defense contractors.
- The kingdom and other oil producers could limit U.S. investments in their countries or simply raise their prices for oil sold into the United States – undermining the basic aim of the bill.

NOBEL PEACE PRIZE FOR 2022

- The Nobel Peace Prize for 2022, awarded to a jailed Belarus civil rights activist, and a rights organisation each in Russia and Ukraine.

Ales Bialiatski

- He is a Belarus civil rights activist who promotes democracy and peaceful development in his country.
- Ales Bialiatski, who is in jail since 2021, is a vocal critic of Putin's ally, President Alexander Lukashenko of Belarus.
- In 1995, Bialiatski founded the Belarus human rights group Viasna (Spring) which, according to a fund-raising page on patreon.com, "defends human rights, promotes human rights and exposes violations".
- Belarus's support to Russia – offered country's territory to Russian troops for launching attacks into Ukraine and its soldiers are said to have fought alongside Russian troops.

Center for Civil Liberties, Ukraine

- The Center was founded in Kyiv in 2007 with the aim of advancing human rights and democracy in Ukraine.
- The Center has actively advocated that Ukraine become affiliated with the International Criminal Court.
- Since Russia's invasion in February 2022, the Center has engaged in efforts to identify and document Russian war crimes against the Ukrainian civilian population in collaboration with international partners.

Memorial group of Russia

- Memorial was established by human rights activists in the former Soviet Union during the Gorbachev years of glasnost and perestroika, and among its founders were 1975 Nobel Peace Prize laureate Andrei Sakharov and Russian mathematician Svetlana Gannushkina.
- Its objective was to record atrocities committed during the communist regime, especially under Joseph Stalin.
- After the collapse of the Soviet Union, Memorial grew to become the largest human rights organisation in Russia.
- It established a centre to document victims of the Stalinist era, and compiled information on political oppression and human rights violations in Russia.
- Memorial, the most authoritative source of information on political prisoners in Russian detention facilities, also leads efforts to combat militarism and promote human rights.
- During the Chechen wars, Memorial gathered and verified information on abuses and war crimes by Russian and pro-Russian forces.
- In 2009, the head of Memorial's branch in Chechnya, Natalia Estemirova, was killed because of this work.

- The organisation was stamped as a “foreign agent” early on, and in December 2021, the Supreme Court ruled that it must be liquidated and the documentation centre shut permanently.

Significance

- The Peace Prize winners represent civil society in their home countries.
- They have for many years promoted the right to criticise power and protect the fundamental rights of citizens.
- They have made an outstanding effort to document war crimes, human rights abuses and the abuse of power
- Together they demonstrate the significance of civil society for peace and democracy.
- This year’s winners have revitalised and honoured Alfred Nobel’s vision of peace and fraternity between nations — a vision most needed in the world today.

UNICEF’S ‘THE COLDEST YEAR OF THE REST OF THEIR LIVES’ REPORT

- United Nations International Children’s Emergency Fund (UNICEF) recently released a report. The title of this report is “The coldest year of the rest of their lives”.
- It calls for “Protecting children from the escalating impacts of heatwaves”.

Key Takeaways of the Report

- The climate crisis is rapidly accelerating and with it, heatwaves are becoming longer, stronger, more widespread and more frequent.
- Already, around 559 million children are exposed to high heatwave frequency and around 624 million children are exposed to one of three other high heat measures – high heatwave duration, high heatwave severity or extreme high temperatures.
- This report provides yet more evidence that children are on the front lines of the climate crisis.
- By 2050, virtually every child on earth – over 2 billion children – is forecast to face more frequent heatwaves, regardless of whether the world achieves a ‘low greenhouse gas emission scenario’ with an estimated 1.7 degrees of warming in 2050 or a ‘very high greenhouse gas emission scenario’ with an estimated 2.4 degrees of warming in 2050.
- These findings underscore the urgent need to adapt the services children rely on as unavoidable impacts of global heating unfold.
- These heat waves will make it difficult for young people to regulate their body temperature.
- Therefore resulting in vulnerability to health issues like chronic respiratory conditions, asthma, and cardiovascular diseases.
- Children in northern regions will face the most dramatic increases in high heatwave severity while by 2050, nearly half of all children in Africa and Asia will face sustained exposure to extreme high temperatures.
- Extreme atmospheric heat can result in drought, which will cause hurdles in accessing clean drinking water and healthy food.
- The report highlights that the heatwaves will result in the stunted development of children and force families to migrate.
- These findings underscore the urgent need to adapt the services children rely on as unavoidable impacts of global heating unfold. It also makes a case for more substantial emissions reduction, to prevent the worst impacts of the other high heat measures.

The report suggest in form of 4 Ps to save children from heat

- “Heat is especially damaging to children’s health and affects their education and future livelihoods. Countries must act now by:
- **Protecting** children from climate devastation by adapting social services.
- **Preparing** children to live in a climate-changed world.
- **Prioritizing** children and young people in climate finance and resources.
- **Preventing** a climate catastrophe by drastically reducing greenhouse gas emissions and keep 1.5 degrees Celsius alive.

Impact of climate change on children

- A study has been conducted, based on data from the Inter-sectoral Impact Model Intercomparison Project (ISIMIP). This is a community-driven climate-impacts modelling initiative that assess the differential impacts of climate change. The ISIMIP data were used alongside country-scale, life-expectancy data, population data and temperature trajectories from the Intergovernmental Panel on Climate Change (IPCC).
- During his or her lifetime, a child born in 2021 is likely to experience on average twice as many wildfires, two to three times more droughts, almost three times more river floods and crop failures and about seven times more heat waves compared to a person who is, say, 60 years old today, the researchers have found.
- Under a scenario of current “insufficient” climate policies, dangerous extreme heatwave events, which affect about 15% of the global land area today, could treble to 46% by the end of this century.
- However, if countries are able to follow through with their climate policies as decided under the Paris Climate Agreement, this effect could be limited to 22%, which is just seven percentage points more than the global land area that is affected today.
- A 1.5-degree target will reduce young people’s potential exposure to extreme events on average by 24% globally. For North America it’s minus 26%, for Europe and Central Asia minus 28%, and in the Middle East and North Africa even minus 39%.



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GENERAL STUDIES 3.

INDIAN ECONOMY

NOBEL PRIZE IN ECONOMICS

- The Sveriges Riksbank Prize in Economic Sciences for 2022 was awarded to three American economists: Ben S Bernanke, Douglas W Diamond and Philip H Dybvi.

About Research

- Modern banking research clarifies why we have banks, how to make them less vulnerable in crises and how bank collapses exacerbate financial crises.
- The foundations of this research were laid by Ben Bernanke, Douglas Diamond and Philip Dybvig in the early 1980s.
- Their analyses have been of great practical importance in regulating financial markets and dealing with financial crises.
- The laureates' insights have played an important role in ensuring crises such as covid pandemic did not develop into new depressions with devastating consequences for society.

Ben S Bernanke

- Bernanke demonstrated how failing banks played a decisive role in the global depression of the 1930s. The collapse of the banking system explains why the downturn was not only deep, but also long-lasting.
- It added the importance of well-functioning bank regulation.
- Conflict: savers want instant access to their money in case of unexpected outlays, while businesses and homeowners need to know they will not be forced to repay their loans prematurely. This creates the fundamental problem of volatility in banks and vulnerability to shocks such as in case of bank runs.
- For example, when people were unable to withdraw their money from a few rural banks in China earlier this year, they witnessed bank runs. A bank run may happen where many savers try to withdraw their money at once, which can lead to a bank's collapse.
- Interestingly, Bernanke was the head of the US central bank, the Federal Reserve, when the 2008 crisis hit, and was able to "put knowledge from research into policy,"

Douglas W Diamond and Philip H Dybvi

- Both Diamond and Dybvig worked together to develop theoretical models explaining why banks exist, how their role in society makes them vulnerable to rumours about their impending collapse, and how society can lessen this vulnerability.
- The model captures the central mechanisms of banking, as well as its weaknesses.
- It is based upon households saving some of their income, as well as needing to be able to withdraw their money when they wish.
- That this does not happen at the same time for every household allows for money to be invested into projects that need financing.
- They argue, therefore, that banks emerge as natural intermediaries that help ease liquidity.
- But with massive financial crises that have been witnessed in history, particularly in the US, it is often discussed how banks need to be more careful about assessing the loans they give out, or how bailing out banks in crisis might turn out to be.

Miscellaneous

- A bank run may happen where many savers try to withdraw their money at once, which can lead to a bank's collapse. For example, when people were unable to withdraw their money from a few rural banks in China earlier this year, they witnessed bank runs.

NHAI InvIT

- National Highways Infra Trust (NHAI InvIT), the infrastructure investment trust sponsored by National Highway Authority of India (NHAI) to support Government of India's National Monetization Pipeline, has raised a sum of Rs 1,430 crore from domestic and international investors through placement of its units, for part funding its acquisition of three additional road projects from NHAI.

Infrastructure Investment Trusts (InvIT)

- InvITs are similar to mutual funds.
- While mutual funds provide an opportunity to invest in equity stocks, an InvIT allows one to invest in infrastructure projects such as road and power.
- InvITs are listed on exchanges just like stocks — through IPOs.
- The InvITs listed on the stock exchange are IRB InvIT Fund and India Grid Trust.
- InvITs are regulated by the Securities and Exchange Board of India (SEBI) (Infrastructure Investment Trusts) Regulations, 2014.
- Real Estate Investment Trusts (REITs) are similar to InvITs but they are present only in Real estate sector.
- For a dedicated peer group, Motivation & Quick updates, Join our official telegram.

NHAI InvIT

- The infrastructure investment trust is sponsored by National Highway Authority of India (NHAI) to support Government of India's National Monetization Pipeline.
- In order to enhance participation by domestic investors, NHAI InvIT is issuing Non-Convertible Debentures or NCDs to raise Rs.1500 crore, which have a long dated maturity of 24 years.
- The minimum investment amount has been kept low at Rs.10,000, so that common man can participate in it.
- 25% of the NCD issue is being reserved for retail investor.
- The coupon is 7.9% payable half yearly, which works out to 8.05% interest for the year.
- While the NCDs are not guaranteed by the government or NHAI, it carries AAA rating from two rating agencies.
- In the current environment, this presents an attractive opportunity to make investments from long term perspective

DIGITAL BANKING UNITS

- Prime Minister dedicated 75 digital banking units to the nation, taking forward an announcement that was made in the 2022-23 Union Budget.

What are these DBUs?

- The Reserve Bank of India (RBI) announced the guidelines for DBUs, following the report of a working group of the Indian Banks Association (IBA).
- A digital banking unit is a specialised fixed point business unit or hub, housing a certain minimum digital infrastructure for delivering digital banking products and services as well as servicing existing financial products and services digitally in self-service mode at any time.

Who will set up these DBUs?

- Commercial banks (other than regional rural banks, payment banks and local area banks) with past digital banking experience are permitted to open DBUs in tier 1 to tier 6 centres, unless otherwise specifically restricted, without having the need to take permission from the RBI in each case.

What services will be provided by these units?

- As per the RBI, each DBU must offer certain minimum digital banking products and services.
- Such products should be on both liabilities and assets side of the balance sheet of the digital banking segment.
- Digitally value-added services to conventional products would also qualify as such.
- The services include saving bank accounts under various schemes, current accounts, fixed deposit and recurring deposit accounts, digital kits for customers, mobile banking, Internet banking, debit cards, credit cards, and mass transit system cards, digital kits for merchants, UPI QR codes, BHIM Aadhaar and point of sale (PoS).
- Other services include making applications for and onboarding customers for identified retail, MSME or schematic loans.
- This may also include end-to-end digital processing of such loans, starting from online application to disbursement and identified government-sponsored schemes that are covered under the national portal.

Neobanks

- Currently, fintechs operating as neobanks offer digital banking services but they do so in partnership with non-banking financial companies (NBFCs).
- Some of the neobanks offering services in India are Jupiter, Fi Money, Niyo, Razorpay X.
- Compared to conventional banks with online and mobile banking facilities, neobanks or digital banks excel at product innovation and offer far better digital solutions.
- However, given the arrangement they have currently with NBFCs or scheduled banks to conduct the actual banking part, some in the industry have pegged these digital banks as “glorified digital distribution companies”.

Significance of DBUs

- Further financial inclusion
- Significantly improve banking experience for the citizens

MINIMUM SUPPORT PRICES (MSP)

- Recently, the Cabinet Committee on Economic Affairs under the chairmanship of Prime Minister approved the increase in the Minimum Support Prices (MSP) for all mandated rabi crops for marketing season 2023-24.
- The MSP announced an increase of 2% to 9% in the Minimum Support Prices (MSP) for six mandated rabi crops for this season.
- For wheat, the MSP is ₹2,125 for a quintal. Last year, the price was ₹2,015 and the increase this year ₹110.
- For lentil, (Masur) the increase is ₹500 per quintal (₹6000) followed by rapeseed and mustard at ₹400 per quintal (₹5,450).
- For safflower, Centre approved an increase of ₹ 209 per quintal (₹ 5,650).
- For gram and barley also the increase is ₹ 105 (₹5,335) and ₹ 100 (₹ 1,735) respectively per quintal.

Three kinds of Production cost

- The CACP projects three kinds of production cost for every crop, both at state and all-India average levels.
- ‘A2’: Covers all paid-out costs directly incurred by the farmer in cash and kind on seeds, fertilisers, pesticides, hired labour, leased-in land, fuel, irrigation, etc.
- ‘A2+FL’: Includes A2 plus an imputed value of unpaid family labour.
- ‘C2’: It is a more comprehensive cost that factors in rentals and interest forgone on owned land and fixed capital assets, on top of A2+FL.
- CACP considers both A2+FL and C2 costs while recommending MSP.

Importance of Minimum Support Price

- **Fixed Remunerations:** The farmers are financially secured against the vagaries of price instability in the market. It provides security to farmers from the risk of crop failure and less production.

- **Informed decision making:** MSP are announced at the beginning of the sowing season, this helps farmers make informed decisions on the crops they must plant. This advance information helps the farmer to make an informed decision about which crop to sow for maximum economic benefit within the limitations of his farm size, climate and irrigation facilities.
- **Diversification of crops:** The MSP announced by the Government of India for the first time in 1966-67 for wheat has been extended to around 24 crops at the present. This has encouraged the farmers to grow these diverse crops to maximise their income.
- **Benchmark for private buyers:** MSP sends a price-signal to market that if merchants don't offer higher than MSP prices the farmer may not sell them his produce. Thus it acts as an anchor or benchmark for the agro-commodity. It ensures the market prices will not be drastically lower than MSP.
- **Targeted crops:** MSP is used as a tool to incentivize production of specific food crops which is short in supply. MSP motivates farmers to grow targeted crops and increased production.
- **Enhance purchasing power:** Slow farm growth and increasing farmer's distress demand for more MSP for farmers. It helps in enhancing the purchasing capacity of farmers.

Issues associated with Minimum Support Price

- **Non-proportional increase:** The support prices that are being provided do not increase at par with increase in cost of production. A rating agency, CRISIL pointed out that the increase in MSP has indeed fallen during 2014-17.
- **Reach:** The benefits of this scheme do not reach all farmers and for all crops. Not all farmers have been able to get the benefits of MSP because of lack of awareness. There are many regions of the country like the north-eastern region where the implementation is too weak.
- **Excess storage:** MSP without sufficient storage has resulted in huge piling of stocks in the warehouses. The stock has now become double the requirements under the schemes of PDS, Buffer stock etc.
- **Market distortion:** It distorts the free market by favouring some particular crops over other crops.
- **Fiscal burden:** Open-ended procurement of paddy and wheat at MSPs is completely out of sync with market prices and lead to fiscal burden.
- **Impact agricultural exports:** Hikes in MSP also adversely affect the exports by making Indian farm goods uncompetitive especially when international market prices are lower.
- **Ecological problem:** MSP leads to non-scientific agricultural practices whereby the soil, water are stressed to an extent of degrading ground water table and salinization of soil.
- **Crop diversity:** MSP affects the crop diversity of India. With MSP cropping patterns get affected as it leads to production of MSP supported crops as it guarantee returns.

Way Forward

- Agriculture is, perhaps, the only business where there is a high probability of both production and price risks. It may be more worthwhile to consider "how best" to make MSP work for the farmer.
- Public procurement needs to continue for staple cereals, but farmers of non-staple food crops need to be provided with direct income transfers.

CREDIT IN THE ECONOMY

- In absolute terms, credit outstanding stood at ₹128.6 lakh crore as of October 07, 2022, rising by ₹19.6 lakh crore over the last 12 months: CareEdge report.
- Increase is due to a low base, retail credit, higher demand for working capital requirements amidst high inflation, and low funds raised in the capital market.

