

THE IAS GAZETTE

A House Journal of **APTI PLUS**

FEBRUARY 2022



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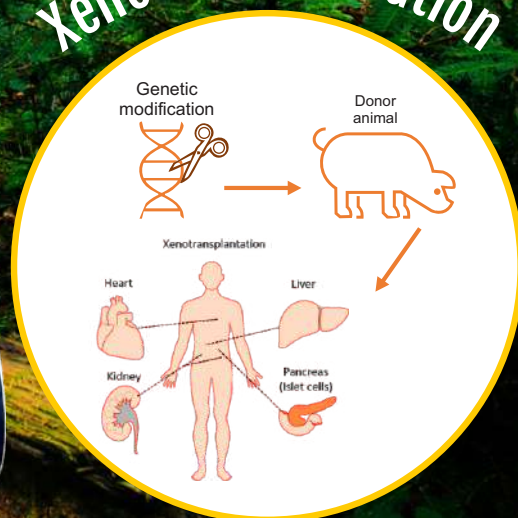


TH EDITION

FOREST SURVEY REPORT 2021



xenotransplantation



A MONTHLY PERIODICAL FOR ASPIRANTS OF UPSC EXAMINATION



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GENERAL STUDIES - I

SWAMI VIVEKANANDA

GS-I MODERN HISTORY

Context

- The Nation Paid tributes to Swami Vivekananda, on his Jayanti.

Key Facts

- Disciple of:** Ramakrishna Paramhansa
- Founder of:** Ramakrishna Mission (1897), Ramakrishna Math, Vedanta Society of New York
- Philosophy:** Advaita Vedanta
- Literary works:** Raja Yoga (1896), Karma Yoga (1896), Bhakti Yoga (1896), Jnana Yoga, My Master (1901), Lectures from Colombo to Almora (1897)

Contribution

Revival of Hindu Spiritualism

- He was responsible for the revival of Hindu spiritualism and established Hinduism as a revered religion on world stage.
- He introduced Hinduism at the Parliament of the World's Religions in Chicago in 1893.

Message of Universal Brotherhood

- His message of universal brotherhood and self-awakening remains relevant especially in the current backdrop of widespread political turmoil around the world.

Social Service

- The Ramakrishna Mission undertook various forms of social service like establishing and running school, collages and hospitals, propagation of practical tenets of Vedanta through conference, seminars and workshops, initiating relief and rehabilitation work across the country.

Harmonization of the East and West

- He harmonized the East and the West, religion and science, past and present.

Emphasis on the youth

- He believed that working for social change requires energy and spirit.
- Hence, he asked the youth to work on both - mental energy and physical fitness.
- What Vivekananda wanted from the youth was 'muscles of iron' and 'nerves of steel'. He advised the youth to 'Serve God in man'.

Emphasis on Primary Education

- Swami Vivekananda suggested to rebuild the Indian society, education was the primary means for empowering the people.

Spiritual Contribution

- Vivekananda called for a nationwide renovation with the ideals of 'tyaga' or sacrifice and 'seva' or selfless service, the most imperative aspects of shaping the life of young people.
- Swami made the point that this way of life is what can be called 'spiritual pursuit'.
- His vision of India was that of a transformed society inspired by dignity, freedom and individuality and rooted in strength, love and service.

NETAJI SUBHAS CHANDRA BOSE

GS-I MODERN HISTORY

Context





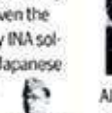



- To mark the year-long celebration of the 125th birth anniversary of Netaji Subhas Chandra Bose, a grand statue of Netaji to be installed at India Gate.

Details

- The statue, made of granite, shall be a tribute to the immense contribution of Netaji in our freedom struggle.
- It would be a symbol of the country's indebtedness to him.
- Till the work for the statue is completed, a hologram statue of Netaji will be present at the same place.

About Subhash Chandra Bose

LIFE AND AFTERLIFE No Indian revolutionary has attracted as much controversy in life and beyond as Netaji Subhas Chandra Bose

 Born in the family of lawyer Jankinath Bose in Cuttack. Graduates from Cambridge, clears ICS exams in London, resigns in 1921 and returns to India. 1897	 Becomes president of All India Youth Congress. Takes charge as Congress general secretary four years later. Becomes Calcutta mayor in 1930. 1923	 Gets elected as Congress president. Quits in 1939 following differences with Gandhi and Nehru. Floats the All India Forward Bloc faction within the Congress. 1938	 The British place him under house arrest in his family home in Calcutta. He escapes to Afghanistan, travels across Soviet Union, enters Germany in 1941. Meets Adolf Hitler, secures his cooperation for India's freedom struggle. 1940	 Leaves wife Emilie Schenk and his 2-month old daughter Anita in Austria. Travels to Japan on a German submarine. Gets transferred on to a Japanese one in the middle of the Indian Ocean. 1942	 Raises Azad Hind Fauj or the Indian National Army in Singapore. Given the title of 'Netaji' by INA soldiers. INA joins Japanese army in march towards India. Establishes provisional government of India in Andaman and Nicobar Islands. 1943	 Allied forces rout Japanese-INA armies, recapture Singapore. Japan surrenders on August 15, 1945. Bose boards Tokyo-bound plane in Bangkok the next day. Plane crashes in Taiwan on August 18. His body is cremated, ashes placed in Renkoji temple. 1944-45	 Nehru says "little doubt Bose died". His supporters say air crash theory circulated by Bose to hoodwink enemies. Intel inputs say he might have gone to Soviet Union. 1946
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Contribution: As a Social Reformer

Against Casteism

- The India National Army was a mixture of various Religions, Races, and Castes with total social equality of all soldiers.
- Any Indian irrespective of his caste (including non-martial caste) and religious community could enroll in the INA.
- They were served food cooked in the common kitchen and shared space in common barracks breaking the age old caste bonds and practices.
- These were the first major successful steps in eradicating casteist feelings and nurturing feelings of "being Indian" above everything else among the soldiers.

Secularism

- To strengthen the secular feelings and thereby foster National unity, common worship and celebrations of all religious festivals were introduced in the INA.
- Many Indians from the Minority Communities occupied high positions in the Provisional Government of Free India and the Azad Hind Fauj.

Impetus to "Unity in Diversity"

- Though Hindustani was widely used for military commands and administrative use, all other Indian languages were considered equally important.
- Also, the Azad Hind Radio Station, beamed to India in some Indian Languages like Bengali, Tamil, Telugu, Kannada, Malayalam, Gujarati, Marathi, Punjabi, Gurkhali and Pushtu apart from Hindustani and English.
- Azad Hind Radio Station had broadcast stations in Singapore, Bangkok, Rangoon, Tokyo and Saigon.

Champion of Women's Rights

- Netaji Subhas Chandra Bose had an inherent faith in "Nari Shakti" or "Women's Power".
- He strongly believed in the equality of men and women in Civil and Military life.
- His ideas on "women empowerment" were not mere lip service. Bose created a history by establishing the world's first all Women Regiment within the Indian National Army in 1943 and christened it "The Rani Jhansi Regiment."
- It was a full-fledged combat regiment with its Indian women soldiers receiving all necessary military training on par with their male counterparts.

Education

- Bose realized that education is a great force in bringing about a sense of national unity and solidarity.
- He was in favour of a common educational policy with a common script which should be 'Roman Script', the common lingua franca being Hindusthani.

Spiritualism

- His religious and spiritual propensity was further elevated in contact with the teachings of Ramkrishna Paramahansa and Vivekananda. He always had a small copy of Bhagavat Gita in the breast pocket of his field uniform.
- Subhas Chandra Bose accepted Upanishadic concept of 'Tyaga' and imbibed the ideal of renunciation for self-realisation.
- He became determined to work ceaselessly for the benefit of the country and its toiling masses.

Political Contribution

Within Congress

- Bose stated his opinion that the INC "should be organised on the broadest anti-imperialist front with the two-fold objective of winning political freedom and the establishment of a socialist regime.
- Bose supported idea of comprehensive independence and with his support Jawahar Lal Nehru has passed resolution of Poorna Swaraj in 1929.

- He organised the All-Bengal Young Men's Conference.
- In 1938 he was elected president of the Indian National Congress (Haripura Session, Bengal) and formed a national planning committee.
- In 1939 he was re-elected in the Tripuri session of Congress.

Forward Block

- In 1939 Bose resigned from Congress and established the All India Forward Bloc - as a faction within the India Congress. "
- His aim was to liberate India from the colonial yokes.

Collaboration with foreign countries

- In 1943, Singapore, Subhash Chandra Bose reorganized and expanded the Indian National Army. This force was renamed as "Azad Hind Fauj."
- He also founded the Provisional Government of Free India at Singapore on 21st October 1943.
- The government was recognized by nine governments including Germany, Italy, Japan and Myanmar.

Ideology of Samyavada or Doctrine of Synthesis

- Netaji picked up the common good traits of National Socialism and Communism to "form the basis of the new synthesis."
- Samyavada points to a perfect balance between the material and the spiritual, between the East and the West.
- According to Bose, India's emphasis was not on civilization but on culture, not on the material side of life but on the intellectual and spiritual. Thus, we had our advantages as well as disadvantages.
- The new India must be a synthesis of ancient glories and modern trends, of Indian achievements and foreign contributions.

Economic Contribution

- The National Planning Committee formulated by Bose in 1938 advocated for a policy of rapid and broad industrialization on modern lines.

The relationship between Gandhiji and Subhash Chandra Bose

- Mahatma Gandhi and Subhas Chandra Bose were two legendary personalities, gigantic in their political moral and ethical stature. Both of them were two worthy sons of Mother India.
- To Subhash Bose, Gandhi always remained 'India's greatest man'.
- Subhash had all praise for Gandhi's unflinching patriotism, firmness in character, love for truth etc.
- He recognised and admitted Gandhi as the undisputable, unrivalled leader of the masses.
- Similarly, to Gandhi, Bose was like a son whose 'self sacrifice and suffering, drive, integrity and commitment to the national cause and the capacity to bind all Indians into one people were unsurpassed.'
- Both Gandhi and Bose were totally honest men. They were internationalists and humanists. They were secular in approach and anti-racial in outlook.
- Their minds were always diverted towards the liberation of their motherland.
- The whole life of both the leaders was an epic struggle for India's independence.

GURU RAVIDAS

GS-I MODERN HISTORY

Context

- The postponement of the Punjab elections will allow Ravidassias to travel to Varanasi for Guru Ravidas Jayanti. Why is it important for all political parties to woo this community and its largest dera?

Ravidas Ji

- **About:** Sant Ravidas was a 14th-century saint and founder of the Bhakti movement in North India.
- **Founder of:** He was also the **founder of Ravidassia religion** during the 15th to 16th century CE.
- **Disciple:** Ravidas was the **disciple of the Brahmin bhakti-poet Ramananda**.
- **Contemporary:** He is traditionally considered as Kabir's younger contemporary.
- **Scripture:** Ravidas's devotional Verses were included in the Sikh scriptures known as Guru Granth Sahib. In the Adi Granth, forty of Ravidas's poems are included, and he is one of thirty six contributors to this foremost canonical scripture of Sikhism.
- **Teaching:** He taught removal of social divisions of caste and gender, and promoted unity in the pursuit of personal spiritual freedoms.
- **Literary works:** The Adi Granth of Sikhs, and Panchvani of the Hindu warrior-ascetic group Dadupanthis are the two oldest attested sources of the literary works of Ravidas. Ravidas's poetry covers topics such as the definition of a just state where there are no second or third class unequal citizens, the need for dispassion, and who is a real Yogi.

Beliefs of the Ravidassia Religion

- Teachings of Ravidas represent an offshoot of the Bhakti movement of the fifteenth century, a religious renaissance in India. Ravidas taught the following principles:
 1. The oneness, omnipresence and omnipotence of God.
 2. The human soul is a particle of God.
- The rejection of the notion that God cannot be met by lower castes.
 1. To realize God, which is the goal of human life, man should concentrate on God during all rituals of life.
 2. The only way of meeting with God (moksha) is to free the mind from duality.

Final Thoughts

- Guru Ravidas was a great saint and a religious reformer, who devoted his life to serve humanity.
- He worked for promoting the principles of social harmony and brotherhood throughout his life.
- He called upon people to resolve to take inspiration from his teachings and strive for strengthening fraternity in the society for the benefit of humanity.
- The messages given by Sant Ravidas on equality, goodwill and compassion centuries ago, will inspire the countrymen for ages.

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ARUSHI JAIN
RANK 85



CHALLAIPALLE HRISH
RANK 93

IASGYAN
PREDICT THE UNPREDICTABLE

THE IAS GAZETTE

■ FEBRUARY 2022

Context

- We are "not averse" to demilitarization of the Siachen glacier but the pre-condition is Pakistan has to accept the Army chief General Manoj Naravane said.

About

Location

- The Siachen Glacier is a glacier located in the **eastern Karakoram range in the Himalayas** just northeast of the point NJ9842 where the Line of Control between India and Pakistan ends.
- The Siachen Glacier lies **immediately south of the great drainage divide that separates the Eurasian Plate from the Indian subcontinent** in the extensively glaciated portion of the Karakoram sometimes called the "Third Pole".
- The glacier lies **between the Saltoro Ridge immediately to the west and the main Karakoram Range to the east**.
- Note:** The Saltoro Ridge originates in the north from the Sia Kangri peak on the China border in the Karakoram range.

Length

- At 76 km long, it is the **longest glacier in the Karakoram** and **second-longest in the world's non-polar areas**.

Major passes

- The major passes on this ridge are, from north to south, **Sia La, Bilafond, and Gyong La**.

Drainage

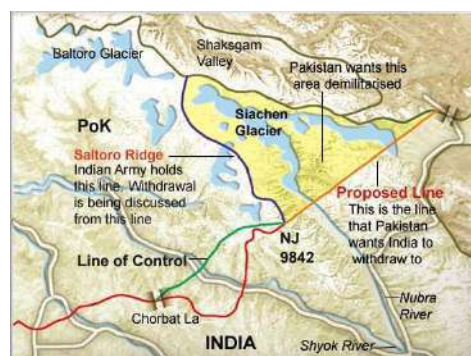
- The glacier's melting waters are the **main source of the Nubra River in the Indian region of Ladakh**, which drains into the Shyok River.
- The Shyok in turn joins the Indus River which flows through Pakistan.
- Thus, the glacier is a **major source of the Indus** and feeds the largest irrigation system in the world.

Administration

- The **entire Siachen Glacier**, with all major passes, has been **under the administration of India** (currently as part of the union territory of Ladakh, located in the Kashmir region) **since 1984**.
- Pakistan** maintains a territorial claim over the Siachen Glacier and **controls the region west of Saltoro Ridge**, lying west of the glacier.

Border Conflict: A Brief History

- Both India and Pakistan claim sovereignty over the entire Siachen region.
- U.S. and Pakistani maps in the 1970s and 1980s consistently showed a **dotted line from NJ9842** (the northernmost demarcated point of the India-Pakistan cease-fire line, also known as the Line of Control) to the Karakoram Pass, **which India believed to be a cartographic error and in violation of the Shimla Agreement**.
- In 1984, **India launched Operation Meghdoot**, a military operation that



ALL ABOUT THE DISPUTE

GENESIS OF CONFLICT

It lies in the formulation of the cease-fire line (CFL) defined in the 1949 Karachi Agreement, which did not explicitly delineate the CFL all the way to the International border with China. This ambiguity led to the conflict. The Indian interpretation of the statement is that the Line of Control should run northeasterly from the map coordinate known as NJ-9842, along the Saltoro Ridge to the Chinese border. Pakistan believes it should run straight to the Karakoram Pass on the India-China border.

The conflict began in 1984, when India launched Operation Meghdoot and took control of Siachen by preempting Pakistan's Operation Ababel aimed at occupying the glacier.

2,300 sq km
THE CONTENTIOUS AREA

25,000+ FEET
ALTITUDE OF INDIAN POSTS

9,000-15,000 FEET
ALTITUDE OF PAK POSTS

India and Pakistan have cumulatively deployed nearly 10,000 troops along the 110-km Actual Ground Position Line (AGPL) on the glacier.

ACTUAL GROUND POSITION LINE

This line, slightly to the left of Siachen Glacier, runs along the Saltoro Ridge from NJ-9842 to Indira Col, a pass. Passing over the major peaks of the ridge, this line is held by Indian troops.

SIACHEN GLACIER

At 72-km long, it is the longest glacier in the Karakoram. It falls from an altitude of 18,875 ft above sea level at its head at Indira Col down to 11,875 ft. Its snout. It gets its name from the wild roses that grow near its snout. Siachen is the source of the Nubra River.

CURRENT POSITION

India: It controls all of the 70 km-long glacier and all of its tributary glaciers, as well as the three main passes of the Saltoro Ridge, Sia La, Bilafond La and Gyong La.

Pakistan: It controls the glacial valley just five km south-west of Gyong La. The Pakistanis have been unable to get up to the crest of the Saltoro Ridge, while the Indians can't come down and abandon their strategic high posts.

gave India control over all of the Siachen Glacier.

- Indian troops under Operation Meghdoot occupied most of the Saltoro Ridge to the west of Siachen Glacier
- The glacier's region is the **highest battleground on Earth**, where Pakistan and India have fought intermittently since 1984.
- Both countries maintain a permanent military presence in the region at a height of over 6,000 m.
- India and Pakistan wished to disengage from the costly military outposts.
- However, after the Pakistani incursions during the Kargil War in 1999, India abandoned plans to withdraw from Siachen without official recognition of the current line of control by Pakistan.
- Prime Minister **Manmohan Singh became the first Indian Prime Minister to visit the area**. After that present Prime Minister Narendra Modi also visited this place.

Actual Ground Position Line (AGPL)

- The Actual Ground Position Line (AGPL) divides current positions of Indian and Pakistani military posts and troops across the entire 110 kilometres long front line in the disputed region of Siachen Glacier.
- AGPL generally **runs along the Saltoro Mountains range**, beginning from the northernmost point of the (LOC) at Point NJ 9842 and **ending in the north on the Indira Ridge at the India-China-Pakistan LAC tri-point near Sia Kangri** about 4 km northwest of Indira Col West.

MEKEDATU RESERVOIR PROJECT & INTER STATE WATER DISPUTE

GS-I GEOGRAPHY

Context

- Recently, the Congress on Thursday halted its 'Mekedatu march', a day after the Karnataka High Court raised questions on how it was being carried out amid rising Covid-19 cases.

Mekedatu Balancing Reservoir Project

About

- Karnataka wants to construct a concrete gravity dam at Mekedatu with a storage capacity of 67.16 tmcft. The project was **first announced in 2013**.

Location

- The project will actually come up at Ontigondlu, about 1.5 km from what is known as Mekedatu **at the confluence of Cauvery and Arkavathi rivers**.

Objective

- Supplying drinking water to Bengaluru and surrounding areas + generate hydroelectric power.

Project area

- 5,252 hectares of land. Of this, 3,181 hectares **fall in the Cauvery Wildlife Sanctuary**.

Current status of the project

- In January 2019, Karnataka submitted the Detailed Project Report (DPR) to the Central Water Commission (CWC) and later to the Cauvery Water Management Authority (CWMA) to get the consent of the co-basin states.
- The CWMA is yet to approve the DPR because Tamil Nadu, which is the co-basin state, has opposed the project.
- Tamil Nadu also approached the Supreme Court against Mekedatu, and the matter is pending adjudication.
- The project will need multiple clearances from the Centre and courts as it involves the Cauvery water sharing dispute.



Why is Tamil Nadu opposing Mekedatu

- **Hoarding of the state's share of Cauvery water:** If the reservoir is constructed, Tamil Nadu fears, Karnataka will hoard water in the dam, thereby cheating it of its share of the Cauvery water.
- **Violates Inter-State River Water Disputes Act:** It has argued that as per the Inter-State River Water Disputes Act, Karnataka cannot build the dam without the consent of the lower riparian state, which is Tamil Nadu in this case.

Other hurdles to the project

- **Environmental price:** Green activists have questioned the **environmental price of the project**. A major chunk of the land that will be submerged by the dam will be of the Cauvery Wildlife Sanctuary area, **which is a key elephant corridor**.

- **Threat to Endangered animals:** The sanctuary is also home to many endangered wildlife species. The sanctuary also acts as a buffer area for wildlife animals such as tigers in the nearby Male Mahadeshwara Hills and Biligiriranga Hills.
- **Man- Animal Conflict:** Activists fear that the loss of this space will only lead to more man-animal conflict.

Karnataka's argument

- **Within its rights:** The Karnataka government has maintained that it is well within its rights to construct the dam as long as it makes sure that Tamil Nadu gets its annual share of water as prescribed by the Cauvery Water Disputes Tribunal.
- **No violation of Inter-State River Water Disputes Act:** Since the dam will come up within Karnataka, the state is not violating any law.
- **Redressal of water shortage issue:** There is an acute power shortage in Karnataka. The state sees Mekedatu as an opportunity to supply sufficient water to meet the ever-growing needs of Bengaluru and the surrounding districts.
- **Boost to Tourism:** The state also hopes that the dam will boost tourism in the area.

The recent 'Mekedatu march'

- The 'Mekedatu march' had been launched for implementation of a project to build a reservoir on the Cauvery.
- The 'Walk for Water', March by Karnataka has been temporarily suspended due to rising Covid-19 cases.

River Cauvery

- **Ancient name and Literature:** It was also called as Ponnai (in reference to the fine silt it deposits) in Tamil literature. Profusely described in the Tamil Sangam literature.
- **Source:** Rises at Talakaveri in the Brahmagiri range in the Western Ghats, Kodagu district of the state of Karnataka.
- **States flowing through:** Karnataka and Tamil Nadu.
- **Drains:** It reaches the sea in Poompuhar in Mayiladuthurai district before its outfall into the Bay of Bengal.
- **Size:** It is the third largest river – after Godavari and Krishna – in southern India and the largest in the State of Tamil Nadu, which, on its course, bisects the state into North and South.
- **Major Tributaries:** Harangi, Hemavathi, Kabini, Bhavani, Lakshmana Tirtha, Noyyal and Arkavati.
- **Minor Tributaries:** Three minor tributaries, Palar, Chinnar and Thoppar enter into the Kaveri on her course, above Stanley Reservoir in Mettur, where the dam has been constructed.
- **Drainage Basin:** The river basin covers three states and a Union Territory as follows: Tamil Nadu, 43,868 square kilometers; Karnataka, 34,273 square kilometres; Kerala, 2,866 square kilometres, and Puducherry, 148 square kilometres.
- **Falls associated:** In Chamarajanagar district, Karnataka, it forms the Shivanasamudra Falls. Upon entering Tamil Nadu, the Kaveri continues through a series of twisted wild gorges until it reaches Hogenakal Falls.
- **Dams on it:** Mettur Dam was constructed for irrigation and hydel power in Tamil Nadu.
- **Islands Formed:** Srirangapatna and Shivanasamudra.



Cauvery Water Dispute: A Timeline

The Cauvery water dispute is 122 years old.

Roots: Agreements of 1892 and 1924 between the then Kingdom of Mysore and the then Madras Presidency. Madras disagrees to Mysore administration's proposal to build irrigation systems, arguing that it would impede water flow into Tamil Nadu.

1990: A Cauvery Water Disputes Tribunal (CWDT), set up under the centre after the Supreme Court's direction.

2007: Tribunal delivered its final verdict on how water should be shared between Tamil Nadu, Karnataka Kerala and Puducherry. All states challenged the share assigned to them.

2012, 2016, 2017: Supreme Court Interventions and directions.

2018 SC final verdict: Karnataka will get 284.75 tmc ft, Tamil Nadu will get 404.25 tmc ft, Kerala will get 30 tmc ft and Puducherry will get 7 tmc ft, 10 tmc ft will be reserved for Environmental Protection and 4 tmc ft will be reserved for Inevitable Wastage into the Sea. Central government notified the 'Cauvery Water Management Scheme' as per SC's direction constituting the 'Cauvery Water Management Authority' and the 'Cauvery Water Regulation Committee'.

Interstate (River) Water Disputes

- Interstate (River) Water Disputes (ISWDs) are a continuing challenge to federal water governance in India.
- Rooted in constitutional, historico-geographical, and institutional ambiguities, they tend to become prolonged conflicts between the states that share river basins.

Sub-national disputes are far more omnipresent, and are much more economically and socially disruptive in nature.

Constitutional Approach for Inter-state River water dispute

- Entry 17** of State List deals with water i.e. water supply, irrigation, canal, drainage, embankments, water storage and water power.
- Entry 56** of Union List empowers the Union Government for the regulation and development of inter-state rivers and river valleys to the extent declared by Parliament to be expedient in the public interest.
- Article 262:**

In case of disputes relating to waters:

- Parliament may by law provide for the adjudication of any dispute or complaint with respect to the use, distribution or control of the waters of, or in, any inter-State river or river valley.

- Parliament may, by law provide that neither the Supreme Court nor any other court shall exercise jurisdiction in respect of any such dispute or complaint as mentioned above.

Laws according to Article 262:

- River Board Act, 1956:** The river Boards were supposed to advise on the inter-state basin to prepare development scheme and to prevent the emergence of conflicts. Till date, no river board as per above Act has been created.
- Inter-State Water Dispute Act, 1956:** In case, if a particular state or states approach to Union Government for the constitution of the tribunal:
 - Central Government should try to resolve the matter by consultation among the aggrieved states.
 - In case, if it does not work, then it may constitute the tribunal.

LIST OF EXISTING WATER DISPUTE TRIBUNALS		
No	Name of Tribunal	States concerned
1.	Godavari Water Disputes Tribunal	Maharashtra, Andhra Pradesh, Karnataka, Madhya Pradesh & Odisha
2.	Krishna Water Disputes Tribunal -I	Maharashtra, Andhra Pradesh, Karnataka,
3.	Narmada Water Disputes Tribunal	Rajasthan, Madhya Pradesh, Gujarat and Maharashtra
4.	Ravi & Beas Water Tribunal	Punjab, Haryana and Rajasthan
5.	Cauvery Water Disputes Tribunal	Kerala, Karnataka, Tamil Nadu and Puducherry
6.	Krishna Water Disputes Tribunal -II	Karnataka, Telangana, Andhra Pradesh and Maharashtra
7.	Vansadhara Water Disputes Tribunal	Andhra Pradesh & Odisha
8.	Mahadayi Water Disputes Tribunal	Goa, Karnataka and Maharashtra

Provisions of the Inter-State River Dispute (Amendment) Act, 2019

- A dispute between two states will first go to a dispute resolution committee.
- In case of its failure, dispute will go to the permanent tribunal.
- A single Tribunal with different benches for all the river disputes.
- Maximum duration for a tribunal award is 6 years.** 1.5 years for dispute resolution committee and 4.5 years for tribunal's hearing and verdict.
- Tenure of Tribunal Members will be of 5 years or 70 years of age.** Tribunal will consist of domain experts.
- Tribunal decisions are binding** and have authority of Supreme Court order.
- It will require maintenance of basin database.