Weighted Average Call Rate (WACR)

- Call money rate is the rate at which short term funds are borrowed and lent in the money market.
- The duration of the call money loan is 1 day.
- Banks resort to these types of loans to fill the asset liability mismatch, comply with the statutory CRR and SLR requirements and to meet the sudden demand of funds.
- RBI, banks, primary dealers etc are the participants of the call money market.

- Demand and supply of liquidity affect the call money rate. A tight liquidity condition leads to a rise in call money rate and vice versa.
- It represents the unsecured segment of the overnight money market.
- It was explicitly chosen as the operating target of monetary policy in India.

Emergency Credit Line Guarantee Scheme(ECLGS) for MSMEs.

- To mitigate the economic distress being faced by about 45 lakh MSMEs by providing them additional funding of up to Rs 3 lakh crore in the form of a fully guaranteed emergency credit line.
- All MSME borrower accounts with outstanding credit of up to Rs.25 crore as on 29th February,2020 and with annual turnover of up to Rs.100 crore would be eligible for the scheme.They can get up to 20% fresh loans of their entire outstanding credit.
- National Credit Guarantee Trustee Company (NCGTC) will provide 100% guarantee against losses on loans advanced to eligible MSMEs and MUDRA borrowers.
- The loan will be provided for four years with a moratorium of one year on the principal amount.
- The Interest rates under the Scheme are capped at 9.25% for banks and financial institutions and at 14% for non-banking financial companies(NBFCs)
- **Benefits of the Scheme**
- The scheme is expected to provide credit to the sector at a low cost, thereby enabling MSMEs to meet their operational liabilities and restart their businesses and recover early.
- The Scheme is expected to have a positive impact on the economy and support its revival.

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SECURITY ISSUES

AATMANIRBHAR IN DEFENCE PRODUCTION

- **India** ranks fourth among 12 Indo-Pacific nations in self-reliant arms production capabilities, according to a study released this month by the Stockholm International Peace Research Institute (SIPRI), a widely respected independent resource on global security. China tops the list, Japan is second, South Korea is in third place, and Pakistan is at number 8.

The study, which measures self-reliance until 2020, is based on three indicators of self reliance in each country:

- **Arms procurement** — imports, licensed and domestic production as a proportion of the government's total procurement of major conventional arms.
- **Arms industry** — the study presents the five largest arms companies in each country, where data are available, ranked by sales of arms and military services in 2020 to both domestic and export customers.
- **Uncrewed maritime vehicles**, the sea equivalent of drones — covering both uncrewed surface vehicles (USVs) and uncrewed underwater vehicles (UUVs), meant to provide a qualitative understanding of how countries are engaging domestic research institutes and firms to produce such cutting edge systems.

Indian Companies & Suppliers

- Hindustan Aeronautics Ltd, Indian Ordnance Factories, Bharat Electronics, Mazagaon Docks and Cochin Shipyard are among the major Indian arms servicing companies.
- Ashok Leyland, one of the largest suppliers of trucks to the Indian Army, is the only company ranked in the top 50 in the Indo-Pacific.

Aatmanirbhar in defence production:

Make-I Category:

- Under the Defence Acquisition Procedure 2020, 'Make' Category aims to achieve self-reliance by involving greater participation of Indian industry.
- Projects involving design and development of equipment, systems, major platforms or upgrades thereof by the industry can be taken up under this category.

Financial Support:

- The Ministry of Defence will provide financial support up to 70% of the total cost of prototype development.

Make-II Category:

- It is **funded** by industry with assured procurement. The following platform has been listed – Anti-jamming Systems for Multiple Platforms.

SCIENCE AND TECHNOLOGY

FIRST INDIGENOUS LIGHT COMBAT HELICOPTER

- India's first indigenous light combat helicopter was inducted into the IAF. The helicopter is capable of offensive operations in high-altitude areas like Siachen Glacier and eastern Ladakh.
- Indian Air Force has formally inducted the indigenously developed multi-role Light Combat Helicopter (LCH), Prachand.
- The Helicopter is suitable for operating in high-altitude battlefields, and capable of destroying enemy air defence and engaging in counter-insurgency operations.
- The Limited Series Production version of the light combat helicopter has around 45 per cent indigenous content by value.
- In due course, it will increase to more than 55 per cent for the Series Production version.

Features of Prachand

- The LCH is the only attack helicopter in the world which can land and take off at an altitude of 5,000 meters with a considerable load of weapons and fuel.
- Designed as a twin-engine, it has the maximum take-off weight of 5.8 tonnes, maximum speed of 268 kilometers per hour, range of 550 kilometers.
- It has an endurance of over three hours and service ceiling — the maximum density altitude to which it can fly — of 6.5 kilometres.
- It is powered by two French-origin Shakti engines manufactured by the HAL.
- As far as weapons systems are concerned, a 20 mm turret gun, 70 mm rockets and air-to-air missile systems are onboard.

NOBEL PRIZE IN MEDICINE

- Svante Pääbo, a Swedish scientist, was recently awarded the Nobel Prize in Physiology (Medicine) for his discoveries about the genomes of extinct hominins and human evolution.

His Research

- Svante Pääbo accomplished something near impossible by sequencing the genome of the Neanderthal, an extinct relative of modern humans, and also made the sensational discovery of a previously unknown hominin, Denisova.
- Hominins are an extinct ape species assumed to be related to modern humans.
- He invented a completely new scientific discipline called paleogenomics, which focuses on reconstructing the DNA and genetic information of extinct hominins.
- Pääbo also discovered that gene transfer occurred from these now-extinct hominins to Homo sapiens following the 70,000-year-old migration out of Africa.
- An example of the relationship between evolution and biology is when Pääbo extracted DNA from bone specimens from extinct hominins, from Neanderthal remains in Germany's Denisova caves.
- The Denisovan version of the gene EPAS1 confers a survival advantage at high altitudes and is common among modern Tibetans.

Significance:

- The work appears to have been focused on human evolution and the role it has played in shaping our health and biological systems over time.
- This could result in a one-of-a-kind resource that the scientific community can use to better understand human evolution and migration.
- Svante Pääbo's groundbreaking discoveries will serve as the foundation for investigating what makes us uniquely human.
- We now know that archaic gene sequences from our extinct ancestors influence the physiology of modern humans.

- This ancient gene flow to modern humans has physiological implications, such as influencing how our immune system responds to infections.

Nobel Prize

- Nobel Prizes are widely regarded as the highest honors available in their respective fields.
- According to Alfred Nobel's will, the Nobel Prize is five separate prizes (Physics, Chemistry, Medicine, Literature and Peace), awarded annually to those who, during the preceding year, have conferred the greatest benefit to humankind.
- Alfred Nobel was a Swedish chemist, engineer and industrialist best known for inventing dynamite.
- In his will, he directed that all of his "remaining assets" be used to establish five prizes known as the "Nobel Prizes."
- Nobel Prizes were first awarded in 1901, five years after Nobel's death.
- The economics award, officially known as the Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel, was established in 1968 by Sweden's central bank, not by Nobel.
- The Nobel Peace Prize is awarded in Norway, while the other prizes are presented in Sweden.
- The Nobel Prize is administered by the Nobel Foundation and its winners (known as a "laureate") are selected by the Royal Swedish Academy of Sciences.
- Each prize is worth 10 million kronor (nearly \$900,000) and will be handed out with a diploma and gold medal on December 10 - the date of Nobel's death in 1896.
- A prize may not be shared by more than three individuals, but the Nobel Peace Prize may be awarded to organizations with more than three members.
- Although Nobel Prizes are not given posthumously, if a person is nominated for one and dies before receiving it, the prize is still given.

SASTRA RAMANUJAN PRIZE

- The SASTRA Ramanujan Prize for 2022 will be awarded to Yunqing Tang, Assistant Professor with the University of California, Berkeley, U.S.A.
- The award, instituted by the Shanmugha Arts, Science, Technology & Research Academy (SASTRA) in 2005 with a cash prize of \$10,000, is presented annually to individuals aged 32 and below, who made outstanding contributions in the field of mathematics, influenced by Srinivasa Ramanujan in a broad sense.
- Ms. Yunqing's works "display a remarkable combination of sophisticated techniques, in which the arithmetic and geometry of modular curves and of Shimura varieties play a central role, and her results and methods are bound to have major impact on future research in this area."

About SASTRA Ramanujan Prize:

- The award, instituted by the Shanmugha Arts, Science, Technology & Research Academy (SASTRA) in 2005 with a cash prize of \$10,000, is presented annually to individuals aged 32 and below, who made outstanding contributions in the field of mathematics, influenced by Srinivasa Ramanujan in a broad sense.

Srinivasa Ramanujan (1887-1920)

- Born on 22nd December, 1887 in Erode, Tamil Nadu and died on 26th April 1920 in Kumbakonam, Tamil Nadu, India.
- In 1911 Ramanujan published the first of his papers in the Journal of the Indian Mathematical Society.
- In 1913 he began a correspondence with the British mathematician Godfrey H. Hardy which led to a special scholarship from the University of Madras and a grant from Trinity College, Cambridge.
- In 1918 he was elected to the Royal Society of London.
- Ramanujan was one of the youngest members of Britain's Royal Society and the first Indian to be elected a Fellow of Trinity College, Cambridge University.

- The European Union (EU) has given final approval to online safety-focused legislation, which is an overhaul of the region's social media and e-commerce rules.

About

- Called the Digital Services Act (DSA), the law tightly regulates the way intermediaries, especially large platforms such as Google, Meta, Twitter, and YouTube, function in terms of moderating user content.
- It will give better protection to users and to fundamental rights online, establish a powerful transparency and accountability framework for online platforms and provide a single, uniform framework across the EU.

Key features of the Digital Services Act

- **Faster removals and provisions to challenge:** The social media companies will have to add “new procedures for faster removal” of content deemed illegal or harmful. They will also have to explain to users how their content takedown policy works. It also allows for users to challenge takedown decisions taken by platforms and seek out-of-court settlements.
- **Bigger platforms have greater responsibility:** Under the DSA, ‘Very Large Online Platforms’ (VLOPs) and ‘Very Large Online Search Engines’ (VLOSEs), that is platforms, having more than 45 million users in the EU, will have more stringent requirements.
- **Direct supervision by European Commission:** These requirements and their enforcement will be centrally supervised by the European Commission itself.
- **More transparency on how algorithms work:** VLOPs and VLOSEs will face transparency measures and scrutiny of how their algorithms work.
- **Clearer identifiers for ads and who's paying for them:** Online platforms must ensure that users can easily identify advertisements and understand who presents or pays for the advertisement. They must not display personalised advertising directed towards minors or based on sensitive personal data.

Significance

- It will give better protection to users and to fundamental rights online, establish a powerful transparency and accountability framework for online platforms and provide a single, uniform framework across the EU.
- More transparency on how algorithms work: VLOPs and VLOSEs will face transparency measures and scrutiny of how their algorithms work
- Systemic risk analysis by social media companies will drive accountability about the society impacts of their products.

NOBEL PRIZE IN CHEMISTRY 2022

- The 2022 Nobel Prize in chemistry was awarded to Carolyn R Bertozzi, Morten Meldal and K Barry Sharpless “for the development of click chemistry and bioorthogonal chemistry”

About

- Sharpless was the first scientist to work on ‘click chemistry’ – a branch of science that explores the assembly of molecules.
- Meldal and Dr. Sharpless – independently of each other – presented the copper-catalysed azide-alkyne cycloaddition (CuAAC), a reaction that is now widely used in fields like medicinal chemistry. The CuAAC reaction is an improved form of the azide-alkyne Huisgen cycloaddition.
- Bertozzi improved the field further by developing click reactions that work inside living organisms. These bioorthogonal reactions do not disrupt the normal chemistry of the cell.

What is click chemistry?

- Click chemistry is a functional field where molecules snap together quickly and efficiently – literally like a click. It is defined as a “set of powerful, highly reliable, and selective reactions for the rapid synthesis of useful new compounds and combinatorial libraries through heteroatom links”.

Need of Click Chemistry

- Replicating reactions that involve bonds between carbon atoms – that are vital to the existence of life – is expensive and often leads to side reactions and loss of material.
- Instead of trying to make carbon atoms react with each other, Dr. Sharpless’s research focuses on using smaller molecules that already have a complete carbon frame. These molecules can further be linked using oxygen or nitrogen atoms as bridges.
- Simpler reactions, “where there is a strong intrinsic drive for the molecules to bond together”, may avoid the loss of material as well as the unwanted side reactions.

VYOMMITRA

- ‘Vyommitra’, the humanoid designed and developed by the Indian Space Research Organisation (ISRO) to fly aboard unmanned test missions ahead of the Gaganyaan human space-flight mission, is undergoing pre-flight ground tests at the ISRO Inertial Systems Unit (IISU).

About Vyommitra

- IISU was responsible for the design, development, and integration of the robot, while sister ISRO centre Vikram Sarabhai Space Centre (VSSC) at Thumba here developed its fingers.
- Vyommitra is a female-looking spacefaring humanoid robot being developed by the Indian Space Research Organisation to function on-board the Gaganyaan, a crewed orbital spacecraft.
- A humanoid is basically a robot with the appearance of a human being.
- ISRO’s Vyommitra (vyoma = space, mitra = friend) is also being called a half-humanoid since she will only have a head, two hands and a torso, and will not have lower limbs. Like any robot, a humanoid’s functions are determined by the computer systems to which it is connected.
- ‘Vyommitra’, the humanoid designed and developed by the ISRO to fly aboard unmanned test missions ahead of the Gaganyaan human space-flight mission, is undergoing pre-flight ground tests.
- IISU has successfully integrated it with a computer ‘brain’ which enables it to ‘read’ control panels aboard the unmanned test flights and communicate with the ISRO ground stations.
- The AI-enabled robot, which can withstand vibrations and shock during the flight, has been designed to resemble a human with facial expressions and speech and sight capabilities.

ISRO developing a humanoid

- ISRO plans to send a human into space for the first time by 2022.
- It is racing against time to develop a crew module and rocket systems that will ensure the safe travel and return of the Indian astronaut.
- Other countries that have successfully launched humans into space did so after having used animals for conducting tests of their rockets and crew recovery systems.
- ISRO will use the humanoid to test the efficacy of its GSLV Mk III rocket to transport a human to space and back.
- The humanoid is under development at a robotics laboratory at the Vikram Sarabhai Space Centre.
- Once flown into space, ISRO’s half-humanoid will be able to test systems in the crew module meant for the survival and safe travel of the first Indian astronaut in 2022.

Activities of Vyommitra

- The activities that Vyommitra will be able to perform, once fully developed for the unmanned flight, will include:
- procedures to use equipment on board the spacecraft’s crew module such as safety mechanisms and switches,
- receiving and acting on commands sent from ground stations
- attaining launch and orbital postures,
- responding to the environment,
- generating warnings,
- replacing carbon dioxide canisters,
- operating switches,

- monitoring of the crew module,
- receiving voice commands,
- responding via speech (bilingual).
- Vyommitra will also report back to Earth on the changes occurring in the crew module during the spaceflight and return, such as heat radiation levels, to enable ISRO to understand the safety levels required in the crew module that will eventually fly a human being.

PALAEOGENOMICS

- The Nobel Prize for Physiology this year has been awarded to Svante Pääbo, Swedish geneticist, who pioneered the field of Palaeogenomics, or the study of ancient hominins by extracting their DNA.

What is the significance of Pääbo's work?

- Pääbo is the Director of the Max Planck Institute of Evolutionary Anthropology in Leipzig, Germany and has, over three decades, uniquely threaded three scientific disciplines: palaeontology, genomics and evolution.
- The study of ancient humans has historically been limited to analysing their bone and objects around them such as weapons, utensils, tools and dwellings.
- Pääbo pioneered the use of DNA, the genetic blueprint present in all life, to examine questions about the relatedness of various ancient human species.
- He proved that Neanderthals, a cousin of the human species that evolved 1,00,000 years before humans, interbred with people and a fraction of their genes — about 1-4% — live on in those of European and Asian ancestry.
- Later on, Pääbo's lab, after analysing a 40,000-year-old finger bone from a Siberian cave, proved that it belonged to a new species of hominin called Denisova.
- This was the first time that a new species had been discovered based on DNA analysis and this species too had lived and interbred with humans.

How can DNA be extracted from fossils?

- The challenge with extracting DNA from fossils is that it degrades fairly quickly and there is little usable material. Because such bones may have passed through several hands, the chances of it being contaminated by human as well as other bacterial DNA get higher.
- One of Pääbo's early forays was extracting DNA from a 2,500-year-old Egyptian mummy and while it caused a stir and helped his career, much later in life he said that the mummy-DNA was likely contaminated.
- DNA is concentrated in two different compartments within the cell: the nucleus and mitochondria, the latter being the powerhouse of the cell.
- Nuclear DNA stores most of the genetic information, while the much smaller mitochondrial genome is present in thousands of copies and therefore more retrievable.
- In 1990, Pääbo, as a newly appointed Professor at the University of Munich, took the call to analyse DNA from Neanderthal mitochondria.
- With his techniques, Pääbo managed to sequence a region of mitochondrial DNA from a 40,000-year-old piece of bone. This was the first time a genome from an extinct human relative was pieced together.
- Subsequently, he managed to extract enough nuclear DNA from Neanderthal bones to publish the first Neanderthal genome sequence in 2010.
- This was significant considering that the first complete human genome was published only in 2003.

What has Pääbo's work shown?

- Pääbo's most important contribution is demonstrating that ancient DNA can be reliably extracted, analysed and compared with that of other humans and primates to examine what parts of our DNA make one distinctly human or Neanderthal.
- Comparative analyses with the human genome demonstrated that the most recent common ancestor of Neanderthals and Homo sapiens lived around 8,00,000 years ago.

- In 2008, a 40,000 year-old fragment from a finger-bone, sourced from a Siberian cave in a region called Denisova, yielded DNA that, analysis from Pääbo's lab revealed, was from an entirely new species of hominin called Denisova.
- This was the first time that a new species had been discovered based on DNA analysis.
- Further analysis showed that they too had interbred with humans and that 6% of human genomes in parts of South East Asia are of Denisovan ancestry.

What are the implications of Palaeogenomics?

- The study of ancient DNA provides an independent way to test theories of evolution and the relatedness of population groups. In 2018, an analysis of DNA extracted from skeletons at Haryana's Rakhigarhi — reported to be a prominent Indus Valley civilisation site — provoked an old debate about the indigenesness of ancient Indian population.
- These fossils, about 4,500 years old, have better preserved DNA than those analysed in Pääbo's labs as they are about 10-times younger.
- The Rakhigarhi fossils showed that these Harappan denizens lacked ancestry from Central Asians or Iranian Farmers and stoked a debate on whether this proved or disproved 'Aryan migration.'
- Palaeogenomics also gives clues into disease as researchers have analysed dental fossils to glean insights on dental infections.

SUPER APP

- The concept of an everything app, often referred to as a "super app," is massively popular in Asia and tech companies across the world have tried to replicate it.

What is a Super App?

- A super app, or what Musk refers to as an "everything app," has been described as the Swiss army knife of mobile apps, offering a suite of services for users such as messaging, social networking, peer-to-peer payments and e-commerce shopping.
- These mega apps are widely used in Asia because mobile is the main form of access to the internet for many people in the region.
- Chinese super app WeChat has more than 1 billion monthly users, according to one estimate, and is a ubiquitous part of daily life in China. Users can hail a car or taxi, send money to friends and family or make payments at stores.
- Elon Musk saw an opportunity to create such an app by adding more tools and services to Twitter.
- Musk said he wanted Twitter to grow from its 237 million users to "at least a billion."
- On the contrary, any other app in general will be specialising in one of these services or categories such as Uber for cabs, Swiggy for food and grocery delivery, and Netflix for movies and content.
- These Super apps are strongly aligned with emerging market governments because of their role in shrinking the grey economy.

Have other U.S tech companies tried this?

- Yes, Snapchat parent Snap Inc. previously introduced peer-to-peer payments called Snapcash, but ended the feature in 2018.
- It also made a push into mobile gaming and recently ended that venture as part of cost-cutting plans.
- Meta Platform Inc.'s Facebook and Instagram have also tried to expand beyond social networking and messaging into e-commerce.

India's Position

- Amazon in India, lets you pay utility bills, book travel, order food, groceries and so on.
- Paytm has been offering a multitude of services, including bill payments, ticket booking, gaming, investments and more.
- Reliance Jio's intents offering a suite of services within its app. The app will have groceries, medicines, content, fashion and so on.

- Flipkart's Phonepay too has been partnering with several other companies like Ola, Swiggy, MakeMyTrip, IRCTC to name a few to enable services across categories through Phonepay Switch platform.
- Tata Digital's Tata Neu latest offering has brought together some of the top brands within their respective categories with a smoother and better user interface.

INDIAN SPACE ECONOMY

- Indian space economy is set to reach \$13 billion by 2025, according to a joint report prepared by EY and the Indian Space Association (ISPA), an apex industry association of space and satellite companies in the country.

Important Points of the Report

- The space launch segment would grow fastest at a CAGR of 13% spurred by growing private participation, latest technology adoption and low cost of launch services.
- Satellite services and application segment would form the largest share of the space economy accounting for 36% of the space economy by 2025.
- There are over 100 space tech start-ups in the country and investments in space tech start-ups increased 196% y-o-y in 2021.
- On the country's satellite manufacturing opportunity, it said in 2020 it was \$2.1 billion and this would reach \$3.2 billion by 2025.
- By 2025, satellite manufacturing would be the second fastest-growing segment in the Indian space economy.
- Space parks that are coming up across the country would give a fillip to companies operating across the space value chain, especially manufacturing.
- With the rapidly growing space ecosystem, India is all prepared to grow to \$13 billion by 2025.
- India looks forward to the New Space Policy, the private industry's role is set to create a revolution in the current value chain of the Indian space economy,

TELE-MANAS

- Tele Mental Health Assistance and Networking Across States (Tele-MANAS) initiative launched on occasion of World Mental Health Day.
- Tele-MANAS aims to provide free tele-mental health services all over the country round the clock, particularly catering to people in remote or under-served areas.
- The programme includes a network of 23 tele-mental health centres of excellence, with NIMHANS being the nodal centre and International Institute of Information Technology-Bangalore (IIITB) providing technology support.
- Indian Institute of Technology (IIT) Bengaluru and National Health Systems Resource Centre (NHRSC) will provide the technical support.
- The Union Government aims to open at least one Tele-MANAS Cell in each State/UT.

Important Points

- Tele-MANAS will be organised in two tier system; Tier 1 comprises of state Tele-MANAS cells which include trained counsellors and mental health specialists.
- Tier 2 will comprise of specialists at District Mental Health Programme (DMHP)/Medical College resources for physical consultation and/or e-Sanjeevani for audio visual consultation.
- Presently there are 5 regional coordination centres along with 51 State/UT Tele MANAS cells.
- The initial rollout providing basic support and counselling through centralized Interactive Voice Response system (IVRS) is being customized for use across all States and UTs.
- Specialised care is being envisioned through the programme by linking Tele-MANAS with other services like National tele-consultation service, e-Sanjeevani, Ayushman Bharat Digital Mission, mental health professionals, Ayushman Bharat health and wellness centres and emergency psychiatric facilities.

- Eventually, this will include the entire spectrum of mental wellness and illness, and integrate all systems that provide mental health care.

ALLEGATIONS AGAINST GOOGLE BY THE NBDA

- The News Broadcasters and Digital Association (NBDA) approached the Competition Commission of India (CCI) against search-engine operator Google, alleging that the latter had deprived them of their justifiable revenue acquired from news dissemination on the tech-giant's platforms.
- The complaint would be clubbed with similar cases filed by the Indian Newspaper Society (INS) in February this year and the Digital News Publishers Association (DNPA) last year.

Why is Google dominant?

- As per the NBDA, Google's search engine commands a 94% market share in the country.
- The number becomes all the more crucial for news publishers with the increased transition toward news consumption online (inclusive of app-based consumption).
- The traditional newspaper industry in India has sustained itself on a business model wherein advertising accounts for two-third of its total revenue.
- On similar lines, with online proliferation, there is an increased reliance of news publishers on digital ad revenues, and in turn, tech-based companies.
- More than half of the total traffic on news websites is routed through Google.
- The search engine, by way of its algorithms and internal quality vetting, determines which news websites would be prioritised in search queries.
- Essential to understand here is that search engines are an important determinant in online news consumption.
- Readers would more often opt for an online web search rather than reaching out to a specific news website by typing its URL in a browser.
- This has made search-engines the first port of call for information online.

Allegations against Google

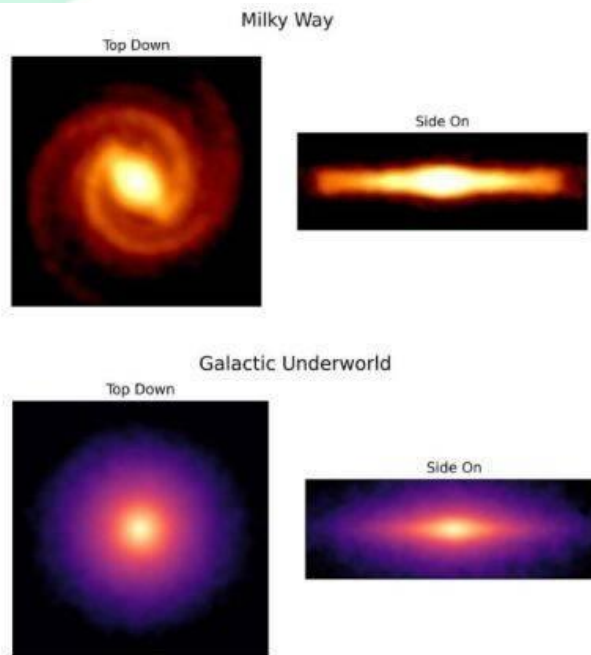
- Dominance of Google: Google's search engine commands a 94% market share in the country. More than half of the total traffic on news websites is routed through Google. The search engine, by way of its algorithms and internal quality vetting, determines which news websites would be prioritised in search queries.
- Google not compensated news publishers for their contribution to (Google's various) platforms and has engaged in practices to bolster its monopoly in the space. The DNPA had put forth that website publishers receive only 51% of the advertisement revenue.
- "Unilateral and non-transparent" determination and sharing of ad revenues, lack of transparency and information asymmetry in the ad-tech services provided by Google. This bothers the quality of services and innovation in the news realm.
- Publishers have been "forced" to integrate content on their platforms and use its buying tool, Google Ads/DV 360, to receive bids from advertisers.
- Encouraging members to disable header bidding – It refers to a programmatic bidding process that unifies multiple exchanges for a single bidding event.
- "Forcing" members into using their Accelerated Mobile Pages (AMP) or building mirror-like 'light-weight' webpages. However, it restricted paywall options unless publishers rebuild their websites as per AMP standards.
- Google represents the buyer and the seller in the same transaction, while also operating the auction house in the middle, and selling its own inventory.

What is happening outside India?

- In February this year, the European Publishers Council filed an anti-trust complaint against Google with the European Commission, challenging its existing "ad tech stranglehold" over press publishers.
- Australia introduced the 'Media Bargaining Code' in February to address the imbalance.

MAP OF MILKY WAY'S GRAVEYARD OF DEAD STARS

- Researchers have created a chart of the corpses of massive stars that have since collapsed into black holes and neutron stars.
- The study reveals that this “galactic graveyard” stretches three times the height of the Milky Way and that close to one-third of the objects have been flung out from the galaxy.
- These compact remnants of dead stars show a fundamentally different distribution and structure to the visible galaxy.
- The ‘height’ of the galactic underworld is over three times larger in the Milky Way itself. And an amazing 30 per cent of objects have been completely ejected from the galaxy.



Formation of Black Hole

- Black holes and neutron stars are formed when stars which are more than eight times larger than our Sun exhaust their fuel supply and suddenly collapse.
- When this happens, it triggers a reaction that blows apart the outer portion of the star in a supernova explosion.
- Meanwhile, the core keeps compressing itself until it becomes either a neutron star or a black hole, depending on its starting mass.

Neutron Stars

- Neutron stars have cores so dense that electrons and protons combine at the subatomic level to form neutrons.
- This squeezes its total mass into a sphere that is “smaller than a city.”
- If the starting mass of the star is more than 25 times that of our Sun, this collapse will continue until the core gets so dense that even light cannot escape, creating a black hole.
- Both kinds of stellar remnants warp space, time and matter around them due to their density.

NEXT GENERATION LAUNCH VEHICLE (NGLV)

- The Indian Space Research Organisation (ISRO) is developing a rocket named Next Generation Launch Vehicle (NGLV) to replace its ageing workhorse the Polar Satellite Launch Vehicle (PSLV) that was developed in the 1980s.

- ISRO to develop a 'Bharat Krishi satellite' to study the growth pattern of crops, identify irrigation deficiencies and provide information that will help in pest-control and verification of farm insurance claims besides many other applications.
- The space agency is exploring the possibility of increasing civilian use of the country's indigenous satellite navigation system NaVIC.
- It is penetrating slowly into the civilian sector. But the primary goal of NaVIC continues to remain as a service to the strategic sectors.

NGLV

- It will use 'semi-cryogenic' technology which is both efficient and cost-effective.
- The new rocket could also be 'reusable'."
- A reusable rocket will have a smaller payload than an expendable one. If it is reusable, the payload will be around five tonnes and if it's expendable, it will go up to 10 tonnes.
- Participation of the industry would ensure that capability is created outside ISRO to build, operate and launch it on a commercial basis.

NASA'S DOUBLE ASTEROID REDIRECTION TEST

- NASA scientists have succeeded in slightly altering the trajectory of an asteroid by using a spacecraft to slam into it.
- DART (Double Asteroid Redirection Test) was aimed at a 160-metre-wide asteroid Dimorphos, which was orbiting a larger asteroid Didymos, both of which were circling the sun, 11.2 million kilometres from the earth.
- Since neither body would have come closer than about 6.4 million km of the earth in their lifetime, they did not pose any threat.
- However, DART was a test mission to see if this technique, known as kinetic impactor, would give the necessary 'nudge' to an asteroid and alter its course by a desired amount.
- After studying the two bodies for nearly 10 days, NASA announced that the course of the smaller asteroid has indeed been altered a little.
- Initially, the orbit of Dimorphos around Didymos took 11 hours and 55 minutes.
- After the impact, a 32-minute alteration in its orbital period has taken place — it is now 11 hours and 23 minutes only.
- The reason for this test is to learn how to use the kinetic impactor technique to 'nudge' earth-bound asteroids out of the way, years before impact.
- This is not a last-minute effort. A word of caution: all asteroids are not similar, so more tests have to be done to perfect this technique.

Utility

- There is a need to develop this technique because an impact with even a small asteroid can have serious consequences.
- The Chicxulub crater is a reminder of the impact of a 10 km wide large asteroid that fell on the earth 66 million years ago and wiped out nearly 75% of plant and animal life.
- An impact with an asteroid even about 100 m wide can destroy a city the size of Chennai.
- The other question is whether this technique can be used to deflect asteroids bearing rich bounties of minerals and moving them to closer locations from where these can be harvested. No country has made this an explicit aim till now.
- The U.S. is not alone in attempting this.
- China has a plan to deflect a 40 m wide, earth-crossing asteroid named 2020PN1 by 2026.

SUBMARINE LAUNCHED BALLISTIC MISSILE (SLBM)

- The Ministry of Defence (MoD) announced that the indigenous ballistic missile nuclear submarine INS Arihant had successfully launched a nuclear capable Submarine Launched Ballistic Missile (SLBM) in the Bay of Bengal with “very high accuracy”.

The Submarine Launched Ballistic Missiles (SLBMs)

- The Submarine Launched Ballistic Missiles (SLBMs), sometimes called the ‘K’ family of missiles, have been indigenously developed by Defence Research and Development Organisation (DRDO).
- The family is codenamed after Dr APJ Abdul Kalam, the centre figure in India’s missile and space programmes who also served as the 11th President of India.
- Because these missiles are to be launched from submarines, they are lighter, more compact and stealthier than their land-based counterparts, the Agni series of missiles which are medium and intercontinental range nuclear capable ballistic assets.
- Part of the K family is the SLBM K-15, which is also called B-05 or Sagarika. It has a range of 750 km.
- INS Arihant can carry a dozen K-15 missiles on board.
- India has also developed and successfully tested K-4 missiles from the family, which have a range of 3,500 km.
- It is also reported that more members of K-family reportedly carrying the code names K-5 and K-6, with a range of 5,000 km and 6,000 km respectively are under development.

INS Arihant (the submarine)

- Launched in 2009 and Commissioned in 2016, INS Arihant is India’s first indigenous nuclear powered ballistic missile capable submarine built under the secretive Advanced Technology Vessel (ATV) project, which was initiated in the 1990s.
- INS Arihant and its class of submarines are classified as ‘SSBN’, which is the hull classification symbol for nuclear powered ballistic missile carrying submarines.
- In November 2019, after INS Arihant completed its first deterrence patrol, the government announced the establishment of India’s “survivable nuclear triad”.
- The second submarine in the Arihant class, SSBN Arighat, is reported to have been launched in 2017, and said to be undergoing sea trials at present.
- In addition, India operates 15 conventional diesel electric submarines (classified as SSK), and some more are on the way.