Major Impediments

- Institutional lacunae:** led to a fractured landscape of interstate river water governance in India.
- Lack of political will**
- Inadequate appreciation of the ecological and economic costs of such protracted conflict** has constantly evaded a sustainable and holistic approach to this issue based on federal cooperation.
- Institutional ambiguity:** Article 262 deters the highest judiciary from adjudicating interstate river water disputes but article 136 empowers the Supreme Court to hear appeals against the tribunals and also ensure implementation of the tribunal. This creates an institutional ambiguity regarding which body i.e. the tribunals or the Supreme Court is the ultimate adjudicatory power in the realm of interstate river water disputes in India.

Way Ahead

- Distress sharing formula:** the Supreme Court has to get the states to agree on a practical distress sharing formula in a deficit season.

- **Institutional mechanisms for implementing tribunal awards:** The Supreme Court has to clear the questions of law about who and what kind of institutional mechanisms should be put in place for implementing tribunal awards.
- **Interstate coordination:** There is a huge vacuum with respect to institutional avenues and credible practices for interstate coordination. The solution lies in cooperation and coordination, not in conflict.
- **Interstate governance mechanisms:** Creation of enduring and effective interstate governance mechanisms is the key to manage interstate water disputes.
- **Conservation:** Ecological restoration and conservation of aquatic biodiversity, in addition to the balancing of water supply and demand for human use in the management objectives and outcomes of the basin plan.
- **Address River Basin issues:** The identification of key issues and risks to river basins and the strategies needed to address them in both the short and long term.
- **Consensus building:** Consensus-building, based on sustained political deliberation. An example of such a consensus-based model, in which the Centre and the states have found an amicable way to coordinate, is the implementation of the Goods and Services Tax (GST). The Centre brought the states on board to negotiate the reform in the spirit of "cooperative federalism."
- **Complete Depoliticisation:** Formulating an alternative to political negotiation is the only long-term and durable solution to river water conflicts, with a political will that can forge an amicable consensus for mutually agreed river-water sharing.
- **Positive Politicisation:** The issue in question and the demand for a solution must be highly politicised to ensure that the dispute gets adequate public attention and, consequently, electoral priority. A case in point is the 2012 mass-based anti-corruption movement in India, which relied on the extreme politicisation of the issue of corruption and the subsequent passing of the anti-corruption legislation – The Lokpal and Lokayuktas Act, 2013. Such "positive politicisation" of an issue can pave the way for concrete political action for conflict resolution.
- **Need for clarity:** Any concrete step towards a more responsive and effective river water governance mechanism, despite its well-meaning intent, would remain chequered unless deep-rooted Institutional ambiguities regarding the issue are constantly comprehended, recognised and interrogated in a bipartisan manner. (In ref to Art. 262 and Art. 136)

Final Thought

- The current condition of interstate river water governance in India warrants a new approach for cooperative federalism and interstate water governance.



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GENERAL STUDIES - II

CHALLENGES TO FEDERAL INDIA

GS-II POLITY

Context

- On **January 26, 1950** when the Indian Constitution came into force, it was a big step for the nation that had longed to achieve the **ideals of justice, equality, liberty and fraternity**.

Federal Structure of India

- Indian Federalism:** According to the K.C. Where, Indian constitution is quasi-federal in nature.
- The Indian federal system is based on the 'Canadian model' and not on the 'American model' where it establishes a strong centre.
- However, the term '**federation**' has **no where been used in the Constitution**.

Federal features of Constitution

- Dual Polity:** The Constitution establishes a dual polity consisting the Union at the Centre and the states at the periphery with sovereign powers to each.
- Written Constitution:** Written constitution specifies the structure, organisation, powers and functions of both the Central and state governments and prescribes the limits within which they must operate.
- Division of Powers:** The Constitution divided the powers between the Centre and the states in terms of the Union List, State List and Concurrent List in the Seventh Schedule.
- Supremacy of the Constitution:** The laws enacted by the Centre and the states must conform to its provisions. Otherwise, they can be declared invalid by the Supreme Court or the high courts through their power of judicial review.
- Independent Judiciary:** Independent judiciary protects the supremacy of the Constitution by exercising the power of judicial review.

Issues in the Federalism

- Interstate council, a constitutional body (Article 263) has met only for once in the 7 years. It was recommended to be made mandatory by the Sarkaria commission.
- GST has made the taxation centralising in nature and taken away the independent power of states to undertake the taxation.
- Central government has often delayed the transfer of funds to the states arising from GST.
- Article 370 was scrapped without undertaking the states into discussion.
- Through successive amendments, no of enteries in the union list are on rise while enteries in state list are reducing.
- In the recent times, central government has bypassed the legislative powers of states by enacting laws on state list like on agriculture.
- States have criticised the unitary method of decision making in deciding the lockdown during the pandemic which has reduced their stature to an implementing body only.

Way Forward

- GST compensation deadline must be extended beyond 2022 to provide cushion for the state finances.
- Inter-state council must be made permanent and regular meetings must be held to harmonise relations between centre and state.
- NITI Ayog must play a proactive role in harmonising state and centre relations.
- State government needs to develop their own capacity and must rise above the populist policies to undertake long term development.

EVM MACHINES

GS-II POLITY

Context

- Chief Minister of **Chattisgarh's father questioned the credibility of the electronic voting machine (EVM)** and called for a national election to be held on a ballot.

About EVM

- The Electronic Voting Machine (EVM) was introduced in India in 1982 Introduced in India in 1982.
- An EVM is designed with two units: the control unit and the balloting unit. These units are joined together by a cable.
- EVM's run on normal battery and they do not require electricity.

- An EVM can be used to record a maximum of 2,000 votes.
- The arrangement of names of candidates in the ballot paper is in alphabetical order, first candidates from national political parties figure and then from other state registered parties.

Advantage of the EVM

- Voting by EVM's has made the process simpler as one does not need to mark a ballot paper and put it in the ballot box.
- The scope of invalid votes is eliminated which could not be possible in the paper ballot system.
- The counting process is very quick and the result can be declared in hours as opposed to days.
- There is no need for printing millions of ballot papers. This leads to saving of money on account of paper, printing, transportation, storage and distribution.
- There are both audio and visual indications for the voter to be assured that his vote has been recorded correctly.
- EVMs are standalone machines and not connected to internet. This makes it difficult for hackers to hack it.
- They are easy to carry and chances of booth capturing, election rigging are minimized to a negligible chances.

Disadvantage of EVM

- Many times EVM have been brought in the controversy for its susceptibility to the hacking.
- Difficult rules to file complaint: As per the 2013 rules, the complainant can not only be jailed for six months under Section 177 of the IPC for "furnishing false information" but also fined a sum of Rs 1,000.
- There has been reports of false VVPAT display. According to voters, vote didn't go to the intended party.
- EVM has only captured the votes but the identity of voters is still decided by traditional methods thus allowing bogus voting.

Steps taken by Election Commission

- Election commission has allowed hackers to hack the EVM and prove EVM vulnerability, but so far, none of such events have happened.
- By the multiple court verdicts, EVM has been proved technologically safe and sound.
- Samples of the EVM before any elections are checked by a quality assurance teams which is independent of the producing PSU.
- The software of EVMs is developed in-house by a selected group of Engineers in BEL (Defense Ministry PSU) and ECIL (Atomic Energy Ministry's PSU) independently from each other.
- Candidates and their representatives are allowed to conduct mock polls on EVMs at the time of candidate setting and also before the actual poll on the poll day to satisfy themselves about the satisfactory functioning of EVMs being used.

VVPAT

- In times of political mudslinging about EVM tampering, a paper trail ensures that voter faith remains intact, strengthening participatory democracy.
- VVPAT is a machine that is used in elections to verify that the citizen's vote has been correctly placed.
- Essentially, after a voter presses the button confirming their vote for their chosen candidate or NOTA, the VVPAT machine prints a slip containing the name of the candidate and the corresponding election symbol and automatically drops it in a sealed box.
- The VVPAT is placed in a transparent glass case, allowing the voter to see the vote.

CONTEMPT OF COURT

GS-II POLITY

Context

- Attorney-General (A-G) gave consent to a plea to initiate contempt proceedings under arrest in the Haridwar hate speech case.

Contempt of Court in India

- Supreme Court is declared a **Court of Record under Article 129**. As a court of record, it has all the powers of such a court including the power to punish for its contempt.
- **Under Article 129 and 142 of the constitution of the Supreme Court**, it has been vested with power to punish for contempt of court.

Procedure to begin contempt of court

- In the case of the Supreme Court, the Attorney General or the Solicitor General, and in the case of High Courts, the Advocate General, may bring in a motion before the court for initiating a case of criminal contempt.
- If the motion is brought by any other person, the consent in writing of **the Attorney General or the Advocate General is required**.

- The motion will specify the cause for which contempt proceedings have been initiated against the person.

Need for AG-Grant

- **Legislative requirement:** Consent of the attorney general is required by the law to initiate the proceedings under contempt of courts act-1971.
- **Time Saving:** It saves the precious time of court else it would lead to frivolous petition for contempt of court.
- **Independent viewpoint:** AG being a member of government will bring independent thinking thus ensuring separation of power.

When consent is required

- **Filing by private citizen:** AG consent is required when filing is being done by the private citizen and he needs to sign on a complaint.
- **Initiated by Court:** When the contempt proceedings are initiated by court as was done during Prashant Bhusan case, AG consent is not required.
- **Court ruling:** During the Prashant Bhusan case, court had upheld that once the court has taken suo-moto cognizance of the case, the matter lies between court and contemnor.

If AG denies consent:

- The matter ends over there and no contempt proceedings are initiated.
- AG has denied permission for contempt proceedings against Swara Bhaskar for making derogatory remarks against Supreme Court.
- Court can take the suo-moto cognizance of the matter under article 129.

Types of Contempt of Court

- Contempt can be criminal or civil.
- Criminal contempt involves an intentional interference with the administration of justice.
- Civil contempt is disobedience to orders or judgments of the court.
- Criminal Contempt:
 - Scandalises or tends to scandalise, or lowers or tends to lower the authority of, any court;
 - Prejudices, or interferes or tends to interfere with, the due course of any judicial proceeding;
 - Interferes or tends to interfere with, or obstructs or tends to obstruct, the administration of justice in any other manner.

Contempt of Court Act-1971

- Article 129 and 215 of the Constitution of India empowers the Supreme Court and High Court respectively to punish people for their respective contempt.
- Section 10 of The Contempt of Courts Act of 1971 defines the power of the High Court to punish contempt of its subordinate courts.
- Power to punish for contempt of court under Articles 129 and 215 is not subject to Article 19(1) (a).
- A contempt of court may be punished with simple imprisonment for a term, which may extend to six months, or with fine.

Reason behind its existence

- Needed to punish wilful disobedience to court orders (civil contempt),
- To prevent interference in the administration of justice.
- To prevent threats to judges.
- Insulate the institution from unfair attacks.
- Prevent a sudden fall in the judiciary's reputation in the public eye.

Need for reforms

- Social Media is full of judiciary criticism. It is not good to waste the time of judiciary in exercising its power to punish for its contempt.
- England itself abolished the offence of "scandalising the court" in 2013, from where the idea has been borrowed.
- Contempt of law prevents media from looking at the functioning of judiciary effectively.
- Definition of criminal contempt in India is extremely wide, and can be easily invoked.
- Suo-motu powers of the Court to initiate such proceedings only serve to complicate matters.
- Criminal contempt is completely asynchronous with the modern democratic system, which recognises freedom of speech and expression as a fundamental right.

Way Forward

- It would be a progressive move if the courts itself focus on improving its accountability and transparency, that can result in improving its public image.

RULE CHANGES IN CENTRAL DEPUTATION

GS-II POLITY

Context

- The Centre has proposed amendments to the IAS (Cadre) Rules in order to exercise greater control in central deputation of IAS officials

Current Rules for Deputation

- The Department of Personnel and Training is the IAS officers' cadre controlling authority.
- Every year, the Centre requests a "offer list" of officers wanting to serve on central deputation from the All-India Services (IAS, IPS, and Indian Forest Service), from which officers are selected.
- Currently, **states can veto an IAS or IPS officer's Central deputation, or issue an objection** or no objection notice.
- Currently, a **unique feature of All India Services is that the members of these service are recruited by the Central Government and are placed under various State Cadres.**
- Rule-6 (1) of the IAS (Cadre) Rules-1954, added in 1969, governs central deputation in the Indian Administrative Service.
- States are **required to depute to Central government offices under existing regulations, with no more than 40%** of the entire cadre strength at any time.

Proposed Amendments

- The Centre has **proposed to amend Rule 6 of IAS (Cadre) Rules, 1954, to address the crunch of IAS officers by different state governments.**
- Proposed **amendment to the IAS Cadre Rules would enable Centre to post IAS officers on central deputation bypassing reservations of the state governments.**
- The Centre has **proposed to insert a provision in Rule 6 of IAS (Cadre) Rules, 1954, which stated that any IAS officer could be posted on central deputation with the concurrence of the state government concerned.**
- The **actual number of officers to be deputed to the central government shall be decided by the Centre in consultation with the state government** concerned.
- The **proposed amendment asks the states to nominate a pre-decided number of IAS officers for central deputation reserve and allows the Centre to post these officers, even overriding state objections.**

Issues

- State government will no **longer be able to shield the state IAS officers from Central influence.**
- It will cease state's control on state IAS officers **who can be remotely 'administered orders' from the Centre.**
- All the IAS officers **will be indirectly governed by the new service Act** and this may reduce their allegiance to the elected state governments.
- The proposal has already **been labelled 'draconian' by West Bengal chief minister Mamata Banerjee, who protested the move.**
- The proposed **rules will severely affect state's ability to implement policies** and oppose arbitrary decisions of the Union government.
- It will **make states as dependent on the Centre as possible.** So that central government has a strong Centre and the states are only vassals to them.
- Proposed **rules will destroy the autonomy of states, and entire concept of cooperative federalism will be destroyed.**

Way Forward

- Government should increase the timeline from 12 days to seek the comments from the state government.
- The matter must be settled in the Inter-state council where union and state government must take decision in collaborative manner.

STRENGTHENING LOCAL GOVERNMENT

GS-II POLITY

Context

- The Reserve Bank of India (RBI) suggests that **local government needs to strengthen their functional autonomy and strengthen their governance structure.**

Background

- The RBI said in its report, State Finances, Study of Budgets of 2021-22, that **third-tier governments are at the forefront of the fight against pandemics by implementing containment strategies** and medical care.
- Local bodies finances have come under strain and leading to reduction in expenditure at welfare activities.
- The RBI added that local bodies **needs to increase functional autonomy and strengthen** governance structures.
- This can be **achieved by empowering financially by increasing the availability** of resources.

Challenges

- **Decline in Revenue:** According to an RBI survey of 221 municipal governments, **revenues fell by more than 70% and spending increased by nearly 71.2%.**
- **Failure to collect property tax:** According to RBI, local bodies have failed to collect the property tax effectively leading to poor revenue generation. According to data from the Organization for Economic Co-operation and **Development (OECD), India's property tax collection is the lowest in the world.**
- **Poor participation of Mayor:** During the pandemic, state leaders and national leaders were at the forefront but there was little participation of the City Mayors highlighting their limited empowerment.
- **Treating the city as subordinate:** Urban cities in India are treated as subordinate to the state government rather than an independent legislative organ. They work as per the whims of state government.
- **Removal of Octroi:** GST has also subsumed the Octroi taxes levied by the municipal government which has further reduced municipal revenues.
- **No Financial empowerment:** In the list of 18 subjects mentioned in the Schedule 12 of the constitution, financial empowerment is not mentioned in the list.

Way Forward

- **Increase Functional autonomy:** The RBI report correctly emphasized that the **functional autonomy of the city government** must be enhanced by letting it legislating independently.
- **Three Fs:** Functional autonomy must be accompanied by devolution of **three Fs: function, finance, and functionaries to the local government.**
- **Mention in 12th Schedule:** Financial empowerment must be mentioned as a subject in the 18 lists mentioned under schedule 12 of the constitution.
- **Focus on democratic decentralisation:** Principle of subsidiarity must be followed for the democratic decentralization as supported by 2nd ARC. Activity mapping between different agencies mainly the district panchayat and urban bodies needs to be done.
- **Follow Successful model of Kerala:** Other state must take the learning from the successful model of Kerala where 40% of the budget has been allotted to the local government and letting them plan their functions independently.
- **Undertaking Planned development:** Planned development in the cities must be undertaken with development of long term master plan and association of required resources for the same.
- **Giving a due in income tax:** Urban cities need to be given due in the income tax as followed in the Scandinavian countries. This would enhance elasticity of the resources for the urban government letting them to undertake long term planning.

Conclusion

- Local governments are critical for providing participation to the local people in the decision making. They need to be empowered financially to let them undertake their functions effectively and efficiently.

SUSPENSION OF MLA

GS-II POLITY

Context

- In its judgement delivered on the pleas filed by 12 BJP MLAs who were suspended for a year, a bench headed by Justice A M Khanwilkar observed that one-year suspension is “worse than” expulsion, disqualification or resignation.

About the Issue

- Twelve BJP legislators **were suspended for one year by the Maharashtra Assembly last July for alleged disorderly conduct.**
- The unusually long period of suspension has been questioned by the Supreme Court.

Challenges of MLA

- **Article 14:** The 12 MLA stated that they were not given the opportunity to file a proceeding and that suspension violated their **fundamental right to equality before the law under Article 14 of the Constitution.**
- They also argued **that they were not given access to video footage of the House of Representatives session and it was not**

clear how they were identified among the large crowds gathered at the Chamber of Commerce.

- **Rule 53:** Rule 53 only provides for the **withdrawal of a member for the remainder of the day or in case of repeat misconduct in the same session, for the remainder** of the session.

Government Arguments

- Action was taken due to “undisciplined and unbecoming behaviour” of the MLAs.
- **No Authority of Court to Question:** Article 212 (1) states that “the validity of any proceedings in the **Legislature of a State shall not be called in question on the ground of any alleged irregularity of procedure.**”
- **On the Vacancy of seat:** The state had also said **that a seat does not automatically become vacant if the member does not attend the House for 60 days but it becomes vacant only if declared** so by the House.

Court observations

- **Violation of democratic values:** Suspension beyond the ongoing session is violative of basic democratic values as it would mean the constituency the member represents in the House would remain unrepresented.
- It will curtail the effectiveness of opposition to participate effectively as they will fear of the suspension.
- According to court, procedures are **open to judicial review on the touchstone of being unconstitutional, grossly illegal, irrational** or arbitrary.
- If the resolution passed by the House was to provide for suspension beyond the period prescribed under the stated Rule, it would be substantively illegal, irrational and unconstitutional.

Rules of Suspension

- Rules 373, 374, and 374A of the Rules of Procedure and Conduct of Business in Lok Sabha provide for the withdrawal of a member whose conduct is “grossly disorderly”, and suspension of one who abuses the rules of the House or willfully obstructs its business.
- The maximum suspension as per these Rules is “for five consecutive sittings or the remainder of the session, whichever is less”.
- The maximum **suspension for Rajya Sabha under Rules 255 and 256 also does not exceed the remainder of the session.**
- Similar rules also are in place for state legislative assemblies and councils which prescribe a maximum suspension not exceeding the remainder of the session.

Way Forward

- Speaker or Chairperson must act according to the constitutional ethos and should work within the permissible rules and regulations.
- The representatives must show ethical behavior in the house and shouldn't engage in undemocratic activities.

LOK ADALAT

GS-II POLITY

Context

- Recently, the National Legal Services Authority (NALSA) has decided to further focus on National Lok Adalat's contribution to effectively reduce the number of pending proceedings.

Measures to strengthen the Lok Adalat

- In June 2020, the Legal Services Authorities integrated technology with the conventional modes of dispute settlement and introduced virtual Lok Adalats also called as ‘E-Lok Adalats’.
- As a preparatory measure, **NALSA started organization of prior consultative and review meetings with all the State Legal Services Authorities** to guide them towards the maximum disposal during such Lok Adalats.
- Before the organization of each National Lok Adalat, **multiple interactions were organised with the Executive Chairpersons of all the State Legal Services Authorities.**
- Authorities have been instructed to explore to possibilities to settle the cases of financial matters like Bank recovery cases.

About Lok Adalat

- Lok Adalat is one of the alternative dispute redressal mechanisms.
- It is a forum where disputes/cases pending in the court of law or at pre-litigation stage are settled/ compromised amicably.
- Lok Adalats have been given statutory status under the Legal Services Authorities Act, 1987.
- Under the said Act, the award (decision) made by the Lok Adalats is deemed to be a decree of a civil court and is final and binding on all parties
- No appeal against such an award lies before any court of law.

Lok Adalat's mandate

- Motor-accident claims, **disputes related to public-utility services, cases related to dishonour of cheques, and land, labour and matrimonial disputes** (except divorce) are usually taken up by Lok Adalats.
- The Lok Adalat **shall not decide the matter so referred at its own instance**, instead the same would be decided on the basis of the compromise or settlement between the parties.

Lokadalat costs

- There is no court fee payable when a matter is filed in a Lok Adalat.
- If a matter **pending in the court of law is referred to the Lok Adalat and is settled subsequently, the court fee originally paid** in the court on the complaints/petition is also refunded back to the parties.

Roles of Lok Adalats members

- The persons **deciding the cases in the Lok Adalats are called the Members of the Lok Adalats**, they have the role of statutory conciliators only and do not have any judicial role.
- They can only **persuade the parties to come to a conclusion for settling the dispute outside the court in the Lok Adalat and shall not pressurize or coerce** any of the parties to compromise or settle cases or matters either directly or indirectly.

Differences between Lok Adalat and regular court

Court	Lok Adalat
Fixed Premise	Mobile Premise
Presence of Lawyer	Can represent themselves
Forum of the state	Forum of the citizens and stakeholders to provide the justice
Appeals can go to higher court	No appeal
Settlement through legal mechanism	Settlement through mediation

Importance and consequences of such measures

- Across the country, a **total number of 1,27,87,329 cases were disposed of in four National Lok Adalats**, which included a huge number of pending case.
- Lokadalats also provide people with opportunities for justice that they might not otherwise have in the formal court system.
- Mechanisms like E-Lokadalat has brought the justice to doorstep of common citizens.
- Since, there is no court fee, it has made justice affordable and accessible to millions of people.
- To settle a dispute in Lokadalat, there is no need to go to court and the dispute can be settled in Lokadalat directly.
- It is an informal setup which doesn't strictly follow the evidence act or procedural laws. It allows direct interaction of the litigant with the judges letting them clarify their stand.

Challenges faced by Lok Adalats (LA)

- Many insurgent groups have utilized the mechanism of Lokadalat to run their dictate. Naxalities have set up their own court in Andhra Pradesh and run their dictat.
- Most of the decisions are taken only in single sitting and due consideration is not paid to both the claims.
- Judges are not trained in the functioning of Lokadalat and they lack attitude to resolve the disputes amicably.
- In many cases, compromises are imposed on the poor who often have no choice but to accept them.
- There is a concern that in the endeavour for speedy disposal of cases, it undermines the idea of justice.
- Poor women are made to settle their dispute in the traditional view of marriage by family courts.

Way Forward

- Seeking Participation:** Lokadalats must use the village elders and local representatives in settlement of disputes to assimilate the cultural tradition with dispute resolution.
- Using Processes of locality:** Lokadalats should incorporate the processes and characteristics of conciliation most used in **each locality in order to compel parties to use LAs so that they have** a more positive and permanent effect
- Resource Allocation:** There is a need to allocate more financial resources for the effective functioning of Lokadalats. An influx of staff, funding, and facilities would allow Lokadalats to run more effectively, make them structurally sound, and increase public confidence in them.
- There should be Panel of judges including eminent jurists, civil society members to for dispute resolution.
- Parties should be made aware of the working of Lokadalats and its pros and cons in advance.

Conclusion

- Lok Adalats have settled greater number of cases than any other dispute resolution mechanism and emerged as the most effective tool of Alternative Dispute Resolution Mechanism.

GOVERNOR**GS-II POLITY****Context**

- Dispute between the government of Kerala and Maharashtra with their Governors have brought in light the controversial role of Governor.

Recent examples

- In Maharashtra, the **Governor refused to accept the Election Day recommended by the state government** for the speaker. As a result, the assembly was unable to elect a speaker.
- Governors are the de-facto vice chancellor of the state university but Tamil Nadu chief minister has announced to appoint other person as vice-chancellor of state university.
- Such conflicts between the Governor and the state government are also frequent in states such as Rajasthan and west Bengal.

Meaning of agent of centre

- Governors are **always seeking an opportunity to run down the state government** when it is in the hands of a party opposed to the party ruling at the centre.
- He is always **trying to bring about a government of the same party** as at the centre.

Different methods to act as agent of centre

- Issues of selecting the chief minister
- Determining the timing for proving legislative majority
- Demanding information about day-to-day administration
- Taking apparently long time in giving assent to bills or reserving bills for the president
- Commenting adversely on specific policies of the state government

Philosophy of discretionary powers of Governor

- Constitutional provision provides discretionary power under certain circumstances, Governor shouldn't use it beyond this circumstances.
- Governor discretionary powers are not the general clause to disregard the advice of the ministers and run the administration as per his personal whims and fancies.
- Governor discretionary **powers are to ensure the constitutional administration rather** than promoting the interest of Central Government.

Different role of discretionary powers

- Role of seeking **information from ministries is to advise the ministry, to warn the ministry, to suggest to the ministry** an alternative for any action which would be constitutional and in public interest and ask for reconsideration.
- Reserving a bill for president consideration:** it is necessary for the Governor to make sure that state's laws fall within the framework of the constitution.
- Appointment of chief minister:** according to the Sarkaria Commission, this power's role is to see that a government is formed and not to try to form a government.

Why Governors act as agent of centre

- Appointment:** Governor is being appointed by the centre hence acts on the partisan line.
- Lack of tenure:** Governor doesn't have security of tenure which makes them dependent upon the centre wishes.
- Discretionary powers:** Governor powers like reserving the bill for president has allowed for the central interference in the state legislative process.
- Credibility of person:** Governor post has become a parking lot for the retired bureaucrats and politicians rather than for people of high integrity.

Important recommendations**Sarkaria commission**

- He should be an eminent person;
- He must be a person from outside the State;
- He should not have participated in active politics at least for some time before his appointment
- His tenure of office must be guaranteed and should not be disturbed except for extremely compelling reasons.
- In case of such termination or resignation of the Governor, the Government should lay before both the Houses of Parliament a

statement explaining the circumstances leading to such removal or resignation.

Punchi Commission

- The term of appointment should be five years.
- Governor could only be removed via a resolution by the State Legislature.
- A committee should be formed that is entrusted with the task of appointment of governors. This committee may comprise the Prime Minister, the Home Minister, the Lok Sabha's speaker and the concerned Chief Minister of the State.
- There should be a say of the State's Chief Minister while making the Governor's appointment.

Conclusion

- The constitution **does not allow the Governor to run a parallel government and does not hold him personally responsible** for his actions as Governor.
- According to the Pandit Thakur Dass Bhargava "The Governor is the man above the party and will see the minister and the government from a distant perspective".
- Governor should act on constitutional philosophy and be a friend, philosopher and guide for the state government.