The Strategic Significance

- The successful user training launch of the SLBM by INS Arihant is significant to prove crew competency and validate the SSBN programme.
- A robust, survivable and assured retaliatory capability is in keeping with India’s ‘no first use’ commitment.
- These submarines can not only survive a first strike by the adversary, but can also launch a strike in retaliation, thus achieving ‘Credible Nuclear Deterrence’.
- The development of these capabilities is important in the light of India’s relations with China and Pakistan.
- China: The PLA Navy currently operates 6 nuclear-powered ballistic missile submarines (SSBNs) and 46 diesel-powered attack submarines (SSs).
- Pakistan: It Navy operates 5 diesel-electric submarines and 3 mini submarines of under 150 tonne displacement.
- Arihant stressed on the strategic postures of ‘credible minimum deterrence’ and ‘no first use’ which are pivotal to India’s nuclear doctrine, made public in January 2003.
- **The key points in the doctrine made public at the time were:**
 - Building and maintaining a credible minimum deterrent;
 - A posture of ‘no first use’ denoting that the nuclear weapons will only be used in retaliation against a nuclear attack on Indian territory or on Indian forces anywhere;
 - Nuclear retaliation to a first strike will be massive and designed to “inflict unacceptable damage”.

- The US Food and Drug Administration (FDA) announced a shortage of Adderall, medication used to treat **attention-deficit hyperactivity disorder (ADHD)**. There is not sufficient supply to continue to meet US market demand.

Adderall and its treatment for ADHD

- Adderall is the brand name for the formulation that consists of a combination of dextroamphetamine and amphetamine.
- It is an FDA-approved drug for the treatment of ADHD and narcolepsy, a sleep condition that causes daytime sleepiness.
- The CDC states that symptoms can appear different at older ages, for example, hyperactivity can appear as extreme restlessness.
- Adderall belongs to the class of drugs known as stimulants and increases the levels of dopamine and norepinephrine in the brain.
- For people diagnosed with ADHD, Adderall can help improve focus, concentration, impulse control and hyperactivity, because of its effects on the central nervous system.
- It can also have the same effects on those who do not have ADHD.
- Adderall is classified as a Schedule II drug in the US, which means that while it has positive medicinal effects, there is a large potential for abuse.

Attention-Deficit Hyperactivity Disorder (ADHD)

- ADHD is one of the most common neurodevelopmental disorders of childhood, usually diagnosed at an early age and lasting into adulthood.
- According to the US Centres for Disease Control and Prevention (CDC), children with ADHD might have trouble paying attention or controlling impulsive behaviours, and can be overly active.
- Many adults remain undiagnosed, and symptoms can cause difficulty at work, home or relationships.
- There are three different types of ADHD:
 - Predominantly Inattentive Presentation
 - Predominantly Hyperactive-Impulsive Presentation
 - Combined Presentation
- The causes and risk factors for ADHD are unknown, but current research shows that genetics plays an important role.
- Other possible causes may include brain injury, exposure to environmental risks (e.g., lead) during pregnancy or at a young age, alcohol and tobacco use during pregnancy, premature delivery, low birth weight, etc.
- Amphetamines have been extensively abused. Tolerance, extreme psychological dependence, and severe social disability have occurred.

BARIUM FOUND IN EXOPLANETS

- Scientists have detected barium in the upper atmosphere of two giant exoplanets for the first time.

About Exoplanet

- These exoplanets are two ultra-hot Jupiters WASP-76b and WASP-121b which orbit their host stars WASP 76 and WASP 121.
- The former is about 640 light-years away from the Earth and the latter around 900 light-years away.
- Ultra-hot Jupiters are a class of hot gaseous planets that matches the size of Jupiter. But they have short orbital periods, unlike Jupiter.
- Both WASP-76b and WASP-121b complete one orbit in two days. Surface temperatures in these bodies reach as high as 1,000 degrees Celsius.
- These bodies have unique features owing to their high temperatures. For instance, WASP-76b experiences iron rain.

Findings

- The scientists confirmed the presence of hydrogen, lithium, sodium, magnesium, calcium, vanadium, chromium, manganese and iron in the atmosphere of the WASP-76 b, in addition to barium.
- Additionally, the team found elements such as cobalt and strontium. They also found indications of titanium in the exoplanet.
- The presence of heavy elements at high altitudes in the atmospheres of ultra-hot Jupiters indicates that some unique atmospheric dynamics are at play.
- This discovery of barium is surprising because heavy elements like barium are expected to quickly fall into the lower layers of the atmosphere.

Barium

- Barium is a chemical element with the symbol Ba and atomic number 56.
- The element is used in metallurgy, and its compounds are used in pyrotechnics, petroleum production, and radiology.
- Soluble barium compounds are poisonous. In low doses, barium ions act as a muscle stimulant, and higher doses affect the nervous system, causing cardiac irregularities, tremors, weakness, anxiety, shortness of breath, and paralysis.
- Because of its high chemical reactivity, barium is never found in nature as a free element.
- Barium salts are used in fireworks to generate green lights.
- Barium, two and half times heavier than iron, is the heaviest-ever detected element.

PLANT BASED MEAT AND DAIRY

- Last week, meat and seafood retailer Licious forayed into the marketing of “mock” chicken and mutton under a new UnCrave brand.

Plant Based Meat

- Plant-based” refers to products that bio-mimic or replicate meat, seafood, eggs, and milk derived from animals — by looking, smelling, and tasting like them.
- The variety like mutton samosas and also chicken nuggets, momos, and fries with the same prefix.
- Beyond Meat’s patties, apart from using coconut oil to copy the melty beef fat of a real hamburger, apparently even bleed as they cook the “blood” coming from a beetroot juice-based liquid.
- Plant-based dairy products include ice-cream that isn’t simply frozen dessert that replaces milk fat with vegetable oil.
- Even the proteins and other solids-not-fat ingredients are sourced from plants.

How are these made?

- Animal meat contains protein, fat, vitamins, minerals, and water, just like plants.
- This biochemical similarity allows for finding analogues in the plant kingdom or making them through mechanical, chemical, or biological treatment of such ingredients.
- The challenge lies in replicating muscle tissue that plants don’t have.
- The unique spatial arrangement of proteins in these tissues is what creates the distinct texture of animal meat.
- That’s why plant-based mutton samosas, kebabs or keema, having a simpler texture, are easier to make than larger whole cuts of animal meat such as chicken breasts and pork chops.
- As for plant-based dairy, the main products are milk from oats, almond, soyabean, coconut, and rice.
- Among these, oat milk is considered the closest to regular milk in taste and texture. It is also thicker and creamier, as oats absorb more water than nuts or rice during soaking, and more of the grain gets strained for incorporation into the final product.

How big is the industry?

- According to the Good Foods Institute at Washington DC, retail sales of plant-based animal product alternatives in the US stood at \$7.4 billion in 2021.

- While the industry has grown from \$4.8 billion in 2018, it hasn't lived up to the initial hype.

What is the scope in India?

- Due to India's significant vegetarian population, plant-based meat does not see much potential in India.
- Plant-based meat can have only a niche market relevant for the top 1%."
- Most Indians take naturally to milk, which is a classic "superior food".
- Both milk (which includes ghee, curd, butter, ice-cream and other dairy products) and, to a lesser extent, meat (which includes fish and prawn) are superior foods — unlike cereals and sugar, whose share in the value of consumption reduces with increasing incomes, making them "inferior foods".
- Digestive concerns like lactose intolerance aren't very serious in India and, at any rate, pale in comparison to the perception of milk as a wholesome food.
- "Plant-based beverages cannot compete with real milk either on nutrition, taste, or affordability.

IN-SPACE

- IN-SPACE, the government body for dealing with the private sector space industry, has received 125 proposals from start-ups since last June.
- The Indian National Space Promotion and Authorization Centre (IN-SPACE) is meant to act as "the agency to promote, handhold and authorise private sector activities in the sector, besides enabling sharing of technical facilities and expertise from ISRO.

IN-SPACE

- IN-SPACE is an independent nodal agency under Department of Space for allowing space activities and usage of DOS owned facilities by NGPEs as well as to prioritise the launch manifest.
- It assesses the needs and demands of private players, including educational and research institutions, and, explore ways to accommodate these requirements in consultation with ISRO.
- IN-SPACE has been established as a single window nodal agency, with its own cadre, which permits and oversees the following activities:
- Space activities including building of launch vehicles and satellites and providing space based services as per the definition of space activities.
- Sharing of space infrastructure and premises under the control of ISRO with due considerations to on-going activities.
- Establishment of temporary facilities within premises under ISRO control based on safety norms and feasibility assessment.
- IN-SPACE will have a Chairman, technical experts for space activities, Safety experts, experts from Academia and Industries, Legal and Strategic experts from other departments, members from PMO and MEA of Government of India.
- It's headquarters located at Ahmedabad, Gujarat.

New Space India Limited

- New Space India Limited (NSIL), incorporated in March 2019 (under the Companies Act, 2013) is a wholly owned Government of India company, under the administrative control of Department of Space (DOS).
- NSIL is the commercial arm of Indian Space Research Organisation (ISRO) with the primary responsibility of enabling Indian industries to take up high technology space related activities and is also responsible for promotion and commercial exploitation of the products and services emanating from the Indian space programme.

Draft National Space Policy 2020

- The Draft National Space Policy 2020 was thus unveiled with the aim to increase public-private partnerships in space research and exploration activities.
- Instead of only partnering on the manufacturing and logistical side of operations earlier, private players were now given access to ISRO's infrastructure, technical resources and data to grow.

Private startups in Indian Space Industry

- Indian Space Association (ISpA), an association of Indian space companies, said that there were 102 space start-ups in India.
- Several Indian startups have started their operations. Some of the startups include:
- Digantara: It is an Indian private company working to secure long-term space flight safety by developing space debris tracking and monitoring services.
- Bellatrix Aerospace: Headquartered in Bangalore, it is an Indian private aerospace manufacturer and small satellite company.
- Tathya Earth: The company leverages deep learning algorithms for satellite imagery and maritime data to identify important real-time trends in the global economy.
- Skyroot, another Startup founded by two former ISRO scientists. The company is building “Vikram” rockets from scratch, which are the first brand of rockets made by the private sector in India.
- Agnikul Cosmos, a Startup founded by two 21-year-old college students became the world’s first company to successfully test a 3D-sprinted rocket engine, which is a new and upcoming tech in the space industry and is predicted to replace conventional assembly models.
- For the Indian space industry to grow and have many SpaceX-like companies, it has to meet only a key challenge — an assured market. All along the Indian space industry had two players — the government as a provider of demand and ISRO as the supplier of space services— but now, with the private sector getting into both demand and supply, the market is uncertain.

Challenges in the development of the Space Economy

- **Budgetary Constraints:** The CDS and IIST study noticed a decline in the budget for space-related activities.
- **Lack of Data:** The current CDS and IIST paper was a first-time attempt at scientifically measuring the size of the space economy. Further even this was unable to establish the size of the space-based remote sensing industry.
- **Space Debris:** Since the market is open, more corporations can send their vehicles and satellites up into space, which is already crowded. By some estimates, there are over 15,000 traceable and over 200,000 1-10 cm pieces.
- Absence of a Legislative Framework
- **Brain Drain:** India produces the best brains of the world but is unable to retain them. People emigrate from the country for better opportunities and careers that might hamper development of the space sector.
- **Lack of robust Dispute Settlement Mechanism:** This discourages private investment in the space sector e.g., the cancellation of Antrix-Devas deal has impacted investor confidence and hurt India’s reputation as investment destination internationally.

INDIGENOUS UAV RUSTOM-2

- The indigenous medium altitude long endurance (MALE) unmanned aerial vehicle (UAV) developed by the Defence Research and Development Organisation (DRDO) is expected to complete all user trials by August 2023.
- Four prototypes of Rustom-2 are currently flying.
- Five production models will be manufactured by Hindustan Aeronautics Ltd. (HAL).

Rustom-2

- Rustom-2 had crossed a milestone by reaching an altitude of 25,000 feet and an endurance of 10 hours.
- The target is to reach an altitude of 30,000 feet with an endurance of 20 hours endurance which has to be demonstrated.
- Rustom-2 technologically matched the contemporary UAVs available and would also be cheaper than the imported ones while meeting the requirements of the three Services.
- Rustom-2 has been designed and developed by the Aeronautical Development Establishment (ADE), Bengaluru, with the production partners being HAL and Bharat Electronics Ltd.
- It is being developed to carry out surveillance and reconnaissance (ISR) roles and is capable of carrying different combinations of advanced payload and capable of auto landing, among others.



Significance

- High endurance UAVs are a priority requirement for the Indian armed forces especially in view of the stand-off with China in eastern Ladakh.
- Indian armed forces heavily rely on Israeli Searcher and Heron drones to meet their requirements and they have need for more such UAVs.
- The Services have embarked on a major upgrade project of the Heron UAVs in use.

MICROBIAL INTERACTIONS IN INTERNATIONAL SPACE STATION

- Researchers at Indian Institute of Technology Madras (IIT Madras) and NASA Jet Propulsion Laboratory (JPL) have studied the interactions between microbes in the International Space Station (ISS).
- The study will help devise strategies for the disinfection of space stations to minimise any potential impact of microbes on the health of astronauts.
- During spaceflight, crews may have altered immunity and limited access to terrestrial medical facilities.
- Therefore, studying the microbes inhabiting the space station becomes important to understand the risks associated with short-term and long-term space travel on the health of astronauts.

About

- The present study was motivated by the earlier observations of the dominance of *Klebsiella pneumoniae* on the surfaces of the ISS.
- This pathogen has been known to cause pneumonia and other nosocomial infections.
- It is beneficial to various other microbes also present on the ISS, especially the bacteria from the *Pantoea* genus.
- However, it was found that its presence was hampering the growth of *Aspergillus* fungus.
- This bacterial family includes members like *E coli*, *Salmonella*, etc, which are also present in the human gut.
- This bacterial family was found to be the most beneficial among the other microbes present on the ISS.
- The microbial strains found in this study pose no threat to the space station astronauts.
- One of the ways the microbes are introduced in the sealed and closed space station is through crew members.

Importance

- The microbial strains found in this study pose no threat to the space station astronauts, and this study provides evidence on why it's important to monitor the microbiome of the ISS.
- Keeping an eye on what microbes are on the ISS and learning how they adapt in microgravity continues to help us protect astronaut health.
- The interaction between the microbes is also affected by these adverse environmental conditions in space, necessitating such studies.

- More knowledge on the microbes in space can help devise appropriate safety measures for long-term space travel.
- This will also open the doors of space travel to the common people and to ensure the travel safer into the sky.

ISRO'S HEAVIEST ROCKET LVM3-M2

- The Indian Space Research Organisation's (ISRO) heaviest rocket Launch Vehicle Mark 3 (LVM3 or GSLV Mark 3) which took off from the second launch pad (SLP) of the Satish Dhawan Space Centre SHAR, Sriharikota has successfully orbited 36 satellites of U.K.-based OneWeb.
- This is OneWeb's 14th launch, bringing the constellation to 462 satellites.
- This launch represents more than 70% of its planned 648 Low Earth Orbit (LEO) satellite fleet that will deliver high-speed, low-latency connectivity worldwide.

LVM3-M2

- The 43.5 metre LVM3 weighing around 644 tonne carried 36 satellites weighing 5,796 kg or about 5.7 tonne.
- With this launch, LVM3 has made its entry into the global commercial launch service market.
- The LVM3 was conceived primarily for launching geo-stationary satellites with a payload capacity of 4T, which can be used for launching 6T payloads for LEO.
- The mission is very critical to meet the customer's expectations to launch 36 satellites in 9 phases with precision. The mission was designed in such a way that C25 stage was to handle this operation using in-house built inertial navigation systems.
- With this launch, LVM3 has made its entry into the global commercial launch service market.
- LVM3-M2 is the dedicated commercial satellite mission of NewSpace India Limited (NSIL), a Central Public Sector Enterprise (CPSE) under the Department of Space, Government of India.
- This mission is being undertaken as part of the commercial arrangement between NSIL and m/s Network Access Associates Limited (m/s OneWeb Ltd), a U.K. based company.