REVISION OF ELECTION EXPENDITURE

GS-II POLITY

Context

- Prior to parliamentary elections in five states, the **Election Commission of India (ECI)** has raised the spending limit for candidates to vote in Lok Sabha and legislative assembly elections.

Spending in the election

- Spending limits are the **amount of money a candidate can legally spend on a campaign, such as public rallies, rallies, advertisements, posters and banners, and vehicles.**

Submission

- All candidates must submit an **expense report to the EC within 30 days of the completion of the election.**
- **In addition, within 90 days of the end of the election, the party must submit a statement of spending to the Commission though there is no bar on expenditure of political party.**
- **Last major revision:** The last major revision was done in 2014 apart from raising the limit by 10% in 2020.
- Under the Representation of the People (RPA), 1951, Section 77, **each candidate must keep a record of all expenses incurred between the date of nomination and the date of reporting the results.**
- Section 10A of the law states that **false claims or spending that exceeds limits may bar candidates for up to three years.**

Changes made

- **Poll by Lok Sabha:** According to a Lok Sabha study, the **revised spending limit was Rs 95 lakhs in larger states and Rs 75 lakhs in smaller states.** Previously, the upper limit was 70 lakhs in larger states and 54 lakhs in smaller states.
- **State legislature elections:** The **spending limit for state elections has been raised from 280,000 rupees to 400,000 rupees.**

Requirement for state funding:

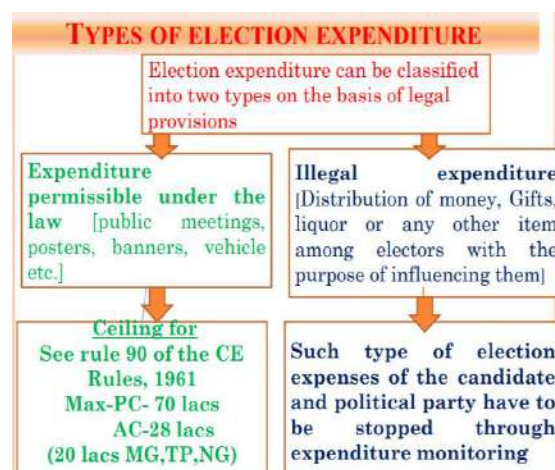
- **Indrajit Gupta Committee (1998):** It has suggested state funding to ensure a **fair competition for poor political parties**, arguing that such a move would be in the public interest. He also recommended that state funding should only be available in the form of free facilities to national and state parties their candidates.
- **Law Commission Report (1999):** State funding for elections is "desirable" if political parties are prohibited from withdrawing funds from other sources.
- **National Commission to Examine the Function of the Constitution (2000):** It did not support the idea, but an appropriate framework for regulating political parties must be in place before state funding is considered.

Need of the Change

- **Cost Inflation Index:** According to the Indian Election Commission, the spending revision was due to an increase in the cost inflation index and the size of voters.
- **Digital Election Campaign:** The Commission also took into account party discussions about the additional work they have to bear as a result of Covid's digital election campaign.

Study on Election Expenses in India

- The Democratic Reform Association (ADR) conducted a survey in 2021 that analyzed the slips in election spending of 538 of the 543 parliamentarians elected in 2019.
- This shows that on paper they spent an average of 50.84 Lakh rupees, or 73% of the spending limit.



GOVERNANCE 4.0**GS-II GOVERNANCE****About**

- Leaders need to adopt more inclusive governance style to counter the issues arising from climate change and pandemic. It require development of governance 4.0

About Governance

- 'Governance' refers to both the **process of making decisions and the process of putting those decisions into action** (or not). It can be used to **corporate governance, international governance, national governance**, and local governance, among other things.

Governance 1.0

- It was **immediately after World War II** where **both public and corporate governance were marked by the rule of the "one man": the elected and unelected strong leader.**
- This type of **leadership worked well in a society where the cost of information was high, hierarchical power and management functioned relatively smoothly**, and technological and economic advances benefited almost everyone.

Governance 2.0

- This paradigm, which arose at the end of the 1960s, **asserted the primacy of material riches and corresponded with the growth of "shareholder capitalism" and progressive global financialization**, upheld the primacy of material wealth.
- Managers who were only answerable to **shareholders ruled supreme and had worldwide clout**. Despite the fact that the **global financial crisis of 2008 shattered this model**, its narrow vision survived.

Governance 3.0

- Crisis management **currently dominates decision-making, with leaders focusing on operational thinking and showing a relative disregard for possible unintended consequences.**
- This short-term, **trial-and-error approach has led to haphazard management** of the pandemic and its socioeconomic fallout.

Need for new governance model

- Global governance **has an unresolved problem: both our institutions and our leaders are no longer fit for their purpose.**
- As the **Fourth Industrial Revolution and climate change continue to disrupt our current lives, public and corporate governance needs to change, too.**
- A new governance paradigm is **required for the world, one that prioritises the primacy of society and nature over the commercial and financial world.**
- Technologies such as blockchain are replacing centralized organizations with decentralized entities, while social, economic and digital inequities are increasing.

Approach under Governance 4.0**Long-Term Strategic Planning**

- Under Governance 4.0, **short-term management must be replaced with long-term strategic thinking.**
- A focus on problems such as the pandemic, socioeconomic crises and people's mental health must be complemented with action to tackle climate change, reverse biodiversity loss and environment damage caused by human activity, and address related challenges such as involuntary migration.
- It must replace the tunnel vision and top down approach that prevailed in the past. We live in a highly complex and interconnected world, not a linear one with few discontinuities.

Responsibilities to be Assumed by Businesses

- Business and state needs to come together to derive positive impact on the social and ecological lives. They can't work in silos.
- The primacy of society and nature must be at the core of any new governance system – whether for business or government.

New Leaders

- Business leaders need to embrace and consent to stakeholder responsibility over shareholder responsibility.
- Leaders that move **outside of their narrow interests as trailblazers and advocate for particular action to combat climate change** and address social injustice should be welcomed.
- There is a need to develop a consistent metrics which will enable us to judge whether leaders are taking a broader view of their role and responsibility.

Conclusion

- Although stakeholder accountability assessment is still in its infancy, the **creation of uniform metrics will allow us to assess whether leaders are taking a more comprehensive perspective** of their role and duty.

Context

- The Ministry of Panchayati Raj recently **announced revised Rural Area Development Plan Formulation and Implementation (RADPFI) Guidelines.**
- All Panchayati Raj Institutions should have a vision for **respective Panchayat for the next twenty-five years.**
- Panchayats should **embark on formulating a master plan for all-round development and should take all possible efforts to boost local infrastructure, other developmental requirements, employment opportunities and resource base of Panchayats.**

Rural Area Development Plan Formulation and Implementation (RADPFI)

Aim

- The goal is to have a **planned spatial development for a village's entire integrated development.**

Objectives

- To **suggest methodological framework for preparing Gram Panchayat level Development Plan.**
- To **arrive at a spatial standards for Gram Panchayat development, especially for abadi areas**
- To **prescribe norms and standards for providing infrastructure facilities and amenities at the village level and its integration with spatial district plan.**
- To **examine the provision of existing statutory framework and suggest suitable amendments so as to ensure preparation of Rural/Village level Development Plan.**
- To **recommend institutional framework for operationalising the guidelines and provide a road map for planned development of Gram Panchayat.**

Application

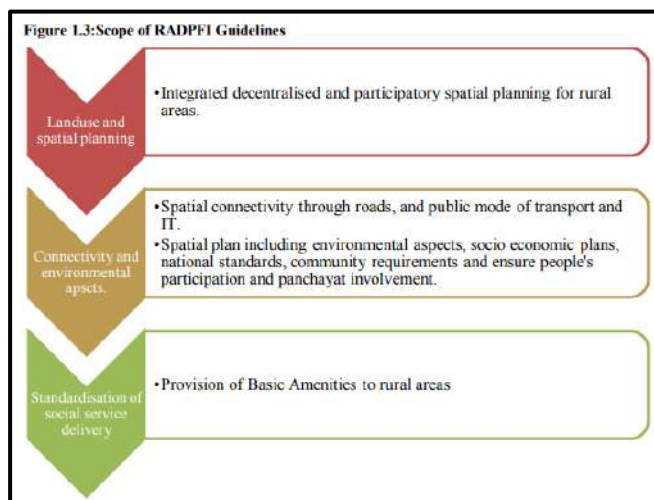
- Dealing with **different development standards, for different rural areas, with varied characteristics.**
- To **facilitate the planned spatial development of rural areas.**
- Planning for environmental benefit and disaster preparedness.**
- To link **spatial plans with 15th FC and SFC.**
- To **improve the digital literacy and village e-governance.**
- Integration/Consolidation of village development with Block/ District plan.**

Need for Rural Area Development

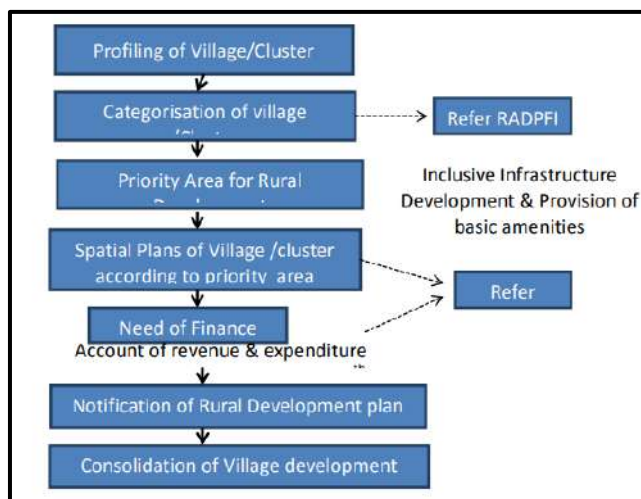
- The need for the RADPFI guidelines arises from the fact, that the **there are 6.4 lakh villages in the country and 68.84 percent of the total population lives in the rural areas.**
- These villages have **varied characteristics and shows different degrees of transformation from rural to urban.**
- The villages **which show high degree of transformation due to their spatial location may attain urban characteristics in the future and therefore it becomes indispensable to plan these settlements.**
- In India, rural areas cover 94% of land and 69% of population while urban area holds 6% of land and 31% of population.**
- The idea of **Planning in rural areas often receives cynical perspectives because of the socio economic constraints that exist in villages, lack of technical knowledge, lower levels of educational attainment.**

Planning in rural areas

- The preparation of Gram Panchayat Spatial Development Plan, is the sole responsibility of Gram Panchayat, and hence constitution of a Village Planning Committee would bring ease in realization of functions of Panchayat.
- Similar to Master Planning done in ULBs, Rural Area planning should also be based on similar legal process for its sustainability and continuity.
- The planning processes, such as community participation, followed in urban planning shall be made mandatory.



Frameworks for use of RAFDI guidelines



Conclusion

- The Rural Area Development Plan Formulation and Implementation (RADPFI) rules, would certainly give direction to the process of planned development in various sectors such as physical and social infrastructure, economic activities, road and transport connectivity, land values and anticipated economic activities
- It will aid towards a workable solution for conversion of agricultural to non-agricultural purpose for planned development.
- It is expected that these revised guidelines would provide guidance to the State Town and Country Planning Departments, State Rural Development and Panchayati Raj Departments

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MGNREGA

GS-II SOCIAL JUSTICE

Context

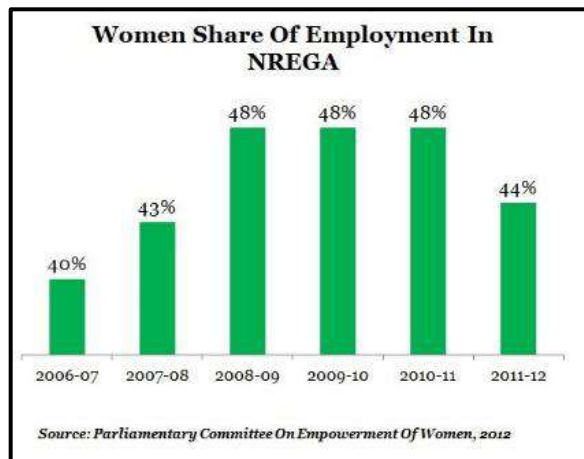
- Recently, the central government wrote to Jharkhand asking it to ensure strict action for irregularities in Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA).

Recent Issues

- Workers:** According to the data, roughly 75% of the workers were missing from 1.59 lakh mentioned in the records.
- Machines:** Beneficiaries were also discovered to have established deals with contractors to use their names on muster lists in exchange for a cut from direct money transfers.
- Funds misappropriation:** In the last four years, Rs 935 crore has been taken out from NREGA budget.

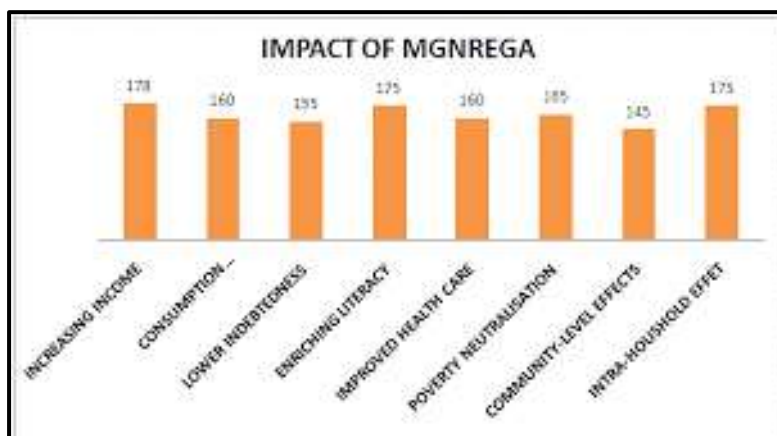
About MGNREGA

- Right to Work:** Adult members of rural households have a legal right to work under the Act.
- Affirmative action for Women:** Women must account for at least one-third of the recipients. Rates must be paid in accordance with the state's Minimum Wages Act of 1948, which specifies wages for agricultural labourers.
- Guarantee of Work in a Timely Manner:** Employment must be provided within 15 days of being asked, failing which a 'unemployment allowance' must be paid.
- Decentralized Planning:** The Panchayati Raj Institutions (PRIs) are in charge of the planning, implementation, and monitoring of the projects.
- Empowerment of Gram Sabha:** Gram Sabhas must recommend the projects to be performed, and at least half of the projects must be carried out by them.



Challenges with MGNREGA

- Ridiculously low wage rate:** Currently, MGNREGA wage rates of 17 states are less than the corresponding state minimum wages.
- Insufficient budget allocation:** MGNREGA's success at the ground level is subject to proper and uninterrupted fund flow to the states.
- Regular payment delays:** The Union Ministry of Rural Development considers wages paid once the FTO (Fund Transfer Order) is signed by the second signatory. However, delays take place even in the processing of signed FTOs, for which the Management Information System (MIS) does not calculate compensation.
- Workers penalised for administrative lapses:** The ministry withholds wage payments for workers of states that do not meet administrative requirements within the stipulated time period.
- The banking puzzle:** The rural banks are highly de-capacitated in terms of staff and infrastructure and thus always remain hugely crowded.
- Faulty MIS data:** There is a growing pile of evidence on how real-time MIS has made MGNREGA less transparent for workers, reduced accountability of frontline functionaries and aided in centralisation of the programme.
- Non-payment of unemployment allowance:** There are a huge number of unemployment allowances being shown in the MIS currently.
- Genuine job cards being deleted to meet 100% DBT targets:** Genuine job cards are being randomly deleted, as there is a huge administrative pressure to meet 100 per cent Direct Benefit Transfer (DBT) implementation targets in MGNREGA.
- Too much centralisation weakening local governance:** A real-time MIS-based implementation and a centralised payment system has further left the representatives of the Panchayats Raj Institutions with literally no role in implementation, monitoring and grievance redress of MGNREGA schemes.



- **Administration not honouring local priorities:** However, with the administration almost dictating its implementation, it is literally a burden now for the people and especially for the local elected representatives.

Success of MGNREGA

- **Reduced the distress in agriculture & economy** due low agricultural productivity & small land-holding size thus provided them better livelihood opportunities.
- **Most of MGNREGA work is directed towards** building irrigation canals, tanks etc. thus provides resources base for further rural development.
- It has **reduced rural distress & intensive urban migration**.
- The provisions like **work up to 5 km from home, equal wages promotes women** empowerment, gender parity & directed towards backward section of society.
- In the 15 years of its implementation, the Act has generated more than 31 billion person days of employment and the government has spent over Rs 6.4 lakh crore on this demand-driven programme, with more than half the jobs going to women workers and almost a 3rd to members of scheduled castes and scheduled tribes.
- It has **resulted into social upliftment for all sections including SC/ST**. The percentage of Scheduled Caste workers benefited under the scheme has consistently been about 20% and of Scheduled Tribe workers has been about 17%.
- The **legislation has reduced distress migration in traditionally migration-intensive areas**.

Government Reforms

- **Geo Tagging of assets:** Geo MGNREGA is a path breaking initiative that uses space technology for geo-tagging all assets created under MGNREGA for improved planning, effective monitoring, enhanced visibility and greater transparency.
- **Direct benefit transfer:** To further streamline the fund flow mechanism and bring down delay in payment of wages, the Ministry of Rural Development has implemented National Electronic Fund Management System (NeFMS) in 21 States and 1 Union Territory.
- **Simplification of MGNREGA:** Initiative has been taken to **simplify MGNREGA through issuance of Annual Master Circular (AMC) for FY 2016-17** by superseding 1039 circulars/advisories issued earlier.
- **Reduction in Number of Registers:** Reduction in number of Registers **being maintained at Gram Panchayat level to seven simplified Registers from an average of 22 Registers** has been implemented.
- **Provision of Independent Social Audit:** The program is progressing towards a **more independent and empowered system of Social Audit and Internal Audit to ensure growth with accountability** through a trained community cadre of social auditors drawn from women SHGs.
- **Upskilling of Labor:** The Ministry has taken up skill development of the MGNREGA workers through **initiatives like Bare Foot Technicians and Project LIFE (Livelihood in Full Employment) in order to move them up the skilling ladder**.

OBC QUOTA IN MEDICAL

GS-II SOCIAL JUSTICE

Context

- The Supreme Court maintained the **constitutional legality of an OBC quota in the National Eligibility cum Entrance Test's (NEET) All India Quota seats for undergraduate and postgraduate medical and dentistry courses**.

About the Quota

- The ruling was issued in response to a petition contesting the central government's introduction of OBC and EWS reservations in state government medical schools through the All India Quota (AIQ) system.
- Article 15 (4) and (5) of the **Constitution give the government the power to make reservations, but they are not an "exception" to Article 15 (1), which states that "the State shall not discriminate against any citizen solely on the basis of religion, race, caste, sex, place of birth, or any of them."**
- The court concluded that the government's power to create OBC reservations bolstered the concept of "substantive equality" enshrined in Article 15 of the Constitution.

Arguments in favour of it

- **Reservation ensure that opportunities are distributed:** in such a way that the lower classes can equally **benefit from the opportunities that structural barriers usually deny them**.
- **To negate cultural capital:** Cultural capital ensures that **affluents children raised by the family environment receives higher education unknowingly that corresponds to the status of the family**. This is detrimental to disadvantaged people **who are first generation learners and come from communities where they practice traditional professions**.
- **Helped many, if not all:** Affirmative action has helped many of the underprivileged and underserved communities in India.
- **Social Justice:** They are **necessary to bring social justice to the most marginalised and disadvantaged**.

- **Counters the negatives of open competition:** Testing through Open competition only **guarantees formal equality and does not end widespread & deep-seated inequality.**

Arguments against reservation

- **Against Performance:** Reservation promotes mediocrity as one qualifies at lower marks because of his or her birth status.
- **Violates equality principle:** Quota allocation is a **form of discrimination that violates the right to equality.**
- **No review:** Reservation policy has never been subjected to a widespread societal or political review.
- **Caste based reservation is wrong:** Poor people from the "forward castes" have no social or economic advantages over those from the "backward castes."
- **Fear of perpetuity:** Due to political difficulties, there is a fear that **once reservation is implemented, it will never be removed, even if there is proof of upliftment** of backward classes.

Way Forward

- **Review:** Reservation system needs to be reviewed on periodic basis and caste which has advanced should be taken out of it.
- **Not on Populist basis:** Reservation shall never be extended on the populist basis and should be after thorough analysis.
- **Sticking to limit:** Reservation shouldn't cross the 50% limit set by the Supreme Court in the Indra Shewney judgment.

PREVENTION OF SEXUAL HARASSMENT ACT

GS-II SOCIAL JUSTICE

Context

- A petition has been filed in the Supreme Court challenging guidelines issued by the Bombay High Court in cases under the Protection of Women from Sexual Harassment (POSH) Act.

Guidelines

- **No mention:** Neither the name of the party nor the personally identifiable information should be mentioned anywhere in the court order.
- **Not Uploaded:** Key resolutions and decisions are not uploaded. All orders and judgments will be delivered in private, i.e. in chamber or in camera.
- **Sealed:** Entire record to be kept sealed and not be given to any person without court order. Fresh filings to be sealed also.
- **In Camera hearings:** All hearings to be held in chamber or in camera.
- **Not published:** The order will not be published unless there is a special court order. At best, only an anonymous version of the order will be released.
- **Prohibitions:** Both parties and lawyers are prohibited from disclosing the content of the order or judgment to the media. Witnesses must sign a nondisclosure agreement.

Criticism of guidelines

- **No public discourse:** In matters of social justice and women empowerment, public discourse plays a crucial role in shaping the nature of legal entitlements that are delivered to women.
- **Deter the victims:** HC order may have a "ripple effect" and deter survivors from approaching courts as well as setting a dangerous precedent for trial cases.
- **Provide protection to offenders:** It will legitimise undue protection to sexual offenders in gross violation of principles of open court, natural justice and fundamental rights of survivors.
- **Violates open court:** It violates the principles of open court as enshrined in the Swapnil Tripathi judgment.

Sexual harassment at work place Act

- It seeks to protect women from sexual harassment at their place of work.
- The Act defines **sexual harassment at the work place and creates a mechanism for redressal of complaints. It also provides safeguards against false or malicious charges.**
- The Act also **covers concepts of 'quid pro quo harassment' and 'hostile work environment' as forms of sexual harassment** if it occurs in connection with an act or behaviour of sexual harassment.
- The definition of "aggrieved woman", **who will get protection under the Act is extremely wide to cover all women, irrespective of her age or employment status, whether in the organised or unorganised sectors, public or private and covers clients, customers and domestic workers as well.**
- An employer **has been defined as any person who is responsible for management, supervision, and control of the workplace and includes persons** who formulate and administer policies of such an organisation under Section 2(g).
- Every employer is **required to constitute an Internal Complaints Committee at each office or branch with 10 or more employees.**

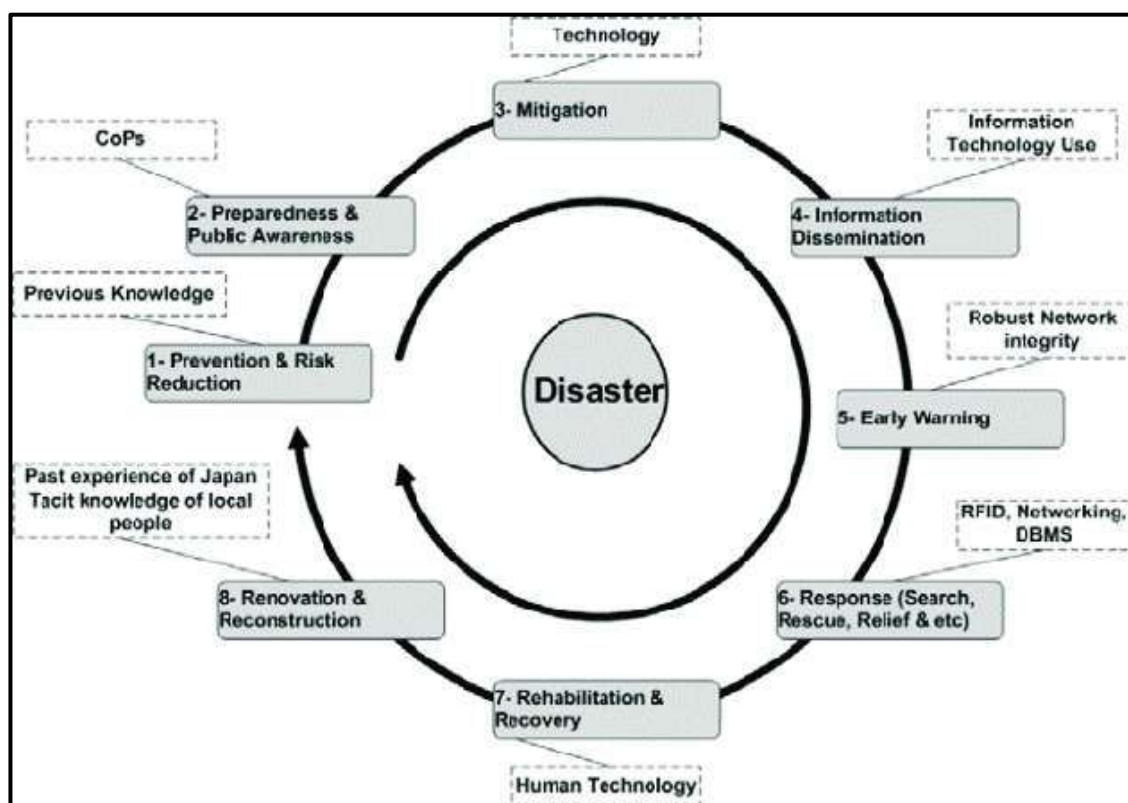
- The Committee is required to complete the inquiry within a time period of 90 days. On completion of the inquiry, the report will be sent to the employer or the District Officer, as the case may be, they are mandated to take action on the report within 60 days.
- The District Officer is required to constitute a Local Complaints Committee at each district, and if required at the block level.
- The Complaints Committees have the powers of civil courts for gathering evidence.
- The Complaints Committees are required to provide for conciliation before initiating an inquiry, if requested by the complainant.

Way Forward

- **Well-informed citizens** govern better. The right to freedom of expression can only be restricted if it interferes with the operation of the judiciary.
- **Accidental disclosure of the identity** of victim must be countered by taking strong action against the offenders.

URBAN CITIES AND DISASTER MANAGEMENT

GS-II SOCIAL JUSTICE



Context

- Recently Chennai witnessed heavy cycle of unexpected rains leading to high urban floods.

Urban City and disaster management

- **Disaster Vulnerability in India:** According to the National Disaster Management Agency, about 12% of India's total land area is prone to flood, 68% is prone to droughts, landslides and avalanches, and 58.6% of land is earth quake prone.
- Tsunamis and cyclones are common phenomena on 5,700 km of the 7,516 km coastline making India one of the most vulnerable country.