OneWeb

- OneWeb is a joint venture between India's Bharti Enterprises and the U.K. government.
- With only four more launches to go, OneWeb remains on track to activate global coverage in 2023, while its connectivity solutions are already live in regions north of 50-degrees latitude.
- This partnership with NSIL and ISRO demonstrates OneWeb's commitment to provide connectivity across the length and breadth of India by 2023.
- From Ladakh to Kanyakumari and Gujarat to Arunachal Pradesh, OneWeb will bring secured solutions not only to enterprises but also to towns, villages, municipalities and schools, including the hardest-to-reach areas across the country.

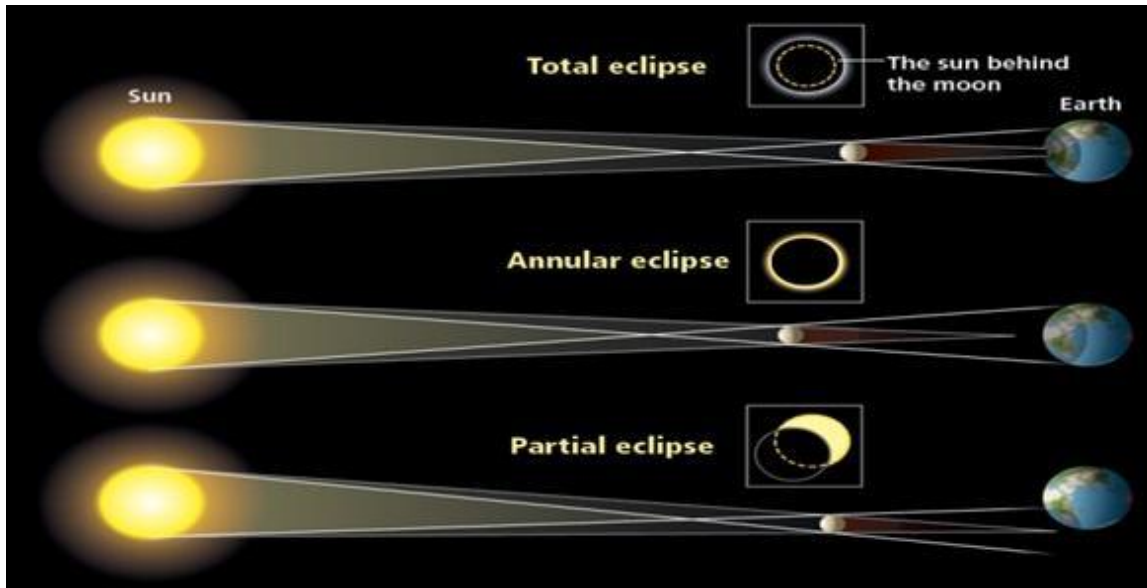
SOLAR ECLIPSE

- The partial solar eclipse or Surya Grahan on October 25 marks the last solar eclipse of the year. The eclipse will be visible from parts of Europe, Northern Africa and large parts of western and central Asia. Most of India was able to view the solar eclipse, apart from some parts in the Northeast.

Solar Eclipse

- During a solar eclipse, the Moon passes between the Sun and the Earth, stopping some of the Sun's light from reaching our planet.
- Typically, there are three kinds of solar eclipses—
- **Total solar eclipse:** During a total eclipse, the Moon will completely cover the Sun.
- **Annular eclipse:** During an annular solar eclipse, the Moon will not fully cover the Sun but will leave an edge visible.

- **Partial solar eclipse:** During a partial solar eclipse the Sun will be partly covered by the Moon as it passes in front of it.



- The type of eclipse we experience depends on the type of shadow that is involved.
- Both the Moon and Earth cast 3 shadows: umbra, penumbra, and an antumbra.
- **The umbra** is a shadow's dark core: It means If you are standing within the umbra, you will not be able to see any part of the light source as the object blocks all direct light rays.
- **The penumbra** is a half-shadow that occurs when a light source is only partly covered by an object
- **Antumbra:** the lighter part of the shadow that begins where the umbra ends.

HAWK AIR DEFENCE EQUIPMENT

- The United States is considering retrieving older HAWK air defence equipment from storage to send to Ukraine which is facing a heavy barrage of Russian drone-fired and cruise missiles.

HAWK after Stinger

- The HAWK interceptor missiles would be an upgrade to the Stinger missile system, which is a smaller, shorter-range air defence system.
- The US sent the shoulder-fired anti-aircraft Stingers to Ukraine early on in the war, and then placed orders for more stocks of the missiles with Raytheon Technologies Corp.
- After they demonstrated great success in stopping Russian air assaults.
- HAWK, short for 'Homing All the Way Killer', entered service with the US Army in 1959, during the Vietnam war.
- It underwent upgrades over the decades that followed, including a major one in 1971 that produced the so-called I-HAWK (or improved HAWK), with a kill probability of 85%.
- The HAWK system was the predecessor to the PATRIOT missile defence system that Raytheon built in the 1990s.
- US forces largely stopped using HAWK from the early years of the new century.
- The Biden administration would use the Presidential Drawdown Authority (PDA) to transfer the HAWK equipment, Reuters said. According to the US Department of State.
- PDA allows for the "speedy delivery of defence articles and services from Department of Defence stocks to foreign countries and international organisations to respond to unforeseen emergencies".
- Military assistance under PDA does not require Congressional approval, and could "begin arriving within days or even hours of approval.
- The US has provided almost \$17 billion worth of security assistance to Ukraine since the launch of Russia's invasion on February 24.

WHO RELEASES FIRST-EVER FUNGAL PRIORITY PATHOGEN LIST

- The World Health Organisation (WHO) has released the first-ever priority pathogen list — which includes 19 fungi — to identify fungi which pose the greatest threat to public health.
- This systematic prioritisation will help address the perceived public health importance and satisfy the unmet needs in the research and development sector.
- The list takes precedence from the bacterial priority pathogens list, first established by WHO in 2017 with a similar focus to galvanise global attention and action.
- The global health body's fungal priority pathogen list was released October 25, 2022. It has been divided into three categories — critical, high and medium priority.

Highlights of the report:

- Fungal pathogens are a major threat to public health as they are becoming increasingly common and resistant to treatment with only four classes of antifungal medicines currently available, and few candidates in the clinical pipeline.
- Most fungal pathogens lack rapid and sensitive diagnostics and those that exist are not widely available or affordable globally.
- The list's publication is opportune as fungi are becoming an increasingly common threat to public health. Global warming and increasing international travel and trade are fuelling this rise.
- The COVID-19 pandemic saw an increase in mucormycosis or black fungus infections among those hospitalised.
- Black Fungus, White Fungus, Yellow Fungus, and Green Fungus have been attributed to COVID-19 and led to prolonged morbidity and mortality in COVID-19 patients.
- A three-layered approach emerged in the strategies suggested by policymakers, governments and public health professionals.

The strategy includes:

- Strengthening laboratory capacity and surveillance.
- Sustaining investments in research, development and innovation
- Enhancing public health interventions for prevention and control.

Mucormycosis or Black Fungus

- Increased cases of Black Fungus or Mucormycosis have been observed in COVID-19 patients in the national capital.

The symptoms of Black Fungus infection are:

- For Brain Mucormycosis: One-sided facial swelling, Headache, Nasal or sinus congestion, Black lesions on nasal bridge or upper inside of the mouth, Fever.
- For Pulmonary Mucormycosis: Fever, Cough, Chest pain, Shortness of breath
- For Gastrointestinal Mucormycosis: Abdominal pain, Nausea and vomiting, Gastrointestinal bleeding.
- Risks of getting infected with Black Fungus: Diabetes, Cancer, Organ transplant, Stem cell transplant, Neutropenia, Long-term corticosteroid use, Hemochromatosis (excess of iron), Skin injury due to surgery, burns, or wounds etc.

NEWS BROADCASTING & DIGITAL STANDARDS AUTHORITY

- The NBDSA is an independent body set up by the News Broadcasters & Digital Association (NBDA), which serves as a representative of private television news, current affairs and digital broadcasters.

The News Broadcasting & Digital Standards Authority (NBDSA)

- It is a self-regulatory agency set up by news and digital broadcasters, has fined the Hindi TV channel Rs 50,000 for turning a news debate on hijab into a "communal issue" and not adhering to guidelines.

- The NBDSA held that the programme was in violation of the principles relating to impartiality, neutrality, fairness and good taste and decency.
- The NBDSA, which adjudicates upon complaints about news broadcasts, said it did not have any problem with the subject but with the narrative of the debate.
- This is not the first time a channel has seen a complaint against it through the NBDSA, and though it is not a government or legal organisation, its rulings matter within the industry.
- The NBDSA is an independent body set up by the News Broadcasters & Digital Association (NBDA), which serves as a representative of private television news, current affairs and digital broadcasters.
- It describes itself as “the collective voice of the news, current affairs and digital broadcasters in India.”
- Funded entirely by its members, the NBDA has 26 news and current affairs broadcasters (comprising 119 news and current affairs channels) as its members.
- Various senior members of Indian media organisations serve on its Board of Directors.
- Apart from presenting a unified front, it carries out activities “to promote, protect and secure the interests including the right of freedom of speech and expression of the news broadcasters, digital news media and other related entities.”
- It shares developments in the industry with members, provides a space for achieving common goals and consensus and aims to protect all its members from persons carrying “unfair and/or unethical practices or who discredit the television news broadcasters, digital news media and other related entities.

Functions and Powers

- It’s standards mention a focus on objectivity, impartiality, maintaining discretion when reporting on crime against women and children, not endangering national security, etc.
- The body includes a chairperson who is to be an eminent jurist, and other members such as news editors, and those experienced in the field of law, education, literature, public administration, etc. nominated by a majority of the Board.
- The Authority may initiate proceedings on its own and issue notice or take action in respect to any matter which falls within its regulations.
- This can also be through complaints referred to the Authority by the Ministry of Information & Broadcasting or any other governmental body, or by anyone else via its website
- A “two-tier” procedure is in place for redressing grievances, where any person aggrieved by the content of any broadcast is required to first make a complaint to the concerned broadcaster and if they are not satisfied by the redress, a complaint can be filed before the Authority.
- Within 14 days from the date of receipt of a complaint, the Authority will issue notice to the concerned broadcaster to show cause why action should not be taken under the regulations.
- An inquiry is held in which proof, documents, and people can be called in by the authority.
- If the complainant or the respondent does not get back to the Authority, the complaint can be set aside.
- It can also recommend to the concerned authority for suspension/revocation of the license of such broadcaster.
- The fine imposed by the Authority shall not exceed Rs. 1 lakh and such fine shall be recovered from the concerned broadcaster.

ENVIRONMENT

INTERNATIONAL SOLAR ALLIANCE

- The International Civil Aviation Organization (ICAO) has become the latest United Nations agency to join the International Solar Alliance (ISA).

International Solar Alliance

- The International Solar Alliance (ISA) was jointly launched by the Prime Minister of India and the President of France in 2015 at UNFCCC CoP 21 Paris, France.
- In March 2018, the first meet of International Solar Alliance was held in New Delhi, India.
- It was conceptualized on the side-lines of the 21st Conference of Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) held in Paris in 2015.
- ISA is partnership of solar resource rich countries to address their special energy needs and provide a platform to collaborate on development of solar energy resource
- It is an intergovernmental body registered with the United Nations under Article 102 of the UN Charter.
- The ISA is open to 121 countries, most of them located between the Tropics of Cancer and Capricorn. However, ISA is now considering to open the membership to all countries.
- **Mission:** Every home no matter how far away, will have a light at home
- The Headquarters is in India with its Interim Secretariat being set up in Gurugram.
- At present, 109 countries are signatories to the ISA Framework Agreement, of which 90 countries have submitted the necessary instruments of ratification to become full members of the ISA.
- The ISA is guided by its 'Towards 1000' strategy which aims to mobilise USD 1,000 billion of investments in solar energy solutions by 2030, while delivering energy access to 1,000 million people using clean energy solutions and resulting in installation of 1,000 GW of solar energy capacity.

One Sun One World One Grid (OSOWOG)

- The concept of OSOWOG, which the British have called a green grid, pitches the idea of a transnational solar grid, from which different countries can draw power.
- The OSOWOG idea was first floated by the Indian Prime Minister in 2018 during the first assembly of the International Solar Alliance (ISA).
- The vision behind the OSOWOG mantra is "the Sun never sets" and is a constant at some geographical location, globally, at any given point of time.
- The project has been taken up under the technical assistance programme of the World Bank.
- Aim– By 2050, a single power grid of renewable energy be accessible across continents — with production in one continent and distribution of power in another.
- It has been taken up under the technical assistance program of the World Bank.

The 3 Phases of the Plan:

- First Phase: It will entail inter-connectivity within the Asian continent.
- Second Phase: It will add Africa.
- Third Phase: It is about global interconnection.

International Civil Aviation Organisation (ICAO)

- International Civil Aviation Organisation (ICAO) is a specialized agency of the United Nations charged with coordinating and regulating international air travel.
- ICAO was established in 1944 by Convention on International Civil Aviation(Chicago Convention).It is headquartered in Quebec,Canada.
- It codifies the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth.

- ICAO council is composed of 36 states which are elected for a three-year term.
- The council member states are chosen under three headings (a)states of chief importance in air transport (b)states which make the largest contribution to the provision of facilities for air navigation and (c)states whose designation will ensure that all major areas of the world are represented.

METHANE EMISSION

- Methane emissions will likely increase by 13 per cent by 2030 without the Global Methane Pledge said by the United States Special Presidential Envoy for Climate by citing an upcoming report by the United Nations Environment Programme during his speech at the Global Methane, Climate and Clean Air Forum 2022 being held in Washington, DC.

The Global Methane Pledge

- It was launched in 2021, aims to keep alive the 1.5 degrees Celsius goal.
- Over a 100 countries have committed to reducing global methane emissions by at least 30 per cent by 2030 from 2020 levels.
- This reduction could eliminate over 0.2°C warming by 2050.
- India, which is not a part of the Global Methane Pledge, is among the top five methane emitters globally, according to the International Energy Agency.

Methane

- Methane and short-lived climate pollutants like hydrofluorocarbons stay in the Earth's atmosphere for a few years, unlike carbon dioxide.
- Their potential to warm the atmosphere could be 80-1,500 times greater.
- Methane has contributed to about one-third of the current anthropogenic greenhouse gas-driven warming, according to an editorial in Nature Geoscience.
- A panel of scientists at the Global Methane, Climate and Clean Air Forum noted that mitigating methane and other short-lived climate pollutants is essential to achieving decarbonisation goals.
- It will enable further carbon dioxide removal.
- Currently, only 2 per cent of global climate finance goes to methane.
- Global methane emissions in 2030, can be reduced by 57 per cent using available strategies and technologies. This reduction can cause lower global warming by around 0.25°C in 2050 and 0.5°C by the end of the century.

Climate and Clean Air Coalition (CCAC)

- The Climate and Clean Air Coalition is a voluntary partnership of governments, intergovernmental organizations, businesses, scientific institutions and civil society organizations committed to improving air quality and protecting the climate through actions to reduce short-lived climate pollutants.
- Its global network currently includes over 120 state and non-state partners, and hundreds of local actors carrying out activities across economic sectors.
- It was formed in 2012 by the governments of Bangladesh, Canada, Ghana, Mexico, Sweden and the United States, along with the UNEP.
- To support fast action and deliver benefits on several fronts at once: climate, public health, energy efficiency, and food security
- 76 countries are its partner including India.
- To achieve the goals of the Paris Agreement and hold warming to 1.5°C. Methane emissions can be reduced by 40% and black carbon by 70% by 2030 (from 2010 levels). Hydrofluorocarbons (HFCs) can be virtually eliminated with the potential for a 99.5% reduction by 2050 (from 2010 levels).
- The Coalition's goal is to reduce short-lived climate pollutants beyond the recommendations made by the Intergovernmental Panel on Climate Change (IPCC) in its special report Global Warming of 1.5°C.

Global Methane Initiative(GMI)

- GMI is an international public-private initiative launched in 2004.

- To achieve a global reduction in anthropogenic methane emission through a partnership among developed and developing countries having economies in transition.
- It is a voluntary Government and an informal international partnership having members from 45 countries including the United States and Canada. India has been one of the members since its inception.
- It is currently hosted by the U.S. Environmental Protection Agency.
- It was launched in 2004.
- It is an international public-private initiative that advances cost-effective, near-term methane abatement and recovery and use of methane as a valuable energy source in three sectors: biogas (including agriculture, municipal solid waste, and wastewater), coal mines, and oil and gas systems.

International Energy Agency(IEA)

- It was established in 1974 as an autonomous intergovernmental organization under the OECD framework.
- To ensure reliable, affordable, and clean energy for its member countries and beyond.
- It has four main areas of focus: a) Energy security b) Economic development c) Environmental awareness and d) Engagement worldwide.
- It has 30 member countries and eight association countries. India became an associate member in 2017.
- IEA member countries need to maintain total oil stock levels equivalent to at least 90 days of the previous year's net imports.
- Secretariat: Paris, France.
- Reports: It releases the
 - World Energy Outlook report
 - Global Energy & CO2 Status Report.
 - World Energy Statistics.
 - World Energy Balances.
 - Energy Technology Perspectives.

CATFISH SPECIES

- A new catfish species has been discovered in the river Cauvery near Mettur Dam. The edible species has been named *Pangasius icaria* (*P. icaria*) after Indian Council of Agricultural Research that discovered the species. The species belongs to the *Pangasius* genus.

Catfish

- The genus *Pangasius* is found in the Gangetic plains but not in peninsular India.
- Through this study, they found that *Pangasius* specimens from the river Cauvery are different from other species of the genus *Pangasius*.
- The new species is edible and the locals call it aie keluthi in Tamil.
- Catfish has high commercial value in aquaculture and wild capture fisheries.

Mettur Dam

- The Mettur Dam is one of the largest dams in India and also the largest in Tamil Nadu, located across the river Kaveri where it enters the plains. Built in 1934, it took 9 years to complete.
- The dam receives inflows from its own catchment area, Kabini Dam and Krishna Raja Sagar Dams located in Karnataka.
- There is a park at the base of the dam called Ellis Park maintained by the Tamil Nadu Public Works Department. It provides irrigation and drinking water facilities for more than 12 districts of Tamilnadu and hence is revered as the life and livelihood-giving asset of Tamil Nadu.

WORLD'S FIRST CNG TERMINAL

- Prime Minister laid the foundation stone for the "world's first CNG (Compressed Natural Gas) terminal" at Bhavnagar in Gujarat.
- This is a three-year-old project that is expected to infuse Rs 4,000 crore in developing the existing port infrastructure at Bhavnagar.

Special lock-gate system at Bhavnagar port

- The consortium will repair and redevelop the tidal lock gate system, which will be the fourth largest such system in the world.
- Traditionally, because of the higher tidal range of approximately 10 meters, Bhavnagar creek attracts a significant amount of sediment in the form of silt.
- This lock gate system has been set up so that a minimal amount of sediment enters the port basin during high tide, thus bringing down the cost of dredging inside the port substantially.

Why is the Bhavnagar port important?

- The Bhavnagar port is in close vicinity to the Dholera Special Investment Region (SIR) and is expected to serve the industries that set up base in the region.
- It is already connected to the northern hinterland through a railway line that extends to the existing berths at the port.

When is the CNG terminal expected to commence operations?

- The construction is expected to commence in the first quarter of 2023 after GMB approves the Detailed Project Report.
- It is expected to be made operational by 2026. The proposed port terminal's capacity is 4.65 Million Tonnes Per Annum (MTPA), of which the capacity of the CNG terminal will be 0.3 MTPA.

HUMAN-ANIMAL CONFLICT

- Tiger T-104 was put down by the forest department of Bihar in the Valmiki Tiger Reserve in West Champaran district of the state according to protocol laid down by National Tiger Conservation Authority (NTCA) for man-eater tigers.
- The tiger in question was a three-year-old male, who had killed 10 people in the district. It was shot dead on the orders of the Chief Wildlife Warden (CWW) of Bihar.
- Four years ago, Avni or T1, the man-eating tigress of Yavatmal district in Maharashtra, had been similarly eliminated after she mauled 13 people to death.
- The elimination of the tiger has raised eyebrows since the animal is listed under Schedule 1 of the **Wild Life (Protection) Act, 1972 (WLPA)**.
- But the NTCA has laid down Standing Operating Procedures (SoP) for declaring tigers and leopards as 'man-eaters', if they pose threats to human lives.

Valmiki Tiger Reserve

- It forms the eastern most limit of the Himalayan Terai forests in India and is the only tiger reserve of Bihar.
- Situated in the Gangetic Plains bio-geographic zone of the country, the forest has combination of bhabar and terai tracts.
- Valmiki Tiger Reserve lies in the north-western (mostly in the West Champaran) district of Bihar.
- The pristine forest and wilderness of VTR is an excellent example of Himalayan Terai landscape.
- The VTR forest area covers 901.07 sq km, out of which Wildlife Sanctuary is 880.78 sq km. and National Park is about 335.64 sq. km.
- VTR is one of the eleven Level 1 Tiger Conservation Units (TCU) in the Indian sub- continent, where long term survival of Tigers (*Panthera tigris*) is possible.
- The Reserve has also been designated as Important Bird Area (IBA) by the Indian Bird Conservation Network.

Wildlife Protection Act (WPA) 1972

- In India, wildlife conservation and protection are maintained under the Wildlife (Protection) Act, 1972.
- The Act is a product of the times when environmental jurisprudence was rapidly developing in India with due credit to judicial activism.

- The current Act is comprehensive and protects all kinds of animals – amphibians to birds, mammals, and reptiles and specified plants that cannot be destroyed and damaged without the approval of the government.
- It provides for the appointment of wildlife advisory Board, Wildlife warden, their powers, duties etc.

Institutions

- The Act provides for setting up of National Parks, Wildlife Sanctuaries etc.
- The constitution of Central Zoo Authority.
- The Act also provides the constitution of Indian Board of Wildlife (IBWL)
- It also sets up the National Tiger Conservation Authority.
- Hunting and poaching are prohibited under the Act with exceptions such as special permission may be granted by CWW for purposes like education, scientific research, etc.
- Constitution of the National Board for Wildlife with the PM as its chairperson.
- 6 schedules include protection to both animals and plants including Vermin (specified in Schedule five)
- Recognition of Protected Areas (PAs) such as Wildlife Sanctuaries and National Parks.

SODIUM CHROMATE

- A section of environmentalists have flagged irregularities in the draft Environmental Impact Assessment report for a proposed chemical plant in Telangana's Nalgonda district.
- The project uses outdated technology to produce sodium dichromate from chromite ore, while disguising itself as a sodium saccharin unit.
- Sodium dichromate is a hazardous chemical. It is corrosive to the eyes, skin and respiratory tract. Exposure to the substance may cause affect kidney and liver.
- The company abandoned 100,000 tonnes of chromite ore processing residue, which continuously leached hexavalent chromium through a stream joining the Krishna.
- The substance is very toxic to aquatic organisms. It may cause long-term effects on the marine environment. It is strongly advised not to let the chemicals enter the environment.

Sodium Chromate

- Sodium chromate is the inorganic compound with the formula Na_2CrO_4 .
- It exists as a yellow hygroscopic solid, which can form tetra-, hexa-, and decahydrates.
- It is an intermediate in the extraction of chromium from its ores.
- Sodium chromate is
- It is obtained on a vast scale by roasting chromium ores in air in the presence of sodium carbonate
- The compound is also corrosive and exposure may produce severe eye damage or blindness.
- Human exposure further encompasses impaired fertility, heritable genetic damage and harm to unborn children.

Sodium Dichromate

- Sodium chromate converts to sodium dichromate when treated with acids.
- Sodium dichromate is a hazardous chemical.
- It is corrosive to the eyes, skin and respiratory tract.
- Exposure to the substance may cause affect kidney and liver.
- Even a brief exposure to the substance can damage tissues.
- Repeated or prolonged inhalation may cause nasal ulceration. This may result in perforation of the nasal septum.
- The substance is very toxic to aquatic organisms.
- It may cause long-term effects on the marine environment.

Uses of Sodium Chromate

- Production of chromium from its ores.
- Used as a corrosion inhibitor in the petroleum industry.

- A dyeing auxiliary in the textile industry.
- A diagnostic pharmaceutical in determining red blood cell volume.
- In organic chemistry, sodium chromate is used as an oxidant, converting primary alcohols to carboxylic acids and secondary alcohols to ketones.
- Sodium chromate is a strong oxidizer.

INDIA'S FIRST SLENDER LORIS SANCTUARY

- In a first in the country, Tamil Nadu government notified Kaduvur slender loris sanctuary covering 11,806 hectares in Karur and Dindigul districts.
- Slender lorises, which are small nocturnal mammals are arboreal in nature as they spend most of their life on trees.
- The species acts as a biological predator of pests in agricultural crops and benefits farmers.
- Listed as an **endangered species** by the International Union for Conservation of Nature (IUCN).
- Slender Loris has a wide range of ecological roles to play in the terrestrial ecosystem.
- The survival of the species depends on its habitat improvement, conservation efforts and mitigation of threats.

In significant steps towards conservation of wildlife, Tamil Nadu government notified

- India's first Dugong Conservation Reserve in Palk Bay,
- Kazhuveli bird sanctuary in Villupuram
- Nanjarayan Tank birds sanctuary in Tiruppur
- The State's fifth elephant reserve at Agasthyamalai in Tirunelveli.
- 13 wetlands across the State were declared as Ramsar sites.

LIVING PLANET REPORT 2022

- There has been a 69 per cent decline in the wildlife populations of mammals, birds, amphibians, reptiles and fish, across the globe in the last 50 years, according to the latest Living Planet Report by World Wide Fund for Nature (WWF).
- The highest decline (94 per cent) was in the Latin America and the Caribbean region.
- Africa recorded a 66 per cent fall in its wildlife populations from 1970-2018 and the Asia Pacific 55 per cent.
- Freshwater species populations globally reduced by 83 per cent.
- Habitat loss and barriers to migration routes were responsible for about half of the threats to monitored migratory fish species.
- The Living Planet Index (LPI), featuring about 32,000 populations of 5,230 species across the world, showed that vertebrate wildlife populations are plummeting at a particularly staggering rate in tropical regions of the world.
- Mangroves continue to be lost to aquaculture, agriculture and coastal development at a rate of 0.13 per cent per year.
- Many mangroves are also degraded by over exploitation and pollution, alongside natural stressors such as storms and coastal erosion.
- Around 137 square kilometres of the Sundarbans mangrove forest in India and Bangladesh has been eroded since 1985, reducing land and ecosystem services for many of the 10 million people who live there.

WWF identified six key threats to biodiversity —

- Agriculture
- Hunting
- Logging
- Pollution
- Invasive Species
- Climate change

To highlight 'threat hotspots' for terrestrial vertebrates.

About Living Planet Report

- The Living Planet Report 2022 is a comprehensive study of trends in global biodiversity and the health of the planet.
- It is an annual flagship World Wide Fund for Nature (WWF) publication.
- It is the world's leading, science-based analysis, on the health of our planet and the impact of human activity.
- It links climate change and biodiversity loss for 1st time. Biodiversity loss and climate crisis should be dealt with as a single issue.

SNOW LEOPARD SURVEY

- Wildlife officials in Arunachal Pradesh are awaiting analysis of the data of a survey conducted in 2021 to ascertain the presence of the elusive snow leopard.
- The data was collected from a high-altitude Himalayan belt across 11 wildlife divisions from Tawang in the west and Anini to the east and was sent to the World Wide Fund for Nature (WWF).
- Namdapha is the known home of three other large cats — tiger, leopard and clouded leopard.
- The belief that the national park is also the habitat of the snow leopard is based on the claim of a hunter from the Lisu ethnic community that he possessed the skin of the carnivore.
- The snow leopard has never been spotted nor recorded in the Namdapha National Park and Tiger Reserve in Arunachal Pradesh's Changlang district.
- The 1,985 sq. km reserve bordering Myanmar has an elevation varying from 200 metres to 4,571 metres above sea level

Snow Leopard

- Snow leopards have a vast but fragmented distribution across the mountainous landscape of Central Asia, which covers different parts of the Himalayas such as Ladakh, Himachal Pradesh, Uttarakhand, and Sikkim.
- It is the State animal of Himachal Pradesh.
- The Snow Leopard (also known as Ghost of the mountains) acts as an indicator of the health of the mountain ecosystem in which they live. It is because of their position as the top predator in the food web.
- Further, it is found in 12 range countries namely Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan, and Uzbekistan.

Conservation efforts

- IUCN status: Vulnerable
- Listed in CITES Appendix I
- Listed as threatened with extinction in Schedule I of the Convention on the Conservation of Migratory Species (CMS) of Wild Animals since 1985.
- Listed in Schedule I of the Wildlife Protection Act, 1972.
- Flagship conservation species of India – part of 21 critically endangered species for the recovery program under MoEF&CC
- India is a party to the Global Snow Leopard and Ecosystem Protection (GSLEP) Programme since 2013.
- SECURE Himalayas initiative of the Global Environment Facility (GEF) and United Nations Development Programme (UNDP)
- Project Snow Leopard 2009.

World Wide Fund for Nature (WWF)

- Established as a Charitable Trust on 27 November, 1969, WWF India set out with the aim of reducing the degradation of Earth's natural environment and building a future in which humans live in harmony with nature. In 1987, the organization changed its name from the World Wildlife Fund to World Wide Fund for Nature India.
- With five decades of extensive work in the sector, WWF India today is one of the leading conservation organizations in the country.

- WWF India is a science-based organization which addresses issues such as the conservation of species and its habitats, climate change, water and environmental education, among many others.
- Their work is focused around six ambitious goals: Climate, Food, Forests, Freshwater, Oceans, Wildlife.

Its initiatives include

- Debt-for-Nature Swap
- Earth Hour
- Healthy Grown
- Marine Stewardship Council
- Living Planet Index

PADDY STRAW PELLET UNITS

- Union Environment Ministry announced a ₹50 crore scheme to incentivise industrialists and entrepreneurs to set up paddy straw pelletisation and torrefaction plants.

Stubble Burning

- Stubble burning refers to the practice of farmers setting fire to plant debris that remain in farms after harvest.
- Stubble burning is practised predominantly by farmers in north India.
- It is to be noted that, before the 1980s, farmers used to till the remaining debris back into the soil after harvesting the crops manually.
- Paddy stubble burning is practised mainly in the Indo-Gangetic plains of Punjab, Haryana, and UP.
- The problem is that about 75% or 20 million tonne is from non-basmati rice, which cannot be fed to cattle as fodder because of its high silica content.

About the scheme

- Paddy straw made into pellets or torrefied can be mixed along with coal in thermal power plants.
- This saves coal as well as reduces carbon emissions that would otherwise have been emitted were the straw burnt in the fields, as is the regular practice of most farmers in Punjab and Haryana.
- New units set up would be eligible for government funding in the form of capital to set up such plants.
- The estimated cost of setting up a regular pelletisation plant, which can process a tonne per hour, is ₹35 lakh.
- Under the scheme, the Centre will fund such plants to a maximum of ₹70 lakh subject to capacity.
- Similarly, the cost of establishing a torrefaction plant is ₹70 lakh and under the scheme, is eligible for a maximum funding of ₹1.4 crore.
- Torrefaction is costlier but can deliver a product whose energy content is much higher and theoretically substitute for more coal in a power plant.
- This would be a “one-time only” scheme and regular pellet plants would be eligible for ₹40 crore of the overall pie.

Central Pollution Control Board (CPCB)

- The Central Pollution Control Board (CPCB) is a statutory organization, constituted in 1974 under the Water (Prevention and Control of Pollution) Act, 1974.
- It is the apex organization in the country in the field of pollution control as a technical wing of the Ministry of Environment, Forests and Climate Change (MoEF).
- It is also entrusted with the powers and functions under the Air (Prevention and Control of Pollution Act 1981)
- It also serves as a field formation and also provides technical services to the Ministry of Environment and Forests under the provisions of the Environment (Protection) Act, 1986.
- The functions of CPCB includes
- promote cleanliness of streams and wells in different States by prevention, control and abatement of water pollution and to improve the quality of air and to prevent, control or abate air pollution in the country.

COMPRESSED BIO GAS (CBG)

- Addressing the inaugural event of Asia's largest Compressed Bio Gas (CBG) plant in Lehragaga, Sangrur, Punjab, Union Minister of Petroleum & Natural Gas and Housing & Urban Affairs said that this plant in Sangrur is just the beginning of India's master plan for a CBG-based rural economy.
- The Compressed Bio Gas (CBG) plant in Sangrur is a step in achieving objectives of the Sustainable Alternative Towards Affordable Transportation (SATAT) scheme, which was launched by Government of India in October 2018 to establish an ecosystem for production of Compressed Bio Gas (CBG) from various waste/ biomass sources in the country.
- The scheme aims to empower and unleash the rural economy by supporting farmers, increase India's domestic energy production and self-sufficiency and also reduce the air pollution, and help India lead the world toward a clean energy transition.
- Apart from this plant, 38 CBG / Biogas Plants have been commissioned under the SATAT initiative.
- The efforts being made to encourage the indigenous manufacturing of CBG Plant equipment such as Cascades, Compressors & Dispensers.
- The scheme aims to empower and unleash the rural economy by supporting farmers, increase India's domestic energy production and self-sufficiency and also reduce the air pollution, and help India lead the world toward a clean energy transition.