NITI Aayog's Cities Report

- Reforms in Urban Planning capacity in India by Niti Ayog has highlighted that there is an urgent need for cities to become healthy cities by 2030 as learning from management of Covid 19 has shown.
- The report recommends 500 cities to participate in competitive framework and assess the needs and aspirations of citizens by undertaking surveys, participatory planning.

Consequences

- **Uprooting of trees:** Disaster leads to uprooting of trees found in urban areas thus negating any environmental development done so far.

- **Collapse of Infrastructure:** Cyclones lead to breaking of roads, collapsing of houses and buildings thus eradicating the essential infrastructure.
- **Economic loss:** According to the World Bank, annual disaster losses are close to **US \$ 520 billion** and it puts around 24 million people in poverty each year.

Causes

- **Cities agglomerate people and economic output in small geographies:** India's 100 most populated cities account for approximately 16 per cent of its population, produce 43 per cent of its total output and occupy 0.26 per cent of the land.
- **Increase in physical assets in Urban area:** Increased assets may increase households' exposure to hazards such as earthquakes and floods
- **High no of Poor:** The absolute number of urban poor is increasing and the extent of informality in urban employment is as high as 70 per cent which weakens the resilience to a disaster.
- **Difficulty in informed decision making:** Lack of data, limited access to technology and lack of technical and institutional capacities makes directing informed action difficult.
- **Lower devolution of power:** Municipal government lacks the power and financial resources to effectively undertake disaster resilient urban planning.
- **Poor infrastructure:** Urban cities are marred with poor drainage and sewerage system which makes it prone to disasters.
- **Loose implementation:** Implementation of regulatory mechanisms such as environmental impact assessment (EIA) which has provisions such as rainwater harvesting and sustainable urban drainage systems has been weak.

Way forward

- **Municipal Role:** Municipalities need to be strengthened and empowered to make them undertake holistic planning and bring every stakeholder together.
- **Holistic commitment:** Targeted investment in energy and other resources need to be made to mitigate the large-scale urban floods.
- **Coordination between different Bodies:** The Metropolitan Development Authority, NDMA, State Revenue and Irrigation Department need to coordinate with local government agencies.
- **Better Urban Planning:** Urban planning needs to be holistic to provide a sustainable cities which has provisions for poor like affordable housing.
- **Environmentally friendly:** Environmentally friendly materials can also reduce the increase in carbon emissions during the construction of infrastructure.
- **Drainage planning:** Drainage plans of the cities should be developed along the lines of watershed.
- **Focus on Documentation and standard operating procedures:** Standard operating procedure to mitigate any climate crisis need to be developed and every stakeholder must be sensitized towards the same.

Conclusion

- Indian cities are the driving force of economic growth with mass production and consumption, but this sunrise story is threatened by unsustainable urban development in an era of climate change. There is a need to develop a robust and functional metropolis that can handle floods, heat waves, pollution and mass migration to sustain the economic impetus. Otherwise, Urban India will be a subprime investment.

PRADHAN MANTRI JAN AROGYA YOJANA

GS-II SOCIAL JUSTICE

Context

- The Pradhan Mantri Jan Arogya Yojana (PMJAY) provided a cushion to only 14.25 per cent of people hospitalized for the COVID19, between April 2020 and June 2021.

About

- The scheme was **launched in September 2018 and recommended by the National Health Policy 2017**, to achieve the vision of Universal Health Coverage (UHC).
- It is a **Centrally Sponsored Scheme having a central sector** component under Ayushman Bharat Mission
- PMJAY was earlier known as the National Health Protection Scheme (NHPS) before being rechristened.
- It **subsumed the then existing Rashtriya Swasthya Bima Yojana (RSBY)** which had been launched in 2008.

Key Features

- It is the world's **largest health insurance/ assurance scheme fully financed by the government and the cost of implementation** is shared between the Central and State Governments.

- It provides **compensation of Rs. 5 Lakh per family per year for secondary** and tertiary hospitalizations in public and private hospitals in India.
- There will be **costs for diagnosis and medication from 3 days** before admission to 15 days after admission.
- There are **no restrictions on the number of family members**, age or gender.
- All existing conditions will be covered from day one.

Eligibility

- Households included are **based on the deprivation and occupational standards of the Rural and Urban Socio-Economic Caste Census 2011 (SECC 2011)**.
- Therefore, the coverage mentioned in PMJAY **also includes families that are covered by RSBY but not included in the SECC2011 database**.
- Cover under PMJAY Insurance coverage **includes all costs incurred for the** following elements of treatment:
- Health check, treatment, advice Before hospitalization, Medicines, Non-intensive and intensive care services Diagnosis and laboratory tests, Medical implant service (if needed) are covered under this scheme.
- After Complications during treatment Follow-up care after hospitalization for up to 15 days is covered.

Goals

- It focusses on providing healthcare facility to all by soliciting participation of public and private healthcare.
- It aims to improve the healthcare infrastructure including pediatric care and bring result orientation approach in the health sector.

Success

- It has provided cashless access to medical services for the beneficiaries.
- It has reduced **the dire medical costs** that drive nearly 6 billion Indians into poverty each year.
- Success Over the last three years, the AB PMJAY program has **reached several milestones in achieving its universal health goals**.
- The program has **expanded its reach to 33 states / regions in the Union, making** the lives of beneficiaries easier while receiving treatment.
- Under the program, **more than one crore treatment** has been availed by the beneficiaries.
- It has been **shown to be a blessing to women**. More than half of the total number of beneficiaries who receive benefits under this system are female.

Issues

- PMJAY paid only **520,000 COVID 19 hospital stays** nationwide. This **percentage is negligible**, considering that the scheme is said to cover 165 million beneficiaries nationwide.
- State insurance **did not cover all eligible groups and beneficiaries**, insured also had to fight pandemics themselves and raise large sums of money for treatment.
- Under PMJAY, **beneficiaries can only access the list of affiliated private hospitals**. This remains a big problem, especially in small towns and villages with few hospitals.
- PMJAY has excluded certain communities. For example, thousands of sex workers in Budhwar Peth Zone has been excluded.

Way Ahead

- The government is **revising the beneficiary identification system to make it easier and faster for program** beneficiaries to register.
- The government is **streamlining packaging, tariffs, and treatment protocols to meet the needs of the medical** community. It makes the package more viable for private hospitals and makes it more attractive for new healthcare providers to join the PMJAY ecosystem.
- Governments are also **making IT platforms more robust, streamlining and automating billing decision** logs, and speeding bill settlement.
- PMJAY aims to **build a health highway in line with the National Digital Health Mission** (also a flagship program run by NHA) to provide global health continuity to countless families across the country.

SEPARATE REGULATOR FOR HEALTH SEGMENT

GS-II SOCIAL JUSTICE

Context

- Insurance Regulatory and Development Authority of India (IRDAI) has proposed that either there must be a separate regulator for the healthcare segment or IRDAI must be allowed to regulate hospitals.

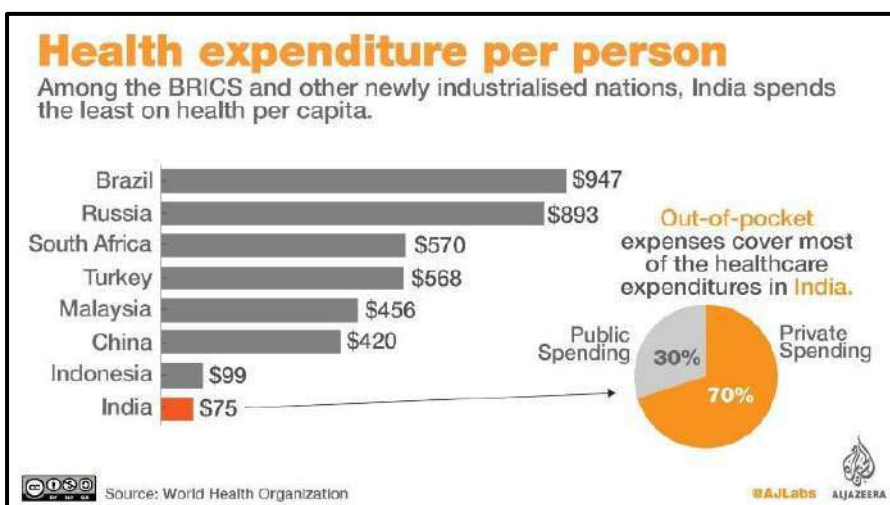
- The inflation rate for **hospitalization is currently around 10- 15%**, and it was found that the rates are changing regularly.

Important point about (problems related to the hospital's current fee structure)

- Different tariffs:** Hospitals change rates on a regular basis. There is **no agency that regulates pricing and classification**. When Covid struck the country last year, patients were overcharged by several hospitals.
- Health insurance premium:** If the insurance company **keeps paying at the hospital's request, the health insurance business will not be successful in the long run**. The industry has already recorded a large number of bills.
- IRDAI does not allow insurance companies to **raise premium each year; though there is a 10-15 per cent inflation** of hospital charges at present.
- Duplication of the process:** Health care schemes and private insurance **have individual hospital empanelment process, which replicates various activities and contributes to inefficiency** and duplication of processes.
- No infrastructure to regulate hospitals:** IRDAI currently does not have the infrastructure to regulate hospitals.
- As healthcare is a state subject, it's difficult for IrdaI to regulate the hospitals.

Suggestions of the Panel

- Even with rising penetration, general and medical inflation must be taken into account, and **medical inflation far exceeds CPI (Consumer Price Index) inflation, so a correction cycle is needed** from a price perspective.
- The joint working group of the IRDAI and the National Health Authority (NHA) **had proposed a unique common hospital registry, empanelment process, grading of hospitals and package cost harmonisation to promote the standardisation and effective utilisation of health care infrastructure under the insurance programme**.
- It is recommended to have common empanelment portal which can be utilised by all the schemes/insurance companies with standardised empanelment criteria.



Need to regulate Health Sector

- Healthcare has become **one of India's largest sectors in terms of sales and employment**.
- Population growth, income growth, infrastructure growth, heightened awareness, insurance policy, and the rise of India **as a hub for medical tourism and clinical trials are contributing to the development of India's medical sector**.
- As the demand in this area **grows, it becomes important to provide modern medical facilities**.
- Government-funded **health insurance allows the poor in India to receive** timely care without the burden of paying for themselves.
- Low government spending:** The low government health costs limit the capacity and quality of public sector health services.
- A considerable population is overlooked:** At least 30% or 40 million people do not have financial protection for their health.

Importance of health insurance

- Health insurance controls the Out of the Pocket expenditure (OOPE) by providing financial protection during health emergencies.
- Higher young population ensures that health insurance is available at nominal cost thus providing affordable care for all.
- It allows people to seek specialized tertiary care at limited expenses thus preventing them into falling in the poverty trap.

INDIA- MYANMAR RELATION

GS-II INTERNATIONAL RELATIONS

Context

- Almost a year since the coup in Myanmar, New Delhi is concerned that the instability could impact security in the North-East.

Recent developments

- With many governments favouring engagement with the Taliban in Kabul, same yardstick should be applied to the military regime in Myanmar.
- Myanmar was part of the first few countries alongside Bangladesh, Bhutan and Nepal that received Covishield vaccine of the Serum Institute of India (SII) in January as part of the Vaccine Maitri initiative.

India-Myanmar's Relations

"Myanmar is India's gateway to Southeast Asia, India is Myanmar's gateway to South Asia."

Why Myanmar Should Matter to India

- Myanmar is **only country** that sits at the intersection of India's "Neighborhood First" policy and "Act East" policy.
- Myanmar is an **essential element** in India's practice of regional diplomacy in the Indo-Pacific, and serves as a **land bridge** to connect South Asia and Southeast Asia.
- Myanmar is an important member of the **Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)**, a multilateral subregional organization that is committed to fostering bilateral or regional cooperation among Bay of Bengal countries.
- To elevate its **"Made in India" arms industry**, India has identified Myanmar as key to increasing its military exports.
- Myanmar is **geopolitically significant** to India as it stands at the center of the India-Southeast Asia geography.
- Myanmar is the only Southeast Asian country that shares a **land border** with northeastern India, stretching some 1,624 kilometers. The neighbors also share a 725-km **maritime boundary** in the Bay of Bengal.

Measures taken to improve ties

- It was one of only two Southeast Asian countries invited to attend the swearing-in of Indian Prime Minister Narendra Modi after he won re-election in May 2019.
- Facilitating connectivity** is central to improving India-Myanmar economic relations. India regards Myanmar as a gateway to link up to the rest of Southeast Asia, and invested in **ASEAN-wide infrastructural projects** that are able to boost trade in the ASEAN-India Free Trade Area.
- Infrastructure projects:**
- The **India-Myanmar-Thailand Trilateral Highway and Kaladan Multi-Modal Transit Transport (KMMTT)**, to connect the eastern Indian seaport of Kolkata with the Sittwe deep-water port in Myanmar's Rakhine state by sea.
- Sittwe port:**
 - As part of its policy for the Indian Ocean called **Security and Growth for All in the Region (SAGAR)**, central to which is "port-led development," India developed the **Sittwe port** in Myanmar's Rakhine state.
 - This port, which sits on the Bay of Bengal, serves as a critical node of the KMMTT initiative to connect **southwestern Myanmar to northeastern India by creating a multi-modal trinary of sea, river and road transport corridor to boost interconnectivity.**
 - India's long-term strategic goal is to create a **Special Economic Zone surrounding the Sittwe port.**
 - The Sittwe port is meant to be **India's answer to the Chinese-fronted Kyaukpyu port**, which is intended to cement China's geostrategic footprint in Rakhine.
- India has been **providing humanitarian relief** even while deporting Rohingya refugees from India for security reasons, provoking the UN's ire.



Challenges in India-Myanmar relations

- China Factor:** Beijing's bidding into Myanmar regional affairs. Myanmar is inevitably a "kingmaker" in Sino-Indian relations.

- **Trade deficit:** With a total bilateral trade of \$2 billion, India's economic engagement with Myanmar lags behind China. Myanmar is vital to fulfilling India's ambition to become a \$5 trillion economy by 2024. India's **withdrawal from Regional Comprehensive Economic Partnership** can further increase this trade gap.

Strengths of India-Myanmar relations

- It is **the only Southeast Asian country** that has a **separate bureaucratic division** (shared with Bangladesh) in India's External Affairs Ministry, testifying to the continued importance of Myanmar to India's current foreign policy.
- **Operation Sunshine 1 and 2:** The Indian and Myanmar armies have carried out two joint military operations, Operation Sunshine 1 and 2, to fight militants along the borders of Myanmar's Rakhine state, which borders the northeastern Indian states of Arunachal Pradesh, Nagaland, Manipur, and Mizoram.
- **IMBAX-2017 and IMBEX 2018-19:** Seeing that Myanmar is critical to its national security interests, India provides military training and conducts joint military exercises with the Myanmar Army like the India-Myanmar Bilateral Military Exercise (IMBAX-2017 and IMBEX 2018-19), by which India had trained the Myanmar Army to be able to participate in UN Peacekeeping Operations.
- **Defense Cooperation Agreement:** To deepen their defense relations, India and Myanmar signed a landmark defense cooperation agreement in July 2019.
- **IMNEX-18:** Realizing the growing importance of the Bay of Bengal, the navies of both India and Myanmar conducted a historic bilateral naval exercise, IMNEX-18, in 2018. India also invited the Myanmar Army to participate in the India-led multilateral **Milan naval exercise** that occurs biennially in the Andaman and Nicobar Islands.
- **Military purchases:** Myanmar bought India's first locally-produced anti-submarine torpedo, called TAL Shyena, a diesel-electric Kilo-class submarine, INS Sindhuvir.
- **Cultural diplomacy: "Buddhist Circuit" initiative,** which seeks to double foreign tourist arrivals and revenue by connecting ancient Buddhist heritage sites across different states in India, should resonate with Buddhist-majority Myanmar.

Way forward

- **Security Cooperation:** For **economic relations to improve**, India and Myanmar must boost their security cooperation at the border. The more secure the border is, the greater the economic activity will be.
 - **For example:** Part of the reason why the KMMTT has faced delays is that the route of the project traverses a warzone in Rakhine state, where a battle rages on between the Myanmar Army and the Arakan Army rebels on the one hand, and on the other, the Arakan Rohingya Salvation Army. Insurgents from India's Nagaland have also disrupted the completion of the KMMTT project.
- **Handling Rohingya issue with care:** Myanmar's geostrategic importance to India has meant that Delhi did not take a hardline approach on Naypyidaw vis-à-vis the Rohingya issue, even keeping its distance when Myanmar was hauled into the International Court of Justice over accusations of Rohingya genocide. India, which has a Hindu majority, will need **to perform a balancing act between Muslim-majority Bangladesh and Buddhist-majority Myanmar as far as the Rohingya issue is concerned**. The quicker the Rohingya issue is resolved, the easier it will be for India to manage its relations with Myanmar and Bangladesh, focusing instead more on bilateral and subregional economic cooperation.
- **India's Buddhist diplomacy** would bolster its tourist industry and could build up India's diplomatic reservoir of goodwill and trust with Buddhist-majority countries such as Myanmar.

Conclusion

- Potential in India-Myanmar relations has to be prioritized by both countries, and bilateral commitments translated should bear some practical outcomes. However, the responsibility remains on India as to how far and deep it is prepared to nurture its relations with Myanmar, knowing full well that Naypyidaw will matter much to Delhi in the next decade, not least if India wants to augment its **standing as a regional power in the Indo-Pacific**.
- India-Myanmar ties are on the **cusp of a remarkable transformation**. The moment is opportune and the atmosphere is conducive for the governments of India and Myanmar to **intensify efforts toward making India-Myanmar relations profoundly significant in each other's foreign policy**.

INDIA-MAURITIUS RELATIONS

GS-II INTERNATIONAL RELATIONS

Context

- Prime Minister Narendra Modi and Prime Minister of Mauritius jointly inaugurated the **Social Housing Units Project in Mauritius**.
- It has been implemented as part of the vibrant development partnership i.e. **Special Economic Package (SEP)** between India and Mauritius.

Recent Developments

- India and Mauritius signed a **\$100 million Defense Line of Credit agreement**, which is a part of the Comprehensive Economic Cooperation and Partnership Agreement (CECPA).
- These projects are transparent and demand-driven, with **full ownership for the Maldives government**.
- India was the first to send a **medical consignment to Mauritius to deal with the COVID pandemic and this included Hydrochloroquine (HCQ) tablet and other essential medicines**.

Introduction of India and Mauritius relations

- India and Mauritius share close ties anchored in **common history, ancestry, culture and language**.
- Mauritius is a key development partner for India in the Indian Ocean Region.
- India has been engaging with the country based in the Indian Ocean Region and it is focused on people-oriented projects.

Diplomatic relations

- Diplomatic relations between India and Mauritius were established in 1948.
- Mauritius maintained contacts with India through successive Dutch, French and British occupation.

Political Relations

- Following Mauritius' independence on March 12, 1968, the first Prime Minister accorded **centrality to India in Mauritius' foreign policy**.
- High level visits have been one of the significant aspects of bilateral relations.
- Prime Minister Navinchandra Ramgoolam was the **only non-SAARC leader to be invited to witness the swearing in ceremony of the new Government** in New Delhi in May 2014.
- India and Mauritius have signed a **wide range of bilateral agreements and MoUs**. Some of them are the Double Taxation Avoidance Convention (DTAC-1982), Bilateral Investment Promotion and Protection Agreement (BIPA-1998), MoU on Cooperation in Ocean Economy (2015), and MoU in the field of Traditional Systems of Medicine (2015) etc.
- Some high-visibility Indian-assisted projects in Mauritius include the Mahatma Gandhi Institute, Cyber Tower at Ebene and the Swami Vivekananda International Conference Centre (SVICC).

Commercial Relations

- CECPA**: The free trade agreement between India and Mauritius seeks to mutually benefit both the countries as negotiations includes **goods, services, rules of origin, technical barriers to trade and sanitary and phyto-sanitary measures, trade remedies and dispute settlement**.
- FDI**: Mauritius was the **second top source of foreign direct investment (FDI) into India** in 2018-19. India received USD 8 billion (about Rs 56,000 crores) foreign inflows from the country.
- Trade**: The **bilateral trade** between the countries increased marginally to USD 1.2 billion in 2018-19 from USD 1.1 billion in 2017-18.
- Besides petroleum products, main items of India's exports to Mauritius are pharmaceuticals, cereals, cotton, electrical machinery, apparel and clothing accessories.
- Main items of Mauritius' exports to India are iron and steel, pearls, precious/semi-precious stones and optical, photographic and precision instruments.

Military relation

- India also provides **extensive capacity building and training inputs** to the Mauritian armed forces, besides carrying out regular joint 4 patrolling/surveillance exercises and in the Mauritian EEZ.
- Over the past forty years, India has **extended several Lines of Credit to Mauritius** to assist in the development of its infrastructure, human resource, skills development, capacity building, project appraisal, etc.

Cultural Relations

- The **Indira Gandhi Centre for Indian Culture (IGCIC)** at Phoenix is one of the largest centres of ICCR, which from March 2000, has emerged as an important venue for promotion of Indian cultural activities in Mauritius.
- Indian Technical and Economic Cooperation (ITEC)** has been India's flagship capacity building programme since its inception in 1964 and has acquired a strong brand name in India's development partnership with Mauritius.
- The **Pan African e-Network Project** was inaugurated on February 26, 2009 in Mauritius, which connected it other African countries and India through a satellite and fiber-optic network.
- Around **100 ICCR scholarships are extended annually to Mauritian students** for higher education in India.

Indian Community

- Mauritius organises a **Bhojpuri Mahotsav**.
- As around **68 per cent of Mauritius's total population of over 1.2 million are people of Indian origin**. Most of them are descendants of indentured labour taken from India between 1834 and the early decades of the 20th century.
- There are around 750 OCI Card holders and about 3500 PIO Card holders.
- To increase tourism inflow from India, Mauritian Government had introduced a visa-free regime for Indian tourists.

Conclusion

- India and Mauritius long-standing and time-tested strategic relationship are based on **deep emotional bonds of kinship and culture and new emerging area of cooperation like Blue Economy and collaboration in Africa.**
- Finalisation of the CECPA would pave the way for giving a strong impetus to the close bilateral economic partnership.

INDIA-CENTRAL ASIA SUMMIT

GS-II INTERNATIONAL RELATIONS

Context

- Prime Minister Modi hosted the **first India-Central Asia Summit** in virtual format. It coincided with the 30th anniversary of establishment of diplomatic relations between India and Central Asian countries.

Participant nations

- Summit was attended by Presidents of the Republic of **Kazakhstan, Kyrgyz Republic, Republic of Tajikistan, Turkmenistan and Republic of Uzbekistan.**

Key outcomes of Summit

- "Delhi Declaration" joint statement:** To develop mutual connectivity for enhanced trade and commerce between India and Central Asian countries.
- Proposed a number of **high-level exchanges**, including bi-annual summits, and annual meetings of the Foreign, Trade and Cultural Ministers and Secretaries of Security to "strengthen cooperation in the areas of political and development, partnership, trade and connectivity, culture and tourism and security".
- Adopted a plan to build a **"Central Asia Centre"** in New Delhi.
- Announced two **"Joint Working Groups" (JWGs)** on **Afghanistan and the Chabahar port project.**
- Stressed on **resuming TAPI gas pipeline project** that has run into issues over India-Pakistan tensions and the situation in Afghanistan.

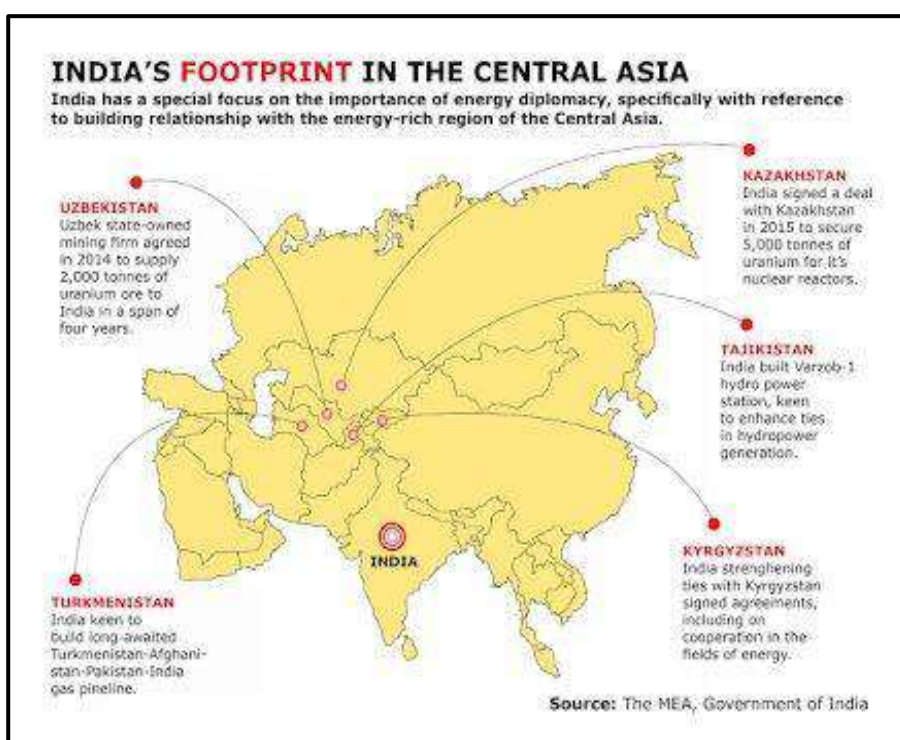
India-Central Asia Relations

Introduction

- Ties between India and Central Asia are based on a foundation of "deep historical, cultural and civilisational links."
- India and Central Asia has close trade and cultural linkages since the Indus valley civilization.

Why Central Asia should matters to India?

- Geo-political importance:** Central Asia serves as a **land bridge between Asia and Europe**, and is rich in **natural resources**. Its geopolitically axial offers whole range of opportunities.
- Geo-economic importance:** This region is rich in natural resources like crude oil, natural gas, gold, copper, aluminum, and iron. It can help India in securing energy security.
- Geo-strategic importance:** This region is located close to the conflict prone area of West Asia and Afghanistan. Although Central Asia doesn't share borders with India but there are very high chances of spreading out of security threats i.e. terrorism, narcotics trafficking and arms smuggling from this region.



What are the areas of cooperation between India and central Asia?

- Energy security:** India launched the **civil nuclear cooperation with Kazakhstan** to ensure supply of nuclear fuel to Indian nuclear plants. The **TAPI project** is connecting energy rich Central Asia with energy starved South Asia.
- Economic Trade:** India's trade with the five Central Asian Republics – Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan and Tajikistan – was around \$ 2 billion in 2018.

- **Peace and security:** India and Central Asian countries have a shared interest in the stability of Afghanistan and counter-terror initiatives.
- **International cooperation:** India's full membership into the Shanghai Cooperation Agreement (SCO) opens up an opportunity for a closer engagement with region but New Delhi still lacks a political-strategic clarity.
- **Development cooperation:** India provides Lines of Credit to finance development and manufacturing projects in Central Asia.
- **Diaspora:** The "people-to-people" contact has been a defining feature of India's Connect Central Asia Policy. Indian cultural diversity has been extremely popular in the region.