Compressed Biogas(CBG)

- It is a purified form of biogas.
- It is the mixture of hydrocarbon gases and vapours consisting mainly of Methane in gaseous form.
- It can be produced from waste including municipal solid waste, sludge from wastewater treatment plants, market residues, agricultural residues, cattle dung, sugarcane press mud among others.

Process of Producing CBG:

CBG from biomass involves a two-pronged approach.

- **First Step:** Biogas is produced through the anaerobic decomposition of biomass.
- **Anaerobic Process:** In this process, microorganisms break down biodegradable material in the absence of oxygen. The process is used for industrial or domestic purposes to manage waste or to produce fuels.
- **Second Step:** Biogas contains 55 to 60% methane, 40 to 45% carbon dioxide (CO₂) and trace amounts of hydrogen sulphide. The second process involves purifying the gas to remove carbon dioxide and hydrogen sulphide gases to prepare CBG.

CBG different from Compressed Natural Gas(CNG)

- Chemically, CBG is the same as CNG — both are compressed methane — and have the same calorific value.
- But, CNG is a by-product of petroleum, and CBG can be produced from any biomass, be it crop residue, cattle dung, sugarcane press mud, municipal wet waste, or effluents from a sewage treatment plant.
- Hence, this makes CBG a commercially viable option as it can be directly used to replace CNG in transportation fuel. Just like CNG, CBG too can be transported through cylinders or pipelines to retail outlets.

GREEN CRACKERS

- According to the National Green Tribunal (NGT), green crackers are permitted only in cities and towns where air quality is moderate or poor.

What is the difference between green crackers and traditional crackers?

- Both green crackers and traditional crackers cause pollution and people should refrain from using either.
- However, the only difference is that green crackers cause 30 per cent less air pollution as compared to traditional ones. “
- Green crackers reduce emissions substantially and absorb dust and don't contain hazardous elements like barium nitrate.

- Toxic metals in traditional crackers are replaced with less hazardous compounds.
- Green crackers are developed by the Council of Scientific and Industrial Research (CSIR).
- There is reduction in sound as well in green crackers.

Identification of Green Cracker

- Green crackers fall only in these three categories- SWAS, SAFAL and STAR: the crackers developed by the Council of Scientific and Industrial Research (CSIR). “
- SWAS, that is “safe water releaser” should have a small water pocket/droplets which get released when burst, in the form of vapour.
- “SWAS is safe water releaser, which suppresses the dust released by releasing water vapour in the air.
- It does not comprise potassium nitrate and sulphur and the particulate dust released will reduce approximately by 30 per cent.
- Similarly, STAR is the safe thermite cracker, which does not comprise potassium nitrate and sulphur, emits reduced particulate matter disposal and reduced sound intensity.
- SAFAL is safe minimal aluminium which has minimum usage of aluminium, and used magnesium instead.
- It ensures reduction in sound in comparison to traditional crackers.
- The identification of green crackers can be done through the CSIR NEERI logo.
- The scanner may be downloaded using the CSIR NEERI green QR code app from Google Playstore.

What are the toxic metals that traditional crackers release?

- Crackers release several toxic metals that can be harmful for health.
- The white color emitted through crackers is aluminium, magnesium and titanium, while the orange colour is carbon or iron.
- Similarly, yellow agents are sodium compounds while blue and red are copper compounds and strontium carbonates.
- The green agent is barium mono chloride salts or barium nitrate or barium chlorate.

Damage and harm of these chemicals

- Lead in crackers impact the nervous system while copper triggers respiratory tract irritation, sodium causes skin issues and magnesium leads to mental fume fever.
- Cadmium not just causes anemia but also damages the kidney while nitrate is the most harmful that causes mental impairment.
- The presence of nitrite causes irritation in mucous membrane, eyes and skin.
- The most vulnerable population though are infants, children, pregnant women, elderly and people with underlying medical conditions.
- Firecrackers made with reduction in size of shell, elimination of ash usage, reduced usage of raw materials, uniform acceptable quality, etc., leading to reduction of particulate matter and gaseous emission is why green crackers are being preferred.

NORTHERN GIRAFFES

- A recent genealogical study of the largest captive herd in India at the **Alipore Zoological Garden** in Kolkata has confirmed that the individuals in this facility, at least, are most likely “**critically endangered**” Nubian giraffes (*Giraffa camelopardalis camelopardalis*) or the **endangered** Rothschild giraffe (*Giraffa camelopardalis rothschildi*).
- The Nubian giraffes are believed to be among three sub-species of the northern giraffe, according to a whole genome sequencing study conducted in 2021.
- A genetic distance analysis of the giraffes in Alipore showed that they were most closely related to Nubian and Rothschild giraffes.
- “Stud-books” maintained in zoos across India had little to no information on where the giraffes brought to India from Africa had been captured, so the only way to identify the species would be through a mitochondrial gene study.

- As giraffes are an exotic species that was imported into India, protocols to manage the populations were different when compared to animals that are native to the country.

Nubian Giraffes

- Nubian giraffes (or *Giraffa camelopardalis camelopardalis*) are believed to be among three sub-species of the northern giraffe.
- It is found in Ethiopia, Kenya, Uganda, South Sudan and Sudan.
- It is currently extinct in the wild of the Democratic Republic of Congo, Egypt and Eritrea.
- The Nubian giraffe used to be widespread in northeast Africa.
- IUCN status: 'critically endangered'.

Rothschild Giraffe

- Rothschild giraffe (or *Giraffa camelopardalis Rothschild*) is a subspecies of the Northern giraffe.
- The Rothschild's giraffe is easily distinguishable from other subspecies. The most obvious sign is in the colouring of the coat or pelt.
- They live in savannahs, grasslands, and open woodlands of Uganda and Kenya.
- IUCN status: 'endangered'

AIR POLLUTION

- With winter around the corner, air pollution levels rise at an alarming rate. Stubble burning, vehicular emissions, construction activities, fire crackers and other factors contribute to degrading air quality.
- These can lead to breathing issues and aggravate diseases and health conditions such as asthma, chronic obstructive pulmonary disease (COPD), respiratory infections and cardiovascular diseases.

Concerns

- Stubble burning, vehicular emissions, construction activities, fire crackers contribute to degrading air quality.
- These can lead to breathing issues and aggravate diseases and health conditions such as asthma, chronic obstructive pulmonary disease (COPD), respiratory infections and cardiovascular diseases.
- The World Health Organisation (WHO) has declared air pollution as a public health emergency and more than 90 per cent of the global pollution is enduring toxic, polluted outdoor air.
- Smog is a mixture of smoke and air pollution, can damage lungs.
- Smog can comprise airborne particulate matter, mostly PM 2.5 and PM 10, that can have adverse health effects.

PM 2.5 over PM 10

- This is a fine, inhalable particle, generally 2.5 micrometres of diameter or smaller.
- The combustion of gasoline, oil, diesel fuel or wood produces much of the PM 2.5.
- Due to its smaller size, the particulate matter can be drawn deep in the lungs and can be more harmful as compared to PM 10.
- It can penetrate the lung deeply, irritate and corrode the epithelial walls and consequently impair lung function.
- PM 2.5 have small diameters but they can spread over large surface areas.
- They are "capable of carrying various toxic stuff, passing through the filtration of nose hair, reaching the end of the respiratory tract with airflow and accumulating there by diffusion, damaging other parts of the body through air exchange in the lung.
- The 'Harvard Six Cities Study', published in 1996, revealed that PM 2.5 was one of the causative factors of human non-accidental death.
- In this study, PM 2.5 was positively related to daily mortality of humans, particularly the elderly (RR =1.5 per cent, 95 per cent CI: 1.1–1.9 per cent)."

Pollution Impacts

- While it is a common notion that air pollution mostly affects lungs,
- Other body organs too can be damaged due to continuous exposure to polluted air.
- For instance, air pollution can damage skin and cause premature ageing and problems like rashes, wrinkles, discoloration, pigmentation and so on.
- Exposure to polluted outdoor air has been proven to be harmful to the human eye.
- Common eye problems caused by pollution are watery eyes, soreness, redness, itching sensation, dry eyes and allergy.
- Other than this, air pollution can have adverse effects on the cardiovascular, nervous, digestive and urinary systems.
- Due to air pollution, there have been increasing cases of heart diseases and cancer.

AQI levels mean

- As air pollution is increasing day by day, it is important to adopt various measures and steps to minimise the harmful impact on your health.
- To know about the air quality, you can easily refer to the air quality index (AQI), which is a daily measure of the quality of air.
- The main purpose is to calculate or measure how air pollution affects health and help people become more aware, especially those who suffer from serious or chronic illnesses caused by exposure to pollutants.

The categories of AQI are:

- Good (0-50),
- Satisfactory (51–100),
- Moderately polluted (101–200),
- Poor (201–300),
- Very poor (301–400),
- Severe (401-500).

CONSERVATION OF VULTURES

- Tamil Nadu government formed a committee to set up an institutional framework for the effective conservation of vultures.
- Tamil Nadu boasts the largest population of vultures south of the Vindhiya Mountain Range.
- Alarmed at the 96% decline in India's vulture population between 1993 and 2003, the Central government put into place two action plans to protect the species at the national level: the first in 2006 and the second, ongoing plan for 2020-2025.
- One of the important action points in this nationwide plan is the formation of State-level committees to save the critically endangered population of vultures.
- Vulture numbers are decreasing over the last few years, with experts attributing the cause to lesser availability of prey as well as erratic weather.
- Experts also agree that the use of some Non-Steroidal Anti-Inflammatory Drugs to treat cattle has led to the crash in vulture populations across India.
- The State government has banned the use of diclofenac to treat cattle, while there are strict restrictions for the sale of other NSAIDs in the Nilgiris, Erode and Coimbatore districts.

The State is home to four species of vultures —

- The white-rumped vulture (*Gyps bengalensis*),
- Long-billed vultures (*Gyps indicus*),
- The Asian king-vulture (*Sarcogyps calvus*)
- The Egyptian vulture (*Neophron percnopterus*).

The white-rumped vulture (*Gyps bengalensis*)

- This species qualifies as Critically Endangered because it has suffered an extremely rapid population decline of >99% over three generations.
- When it was first assessed in 1988 it was classified as a Least concern species owing to a large range and population.
- It was reassessed from a Least Concern to Near Threatened species in the 2007 IUCN Red List.
- In 2012 it was added to the list of Endangered species.
- *Gyps bengalensis* occurs in Pakistan, India, Bangladesh, Nepal, Bhutan, Myanmar, Thailand, Laos, Cambodia and southern Viet Nam, and may be extinct in southern China and Malaysia (BirdLife International 2001).

The long-billed vulture

- The Indian vulture/long billed vulture is native to India, Pakistan and Nepal.
- It has been listed as Critically Endangered on the IUCN Red List since 2002.
- Indian vultures died of kidney failure caused by diclofenac poisoning. It breeds mainly on hilly crags in central and peninsular India.
- The Indian vulture and the white-romped vulture have suffered a 99%–97% population decrease in Bangladesh, Pakistan and India.
- Diclofenac is a non-steroidal anti-inflammatory drug (NSAID) and when given to working animals it can reduce joint pain and so keep them working for longer.
- The drug is believed to be swallowed by vultures with the flesh of dead cattle who were given diclofenac in their last days of life.

The Red-headed vulture

- The red-headed vulture also known as the Asian king vulture, Indian black vulture or Pondicherry vulture is mainly found in the Indian subcontinent, with small populations in some parts of Southeast Asia.
- It has no subspecies.
- Today the range of the red-headed vulture is localized primarily to northern India.
- It was up listed to critically endangered in the 2007 IUCN Red List.

The Egyptian vulture

- The Egyptian vulture also called the white scavenger vulture or pharaoh's chicken, is only member of the genus *Neophron*.
- It is widely distributed from the Iberian Peninsula and North Africa to India
- IUCN Red List Status: Endangered.

Conservation Initiatives:

- National Board for Wildlife (NBWL) has approved an Action Plan for Vulture Conservation 2020-2025. Key highlights of the plan include,
- **Vulture Conservation Centre:** Uttar Pradesh, Tripura, Maharashtra, Karnataka and Tamil Nadu will get a vulture conservation and breeding centre.
- **Vulture Safe zone:** Establishment of at least one vulture-safe zone in each state for the conservation of the remnant populations in that state.
- **Rescue Centres:** Establishment of four rescue centres, in Pinjore (Haryana), Bhopal (Madhya Pradesh), Guwahati (Assam) and Hyderabad (Telangana). There are currently no dedicated rescue centres for treating vultures.
- **Toxic Drugs:** A system to automatically remove a drug from veterinary use if it is found to be toxic to vultures with the help of the Drugs Controller General of India.
- **Vultures Census:** Coordinated nationwide vulture counting involving forest departments, the Bombay Natural History Society, research institutes, nonprofits and members of the public. This would be for getting a more accurate estimate of the size of vulture populations in the country.
- **Database on Threats to Vulture:** A database on emerging threats to vulture conservation including collision and electrocution, unintentional poisoning.

FOREST CONSERVATION RULES

- National Commission for Scheduled Tribes (NCST) had recommended to the Union Environment and Forest Ministry to put the new Forest Conservation Rules, 2022, on hold.
- The commission wrote to the government about the rules, which essentially eliminate the requirement of consent of local tribespeople and forest dwellers for diversion of forest land for other purposes.

What are the Forest Conservation Rules?

- The Forest Conservation Rules deal with the implementation of the Forest Conservation Act 1980. They prescribe the procedure to be followed for forest land to be diverted for non-forestry uses such as road construction, highway development, railway lines, and mining.
- Forest (Conservation) Act was enacted for providing a higher level of protection to forests and to regulate diversion of forest lands for non-forestry purposes.
- The term “forest land” mentioned in the Act refers to the reserved forest, protected forest, or any area recorded as forest in the government records. The term “tree” will have the same meaning as defined in the Indian Forest Act 1927.
- The Act extends to the whole of India except the state of Jammu and Kashmir (J&K).
- As per the Forest (Conservation) Act, 1980 Prior permission of the Central Government is essential for De-reservation/ Diversion of forest land for non-forestry purposes.
- The Act has made ample provisions to check deforestation and encourage afforestation of non-forest areas.
- This act put certain conditions on the user(s) that need to deposit the required amount to undertake compensatory afforestation for mitigate the negative impact of forest land diversion.

Forest Advisory Committee (FAC)

- For forest land beyond five hectares, approval for diverting land must be given by the Central government. This is via a specially constituted committee, called the Forest Advisory Committee (FAC).
- This committee examines whether the user agency, or those who have requested forest land a) Have made a convincing case for the upheaval of that specific parcel of land, b) Whether they have a plan in place to ensure that the succeeding damage will be minimal and c) The said piece of land doesn't cause damage to wildlife habitat.
- Once the FAC is convinced and approves (or rejects a proposal), it is forwarded to the concerned State government where the land is located.
- The state government has to ensure that provisions of the Forest Right Act, 2006 are complied with. State bodies would forward documents to the FAC that would also include information on the status of whether the forest rights of locals in the area were settled or not.
- The FAC approval also means that the future users of the land must provide compensatory land for afforestation as well as pay the net present value (ranging between ₹10-15 lakh per hectare.)

New Rules

- The latest version of the rules consolidates changes to the Act over the years from various amendments and court rulings.
- Private plantation:
- The rules make a provision for private parties to cultivate plantations and sell them as land to companies who need to meet compensatory forestation targets.
- This, according to the government, will help India increase forest cover as well as solve the problems of the States not finding land within their jurisdiction for compensatory purposes.

Consent of Gram Sabha for diversion of land

- Prior to the updated rules, state bodies would forward documents to the FAC that would also include information on the status of whether the forest rights of locals in the area were settled.
- After 2009, the Environment Ministry passed an order mandating that proposals would not be entertained by the FAC unless there was a letter from the State specifying that the forest rights in the place had been

“settled” and the gram sabha, or the governing body in villages in the area, had given their written consent to the diversion of the forest.

- However, there have been a series of orders by the Environment Ministry over the years that have sought to skirt the necessity for consent from the gram sabha.
- The new rules formally codify this and say that a project, once approved by the FAC, will then be passed on to the State authorities who will collect the compensatory fund and land, and process it for final approval.
- Only in passing, is it mentioned that the States will ensure “settlement” of Forest Rights Acts applicable.
- This, many forestry experts say, doesn’t automatically imply the consent of the resident tribals and forest dwellers.