Measures taken by India to boost relations:

- **Strategic Partnership Agreements (SPA):** India provided financial aid to the region and established diplomatic relations. New Delhi signed the Strategic Partnership Agreements (SPA) with Kazakhstan, Tajikistan and Uzbekistan to stimulate defence cooperation and deepen trade relations.
- **Connect Central Asia' policy:** It was adopted in 2012 to boost political cooperation, economic cooperation, strategic cooperation, regional connectivity, information technology (IT), cooperation in education, people-to-people contact, medical cooperation, and cooperation in regional groupings.
- **International North-South (Transit) Corridor (INSTC):** INSTC is a multi-mode network of ship, rail, and road route for moving freight between India, Iran, Afghanistan, Armenia, Azerbaijan, Russia, Central Asia and Europe. It was adopted for cutting the costs and time in moving cargo between Russia and India.
- **Chabahar port:** India and Iran are developing the Chabahar port to serve as an alternate route to Central Asia.
- **Ashgabat agreement:** India joined the Ashgabat agreement for developing the shortest trade route between the Central Asian republics and Iranian and Omani ports.
- **TAPI (Turkmenistan-Afghanistan-Pakistan-India) project** adopted to connect an energy-rich Central to South Asia.

Major challenges in India-Central Asia relation

- **Geographically inaccessible:** India has traditionally attached great importance to its relations with Central Asia. But, unfortunately, the relationship faces constraints due to lack of direct access to Central Asia.
- **Lack of policy:** There is no specific Indian diaspora policy in Central Asia, as the number of Indians in Central Asian Republics (CARs) is quite less.
- **Unstable situation in Afghanistan** and a problematic India-Pakistan relation.
- **China presence:** China has made considerable inroads into the region through its Belt and Road Initiative and its boosting trade with Central Asian states. Growing axis of Russia-China-Pakistan would limit India's presence in Central Asia.
- **US sanctions on Iran:** India has been taking renewed interest in enhancing its strategic presence in Central Asia, but U.S. sanction on Iran makes it difficult for India to capitalise various opportunities and potentials.

Way forward

- India needs to use the economic leverages more efficiently to build closer ties with Central Asia.
- In the backdrop of joining the Ashgabat Agreement, India now must enlarge the strategic role of Chabahar port for evolving an integrated transportation network involving both the INSTC and the proposed transit corridor to Central Asia.
- Importance of Central Asia for India is not merely civilisational and historical; it goes much beyond this.

INDIA-ISRAEL RELATIONS

GS-II INTERNATIONAL RELATIONS

Context

- India and Israel have launched a commemorative logo to **mark the 30th anniversary of the establishment of diplomatic ties between the two countries.**

About Logo

- It features the **Star of David and the Ashoka Chakra**- the two symbols that adorn the national flags of both countries- and forms the numeral 30 depicting the 30th anniversary of bilateral relations.
- It symbolises the strong friendship, love and admiration that exists between the people of the two nations.

India-Israel relations

Introduction

- Israel and India **established diplomatic relations** on 29th of January 1992.
- The two countries have an extensive economic, military, and strategic relationship.

Political relations

- Political ties between the two countries are friendly.
- Prime Minister Modi undertook an historic first ever visit by an Indian PM to Israel from 4-6 July 2017, during which the

relationship was upgraded to a **strategic level**.

Economic and Commercial Relations

- India is Israel's **third largest trade partner in Asia and seventh largest globally**.
- Major exports** from India to Israel include precious stones and metals, chemical products, textile etc.
- Major imports** by India from Israel include precious stones and metals, chemicals and mineral products, base metals and machinery and transport equipment.
- Potash is a major item of Israel's exports** to India.

Cooperation in agriculture

- Under a comprehensive Work Plan for cooperation in agriculture signed on 10 May 2006, bilateral projects are implemented through Centres of Excellence.
- India has benefited from Israeli expertise and technologies in horticulture mechanization, protected cultivation, orchard and canopy management, nursery management, micro-irrigation and post-harvest management particularly in Haryana and Maharashtra.
- Israeli drip irrigation technologies and products are now widely used in India.

Defence relations

- India is the **largest buyer of Israeli military equipment** and Israel is the second-largest supplier of military equipment to India after Russia.
- Military and strategic ties between the two nations extend to intelligence-sharing on terrorist groups and joint military training.

Indian Community

- There are approximately 85,000 Jews of Indian-origin in Israel (with at least one Indian parent), who are all Israeli passport holders.

What can be done to further boost the ties?

- Free Trade Agreement:** Both countries should push to negotiate the FTA, as attempt have been made over the past 14 years.
- Military cooperation:** Both nations should look forward for transfer of defence technology alongwith defence equipment trade.
- Cooperation on Global issues:** Israel supports India's defence against terror and supported India's nuclear tests in 1998.

Conclusion

- India and Israel are natural partners. Relations between both nations are steadily growing and have many synergies and complementarities.



INDIA-NEPAL RELATIONS

GS-II INTERNATIONAL RELATIONS

Context

- The Cabinet has cleared a plan to build a new bridge connecting India and Nepal. It will be built over the **Mahakali river** and link **Dharchula in Uttarakhand with Nepal's Dharchula**.
- It will be completed within three years and will strengthen the relationship between the two countries.

India-Nepal relations

Background

- As close neighbors, India and Nepal share **unique ties of friendship and cooperation** characterized by an open border and **deep-rooted people-to-people contacts of kinship and culture**.
- There has been a long tradition of free movement of people across the border. Nepal shares a **border of over 1850 km with five Indian states – Sikkim, West Bengal, Bihar, Uttar Pradesh and Uttarakhand**.
- The **India-Nepal Treaty of Peace and Friendship of 1950** forms the bedrock of the special relations that exist between India

and Nepal. Nepalese citizens avail facilities and opportunities on par with Indian citizens in accordance with the provisions of the Treaty.

- Nearly **8 million Nepalese citizens live and work in India.**
- Nepal is a unique country whose **citizens can enrol into the Indian civil services as also the Army, which bestows an honorary General's title to the Nepal Army Chief**, a gesture that is reciprocated in equal terms.
- There are regular exchanges of high-level visits and interactions between India and Nepal.
- India and Nepal have several bilateral institutional dialogue mechanisms, including the India Nepal Joint Commission co-chaired by External Affairs Minister of India and Foreign Minister of Nepal.

Defence cooperation

- India has been assisting the Nepal Army (NA) in its modernisation by supplying equipment and providing training.
- Assistance during disasters, joint military exercises, adventure activities and bilateral visits are other aspects of India's defence cooperation with Nepal.
- A number of defence personnel from Nepal Army attend training courses in various Indian Army training institutions.
- The '**Indo-Nepal Battalion-level Joint Military Exercise SURYA KIRAN**' is conducted alternately in India and in Nepal.
- The **Gorkha regiments** of the Indian Army are raised partly by recruitment from hill districts of Nepal.

Connectivity and development partnership

- Government of India's development assistance to Nepal is a broad-based programme focusing on creation of infrastructure at the grass-roots level, under which various projects have been implemented in the areas of infrastructure, health, water resources, education and rural & community development.
- In recent years, India has been assisting Nepal in development of border infrastructure in the Terai area; development of cross-border rail links at Jogbani-Biratnagar, Jaynagar-Bardibas; and establishment of Integrated Check Posts at Birgunj, Biratnagar, Bhairahawa, and Nepalgunj.
- The **total economic assistance earmarked under 'Aid to Nepal' budget in FY 2019-20 was INR 1200 crore.**
- Apart from grant assistance, **Government of India has extended Lines of Credit of USD 1.65 billion for undertaking development of infrastructure.**
- '**India-Nepal New Partnership in Agriculture**' was launched in 2018.

Water resources cooperation

- A **three-tier bilateral mechanism established in 2008**, to discuss issues relating to cooperation in water resources, flood management, inundation and hydropower between the two countries, has been working well.

Energy cooperation

- India and Nepal have a **Power Exchange Agreement since 1971** for meeting the power requirements in the border areas of the two countries, taking advantage of each other's transmission infrastructure.
- India is currently supplying a total of about 600 MW of power to Nepal.
- An Agreement on '**Electric Power Trade, Cross-border Transmission Interconnection and Grid Connectivity**' between India and Nepal was signed in 2014.
- South Asia's **first cross-border petroleum products pipeline connecting Motihari in India to Amlekhgunj in Nepal** was inaugurated in

Economic

- **India is the largest trading partner of Nepal.**
- Total bilateral trade in 2018-19 reached INR 57,858 cr.
- In 2018-19, while Nepal's exports to India stood at INR 3558 cr, India's exports to Nepal were INR 54,300 cr.
- Indian firms are among the largest investors in Nepal, accounting for more than 30% of the total approved foreign direct investments.

Indian community

- **Around 6,00,000 Indians are living/domiciled in Nepal.**
- These include businessmen and traders who have been living in Nepal for a long time, professionals (doctors, engineers, IT personnel) and labourers (including seasonal/migratory in the construction sector).

Border dispute

- Nepal unveiled a **new political map that claimed strategically important land Kalapani, Limpiyadhura and Lipulekh of Uttarakhand as part of its sovereign territory.**
- The map is in retaliation of Nepal's objection to construction of road by India from Dharchula to Lipulekh in Uttarakhand.
- This road connects close to the Line of Actual Control and opens a new route for Kailash Mansarovar yatra via Lipulekh pass.
- This will help pilgrims to avoid dangerous high-altitude routes through Sikkim and Nepal.
- India termed recent action by Nepal as a 'unilateral act' which is not based on historical facts and evidence and also stated that these areas have always been part of the Indian Territory.

Way forward with respect to India-Nepal relations

- The **Kalapani dispute** must be resolved **expeditiously** and earnestly, to the mutual satisfaction of both sides.
- A **Joint Boundary Demarcation Committee** could be appointed by both the countries to scientifically study the Maps and come to a conclusion diplomatically.
- India must **introduce new economic, developmental and infrastructure initiatives** with Nepal that will not only bring tangible benefits to Nepali citizens but also address the vulnerabilities that will emerge in Nepal as the country engages with China.
- A prudent course for India would be to **let Nepal cope with its internal political mess**. India must encourage consolidation of a people-driven polity, and improve its own popular profile.
- Nepal has asked for a **revision of the 1950 treaty**, and this has been accepted by India. Work should begin in this direction.
- **On trade and investment issues, India needs to be more accommodative.**
- The political crisis is a strong reminder for India to **redefine its historic relationship** tied in religion, culture and assimilation.



CRISIS IN KAZAKHSTAN

GS-II INTERNATIONAL RELATIONS

Context

- A state of emergency has been declared in Kazakhstan and the government has officially stepped down following violent protests against a sharp and sudden increase in fuel prices.

What is current situation?

- To restore order in the main city Internet services were promptly shut off and messaging apps were banned.
- Russia has sent in troops under the Collective Security Treaty Organization, to assist security personnel in their efforts to restore order in the country.
 - **Collective Security Treaty Organization (CSTO)**, is a Moscow lead military alliance, comprising Russia, Armenia, Belarus, Kazakhstan, Kyrgyzstan and Tajikistan.

So, why are Kazakhs protesting?

- **High LPG prices:** Kazakhs were protesting after fuel prices doubled in the oil-rich Central Asian nation when the government lifted price caps for LPG, commonly used in vehicles.
- Protest quickly turned violent across the country and protesters demanded resignation of the government and lowering of LPG prices.
- **Risk of Income inequality:** Protesters are worried that jump in LPG prices could cause a steep increase in food prices and deepen the income inequality that has plagued the nation for decades.
- **Inflation in the country** is close to 9 percent due to covid-19 pandemic.

Unrest in Kazakhstan
The once stable but repressive Kazakhstan has been thrown into chaos with dozens reported dead in violent protests and Russia sending troops to quell the unrest

ALMATY IN CHAOS
JAN. 5: Tokayev sacks his Cabinet in a bid to head off the unprecedented unrest but protesters gather again, blocking roads and storming Almaty's local government headquarters

DOZENS DEAD
JAN. 6: Tokayev says "terrorists" are seizing buildings, infrastructure and small arms, and battling security forces
Police say they killed "dozens" of protesters overnight as they tried to take over government buildings and police stations
13 security officers have been killed and 353 wounded in the unrest, local media report. The Health Ministry says 1,000 people have been wounded

LPG PRICE HIKE
JAN. 2: Protests erupt in the town of Zhanaozen in the oil-rich western Mangystau region over a New Year Increase in prices for LPG
Unrest spreads to the regional hub of Aktau on the ex-Soviet country's Caspian Sea coast

STATE OF EMERGENCY
Later that night, President Kassym-Jomart Tokayev (above) imposes a state of emergency in the city and in the restive west after saying he would cut the price of LPG
Many chant "Old Man Out!", a reference to Tokayev's still-powerful predecessor and mentor Nursultan Nazarbayev

APPEAL TO MOSCOW
Tokayev appeals for help to quell the protests from the Moscow-led Collective Security Treaty Organisation
Russian paratroopers are dispatched

JANUARY 4: Thousands take to the streets of Almaty, the largest city, with police firing tear gas and stun grenades

- **Demands for democracy:** There is discontent among Kazakhs over rising income inequality, which has worsened due to the coronavirus pandemic.
- Its authoritarian government has been widely criticised over the years for violating fundamental freedoms.
- **Anti-Nazarbayev sentiment:** Country's long-time Soviet-era leader Nursultan Nazarbayev was replaced by Tokayev, who is regarded as his hand-picked successor. Nazarbayev and his family, continued to enjoy a fair bit of power in the country.

How did the government respond to the protests?

- After declaring a state of emergency, Tokayev dismissed the country's prime minister and his cabinet.
- He assured that authorities would soon bring down LPG prices to "ensure stability in the country".
- Tokayev ordered government **protection for foreign embassies and businesses owned by foreign companies.**
- The National Bank of Kazakhstan had decided to suspend work of banks for the safety of their workers.

Concerns for neighbors'

- The recent crisis has caused considerable concern in neighbouring **Russia and China**, both of which are key strategic partners of Kazakhstan.

INDIA-U.K ECONOMIC RELATIONS

GS-II INTERNATIONAL RELATIONS

Context

- UK government announced the launch of free trade agreement (FTA) negotiations with India.
- It is seen as a major move by U.K. since its exit from the European Union (EU), in support of free and fair trade in the Indo-Pacific.

Recent developments

- Recently, UK-India signed a trade and investment deal worth 1 billion pounds.

Details of the deal

- It was part of an **Enhanced Trade Partnership (ETP).**
- **ETIP** aim:
 - To double the value of UK-India trade by 2030 and declare a shared intent to begin work towards a comprehensive Free Trade Agreement (FTA).
 - To address several trade barriers, including the lifting of restrictions to enable fruit producers across the UK to export apples, pears and quince to India for the first time.
 - To secure improved access for medical devices through the acceptance of "UK Certificates of Free Sale" in India.

India and UK 2030 vision is for

- Revitalized and dynamic connections between people;
- Re-energised trade, investment and technological collaboration that improves the lives and livelihoods of citizens;
- Enhanced defence and security cooperation that brings a more secure Indian Ocean Region and Indo-Pacific
- **India-UK leadership in climate, clean energy and health** that acts as a global force for good.
- Through this ambitious Roadmap, India-UK relationship will elevate to a Comprehensive Strategic Partnership (CSP).

Free Trade Agreement cooperation will

- Resolve market access issues, boost exports and strengthen trade partnership across a comprehensive range of areas.
- Remove trade barriers through balanced and beneficial market access package including agriculture, health, education, legal services, marine, and social security
- Help to share experience on regulatory reform, tax administration, and trade facilitation and standards through a new UK-India Ease of Doing Business MoU
- Institutionalize cooperation between relevant regulators to facilitate exports and avoid trade disruptions due to non-compliance with standards by producers and exporters.
- Increase exchanges and cooperation in the services sector.
- Step up bilateral Small & Medium Enterprises (SME) trade and collaborations, particularly technology sharing and financing of businesses.
- Identify infrastructure projects in India, particularly green transition projects, that utilise UK Export Finance support in the form of long term competitive financing of up to £4bn, including in Indian Rupees.

Background of India-U.K. economic relations

- **Guiding principle:** The economic and commerce matters of India and U.K. are guided by the India-UK Joint Economic & Trade Committee, Economic and Financial Dialogue and India-UK Financial Partnership.
- **Existing trade balance:** Merchandise trade between the two countries was US\$15.45 billion in 2019-20 with the trade balance in favour of India.
- **FDI inflow:**
 - India became the second-largest source of FDI according to the Department for International Trade inward investment statistics for 2019-2020.
 - UK is the 6th largest inward investor in India with a cumulative equity investment of US \$28.39 billion, accounting for around 6% of all foreign direct investment into India.
- **Trade basket:**

The main products of export from India to the UK include:

- Articles of apparel & Clothing
- Accessories
- Power Generating Machinery & Equipment
- Petroleum and related products

The main products of import from UK to India include:

- Power Generating Machinery & Equipment
- Non-Ferrous Metals, Ferrous ores & Metal scrap
- General Industrial Machinery and Equipment & Machines

WORLD TRADE ORGANIZATION

GS-II INTERNATIONAL RELATIONS

Context

- China's status as a 'developing country' at the World Trade Organization has become a contentious issue.

About World Trade Organization

- It was established on January 1, 1995 through the **Marrakesh Agreement**, as the successor to the **General Agreement on Tariffs and Trade (GATT)**.
- It covers **trade in services and intellectual property** and introduced procedures for dispute settlement.
- It is a **Binding institution** and its working is Consensus-based.
- Presently 151 members that negotiate to reduce barriers in trade.
- This Geneva based organisation governs nearly \$23 billion of global trade.
- This 'member-driven' organization is viewed as an
 - International platform to negotiate multilateral and plurilateral agreements dealing with trade
 - Dispute settlement system for disputes arising out of negotiated agreements

Benefits of WTO membership

WTO membership provides:

- **Most favoured nation treatment**, which means equal access for all companies of all WTO Members to the markets of all Members of the Organization;
- **National treatment** that prohibits national producers from gaining advantages over importers;
- **Reduction of trade barriers**, primarily tariffs and quantitative restrictions, which provides for increased trade between Members;
- **Predictability and transparency of international trade** - WTO Members have bound their tariffs and cannot, except for good reason, introduce other import restrictions, such as bans or quotas;
- **Increased competitiveness** by eliminating unfair practices between trading partners aimed at stimulating trade, primarily export subsidies and dumping;
- **Opportunity to defend trade interests** at the WTO Dispute Settlement Body, since all Members will have international commitments towards Belarus for non-application of trade restrictions.

What is the concern raised by other developing countries?

- **China is an upper middle-income nation** that derives benefits reserved for developing countries under WTO norms.
- Bangladesh is losing its least developed country' (LDC) status, after surpassing India in terms of GDP per capita.

What are the benefits of 'developing country' tag?

- Certain WTO agreements **give developing countries special rights** through 'special and differential treatment' (S&DT)

provisions.

- Under S&DT provision, WTO can grant developing countries longer timeframes to implement the agreements and even commitments to raise trading opportunities for such countries.
- WTO pacts are aimed at reduction in government support to certain industries over time and set more lenient target for developing nations.
- The classification also allows other countries to offer preferential treatment.

How is a 'developing country' decided and why are some against China being classified as one?

- WTO has **not defined** 'developed' and 'developing' countries.
- **Member countries are free to announce** whether they are 'developed' or 'developing'.

What are the benefits of LDC classification?

- The WTO **recognizes Least developing country** (LDCs) relying on a classification by the UN based on a criteria that is **reviewed every three years**.
- LDCs are often exempted from certain provisions of WTO pacts.
- Country classified as an LDC, receives zero duty, zero quota access for almost all exports to the EU.

What is India's current status?

- **India** has self-designated itself as a **developing nation** and is accordingly, classified by the World Bank as a lower-middle-income economy.

INDIA-US HOMELAND SECURITY DIALOGUE

GS-II INTERNATIONAL RELATIONS

Context

- India and U.S. review cooperation in counterterrorism and cyber security at a virtual Homeland Security Dialogue.

Highlights of the meet

- Other issues were identified that can be taken to explore opportunities and synergies in advancing security cooperation.
- Ways to secure **critical infrastructure and global supply chains, maritime security, aviation security, customs enforcement and trade security** were discussed.

India-U.S. Counter-Terrorism and Internal Security cooperation

- Cooperation in counter-terrorism has seen considerable progress with **intelligence sharing, information exchange, operational cooperation, counter-terrorism technology and equipment**.
- **Zero tolerance for terrorism:**
 - Both sides have called for strict action against all terrorist groups, including the Al-Qaeda, ISIS, Jaish-e-Mohammad, Lashkar-e-Taiba, Hizbul Mujahideen, the Haqqani Network, Tehreek-e-Taliban Pakistan, D-Company, and all their affiliates.
 - Both United Nations and the United States, designated Mumbai attack mastermind Hafiz Saeed as global terrorist.

Recent developments in India-U.S. cooperation in counter-terrorism

Sr. No.	Year	Joint Statement/Working Group/Joint Exercise/Bilateral Dialogue	Significance
1	2000	India-US Statement on Joint Working Group on Counterterrorism	Inter-agency teams from the US and India "agreed on a range of measures to enhance cooperation between the two countries to combat international terrorism. The two sides would share experience, exchange information, and coordinate approaches and action."
2	2002	India-US Counterterrorism Joint Working Group	Launched a bilateral Cyber-Security Forum, with "a wide-ranging program of action to address challenges of cyberterrorism and information security."
3	2006	Indian Army and US Marines, Joint Exercise, EX Shatrujeet	The Indian Army and the US Marine Corps conducted "training in semi-urban terrain with a view to enhance interoperability at functional level and share experience of CT operations along with OOTW (Operations Other Than War) training and operations of an Infantry/Marine company as part of an infantry Marine Battalion."

4	2010	India-US Strategic Dialogue, Joint Statement	The statement "reiterated the continued U.S. commitment to provide full cooperation and support in ongoing counterterrorism investigations, including through continued exchanges of information between designated agencies and by bringing the perpetrators of the 2008 Mumbai terrorism attack to justice."
5	2011	India-US Homeland Security Dialogue	The two sides "decided to strengthen agency-to-agency engagement, including in the areas of intelligence exchange, information sharing, forensics and investigation, access and sharing of data relating to terrorism, security of infrastructure, transportation and trade, conducting joint needs assessments, combating counterfeit currency, countering illicit financing and transnational crime. They agreed that the two sides shall designate points of contact and establish protocols for engagement."
6	2011	India-US Counterterrorism Cooperation initiative	Instituted cooperation towards "strengthening capabilities to effectively combat terrorism; promotion of exchanges regarding modernization of techniques; sharing of best practices on issues of mutual interest; development of investigative skills; promotion of cooperation between forensic science laboratories; establishment of procedures to provide mutual investigative assistance; enhancing capabilities to act against money laundering, counterfeit currency and financing of terrorism; exchanging best practices on mass transit and rail security; increasing exchanges between Coast Guards and Navy on maritime security; exchanging experience and expertise on port and border security; enhancing liaison and training between specialist Counter Terrorism Units including National Security Guard with their US counterparts."
7	2015	India-US Joint Declaration on Combatting Terrorism	Recognised the threat posed by "entities such as Al-Qa'ida and its affiliates, Lashkar-e-Tayibba, Jaish-e-Mohammad, 0 Company, and the Haagen' Network, and other regional groups that seek to undermine stability In South Asia."
8	2016	India-US Cooperation between Ministry of Home Affairs and the US' Terrorist Screening Center	India and the US sign the agreement to exchange terrorism-screening information between the US' Federal Bureau of investigation and India's intelligence Bureau.
9	2018	India-US Homeland Security Presidential Directive-6	India formally entered into the US Homeland Security Presidential Directive-6 (HSPD-6), to enable it to access unclassified biographic information of known and suspected terrorists in real time.
10	2018	Joint Statement on the inaugural India-US 2.2 Ministerial Dialogue	The two sides "committed to enhance their ongoing cooperation in multilateral fora such as the UN and FATF."
11	2019	Exercise Yudh Abhyas	Exercise between the armies of India and the US focused on "specialised drills and procedures involved In counter insurgency & counter terrorist operations loco urban environment."
12	2019	Counterterrorism Tabletop Exercise (CT-TTX) for QUAD countries	Assessed and validated "CT response mechanisms In the light of emerging terrorist threats as well as to provide opportunities to share best practices and to explore areas for enhanced cooperation amongst participating countries."
13	2019	Joint Statement on the Second India-US 2+2 Ministerial Dialogue	The two sides took note of "the Judicial cooperation on terrorism cases between the National Judicial Academy In Bhopal, India and the U.S. Federal Judicial Center" and committed to "facilitate further cooperation between them In new areas and through Joint Judicial workshops for third-country partners."

FOOD FORTIFICATION

GS-II HEALTH

Context

- Over 70% of India's population consumes less than half the daily recommended dietary allowance of micronutrients - The Food Safety and Standards Authority of India's (FSSAI's) Food Fortification Resource Centre (FFRC) has reported.

Food Fortification

- Fortification is the practice of deliberately increasing the content of an essential micronutrient, i.e. vitamins and minerals (including trace elements) in a food, so as to improve the nutritional quality of the food supply and provide a public health benefit with minimal risk to health.
- For example, adding iodine and iron to edible salt.

What is the need for Fortification in India?

Malnutrition

- Malnutrition is the primary reason behind 69 per cent of deaths of children below the age of five in India, according to a UNICEF's The State of the World's Children 2019 report.
- The report further states that every second child in India, under five years of age, is affected by some form of malnutrition.
- Malnutrition prevents brain development, body growth, immune systems from working effectively, and increases lifelong risk of disease and disability.

Global Hunger Index

- India ranked 101st in the Global Hunger Index (GHI) 2021 of 116 countries, slipping from its 2020 position of 94th.

Micronutrient Deficiencies

- Over 70 percent of India's population still consumes less than 50 percent of RDA for micro-nutrients.
- One third of India's population is suffering from vitamin and micro-nutrient deficiencies globally, are in India.
- The control of micronutrient deficiencies is an essential part of the overall effort to fight hunger and malnutrition.

Note:

- India has been implementing a variety of strategies to address anaemia and micronutrient deficiencies which include iron-folic acid supplementation, vitamin A supplementation, nutrition health education to encourage dietary diversity, and others. However, the anaemia levels continue to be high.
- This, therefore, requires the introduction of strategies such as food fortification which are evidence based, tried and tested in other parts of the world.

Compulsory Fortification

- India is considering **compulsory fortification of rice from 2024** as a significant percentage of the population continues to suffer from malnutrition and anaemia.
- The government is likely to announce a policy to help industry ramp up production of rice fortified with iron, folic acid and Vitamin B12.

Significance of Rice Fortification

- Rice is a staple consumed regularly in the preparation of many common local dishes.
- Micronutrient deficiencies of public health significance are widespread in most countries consuming high levels of rice; thus rice fortification has the potential to help aid vulnerable populations.
- Rice kernels can be fortified with several micronutrients, such as iron, folic acid and other B-complex vitamins, vitamin A and zinc.
- Similarly, other vital micronutrients can be added to staples like wheat flour, oil, and milk.
- The reason behind choosing staple items is to reach a larger population.

S. No	Nutrients	Claims
1	Vitamin A	Helps against Night blindness;
2	Vitamin D	Supports strong bones;
3	Vitamin B12	Important for maintaining normal functioning of Nervous system and blood formation;
4	Folate & Folic acid	Important for foetal development and blood formation;
5	Iron	Fights Anemia;
6	Iodine	Required for normal growth, thyroid and brain function;
7	Zinc	Supports a healthy immune system;
8	Thiamine	Required for normal nerve and heart function;
9	Riboflavin	Necessary to release the energy from food;
10	Niacin	Necessary to release the energy from food;
11	Pyridoxine	Necessary to release the energy from food.

About FSSAI

- Food Safety and Standards Authority of India (FSSAI) is an **autonomous body established under the Ministry of Health & Family Welfare**, Government of India.
- The FSSAI has been **established under the Food Safety and Standards Act, 2006**, which is a consolidating statute related to food safety and regulation in India.
- FSSAI is responsible for protecting and promoting public health through the regulation and supervision of food safety.

GENERAL STUDIES - III

BUDGET 2022-2023

GS-III ECONOMY

Context

- Finance Minister Nirmala Sitharaman presented the Union Budget 2022-23 in Parliament.
- With the economy still in search of durable momentum that could help entrench the recovery from the last fiscal year's record contraction, the Union Budget has missed an opportunity to address the flagging consumer spending in the wake of erosion in real incomes and savings through a combination of tax breaks for the middle class and cash handouts for the poor.

Key takeaways

Increase in capital expenditure

- And even as the Minister acknowledges the role public capital expenditure could play in crowding-in private investment at a time when "private investments seem to require that support" and help to 'pump-prime' demand in the economy, the Budget outlay of Rs. 7.50 lakh-crore for the capital account marks just a 24.4% increase from the revised estimate of Rs. 6.03 lakh-crore for the current fiscal.

Infrastructure push

- The budget speech highlights the PM GatiShakti, a "transformative approach for economic growth and sustainable development" that is to be powered by the 'seven engines' of roads, railways, airports, ports, mass transport, waterways, and logistics infrastructure.
- The Budget lists a 'Master Plan for Expressways' that will be formulated in 2022-23 under the scheme and projects the addition of 25,000 kilometres of roads to the National Highways network. The talk of enabling seamless multimodal movement of goods and people and providing multimodal connectivity between mass urban transit systems and railway stations, however, all sound a familiar refrain from past speeches.

Low on social spending

- Spending outlays on several other key sectors including health care, rural development and the vital jobs and income providing national rural employment guarantee scheme have all shrunk as a percentage of overall expenditure in the Budget estimates for fiscal 2023 from the revised estimates for the current year, even if in some cases only marginally.
- That these sectors have been forced to bear the impact of the Government's keenness to broadly stick to a fiscal consolidation road map- with the Budget projecting a narrowing of the fiscal deficit to 6.4% of GDP in 2022-23, from a revised estimate for 6.9%- reflects on its priorities.
- Government spending on health care ought to have instead been significantly increased, with the lessons from the ongoing pandemic's first two waves serving to illuminate the need for a sizable enlargement of the public health infrastructure.
- A source of some solace, though, is the announcement of a 'National Tele Mental Health Programme' to address mental health problems that have been exacerbated by the claustrophobic lockdowns and plethora of anxieties triggered by the pandemic.

Atma Nirbhar Bharat

- A key policy element is a commitment to reduce import dependence in procurement for the country's defence forces. To that end the Minister has proposed earmarking 68% of the armed forces' capital procurement budget to domestic industry in 2022-23, a not insignificant increase from the current fiscal's 58% target.
- The tariff rationalisations, which cover a broad swathe of items ranging from electronics, gems and jewellery, chemicals, inputs used by MSME units and project and capital goods, could, however, have varying short-term impacts.
- Specifically, the move to phase out the concessional rates in capital goods and project imports gradually and apply a moderate tariff of 7.5% could in the short term hurt infrastructure projects and the setting up of new manufacturing capacity, some proposed exemptions for advanced machinery notwithstanding.

Virtual currencies

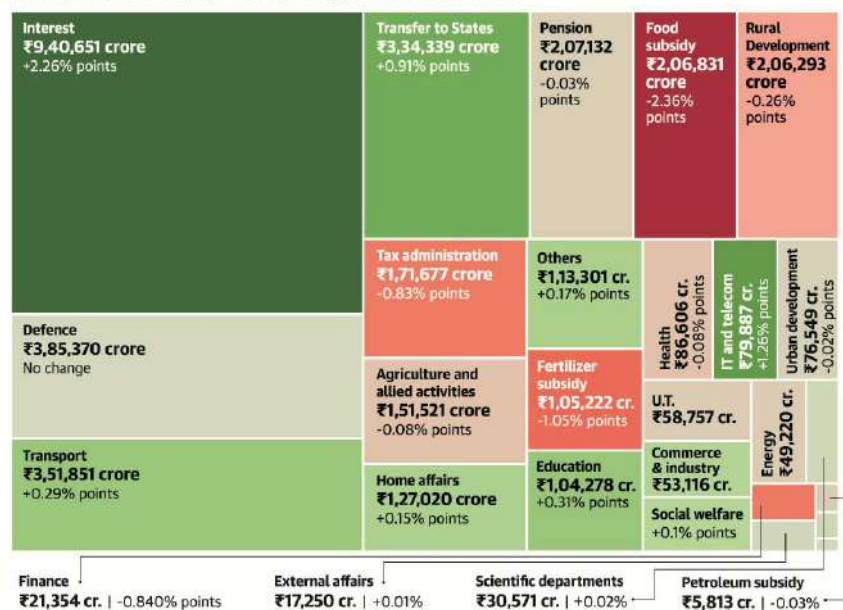
- The Minister has tried to address the raging debate over how to deal with virtual currencies by adopting a twin-track approach. On the one hand the budget proposes to introduce in the coming fiscal year a Central Bank Digital Currency that will impart a big boost to the digital economy and "lead to a more efficient and cheaper currency management system". The RBI issued Digital Rupee would leverage blockchain and other related technologies.
- In parallel, the government intends to tax income from the transfer of any virtual digital asset at the rate of 30%, with deduction allowed only for the cost of acquisition.
- It remains to be seen if the Government's efforts at bringing the mushrooming trade and investment in a multiplicity of virtual digital assets including cryptocurrencies under the tax net would have a salutary impact besides adding a revenue stream to the exchequer.

Disinvestment shortfalls

- The Minister's latest budget also skirts mention of the asset monetisation plan mentioned in the last Budget and shows a sharp decline in capital receipts from disinvestment.
- With just Rs.65,000 crore budgeted from asset sale for fiscal 2023, as opposed to Rs.78,000 crore as per the revised estimates for the current fiscal, the Minister has had to increase gross borrowings to Rs.14.95 lakh-crore, a 24% increase from the current fiscal's budget estimate but a far sharper 43% jump from the revised estimate of Rs.10.46 lakh-crore.
- The resource crunch manifested in the proposed higher debt issuance is ultimately bound to get more acute in the days ahead, given the Budget's lack of growth-invigorating proposals.

BUDGET BREAKDOWN

The graph depicts budgeted expenditure (₹ crore) in FY23 and the change from FY22 (in % points). Food and fertilizer subsidies fell 2.36% and 1.05% points respectively while interest payments and transfers to States went up 2.26% and 0.91% points respectively between FY22 and FY23



ECONOMIC SURVEY 2021-22

GS-III ECONOMY

Context

- Presented after two waves of Covid and a still unfolding third, one can't fault the Economic Survey 2021-22 for making a determined effort to strike an optimistic note and to focus on silver linings amid the clouded macro environment. But in the process it seems to miss out on opportunities to offer prescriptions to problems that may need redress.

What is an 'Economic Survey'?

- The Economic Survey is an annual report card of the economy, which is presented a day before the budget and examines the performance of each and every sector and then suggests future moves.
- The Economic Survey was de-linked from the Budget in 1964 and unveiled in advance in order to provide a context of the latter.

Why is it significant?

- It reviews the economic development in India over the past financial year by analysing and providing detailed statistical data of all the sectors-industrial, agricultural, industrial production, employment, prices, exports, among others.
- The survey also helps in giving a better understanding of the Union Budget by comprehending the country's priority for the next financial year and what sectors would need more emphasis.

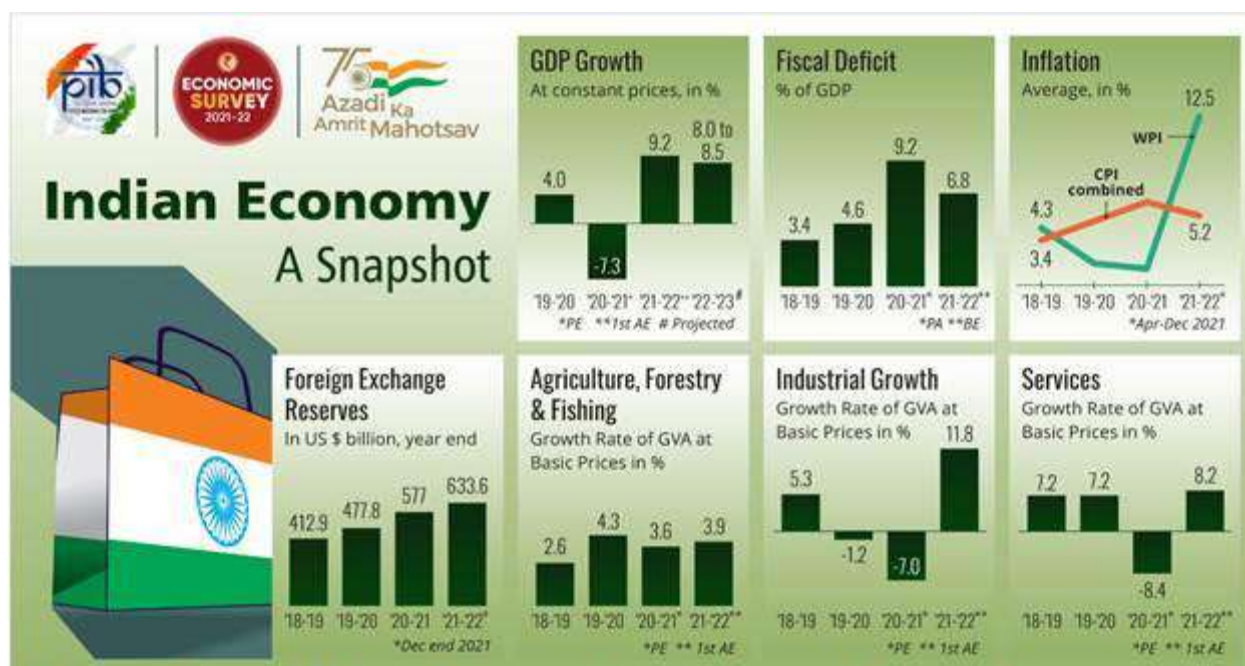
Who prepares the survey?

- It is prepared by the Economics Division of the Department of Economic Affairs of the Finance Ministry under the overall guidance of the Chief Economic Adviser (CEA).
- This year, the survey is being prepared by the Principal Economic Advisor and other officials in absence of the CEA.

What does the Survey point out?

- The Survey reckons that, with a 9.2 percent real GDP growth, India's economic output would surpass pre-pandemic levels this year.
- Agriculture (at 108 percent of FY20 levels), utilities (110 per cent), public administration (106 per cent) and industry (104 per cent) will be main drivers of this rebound, while services lag (99 percent).
- But it suggests that high-contact services such as trade and hospitality will automatically pick up once mobility restrictions are lifted, which is at odds with the distress signals being sent out by these sectors on Budget eve.
- It highlights that exports and fixed investment are more than making up for tepid consumption.
- It attributes weak consumption more to supply-side issues such as the chip shortage than to dented consumer confidence, which would call for demand-side stimulus.

- The Survey finds that government capex has been driving investment and expects the private sector to join the party on its own, helped by well-capitalised banks, record corporate profits and strong IPO mobilisation. But with bank credit growth lagging GDP, the private sector hoarding cash and the bulk of IPO proceeds going to pad up the pockets of private investors, this seems optimistic.
- It rightly credits the government for prudent management of both the external account and the fisc, which has armed it with dry powder to tackle the imminent taper and slowdown.



Addressing the criticism

- Stock-taking apart, it offers interesting insights on the thinking behind policy-making during the pandemic. Addressing critics on India's frugal fiscal stimulus and piecemeal Atma Nirbhar announcements, the Survey asserts this was a well thought-out 'barbell' strategy.
- While the government was quick to offer safety nets to the most vulnerable citizens, it used an agile iterative process to respond to distress in industry, tracking high frequency indicators (including new ones such as satellite data, digital payments and data from MGNREGA dashboards) to tailor sector-specific packages.
- A dynamic data-driven approach to policy-making is indeed welcome, one hopes it also drives policymakers to push for better-quality data on conventional metrics such as employment.
- The document highlights less-known reforms such as simplified customs/GST procedures and quantum improvements in government procurement that have aided ease of doing business during Covid.

Conclusion

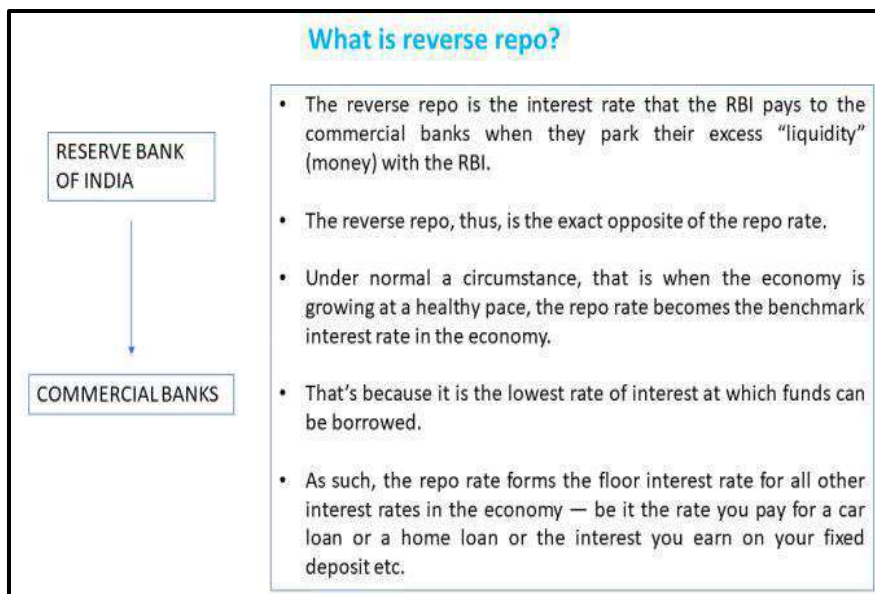
- For all its optimism though, the Survey has chosen to be conservative in pegging its growth projections for FY23 at 8-8.5 per cent, lower than that of the IMF and World Bank. These growth rates are premised on no further Covid-related economic disruptions, normal monsoons, orderly withdrawal of global liquidity and oil prices staying in the \$70-75 range. These are precisely the wild card factors that the government must watch out for, while planning its finances for the year ahead.

REVERSE REPO NORMALISATION

GS-III ECONOMY

Context

- The Reserve Bank of India (RBI) is expected to start the process of normalisation of the accommodative monetary policy by increasing the reverse repo rate



Difference between the Repo and Reverse repo rates:

BASIS FOR COMPARISON	REPO RATE	REVERSE REPO RATE
Meaning	Repo rate is the rate at which the Central bank of India grants loan to the commercial banks for a short period against government securities.	Reverse repo rate is the rate at which the commercial banks grant loan to the Central Bank of India.
Purpose	To fulfil the deficiency of funds.	To ensure liquidity in the economy.
Rate	High	Comparatively less.
Controls	Inflation	Money supply in the economy.
Charged on	Repurchase Agreement	Reverse Repurchase Agreement

What does reverse repo normalisation mean?

- To put it simply, it means that the reverse repo rates will go up.
- The several banks around the world have already increased the interest rates owing to the rising inflation.
- In India, the Reserve Bank of India (RBI) too is expected to raise the repo rate. However, before increasing the repo rate, it will first raise the reverse repo rate to reduce the gap between the two rates.
- SBI first expects the reverse repo to go up from 3.35% to 3.75% while the repo rate continues to be 4%. It will incentivise commercial banks to park excess funds with RBI, thus sucking some liquidity out of the system.

Monetary Policy Normalisation

- To ensure smooth functioning, the RBI keeps changing the total amount of money in the economy. Whenever the RBI wants to boost economic activity it adopts a so-called “**loose monetary policy**” and when the RBI needs to check the flow of currency, it adopts a “**tight monetary policy**”.
- **Loose monetary policy**- RBI adopts it when it RBI to boost the economic activity.
- **At such a time, the RBI buys the government bonds from the market and pays back money to the bondholders, thus introducing/injecting more money into the economy.**
- To incentivise the banks, the RBI also lowers the interest rate it charges banks when it lends money to them (repo rate).
- **Significance**
 - **Boosts consumption**- For the consumer, it would now pay less to keep the money in the bank thus incentivising current consumption.
 - **Boosts production**- For firms and entrepreneurs, it would make more sense to borrow money because interest rates are lower.
- **Tight monetary policy**- It is the opposite of loose monetary policy, here the RBI raises the interest rates and sucks liquidity out

of the economy by selling bonds (and taking money out of the system).

- When the central bank (RBI) finds that a loose monetary policy has started to become counterproductive (that is leading to a higher inflation rate), it will again normalise the policy by tightening the monetary policy stance.

VIRTUAL DIGITAL ASSETS

GS-III ECONOMY

Context

- Union Budget's taxation proposals for 2022-23 is the introduction of a taxation regime for virtual digital assets

Details


- The Union Finance Minister in her budget speech has announced a 30 per cent tax on income from virtual digital assets.
- She further clarified that no deduction in respect of any expenditure or allowance shall be allowed while computing such income except the cost of acquisition.
- Additionally, she also proposed a TDS on payment made in relation to the transfer of virtual digital assets at 1 per cent above a monetary threshold.

What are virtual digital assets and how are they different from digital currency?

- A currency is a currency only when it is issued by the central bank even if it is a crypto. But anything which is outside of that loosely all of us refer to it to be cryptocurrency but they are not currencies.
- What the RBI issues in the next fiscal will be the digital currency and everything else apart from that are digital assets being created by individuals and the government will be taxing the profit which are made during transactions of such assets at 30 per cent.

How does the government define virtual digital assets?

- In the explanatory memorandum of the Finance Bill, the government stated, "To define the term "virtual digital asset", a new clause (47A) is proposed to be inserted to section 2 of the Act.
- As per the proposed new clause, a virtual digital asset is proposed to mean any information or code or number or token (not being Indian currency or any foreign currency), generated through cryptographic means or otherwise, by whatever name called, providing a digital representation of value which is exchanged with or without



What is Virtual Digital Assets? –Decoding the definition

- 1** Any Information, Code, Number, Token, NFT etc. (not Indian or foreign currency)...
- 2** Generated through cryptographic means or otherwise...
- 3** Providing a digital representation of value exchanged, with the promise of having inherent value...
- 4** Functions as a store of value or a unit of account...
- 5** Can be transferred, stored or traded electronically.

- consideration, with the promise or representation of having inherent value, or functions as a store of value or a unit of account and includes its use in any financial transaction or investment, but not limited to, investment schemes and can be transferred, stored or traded electronically.
- Non fungible token and; any other token of similar nature are included in the definition.

What is a Non-Fungible Token?

- NFTs are transaction records captured on the blockchain-the web version of a physical ledger. Non-Fungible Tokens allow people to trade the ownership of digital entities such as memes, media, tweets, arts, articles in "token" form.
- The term 'non-fungible' simply means that each token is different as opposed to a fungible currency such as money (a ten-rupee note can be exchanged for another and so on).
- As NFTs are supported by blockchain, these transaction records are permanent, verified multiple times and cannot be erased or changed.
- Each non-fungible token is uniquely identifiable. So, no two digital entities can have the same token. A NFT is essentially a certificate of authenticity or a digital autograph that can be attached to digital property.

Digital Rupee

- A digital rupee will be like banknotes, but minus the ATMs. Users will be able to transfer purchasing power from their deposit accounts into their smartphone wallets in the form of online tokens, which will be a direct liability of the Reserve Bank of India- just like cash.

PROMOTING BLUE ECONOMY

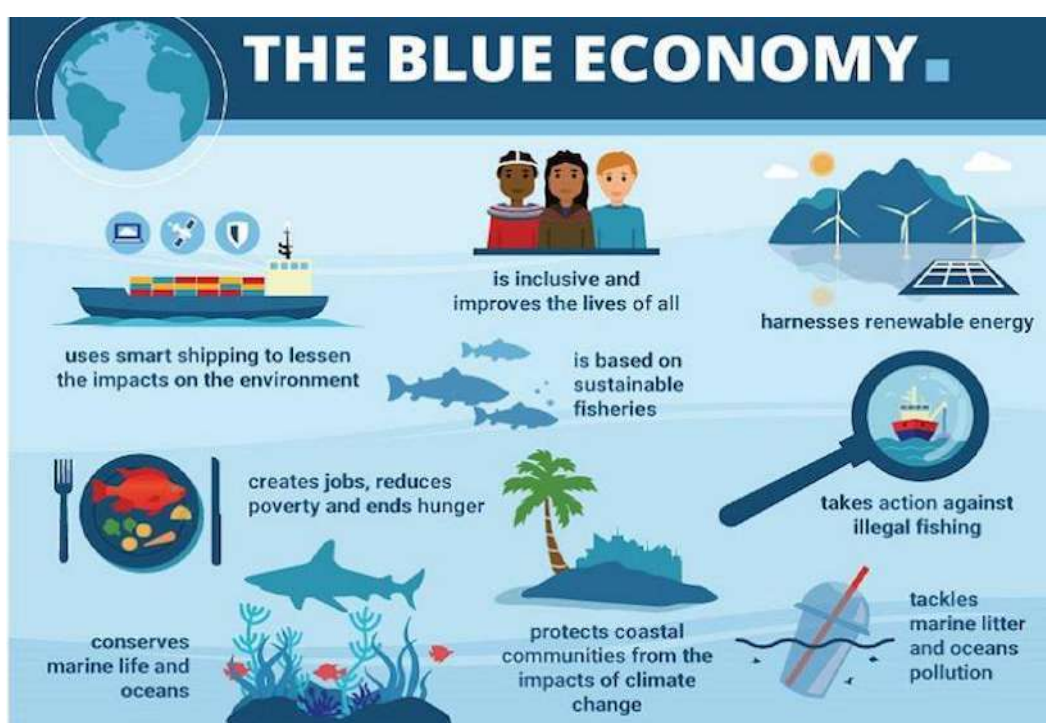
GS-III ECONOMY

Context

- Government of India's Vision of New India by 2030 announced in February 2019 highlighted the Blue Economy as the sixth dimension of its vision. He said, Rs. 150 Cr has been provisioned during 2021-22 under Deep Ocean Mission.

About Blue Economy

- Concept was introduced by Gunter Pauli in his 2010 book- "The Blue Economy: 10 years, 100 innovations, 100 million jobs".
- It is the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health.
- It advocates the greening of ocean development strategies for higher productivity and conservation of ocean's health.



What is the 'blue economy'?

- India's blue economy is understood as a subset of the national economy comprising an entire ocean resources system and human-made economic infrastructure in marine, maritime, and onshore coastal zones within the country's legal jurisdiction.
- It aids the production of goods and services that have clear linkages with economic growth, environmental sustainability, and national security.
- The blue economy is a vast socio-economic opportunity for coastal nations like India to utilise ocean resources for societal benefit responsibly.

It comprises

- Renewable Energy:** Sustainable marine energy can play a vital role in social and economic development.
- Fisheries:** Sustainable fisheries can generate more revenue, more fish and help restore fish stocks.
- Maritime Transport:** Over 80% of international goods traded are transported by sea.
- Tourism:** Ocean and coastal tourism can bring jobs and economic growth.
- Climate Change:** Oceans are an important carbon sink (blue carbon) and help mitigate climate change.
- Waste Management:** Better waste management on land can help oceans recover.
- Blue Economy emphasises on integration of development of ocean economy with social inclusion, environmental sustainability, combined with innovative business models.

Need for Blue Economy

- Oceans cover three-quarters of the Earth's surface, contain 97% of the Earth's water, and represent 99% of the living area on the planet.
- Oceans protect biodiversity, keep the planet cool, and absorb about 30% of global CO₂ emissions.
- At least 3-5% of global GDP is derived from oceans.
- Blue economy, through sustainable use of oceans, has great potential for boosting the economic growth by providing opportunities for income generation and jobs etc.
- It can support food security, and diversification to address new resources for energy, new drugs, valuable chemicals, protein food, deep sea minerals, security etc.
- It is the next sunrise sector.
- Sunrise Sector is a sector that is expanding rapidly and is expected to be increasingly important in the future.

Significance

- With a coastline of nearly 7.5 thousand kilometres, India has a unique maritime position. Nine of its 29 states are coastal, and the nation's geography includes 1,382 islands. There are nearly 199 ports, including 12 major ports that handle approximately 1,400 million tons of cargo each year.
- Moreover, India's Exclusive Economic Zone of over 2 million square kilometres has a bounty of living and non-living resources with significant recoverable resources such as crude oil and natural gas.
- Also, the coastal economy sustains over 4 million fisherfolk and coastal communities. With these vast maritime interests, the blue economy occupies a vital potential position in India's economic growth.
- It could well be the next multiplier of GDP and well-being, provided sustainability and socioeconomic welfare are kept centre-stage. Therefore, India's draft blue economy policy is envisaged as a crucial framework towards unlocking the country's potential for economic growth and welfare.
- SDG 14 seeks to conserve and sustainably use the oceans, seas and marine resources for sustainable development. With a draft blue economy policy framework of its own, India is now all set to harness the vast potential of its ocean resources.

Salient features of the Draft Blue Economy policy for India

- The MoES prepared the draft blue economy policy framework in line with the Government of India's Vision of New India by 2030.
- It highlighted the blue economy as one of the ten core dimensions for national growth. The draft policy framework emphasises policies across several key sectors to achieve holistic growth of India's economy. The document recognises the following seven thematic areas -
 - National accounting framework for the blue economy and ocean governance.
 - Coastal marine spatial planning and tourism. • Marine fisheries, aquaculture, and fish processing.
 - Manufacturing, emerging industries, trade, technology, services, and skill development.
 - Logistics, infrastructure and shipping, including trans-shipments.
 - Coastal and deep-sea mining and offshore energy.
 - Security, strategic dimensions, and international engagement.