Concerns

- Corporates and other commercial entities can now easily arm-twist tribal communities to obtain necessary consent or suppress any opposition.
- Tribals use the revenue forest land for livelihood purposes. The new guidelines allow private players to use the land for plantation, which can lead to monoculture cultivation — thus affecting biodiversity.
- Due to relaxation in the clearance process a developer does not need to take clearances at one go for diverting land use.
- One may take approval over a part of the land to begin the work and take clearance at the final stage.
- The new forest protection regulations should be re-evaluated following constructive consultations with the key stakeholders. They must be adjusted to take into account the crucial importance of tribal and forest rights and the responsibility of the government to safeguard them.

GM MUSTARD

- Genetic Engineering Appraisal Committee (GEAC), which functions in the Union Ministry of Environment, Forest and Climate Change, might approve the commercial cultivation of modified mustard.
- GM mustard, also called **DMH-11**.
- A group of activists have also written to the ministry, objecting to the potential approval of “unsafe, unneeded and unwanted genetically modified organisms.
- This would be the first time since 2002 for such approval to grow GM mustard, a genetically modified hybrid variety of the mustard species, for consumption by the masses.
- The green signal for GM mustard was given by the central government in May 2017 after trials in Punjab Agricultural University (PAU) and Indian Agricultural Research Institute (IARI).

Experts are fearful

- The move that could pose a threat to crop diversity, food security and increase tolerance for use of pesticides.
- The entire biosafety assessment of GM mustard has been unscientific and no guidelines have been followed.
- GM mustard is also a herbicide tolerant crop, which can become hazardous for the environment.
- Genetically modified seeds will also threaten crop biodiversity.
- Indigenous crop varieties may get threatened, which are crucial to fight climate change.
- Genetic modifications can have irreversible damage to the environment.
- The modification technology is comparatively new and we do not know how it will reflect in the long term. It may open gates for unwanted or unknown diseases and how it will manifest in an open field is not assessed or analysed. Even scientists cannot predict this without its execution. In such a situation, agriculture will go beyond the control of farmers and scientists. Therefore, India must prepare to pick up its battles thoughtfully.

MISSION LIFE

- Prime Minister in the presence of U.N. Secretary-General Antonio Guterres, launched 'Mission LiFE' (Lifestyle For Environment), a new initiative for sustainable and healthy lifestyle at the Statue of Unity in Gujarat.
- Listing climate change and global warming as the main challenges before the world and mankind, the Prime Minister underlined that Mission LiFE makes the fight against climate change democratic with the contribution of everyone in per own capacity.
- In November 2021, at the CoP 26 in Glasgow, Prime Minister Narendra Modi had articulated the concept of "Lifestyle for the Environment" (LiFE) — advocating for "mindful and deliberate utilisation" by people worldwide, instead of "mindful and wasteful consumption".
- According to the United Nation Environment Programme (UNEP), if one billion people out of the global population of close to eight billion adopt eco-friendly behaviours in their daily lives, global carbon emissions could drop by approximately 20 per cent.
- There is an urgent need for individuals to transcend geographical, social and economic boundaries, and come together as a global community to tackle the climate crisis.
- India can lead the global climate debate by nudging the world towards a new model of sustainable and inclusive development through the Lifestyle for the Environment (LiFE) movement.

The Mission LiFe

- Launched on June 5, 2022, World Environment Day
- To harness the power of individual and collective action across the world to address the climate crisis.
- The Mission LiFe as a global initiative by India to help the world in its fight against climate change and lead to a sustainable way of life to achieve the sustainable development goals set by the U.N..
- The Mission LiFE emboldens the spirit of the P3 model, i.e. Pro Planet People, as it is premised on the basic principles of 'Lifestyle of the planet, for the planet and by the planet'.

Approach of LiFE Campaign

- **Focus on Individual Behaviours:** Make life a mass movement (Jan Andolan) by focusing on behaviours and attitudes of individuals and communities
- **Co-create Globally:** Crowdsourced empirical and scalable ideas from the best minds of the world, through top universities, think tanks and international organisations
- **Leverage Local Cultures:** Leverage climate-friendly social norms, beliefs and daily household practices of different cultures worldwide to drive the campaign

India's Status

- The annual per capita carbon footprint in the country is only about 1.5 tons, compared to the world average of 4 tons per year
- India has the fourth largest capacity for renewable energy in the world – Ranked fourth in wind energy and fifth in solar energy.
- India's renewable energy capacity has increased by about 290 % in the last 7-8 years.
- Achieved the target of 40% of the electric capacity from non-fossil-fuel sources nine years ahead of the deadline.

SANDALWOOD SPIKE DISEASE (SSD)

- A study has now shown that this 'invisible' disease, which is wiping out the sandalwood trees, can transmit through seeds of infected trees through the presence of disease-causing bacteria called Phytoplasma.
- This phenomenon has been blamed for the spread of the SSD to commercial farms in a study by the Bengaluru-based Institute of Wood Sciences & Technology (IWST) in association with the National Centre for Cell Sciences, Pune.
- Recently, Sandalwood Spike Disease started infecting natural habitats in Karnataka and Kerala. India's sandalwood trees, particularly of Karnataka are facing a serious threat with the return of the destructive Sandalwood Spike Disease (SSD).

Sandalwood Spike Disease (SSD)

- It is caused by phytoplasma — bacterial parasites of plant tissues — which are transmitted by insect vectors.
- Phytoplasmas are bacterial parasites of plant tissues which are transmitted by insect vectors and involved in plant-to-plant transmission.
- The disease is characterized by a huge reduction in leaf size which is also accompanied by stiffening and reduction of internode length.
- The disease was first reported in Kodagu in 1899.
- It is being classified as “vulnerable” by the International Union for Conservation of Nature in 1998.
- Presently, there is no option but to cut down and remove the infected tree to prevent the spread of the disease.
- Between 1 and 5% of sandalwood trees lost every year due to the disease.
- SSD has been one of the major causes for the decline in sandalwood production in the country for over a century.

Reasons for Spread

- The present rapid spread of the infection is largely due to restrictions on green felling in forests, which has allowed vectors to spread the disease to healthy trees.
- Green felling (silviculture felling) is the felling of green trees of one or more types.

Sandalwood

- Sandalwood is a class of woods from trees in the genus Santalum. The woods are heavy, yellow, and fine-grained, and, unlike many other aromatic woods. Further, they can retain their fragrance for decades.
- India has been the traditional leader of sandalwood oil production for perfumery and pharmaceuticals. As early as 1792, Tippu Sultan had declared it a ‘Royal Tree’ of Mysuru.
- Red Saunder/ Red Sandalwood- Found in southern Eastern Ghats Mountain range of South India.
- This tree is valued for the rich red colour of its wood. The wood is not aromatic.
- The International Union for Conservation of Nature (IUCN) has put it under the category of near threatened from earlier endangered species in the Red List.
- Sandalwood has several antibacterial, antibiotic & anti-cancer benefits amongst others. Hence, it finds its uses in pharmaceuticals, personal care & furniture.
- Sandalwood has been long associated with the Indian heritage & culture, as the country contributed 85% of the world’ sandalwood trade erstwhile. However, of late this has been declining at a fast rate.
- Globally, India & Australia are the largest growers of sandalwood. On the other hand, the biggest markets lie in the United States, China, Japan & the Indian domestic market.

VIRAL SPILLOVER RISK

- The effects of climate change are being witnessed across a range of environments – from changes in crop yields due to unreliable weather conditions to the extinction of species.
- According to new research, yet another effect could be the increased risk of “viral spillover” in some regions that could cause new pandemics over the next few years.

Viral Spillover Risk

- Climate change could shift the species range of certain viral vectors and reservoirs northwards, and the High Arctic zone could become fertile ground for emerging pandemics.
- Viral spillover risk increases with climate change in High Arctic lake sediments.
- Viruses are some of the most abundant entities on earth, but they need to infect a host’s cell in order to replicate.
- According to the research, these virus/host relationships seem relatively stable within super kingdoms, the major groupings of organisms.
- However, below this rank, viruses may infect a new host from a reservoir host (in which it usually resides) by being able to transmit sustainably in a novel host a process defined as ‘viral spillover’.

The study

- To study the possibility of a viral spillover, researchers from the University of Ottawa collected sediment and soil samples from Lake Hazen in Canada the largest High Arctic lake by volume in the world, and the region's largest freshwater ecosystem.
- Then they undertook DNA and RNA sequencing to reconstruct the lake area's virus composition.
- They estimated the spillover risk and found that the chances of a virus moving to a new host increases with runoff from glacier melt, treated by them as a proxy for climate change.
- As temperatures increase, the melting of glaciers increases as well, and there is a greater possibility for previously ice-trapped viruses and bacteria to find new hosts.

The Result

- It was found that the risk of viral spillovers increases with changes in the environment at a particular location, driven by global warming.
- As long as viruses and their 'bridge vectors' – that act as hosts and lead to their spread – are not simultaneously present in the environment, the likelihood of dramatic events probably remains low.

ALLMANIA MULTIFLORA

- A rather frail-looking plant spotted on the granite hillocks of Palakkad has been identified as a new species of the genus Allmania.
- Named Allmania multiflora, the species is quite special from both the botanical and conservation points of view.

Characteristics

- Found at heights ranging between 1,000 to 1,250 metres, Allmania multiflora is an annual herb, erect, with branches arising from the base.
- The stem is red to violet at the base and green above.
- Shorter tepals and wider gynoecium (parts of the flower), shorter bracts and in the diameter of the seeds are among the characteristics that distinguishes it from Allmania nodiflora.
- Flowering and fruiting occurs from May to September.
- An annual herb that grows to a height of about 60 cm, Allmania multiflora is only the second species of this genus identified so far anywhere.
- The discovery has come 188 years after the genus and the first species were described by botanists.
- Field surveys, genetic analysis, and molecular and morphometric investigations demonstrated it as distinct from Allmania nodiflora, which so far had been accepted as the lone Allmania species.
- The first species, Allmania nodiflora, was originally published under the genus Celosia as Celosia nodiflora in 1753.
- Specimens found in Ceylon (Sri Lanka) were first described as Allmania nodiflora in 1834.
- Its new-found cousin, Allmania multiflora, is currently known only from a few locations.
- It is a Critically Endangered, as per the IUCN Red List criteria.
- The plant was discovered during ongoing studies on Amaranthaceae, the plant family to which the genus Allmania belongs.

THE NATIONALLY DETERMINED CONTRIBUTIONS (NDC)

- The Nationally Determined Contributions (NDC) pledged by countries to arrest climate change are insufficient, noted a new report released by the United Nations Framework Convention on Climate Change (UNFCCC).
- Cumulative CO2 emissions in 2020-2030, based on the latest NDCs, would likely use up 86 per cent of the remaining carbon budget, according to the new NDC Synthesis Report.
- The UNFCCC's synthesis report is an annual summary of climate commitments made by countries and their impact on global greenhouse gas (GHG) emissions.
- These commitments known as Nationally Determined Contributions were made by countries who signed on to the Paris Agreement to address climate change.

- The latest iteration of the report analyses 166 NDCs communicated to the UNFCCC.
- Only 24 countries submitted new or updated NDCs after COP 26.

India

- India submitted its upwardly revised NDC in August, extending two of its previous NDC goals.
- India now stands committed to reducing emissions intensity of its GDP by 45 per cent by 2030 from its 2005 levels, according to the updated NDC.
- The country will also target about 50 per cent of cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.
- Global emissions must amount to only 31 GtCO₂e in 2030 (43 per cent lower in 2030 compared to 2019) to meet the Paris Agreement's goal of limiting global temperature rise to 1.5 degrees celcius above pre-industrial levels, according to the IPCC.

Nationally Determined Contributions (NDCs)

- 'Panchamrit' announced at COP 26
- net-zero by 2070
- To reduce Emissions Intensity of its GDP by 45 percent by 2030
- LIFE'– 'Lifestyle for Environment'
- Principle of common but differentiated responsibilities and respective capabilities (CBDR-RC)

Concerns

- Currently, we are on track for about 2.5°C of temperature rise by 2100, from a possible range of 2.1°C to 2.9°C.
- Most worrying is the impact on the carbon budget — a biophysical threshold of CO₂ that can be emitted to prevent global average temperatures from rising above a certain level.
- Carbon budgets are constructed on the premise that there is a near-linear relationship between rising global temperatures and the level of cumulative atmospheric CO₂.
- Breaching 1.5°C would lead to irreversible damage to vital planetary features such as the Greenland Ice Sheet, the west Antarctic Ice Sheet and tropical coral reefs. It can lead to more floods, droughts, heat, disease, storms.

Long-term low-emission development strategies (LT-LEDS)

- A second report published today by the UNFCCC summarises 53 long-term emission reduction plans submitted by countries.
- These plans are known as long-term low-emission development strategies (LT-LEDS).
- These plans typically follow the announcement of a long-term target, such as net zero emissions by 2050 or 2070.
- Some 87 per cent of these plans communicated 2050 as a date along with a quantifiable long-term mitigation goal.
- Most NDCs (92 per cent) in the NDC Synthesis report are dated to 2030.
- LT-LEDS are typically broader in scope than NDCs and incorporate developmental goals as well as required levels of investment and government expenditure, said the LT-LEDS Synthesis report.
- The UNFCCC estimates the total emissions of countries who submitted LT-LEDS to be 10.8 GtCO₂e, 68 per cent lower than 2019 levels.
- Alignment between NDCs and LT-LEDS is still unclear only 8 per cent of countries mentioned that their NDCs are aligned with their LT-LEDS.

BLUE FLAG

- India now has 12 'blue' beaches, a certificate awarded by the prestigious international programme of cleanliness and environmental sustainability run by the global nonprofit Foundation for Environmental Education.

- Two more beaches, both in Lakshadweep, have been accorded the 'Blue Flag' tag, putting them in an elite list of the world's cleanest and most eco-friendly "beaches, marinas and sustainable boating tourism operators".

The Blue Flag

- The Blue Flag is an exclusive eco-label or certification that is given to coastal locations around the world as a badge of environmental honour.
- The Blue Flag programme is run by the Copenhagen, Denmark-headquartered Foundation for Environmental Education (FEE), a nonprofit which, through its work, contributes to the Sustainable Development Goals (SDGs) of the United Nations.
- According to the FEE, "the iconic Blue Flag is one of the world's most recognised voluntary awards for beaches, marinas, and sustainable boating tourism operators.
- In order to qualify for the Blue Flag, a series of stringent environmental, educational, safety, and accessibility criteria must be met and maintained."
- The Blue Flag programme started in 1987, initially in Europe. Certification is awarded annually.
- A total 5,042 beaches, marinas, and tourism boats in 48 countries have been awarded the label so far.
- A marina is a small harbour where mainly pleasure boats and yachts dock.
- The certification is given by an international jury comprising members of the United Nations Environment Programme (UNEP), United Nations World Tourism Organisation (UNWTO), and International Union for the Conservation of Nature (IUCN), besides FEE.
- "Central to the ideals of the Blue Flag programme is the aim of connecting the public with their surroundings and encouraging them to learn more about their environment.

Beaches in India

- The two new beaches to have been awarded the eco-label are
- Minicoy Thundi beach
- Kadmat beach, both in Lakshadweep.
- The other 10 Indian beaches on the list, according to the FEE site, are
- Shivrajpur in Gujarat's Devbhumi Dwarka district;
- Ghogla beach in Diu
- Kasarkod (Uttara Kannada)
- Padubidri (Udupi) in Karnataka
- Kappad (Kozhikode) in Kerala
- Eden beach in Puducherry
- Kovalam (Chennai) in Tamil Nadu
- Rushikonda (Visakhapatnam) in Andhra Pradesh
- Golden beach in Puri, Odisha
- Radhanagar Swarajdeep in Andaman and Nicobar.
- Kovalam and Eden got the Blue Flag last year. The other eight beaches received the certification in 2020, and were re-certified last year.

Do's and Don'ts

- In January 2020, an Extraordinary Gazette Notification gave a list of permissible activities and facilities in the CRZ of the beaches, including islands, subject to maintaining a minimum distance of 10 metres from the High Tide Line (HTL), for the purposes of Blue Flag certification.
- These included portable toilet blocks, change rooms and shower panels; solid waste management plant; solar power plant; purified drinking water facility; beach access pathways; landscaping lighting; seating benches and sit-out umbrellas; cloak room facility; safety watch towers and beach safety equipment; information boards and other signages; fencing; and parking facilities.

- The notification said that these activities and facilities would be exempt from prior clearance under the provisions of CRZ Notification, Island Protection Zone Notification and Island Coastal Regulation Zone Notifications.





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