SURETY BONDS

GS-III ECONOMY

Context

- To reduce indirect cost for suppliers and work-contractors, the use of surety bonds as a substitute for bank guarantee will be made acceptable in government procurements as per the Budget 2022-2023.

Details

- As per Budget 2022-23, in order to reduce indirect cost for suppliers and work-contractors, the use of surety bonds as a substitute for bank guarantee will be made acceptable in government procurements. Businesses such as gold imports may find this useful. IRDA has given the framework for issue of surety bonds by insurance companies.
- Surety bond is provided by the insurance company on behalf of the contractor to the entity which is awarding the project. When a principal breaks a bond's terms, the harmed party can make a claim on the bond to recover losses. It can effectively replace the system of bank guarantee issued by banks for projects and help reduce risks due to cost overrun, project delays and poor contract performance, experts say.

What is a Surety Bond?

- A surety bond is a mechanism to transfer risk for businesses. It assures the project owner (typically a government entity) that the assigned contractor will perform the task as per the contract clause.

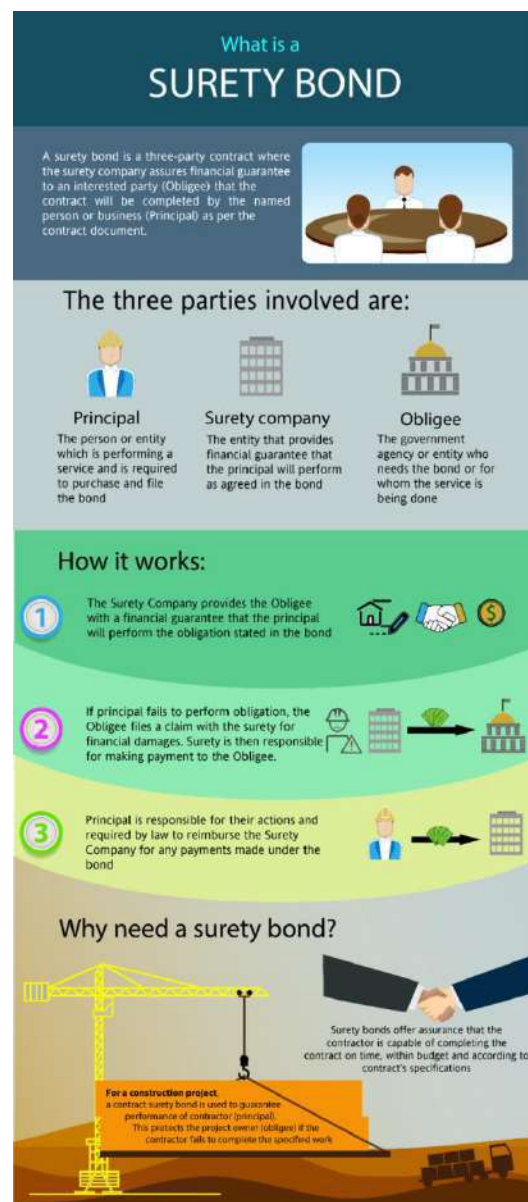
- The surety company pays the project owner the promised amount (as per the contract) in the event of a default.
- The company charges a fee to the contractor to write the surety bond.

What is the benefit to a contractor, infra player?

- By issuing the surety bond, the contractor does not have to furnish a hefty bank guarantee. Thus, helping avoid blocking a huge amount.
- Surety bonds create a level playing field, empower the small and medium contracts to bid for a project at par with a large contractor with financial muscle.

IRDAI guidelines for surety bonds

- The **premium** charged for all surety insurance policies underwritten in a financial year, including all installments due in subsequent years for those policies, **should not exceed 10 percent** of the total gross written premium of that year, subject to a maximum of Rs 500 crore.
- The limit of **guarantee should not exceed 30 percent** of the contract value. Surety Insurance contracts should be issued only to specific projects and not clubbed for multiple projects.



According to the regulator, here are the types and definitions of Surety Contracts.

- **Advance Payment Bond:** It is a promise by the Surety provider to pay the outstanding balance of the advance payment in case the contractor fails to complete the contract as per specifications or fails to adhere to the scope of the contract.
- **Bid Bond:** It is an obligation undertaken by a bidder promising that the bidder will, if awarded the contract, furnish the prescribed performance guarantee and enter into contract agreement within a specified period of time. It provides financial protection to an obligee if a bidder is awarded a contract pursuant to the bid documents, but fails to sign the contract and provide any required performance and payment bonds, as per the India press release.
- **Contract Bond:** It provides assurance to the public entity, developers, subcontractors and suppliers that the contractor will fulfil its contractual obligation when undertaking the project. Contract bonds may include: Bid Bonds, Performance Bonds, Advance Payment Bonds and Retention Money.
- **Customs and Court Bond:** This is a type of guarantee where the obligation is a public office such as tax office, customs administration or the court, and it guarantees the payment of a public receivable incurred from opening a court case, clearing goods from customs or losses due to incorrect customs procedures.
- **Performance Bond:** It provides assurance that the obligee will be protected if the principal or contractor fails to perform the bonded contract. If the obligee declares the principal or contractor as being in default and terminates the contract, it can call on the Surety to meet the Surety's obligations under the bond.
- **Retention Money:** It is a part of the amount payable to the contractor, which is retained and payable at the end after successful completion of the contract, as per the India press release.

SURGE IN INDIA'S COAL DEMAND

GS-III ECONOMY

Context

- India's coal demand to top 1 billion tonnes in 2022.

Details

- According to the IEA's Coal Report 2021, India's coal consumption will increase at an average annual rate of 3.9% to 1.18 billion tonnes in 2024, on the back of a GDP growth rate of 7.4% between 2022 and 2024, which will partially be fuelled by coal.

Coal demand in India from different sectors (mn tonne)

Sector	2030	2035	2040
Utility electricity generation	130 – 140	Continues to increase	161– 200
Industrial demand (ex-captive)	270- 300	Continues to increase	334 – 420
Captive electricity generation	800 – 875	May increase slowly from 2030 levels	Most likely lower than 2035 levels
Total	1192-1325		

Reasons for increasing demand

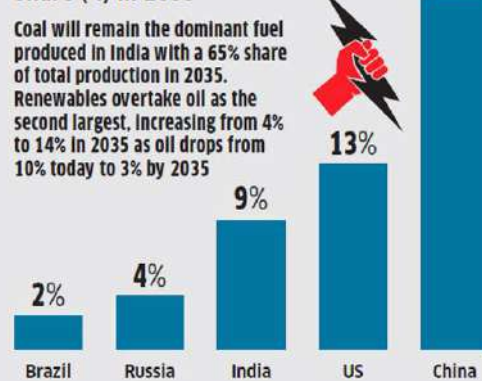
- Stronger economic growth and increasing electrification drives demand in growth of 4 per cent per year.
- iron and steel production use coal and there are not many technologies to replace the fuel immediately
- Continued expansion of India's economy is expected during 2022-2024, with annual average GDP growth of 7.4 per cent, to be fuelled at least partially by the coal.
- "India is unlikely to achieve its target of 100 GW of solar and 60 GW of wind capacity by 2022.
- Claiming it as one of its most ambitious coal sector reforms, the central government has opened up coal mining for the private sector.

Concerns

- Coal- and lignite-based thermal power plants on an annual basis emit 1.3 billion tonnes of carbon dioxide equivalent / year, which is a third of the total greenhouse gas emissions in the country.
- The freeway to coal will raise the local pollution in the country.
- The implementation on the ground of the new emission norms for coal-based thermal power plants has been inadequate. Except Centre-run and some private plants, a majority of the sector still has made no efforts to meet the norms.
- This also indicates the sluggishness in the shift to a cleaner economy.

India's share of global energy demand to rise to 9% by 2035

Share in primary energy consumption
Share (%) in 2035



There are four key objectives to India's broad arching energy policy under the India's Energy Policy:

- Access at affordable prices;
- Improved security and Independence;
- Greater Sustainability; and
- Economic Growth.

To achieve these four objectives, seven areas of intervention were identified, of which energy efficiency is one.

- Energy Consumption by businesses, households, transportation and agriculture
- Energy Efficiency/de-carbonisation measures on the demand side
- Production and distribution of coal
- Electricity generation, transmission and distribution
- Augmenting supply of oil and gas, both by domestic E&P, and through acquisition of overseas acreages
- Refining and distribution of oil and gas.
- Installation, generation and distribution of renewable energy

VANDE BHARAT TRAIN

GS-III ECONOMY

Context

- In her Budget speech, Finance Minister Nirmala Sitharaman announced that 400 Vande Bharat trains will be manufactured in the next three years.

Details

- It comes in addition to the current plan to be able to run 75 Vande Bharat trains across India by Independence Day in 2023.

What is the 'Vande Bharat' train?

- Vande Bharat is a semi-high speed train set, each of 16 coaches, and self-propelled – they do not require an engine. This is called a distributed traction power system, which is increasingly becoming the norm the world over for passenger operations.
- Distributed power gives the train higher acceleration and deceleration compared to loco hauled trains, which take a much longer time to reach top speed or to gradually come to a halt.
- Introduced in 2019, the Vande Bharat semi-high speed trains have been a novelty so far. Two Vande Bharat trains (originally called Train 18) are currently running, both from Delhi – to Varanasi and Katra.

Significance

- Employment generation:** An additional employment generation to the tune of 10,000-15,000 in three years.
- Boast to ancillary sectors:** The pumping in around Rs 50,000 crore into the country's rolling stock industry, will give a big boost in the sectors of component manufacturing, supplies etc.
- Efficiency:** It will also help in improving the railway finances and operational efficiency.

Comparison with conventional trains

- A conventional train loses a lot more time than a train set on journey.
- A train set gains higher average speed during the same journey, and in sections where it is allowed, also clocks semi-high-speed of 160 km/h.
- With shorter journey time, a train set is theoretically able to cover more trips, thereby carrying more people.

Present situation

- Two Vande Bharata train sets (originally called Train 18) are currently running, both from Delhi to Varanasi and Katra.
- The Budget announcement signals the government's intent to turn these self-propelled train sets, as opposed to locomotive-hauled trains, into the future normal for India's century-old railway system.

Indian Railways

- Despite facing the unprecedented Covid related challenges, Indian Railways has not only been able to move millions of people but also been able to keep the national supply chain running.
- Indian Railways strives to provide safe, efficient, competitive and world-class transportation systems being the third largest network in the world under single management with over 68, 102 kilometres of route.
- An average of 1835 track kilometres per year of the new track length has been added through new-line and multi-tracking projects during 2014-2021 as compared to average of 720 track kilometres per day during 2009-14.
- Indian Railways is also adopting indigenous new technology such as KAVACH, Vande Bharat trains and redevelopment of stations to have safe and better journey experience.
- Indian Railways carried 1.23 billion tons of freight and 1.25 billion passengers during FY21.
- The safety of passengers is the topmost priority of Indian Railways, with the continuing focus on safety the number of consequential train accidents has come down from 59 in 2018-19 to 55 in 2019-20 and further to 22 in the last 2020-21.
- Indian Railways has embarked on providing Wi-Fi services in order to provide better amenities at all stations.



MOBILE HONEY PROCESSING VAN**GS-III AGRICULTURE****Context**

- KVIC launched the country's first Mobile Honey Processing Van at Village Sirora in Ghaziabad, UP.

Details**Designed by**

- The Mobile Van has been designed in-house by KVIC under its Honey Mission.

Features

- This mobile honey processing unit can process up to 300 KG of honey in 8 hours.
- The van is also equipped with a testing laboratory that would instantly examine the quality of honey.

Objective

- The Mobile Honey Processing Van aims at training beekeepers, distributing Bee Boxes to farmers and helping rural, educated as well as unemployed youth to earn extra income through beekeeping activities.
- In line with Prime Minister's dream of **"Sweet Kranti" (Sweet Revolution) through honey production**, the KVIC has come up with this unique innovation to enable beekeepers and farmers to get fair price of their honey produce.

Other Honey Initiatives**Honey FPO Programme**

- The Honey FPO Programme has been launched under the **Central Sector Scheme for Formation & Promotion of new 10,000 FPOs**.
- The task of creating these FPOs has been given to NABARD, Small Farmers' Agribusiness Consortium, National Cooperative Development Corporation and NAFED.
- Through these Honey FPOs, NAFED will also work for **promotion of beekeeping as an occupation for unemployed women and tribal populations and uplift their livelihood**.

Honey Mission Programme

- The **Honey Mission Programme was launched by Khadi & Village Industries Commission (KVIC), under the Ministry of MSME, during 2017-18**.
- It is being implemented to promote Bee Keeping activities and provide self-sustaining employment opportunities among farmers, Adivasies and unemployed youth in rural India, especially in economically backward and remote areas.
- Under the programme, beneficiaries are **provided with Bee Boxes, live bee colonies, tool kits and training**.

National Beekeeping & Honey Mission (NBHM)

- Under **National Beekeeping & Honey Mission (NBHM) scheme** under Ministry of Agriculture, scientific beekeeping is promoted for holistic growth of the sector, leading to income and employment generation, livelihood support to farm and non-farm households.

Scheme of Fund for Regeneration of Traditional Industries' (SFURTI)

- Besides, **under 'A Scheme of Fund for Regeneration of Traditional Industries' (SFURTI) implemented by the Ministry of MSME**, traditional beekeepers are provided with sustainable employment by organizing them into clusters, and supporting them with new machineries and training.

Significance**Sweet revolution**

- Sweet Revolution is a strategic **step to emphasize the increase in honey production in the state**, which can be a major contributor to doubling the income of the farmers.
- With the increase in income, the production of crops will also increase by 15%.

Purpose

- Providing employment by connecting the farmers of the state with bee keeping.
- To increase agriculture and horticulture yield and income of farmers.
- To make the state the leading state in the field of honey production.
- Children free from malnutrition.
- Production of quality honey.

- Honey beekeeping will change the lifestyle of small and marginal farmers and help in achieving the goal of increasing farmer's income.

About KVIC

- **About:** The Khadi and Village Industries Commission (KVIC) is a **statutory body formed in 1957 (During 2nd Five Year plan)** under the 'Khadi and Village Industries Commission Act of 1956'.
- **Ministry:** It is an apex organization **under the Ministry of Micro, Small and Medium Enterprises**, with regard to khadi and village industries within India.
- **Objective:** It seeks to - "plan, promote, facilitate, organize and assist in the establishment and development of khadi and village industries in the rural areas in coordination with other agencies engaged in rural development wherever necessary."
- The commission has three main objectives:
 1. The Social Objective - Providing employment in rural areas
 2. The Economic Objective - Providing saleable articles
 3. The Wider Objective - Creating self-reliance amongst people and building up a strong rural community spirit.
- **KVIC implements following schemes**
 - Prime Minister's Employment Generation Programme (PMEGP)
 - Market Promotion Development Assistance (MPDA)
 - Interest Subsidy Eligibility Certificate (ISEC)
 - Workshed Scheme for Khadi Artisans
 - Strengthening the infrastructure of existing weak Khadi institutions and assistance for marketing infrastructure
 - Khadi Reform and Development Programme (KRDP)
 - Scheme of Fund for Regeneration of Traditional Industries (SFURTI)
 - Honey Mission

'INDIAN AGRICULTURE: ACHIEVEMENTS AND CHALLENGES' REPORT

GS-III AGRICULTURE

Context

- India needs a second green revolution along with the next generation of reforms with a view to make agriculture more climate-resistant and environmentally sustainable, said an RBI article 'Indian Agriculture: Achievements and Challenges'.

Status of Agriculture in India

Some Positives

- Agriculture has traditionally been and continues to be the **source of basic sustenance of 60% of the population**.
- India had **success in terms of production that has ensured food security** in the country.
- The country is witnessing some strong initiatives that are **sustainability-focused, tech-led and promote climate-resilient systems**.
- **Andhra Pradesh plans to become India's first 100% "zero budget natural farming" state by 2027**. In zero budget natural farming all crops are grown without chemicals, utilizing non-pesticide management techniques.
- Similarly, **India's 450 agri-tech startups are enabling farmers to try new tech solutions to become a sustainable and profit-yielding enterprise**.
- These changes will play a huge role in national economy as **the sector comprises of 16% of India's GDP and 44% of total workforce employed**.
- Despite all the success, agriculture today is plagued with myriad issues ranging from natural to man-made.

Challenges

- Food inflation and its volatility.
- Dependency on climate/weather and scarce natural resources.
- Small and fragmented land holdings.
- Lack of soil replenishment.
- Lack of adequate and appropriate storage facilities and other services in the supply chain including harvesting, packing, and transporting, etc.
- Current overproduction of crops like rice, wheat and sugarcane, has led to rapid depletion of the ground-water table, soil degradation and massive air pollution raising questions about the environmental sustainability of current agricultural practices in India.
- Crop productivity in India is much lower than other advanced and emerging market economies due to various factors, like fragmented landholdings, lower farm mechanization and lower public and private investment in agriculture.

Recommendations made by the report

- **Second Green Revolution:** A second green revolution focused on the agriculture water-energy nexus, making agriculture more climate resistant and environmentally sustainable.
- **Use of Biotechnology:** The use of biotechnology and breeding will be important in developing eco-friendly, disease-resistant, climate-resilient, more nutritious and diversified crop varieties.
- **Wider use of digital technology:** Wider use of digital technology and extension services will be helpful in information sharing and generating awareness among the farmers.
- **Investment and infrastructure:** Supply-side interventions such as higher public investment, storage infrastructure and promotion of food processing are the need of the hour.
- **Better post-harvest loss-management and a revamp of co-operative movement** through the formation of farmer-producer organizations (FPOs) can arrest the volatility in food prices and farmers' income and help harness the true potential of Indian agriculture.

To read about status of Agriculture in India in detail: Visit: <https://www.iasgyan.in/blogs/status-of-agriculture-in-india>

BAMBOO SHOOT PROCESSING AND PRESERVATION

GS-III AGRICULTURE

Context

- NECBDC sponsored a training programme on "Bamboo Shoot Processing and Preservation" which was conducted by the NECBDC empanelled cluster M/s Delicacies food processing Center, Meghalaya the same venue from 13th to 17th, December 2021.

Objective

- The primary goal for such trainings is to empower the women and other rural folks to have means to a decent livelihood.

Status of Bamboo Forests in India

- India is the world's second largest cultivator of bamboo after China, with 136 species and 23 genera spread over 13.96 million hectares.
- Around 80 per cent of bamboo forests lie in Asia with India, China and Myanmar having 19.8 million hectares of bamboo.
- **Bamboo forests** have grown from 13,882 million culms (stems) in 2019 to 53,336 million culms in 2021 -Forest Survey report 2021.
- Despite all this, the country's share in the global bamboo trade and commerce is only 4 per cent.

Read about Forest Survey Report in details here: <https://www.iasgyan.in/daily-current-affairs/forest-survey-report-2021>

Some Bamboo Initiatives

National Bamboo Mission

- **About:** With a view to harness the potential of bamboo crop, Department of Agriculture & Cooperation (DAC), Ministry of Agriculture & Farmers Welfare is implementing a 100% Centrally Sponsored Scheme called Mission for Integrated Development of Horticulture (MIDH) in which National Bamboo Mission (NBM) is being implemented as a sub scheme.
- National Bamboo Mission was launched in 2003.
- **Aim:** The Mission envisages promoting holistic growth of bamboo sector by adopting area-based, regionally differentiated strategy and to increase the area under bamboo cultivation and marketing.

Project BOLD

- It is an initiative of the **Khadi and Village Industries Commission (KVIC).**
- **Aim:** It was launched with an objective of preventing land degradation and developing green cover. To create sustainable income for the local tribal population and also contribute to environment and land protection.

Challenges in Bamboo Sector

- **Untapped Potential:** Bamboo has tremendous untapped potential for transforming India's rural economy. There is vast scope for expanding bamboo in areas outside forests because: a) its management is easier in these lands than in natural forests and b) due to close to user agencies, economic harvesting is possible.
- **Weak Farmer Industry Linkage:** Emphasis of NBM has, by and large, been on propagation and cultivation of bamboo, with limited efforts on processing, product development and value addition. This has caused weak linkages between farmers and the industry. There is a need to develop an integrated bamboo industry in the country.

- **Land Degradation:** According to the State of India's Environment 2017, nearly 30 per cent of India's land is degraded. With its unique ability to stitch and repair damaged soils, bamboo is ideal for rehabilitating degraded soil. The short fall in bamboo plantation would have adverse impact in reclaiming degraded land as well as the Greening India programme.

The way forward

- **National programme of intensive bamboo plantation:** To arrest the pace of land degradation in the country, a national programme of intensive bamboo plantation involving all stake-holders needs to be undertaken.
- **Usage in Construction:** Developing bamboo as a load-bearing structural element would pave the way for its high value application in construction. This can make bamboo cultivation an economically viable way of greening the vast wastelands. The National Housing Scheme (PMAY) should utilise bamboo as construction material.
- **Boosting Exports:** Edible bamboo has a huge demand in East Asian cuisines and medicine. Bamboo grown in the Northeast (which is 66 per cent of the growing bamboo stock in India) can be exported to East Asian countries like Japan and Taiwan for competitive prices with the GOI's support.
- **Policy for leasing revenue degraded ravine lands:** A large portion of degraded lands, which could be profitably used for raising bamboo, are under the control of the Revenue Department/ Forest Department. Such lands are neither being developed by the Department nor leased away to the interested entrepreneurs for development. These lands can be economically utilized for promoting bamboos.
- **Liberalization of ceiling limits/restrictions** Statutory ceiling limits on agricultural land holdings for wastelands should be liberalized. Plantation of bamboos should be treated on par with plantations of commercial crops like rubber, tea, coffee, etc.
- **Fiscal incentives:** Long term finance, fiscal incentives and tax benefits should be provided to promote technology based reforestation and farm forestry projects. For encouraging the growth of bamboo sector in the country, Import Duties also need to be rationalized.
- **Capacity building:** Wide-ranging national programs to build the capacity of the rural artisans in bamboo craft needs to be initiated towards developing bamboo based cottage industry in the country and enhancing cash incomes of the rural artisan.
- **The need of value addition:** Most of the handicraft sector in bamboo is traditional due to which the production level is low. At present, semi-processed raw materials are obtained by manual processing of whole bamboos by artisans which results in more wastage and reduce the quality of the end product. Therefore, there is an immediate need to provide ready to use raw material so that production can be enhanced without compromising with the quality.

Trivia

- In **2017**, the Government, amended a 90-year-old law and **categorized bamboo as grass**.
- Following the **amendment in the Indian Forest Act, 1927**, bamboo has been **removed from the category of tree**. Now there is **no prohibition on growing or cutting bamboo trees even outside the forests**.
- As bamboo was defined as a tree under the previous law, its inter-state movement required a permit. Consequent to the change brought in by the amended Act, **felling or transportation of bamboos grown in non-forest areas will not require such permits**.

AGRI NUTRI GARDEN

GS-III AGRICULTURE

Context

- Deendayal Antyodaya Yojana - National Rural Livelihood Mission (DAY-NRLM) has observed 'Agri Nutri Garden Week' from 10th to 17th January, 2022 through awareness campaign and encouraging establishment of 'Agri Nutri Gardens' in the rural households.

About Agri Nutri Garden Project

- In the Agri Nutri Garden project **organic nutritional gardens are set up at households** to make available nutritious vegetables and fruits, prepare them to become self-sufficient in vegetables and thereby create a healthy society.
- **Objective:** The main objective of introducing the concept of nutri-gardens was to encourage tribal women to cultivate healthy food crops in their backyards.

Importance

- A nutri-garden ensures an inexpensive, regular and handy supply of fresh vegetables, which are basic to nutrition.
- Green vegetables contain vitamins and minerals, which protect us against diseases.
- Tribal and rural communities have easy access to all the essential resources like land and water but they lack knowledge about the nutritional value and scientific consumption pattern of the available and easily-cultivable nutritious food products.
- Hence, nutri-gardens may be regarded as a simple but innovative option to:
 - Bridge the gap between the available resources and its utilization in a sustainable manner

- Address issues like malnutrition
- Create additional revenue-generating opportunities for farmer communities, especially women
- Introduce healthy eating practices

Significance of the recent Campaign

- The initiative is helping in promoting nutritional awareness, education and behavioral change in rural areas involving farm women and school children, harnessing traditional knowledge through the local recipe to overcome malnutrition and implementing nutrition-sensitive agriculture through homestead agriculture and Nutri-garden.

Deen Dayal Antyodaya Yojana

- **About:** Deen Dayal Antyodaya Yojana - National Livelihoods Mission (NRLM) was launched by the Ministry of Rural Development (MoRD), in June 2011 as a restructured version of Swarna Jayanti Gram Swarozgar Yojna (SGSY). It is a **centrally sponsored programme**.
- **Aim:** Creating efficient and effective institutional platforms of the rural poor enabling them to increase household income through sustainable livelihood enhancements and improved access to financial services.

Key Features of DAY-NRLM

Universal Social Mobilisation

- At least one woman member from each identified rural poor household, is to be brought under the Self Help Group (SHG) network in a time bound manner.
- Special emphasis is particularly on vulnerable communities such as manual scavengers, victims of human trafficking, Particularly Vulnerable Tribal Groups (PVTGs), Persons with Disabilities (PwDs) and bonded labour.

Participatory Identification of Poor (PIP)

- Target Group is identified through the Participatory Identification of Poor (PIP) method. The NRLM Target Group (NTG) derived through the PIP is de-linked from the BPL.

Community Funds as Resources in Perpetuity

- NRLM provides Revolving Fund (RF) and Community Investment Fund (CIF) as resources in perpetuity to the institutions of the poor, to strengthen their institutional and financial management capacity.

Financial Inclusion

- On the demand side, it promotes financial literacy among the poor and provides catalytic capital to the SHGs and their federations.
- On the supply side, the Mission coordinates with the financial sector and encourages use of Information, Communication & Technology (ICT) based financial technologies, business correspondents and community facilitators like 'Bank Mitras'.

Convergence and partnerships

- With NGOs and other CSOs at two levels - strategic and implementation.

Linkages with PRIs

- For regular consultations between such institutions and PRIs for exchange of mutual advice, support and sharing of resources.

TEA INDUSTRY IN INDIA

GS-III AGRICULTURE

Context

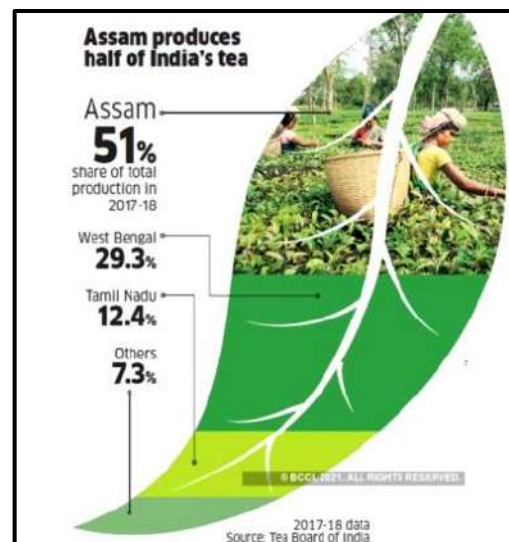
- Production of Darjeeling tea, one of the most popular tea varieties globally, has shrunk to 6.5 million kg in 2021, the lowest on record and just half of the 13 million kg produced two decades ago.

About

- Indian tea is among the **finest in the world** owing to strong geographical indications, heavy investment in tea processing units, continuous innovation, augmented product mix and strategic market expansion.

Major Tea growing regions

- The main tea-growing regions are in the **Northeast (including Assam) and in north Bengal (Darjeeling district and the Dooars region)**.
- **Dibrugarh is currently known as Tea City of India.** The soil of the district is **mostly fertile, alluvial soil**.
- It is the gateway to the three tea-producing districts **of Tinsukia, Dibrugarh, and Sivasagar**.



- These three areas account for approximately 50% of India's Assam tea crop, and this gives Dibrugarh its rightly earned sobriquet as the "Tea City of India".
- The state of Assam is the world's single largest tea-growing region.
- Tea is also grown on a large scale in the Nilgiris in south India.
- India is one of the world's largest consumers of tea, with about three-fourths of the country's total produce consumed locally.

Market Size of Tea Industry in India

- In 2020, nearly 1.10 million tons of tea was consumed in the country.
- The market in the country is projected to witness a further growth in the forecast period of 2022-2027, growing at a CAGR of 4.2%. In 2026, the tea industry in India is expected to attain 1.40 million tons.

Challenges faced by the Tea Industry

Shutdowns of tea plantations

- There are many tea gardens which have closed down in recent years due to various problems affecting the industry.
- Some of these are Red Bank, Dharanipur, Dheklapara, Surendranagar and Bundapani of the Dooars and Raipur Tea estate in West Bengal.
- In Assam too, many tea estates have closed down or are operating just minimally.

Causes

Tea prices started declining

- Across the world, tea's auction price has declined by almost 44% in real terms in the recent past as per World Bank's report.
- In India, all the profits from the tea gardens were siphoned off and there was no real or proper reinvestment in improving quality of tea.
- The burgeoning growth of the small-holder sector (currently 50 per cent of Indian production of 1,390 million kg), consistent with their ability to produce teas at a lower cost, also added pressure to the price lines.
- These have resulted in closing down of the tea gardens.

Less Production

- Financial problems, power problems, labor issues, poor labor schemes, inadequate communication system, increased pollution fee, less subsidy for transport etc. have put the tea industry in North East India in a difficult situation, resulting in low production of tea and tea leaves.

Pest Problem

- Along with the mosquito bug, a disease called the bacterial black spot has also affected many plantations in North East Tea Estates.

Low wages for laborers

- As price realization of tea is very less in the international market and as temporary laborers are used in the peak seasons, usually the wages paid for tea industry laborers are very less. This made some of them starve and leave out the industry.

High production costs

- Low yields and High production costs are pulling the legs of Small Tea Growers backward.
- Even the corporate companies are slowly exiting out of the industry and were concentrating only on the retailing part instead of production.

Sick industry

- A considerable number of tea gardens have gone sick due to lack of infrastructure, modernization and efficient management.

No proper storage

- Due to delay in transportation and lack of storage facilities, the processed tea gains moisture from the atmosphere and deteriorates in quality.

Climatic Conditions

- Unfavourable climatic conditions for tea plantations owing to scanty or very heavy rainfall have badly affected the tea industry.

Political turmoil

- In Darjeeling, due to political agitation, production of flag bearer variety of tea has suffered a lot. This has forced lot of exporters to substitute that with Nepal tea to compensate the flavor and aroma.

Health problems

- The poor living conditions make these labourers vulnerable to various diseases.
- The major health problems faced by the labourers are worm infestation, respiratory problems, diarrhoea, skin infections, filariasis and pulmonary tuberculosis.

No health benefits

- Under the Plantation Labour Act 1951, each tea garden should have a health centre with proper medical facilities.
- However, the gardens are remotely located and the health centres are located in distant towns.
- The workers do not have proper connectivity to these centres.
- There are no maternity benefit schemes available for the female tea garden workers.
- It has been found that women are engaged in hard jobs even during pregnancy and post natal period.

Wage/Price Movement

- The wage/price movement has been adverse.
- Taking 1995 as the base year, and measuring over a 24-year duration up to 2019, wages have gone up by eight times whereas tea prices have gone up only by 2 per cent. Consequently, many companies turned red.

Collapse of the captive Russian market

- South Indian plantations took an earlier and bigger hit because of the collapse of the captive Russian market.

Exit from captive production

- Branding and moving up the value chain were seen as a means to insulate oneself from the commodity price insecurity.
- But the integrated (forward and backward) tea companies soon figured out that captive production was a burden and exited, either fully or partially from captive production.

The recent shrinkage in Darjeeling Tea Production

- Climate change, closure of gardens, high level of absenteeism among tea workers, losing export markets due to agitation in the hills in 2017 and little effort to promote the Darjeeling tea in the domestic market have led to the fall.
- Planters fear that if the government does not come up with a revival package, then Darjeeling tea, the flag bearer of the Indian tea industry, will get lost in history just like the teas from Himachal Pradesh's Palampur.

Under the circumstances, the industry, in general, is in crying need to have a structural change in the way it operates.

Suggestions

Need for Organized Business

- Indian Tea industry is still unorganized and the Tea Board is not that effective. Tea Board that has to undergo structural reforms in order to safeguard the industry.

Quality Enhancement

- Quality tea production will increase the demand for Indian tea in the global arena, thereby increasing the export prices.

Awareness Programs

- Only production is given importance due to ignorance of growing "Small Tea Growers". Stakeholders need to organize more awareness programs on Tea plantations and on entrepreneurship skills.

Distribute Land-Ownership

- Sustainability of the plantation industry can be ensured by distributing land-ownership in favor of the plantation employees and buy back the raw material through a co-operative outfit.

Price Formula

- The green leaf purchase can be based on a price-formula linked to, the published industry auction price.

Land disinvestment

- The land disinvestment is prone to uncertainty over land ownership ('land title' issues + political, social & economic pressure).
- The value of a plantation should simply be based on operational profits.

Social and Welfare amenities

- Once the workmen become owners of land and cease to be plantation employees, the government would have to provide them with social security, currently provided by the plantation managements. This will further bring down production costs for the corporate- a relief from wage increase cycle as the raw material cost can be linked to their end price realization.

Conclusion

- India being the second largest producer of Tea has numerous opportunities to develop the Tea Industry as it is providing employment to a huge number of people in the north eastern states.
- A win-win for all and therefore a truly sustainable and transparent model — is the key requirement for a highly labor-centric industry like tea plantations.

Context

- The guidelines of "Sub-Mission on Agricultural Mechanization" (SMAM) have been amended which envisages granting up to 100% of the cost of agriculture drone or Rs. 10 lakhs, whichever is less, as grant for purchase of drones.

About Sub-Mission on Agricultural Mechanization (SMAM)

Scheme

- Ministry of Agriculture and Farmers Welfare launched the Sub-Mission on Agricultural Mechanization (SMAM) in **2014-15**.

Implementation

- The SMAM is being implemented by the Department of Agriculture and Farmers Welfare.
- The scheme is implemented by the respective State Governments.

Objectives

- Increasing the reach of farm mechanization to small and marginal farmers and to the regions & difficult area where farm power availability is low.
- Boost up mechanization in the agriculture sector, improved agricultural implements and machinery as essential inputs for modern agriculture.
- Promote 'Custom Hiring Centres' and 'Hi-tech Hubs of High-Value Machines' to offset the adverse economies of scale arising due to small and fragmented landholding and high cost of individual ownership;
- Creating awareness among stakeholders through demonstration and capacity building activities and ensuring performance testing and certification of agricultural machines at designated testing centres located all over the country.

Importance of mechanization

- It will enhance the productivity of crops besides reducing human drudgery and cost of cultivation.
- Mechanization also helps in improving the utilization efficiency of other inputs that can boost the income of farmers and growth of the agricultural economy.

Recent Amendment and new provisions in SMAM

- Grant:** Grant of up to 100% of the cost of agriculture drone or Rs. 10 lakhs, whichever is less, for purchase of drones by the Farm Machinery Training & Testing Institutes, ICAR institutes, Krishi Vigyan Kendras and State Agriculture Universities for taking up large scale demonstrations of this technology on the farmers' fields.
- Eligibility:** Existing CHCs or new ones, farmer producers organizations (FPOs) and rural entrepreneurs would be eligible to receive grant up to 75% of the cost of agriculture drone for its demonstrations on the farmers' fields.
- Contingency Expenditure:** A contingency expenditure of Rs.6000 per hectare would be provided to implementing agencies that do not want to purchase drones but will hire drones for demonstrations from Custom Hiring Centres, Hi-tech Hubs, Drone Manufacturers and Start-Ups.
- Limitation of Expenditure:** The contingent expenditure to implementing agencies that purchase drones for drone demonstrations would be limited to Rs.3000 per hectare. The financial assistance and grants would be available until March 31, 2023.

Benefits of using Drones in Agriculture

- Enhanced Production** - The farmer can improve production capabilities through comprehensive irrigation planning, adequate monitoring of crop health, increased knowledge about soil health, and adaptation to environmental changes.
- Effective and Adaptive Techniques** - Drone usage results in regular updates to farmers about their crops and helps develop strengthened farming techniques. They can adapt to weather conditions and allocate resources without any wastage.
- Greater safety of farmers** - It is safer and more convenient for farmers to use drones to spray pesticides. It leads to less pollution and chemicals in the soil.
- Less wastage of resources** - Agri-drones enables optimum usage of all resources such as fertilizer, water, seeds, and pesticides.
- 99% Accuracy rate** - The drone survey helps farmers calculate the precise land size, segment the various crops, and indulge in soil mapping.
- Useful for Insurance claims** - Farmers can use the data captured through drones to claim crop insurance in case of any damages. They even calculate risks/losses associated with the land while being insured.



Read: <https://www.iasgyan.in/daily-current-affairs/artificial-intelligence-in-agriculture-19>

TARDIGRADES & QUANTUM ENTANGLEMENT

GS-III SCIENCE & TECHNOLOGY

In News

- An international team of researchers have performed the first ever experiment successfully 'quantum entangling' a multi-celled organism.
- The team, says it's managed to place a tardigrade in a state of quantum entanglement between a pair of superconducting qubits.

Tardigrades

- Tardigrades also known as water bears or moss piglets, are a phylum of **eight-legged segmented micro-animals**.

Habitat

- They have been **found everywhere in Earth's biosphere, from mountain tops to the deep sea and mud volcanoes, and from tropical rainforests to the Antarctic**. Tardigrades are prevalent in mosses and lichens and feed on plant cells, algae, and small invertebrates.

Physiology

- Tardigrades are among the **most resilient animals known**, with individual species **able to survive extreme conditions** – such as exposure to extreme temperatures, extreme pressures (both high and low), air deprivation, radiation, dehydration, and starvation – that would quickly kill most other known forms of life. Tardigrades **have survived exposure to outer space**.
- Tardigrades are one of the few groups of species that are **capable of suspending their metabolism (cryptobiosis)**.

Note: In the **cryptobiotic state**, all measurable metabolic processes stop, preventing reproduction, development, and repair. When environmental conditions return to being hospitable, the organism will return to its metabolic state of life as it was prior to the cryptobiosis.

- Many species of tardigrade **can survive in a dehydrated state up to five years**, or longer in exceptional cases.



Quantum Entanglement

- Quantum entanglement is a physical phenomenon that occurs **when a pair or group of particles is generated, interact, or share spatial proximity in a way such that the quantum state of each particle of the pair or group cannot be described independently of the state of the others**, including when the particles are separated by a large distance.
- Measurements of physical properties such as position, momentum, spin, and polarization performed on entangled particles can, in some cases, be found to be perfectly correlated.
- Quantum entanglement has direct application in Quantum Computing.

The Recent Experiment

- The researchers managed to put a tardigrade in a state where it was directly **connected to the qubits** in such a way that anything that happens to the water bear or the qubits would simultaneously affect all three.
- This is a fundamental property of quantum computing.

Qubits

- In quantum computing, a qubit or quantum bit is the **basic unit of quantum information**.
- An ordinary computer chip uses bits. These are like tiny switches that can either be in the off position – represented by a zero – or in the on position – represented by a one.
- Rather than just being on or off, **qubits can also be in what's called 'superposition'** – where they're both on and off at the same time, or somewhere on a spectrum between the two. A qubit allows for uncertainty.
- The other thing that qubits can do is called entanglement. In entanglement, two particles are linked together, even if they're physically separate.

Read more at: <https://www.iasgyan.in/blogs/quantum-computing> and;
<https://www.iasgyan.in/daily-current-affairs/quantum-laboratory-at-mhow-mp>

SPACE DEBRIS

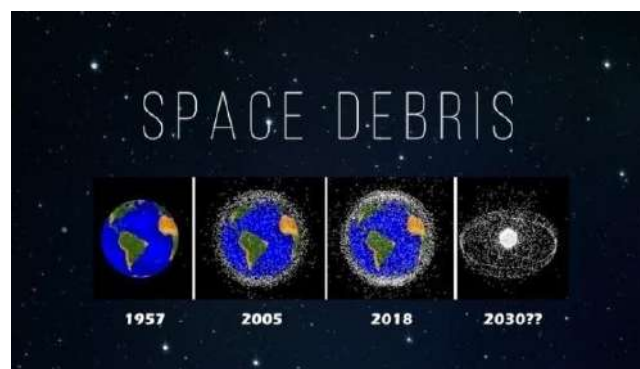
GS-III SCIENCE & TECHNOLOGY

Context

- A Chinese satellite had a near collision with one of the many chunks of debris left by the fallout of a recent Russian anti-satellite missile test.

Space Debris

- Space junk is any piece of machinery or debris left by humans in space** – principally in Earth orbit.
- These include dead satellites, fragments of rocket bodies and spacecraft etc.



Concerns

- Currently, an estimated 20,000 objects – including satellites and space debris – are crowding low-Earth orbit. It can be a **hazard to active satellites and spacecraft**.
- At orbital velocities, even the tiniest pieces of debris **can disable an operational satellite**.
- Potential **collision threat to the space station**.
- Earth orbit could even become impassable** if the risk of collision grows too high.
- It could **hinder our ability to** use weather satellites, and hence to **monitor weather changes**.

Kessler syndrome

- This is an idea **proposed by NASA scientist Donald Kessler in 1978**.
- It says if there is too much space junk in orbit, it could result in a chain reaction where more and more objects will collide and create new space junk in the process, to the point where Earth's orbit became unusable – a Domino Effect.
- 12 fragmentation events have already taken place every year for the past two decades.

Initiatives taken to tackle the problem

Inter-Agency Space Debris Coordination Committee

- IADC is an inter-governmental forum whose aim is to co-ordinate efforts to deal with debris in orbit around the Earth founded in 1993.

NORAD

- North American Aerospace Defense Command, is an initiative of the U.S. and Canada that shares selective debris data with many countries.

ClearSpace-1 Mission

- In this a "chaser" with its four robotic arms will grab the leftover of 2013 craft known as VESPA (Vega Secondary Payload Adapter) and drag it down to Earth's atmosphere where both will burn up. To be launched in 2025.

ELSA-d, Mission

- ELSA-d (End-of-Life Services b), will test technologies to capture an object in low-Earth orbit and move it to a lower altitude, where it will eventually burn up harmlessly in Earth's atmosphere.

Starship

- Space X Starship – the passenger-carrying spacecraft once ready can collect and de-orbit space junk apart as well.

NEO-01'

- China launched a low Earth orbit robot prototype called 'NEO-01'.
- It can scoop up space debris left behind by other spacecraft with a big net.
- NEO-01, was launched on Long March 6 rocket.
- NEO-01 will use a net to capture space debris and then burn it with its electric propulsion system.
- The NEO-01, will also peer into deep space to observe small celestial bodies.
- The 30kg robot will pave the way for future technologies capable of mining on asteroids.

ISRO's Efforts

'Project NETRA'

- It is an early warning system in space to detect debris and other hazards to Indian satellites.

Other

- ISRO's Geosynchronous Satellite Launch Vehicle (GSLV) employs passivation of the Cryogenic Upper Stage at the end of its useful mission.

- ISRO's communication satellites are designed with adequate propellant margins for re-orbiting at the end of their useful life to a higher graveyard orbit.
- **Successful example:** INSAT-2C

Closing Thoughts

- Such multilateral efforts, alongside technological innovation, can ensure that the great space cleanup is well underway.

GAGANYAAN MISSION

GS-III SCIENCE & TECHNOLOGY

Context

- ISRO successfully conducted a 25-second qualification test for its liquid propellant-based Vikas engine to be used under the Gaganyaan mission.

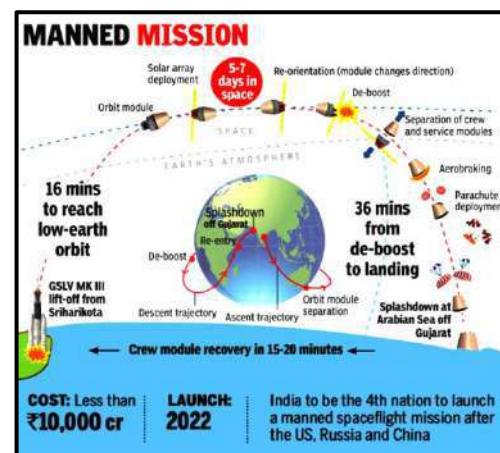
Gaganyaan

About

- Gaganyaan is an Indian crewed orbital spacecraft that is intended to send 3 astronauts to space for a minimum of seven days by 2023, as part of the Indian Human Spaceflight Programme.
- It will be for the **first time that India** will launch its manned mission to space, **making the country fourth in line** to have sent a human to space.

Launch Vehicle

- **GSLV Mk-III (Geosynchronous Satellite Launch Vehicle)** the three-stage heavy-lift launch vehicle will be used for carrying the orbital module.
- **Note:** This three-stage heavy lift launch vehicle, named GSLV MkIII-M1, was used for launching Chandrayaan-2.
- The launcher uses two S200 solid rocket boosters to provide the huge amount of thrust required for lift off.



GSLV Mk III is designed to carry 4 ton class of satellites into Geosynchronous Transfer Orbit (GTO) or about 10 tons to Low Earth Orbit (LEO). The powerful cryogenic stage of GSLV Mk III enables it to place heavy payloads into LEO's of 600 km altitude.

Placement

- The spacecraft **will be placed in a low earth orbit of 300-400 km.**
- The human spaceflight will take 16 minutes to reach the orbit where it will stay for five to seven days.
- The **capsule will rotate around the Earth every 90 minutes**, and astronauts will be able to witness sunrise and sunset. The three astronauts will be able to see India from space every 24 hours, while they conduct experiments on micro-gravity.

Suit

- With the ability to hold one oxygen cylinder, the suit will allow the astronaut to breathe in space for 60 minutes.

Return

- For its return, the capsule will take 36 hours, and will land in the Arabian Sea, just off the coast of Gujarat.

Vyommitra

- ISRO has also developed a **female half humanoid robot named Vyommitra**, a combination of two Sanskrit words Vyoma (space) and Mitra (friend), which will be sent on the first unmanned Gaganyaan flight.
- Vyommitra will **help in simulating human functions in space and will also interact with the environment control life support system.**
- Vyommitra has been **designed to speak in Hindi and English**, can **act as a companion to the astronauts, converse with them, and also respond to their queries.**

Significance

- If the maiden human spaceflight Gaganyaan mission is a success, India will become the **fourth country** to have conducted human spaceflights **after the US, Russia, and China.**
- The programme would **spur research and development within the country in niche science and technology domains.**
- ISRO has developed some critical technologies like re-entry mission capability, crew escape system, crew module configuration, thermal protection system, deceleration and flotation system etc.
- The human spaceflight programme will provide **a unique micro-gravity platform in space for conducting experiments** and a test bed for future technologies.

- It has potential for **technology spinoffs** in several areas such as **medicine, agriculture, industrial safety, pollution, waste management, water and food resource management through this programme.**
- The maiden spaceflight is also aiming to achieve economic activities such as **employment generation, human resource development, and enhanced industrial capabilities.**

XENOTRANSPLANTATION

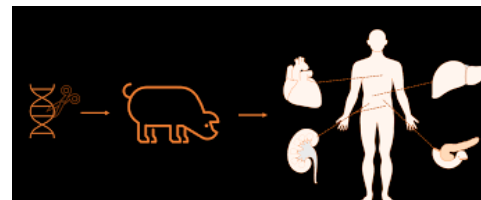
GS-III SCIENCE & TECHNOLOGY

Context

- In a first, doctors in the USA transplanted a genetically altered pig heart into a patient. This process is referred to as xenotransplantation.

About

- Xenotransplantation is any procedure that involves the transplantation, implantation or infusion into a human recipient of either -
 - a) Live cells, tissues, or organs from a nonhuman animal source, or
 - b) Human body fluids, cells, tissues or organs that have had ex vivo contact with live nonhuman animal cells, tissues or organs.
- Such cells, tissues or organs are called **xenografts or xenotransplants.**



Need

- The development of xenotransplantation is, in part, driven by the fact that the demand for human organs for clinical transplantation far exceeds the supply.

Challenges pertaining to Xenotransplantation

Shorter life spans of animal organs

- Typically, animals have much shorter life spans than humans. Even if the success rate improves for transplanting animal organs to humans, there would still be a risk of the organs wearing out or dying prematurely.

Xenozoonosis

- Disease transmission (xenozoonosis) and permanent alteration to the genetic code of animals are also causes for concern.

Animal Rights

- Similarly to objections to animal testing, animal rights activists have also objected to xenotransplantation on ethical grounds.

Moral issues

- Many oppose xenotransplantation because of their religious beliefs that uphold humans being a superior species to animals, thus making them stand their ground that mixing species is against God's will.

Very high rejection rate

- Human body recognizes tissues and organs from animals as not being natural. Thus, strong anti-rejection drugs are needed when performing xenotransplantation to depress the entire immune system. Most organ transplant procedures were not able to prove very effective in the long run.



Prospects of Xenotransplantation

Potential treatment for end-stage organ failure

- Human xenotransplantation offers a potential treatment for end-stage organ failure, a significant health problem in parts of the industrialized world.

Increase Organ Availability

- Xenotransplantation has the potential to increase organ availability.

Open New Research Areas

- This would open new research about treating illnesses meaning that different animals have individual ways of fighting infections and through xenotransplantation humans might be able to cure deadly diseases.

End Transplant List

- If xenotransplantation has a positive outcome when transferring pig organs to humans the availability of pig organs is much higher than human organs. This would help decrease the organ transplant list and cut waiting time for patients.

Life-saving benefits

- It can offer life-saving solutions to extend the life of a person who is on a human transplant list long enough.

Reduces opportunities on the black market for organ donations

- The sale of human organs on the black market has been a huge issue. Using organs from animals, instead of those donated by humans, can end this type of trade.

Satisfy the supply and demand of organs

- This method of organ transplantation has the potential to eliminate the huge deficit between high demand and minimal supply of organs.

Final thoughts

- Xenotransplantation has raised a lot of good questions that lean to both the positive and the negative sides.
- By weighing its pros and cons, the government and concerned stakeholders can decide whether this is a technology that we pursue as a society or not.

SOLID STATE BATTERIES

GS-III SCIENCE & TECHNOLOGY

Context

- Shareholders of California-based QuantumScape Corp, have approved a multibillion-dollar pay package for Chief Executive Officer Jagdeep Singh, subject to the company meeting some performance milestones.

About

- A solid-state battery is a battery technology that uses solid electrodes and a solid electrolyte, instead of the liquid or polymer gel electrolytes found in lithium-ion or lithium polymer batteries.

Background

- Between 1831 and 1834, Michael Faraday discovered the solid electrolytes silver sulfide and lead(II) fluoride, which laid the foundation for solid-state ionics.
- While solid electrolytes were first discovered in the 19th century, several drawbacks, such as low energy densities, have prevented widespread application.
- Developments in the late 20th and early 21st century have caused renewed interest in solid-state battery technologies, especially in the context of electric vehicles, starting in the 2010s.

Advantages of solid state batteries

- Solid-state batteries can provide potential solutions for many problems of liquid Li-ion battery, such as flammability, limited voltage, unstable solid-electrolyte inter-phase formation, poor cycling performance and strength.
- The advantages of the solid-state battery technology include:
 - higher cell energy density (by eliminating the carbon anode),
 - lower charge time (by eliminating the need to have lithium diffuse into the carbon particles in conventional lithium-ion cells),
 - ability to undertake more charging cycles and thereby a longer life, and
 - improved safety.

Materials used

- Materials proposed for use as solid electrolytes in solid-state batteries include ceramics (e.g., oxides, sulfides, phosphates), and solid polymers.

Uses

- Solid-state batteries have found use in pacemakers, RFID and wearable devices.

Challenges

- They are potentially safer, with higher energy densities, but at a much higher cost.

Energetic choices

Solid-state batteries have several pluses over traditional lithium-ion batteries



Front Edge Technology battery powers a light-emitting diode.



Lithium-ion battery

Credit: Front

Solid-state	Lithium-ion
+ Higher cost	+ Lower cost
+ Higher energy storage	- Lower energy storage
+ Lighter	- Heavier
- Nascent technology	+ Proven technology
+ Nonflammable	- Flammable
+ Performs well at high temperatures	- Decreased battery life at higher temperature

- Challenges to widespread adoption include energy and power density, durability, material costs, sensitivity and stability.

Final Thought

- Solid-state batteries have numerous advantages over current batteries but many obstacles need to be overcome if they are to realize their full potential.
- Following this, we will see huge growth across various industries, not just electric vehicles and consumer electronics but also grid energy storage, medical devices and avionics

DEEP OCEAN MISSION

GS-III SCIENCE & TECHNOLOGY

Context

- Chief of the Naval Staff, and the Government stakeholders discussed the modalities to deepen cooperation in "Deep Ocean Mission" which is to be the torchbearer of India's "Blue Economy".

About

- Deep Ocean mission is an initiative to undertake the deep ocean exploration focused on India's exclusive economic zones and continental shelf.
- It is under Ministry of Earth Sciences (MoES).

Objective

- It aims to search for deep-sea resources and minerals, flora and fauna, including microbes, and studying ways to sustainably utilise them.

Deep Ocean Mission includes

- Developing systems for deep sea mining, launching a manned submersible.
- Deep-ocean exploration, including purchase of a vessel for this.
- Deep-ocean biodiversity studies, bio prospecting.
- Establishing a research facility in Goa for marine biology and engineering.
- Undertaking climate change surveys of seas around India.
- Making ocean thermal energy conservation efficacious.
- Generates power from the difference in temperatures.

Components

- There are six components to the programme.

(1) Development of Technologies for Deep Sea Mining, and Manned Submersible:

- A manned submersible will be developed to carry three people to a depth of 6000 metres in the ocean with suite of scientific sensors and tools for mining Polymetallic Nodules.

(2) Development of Ocean Climate Change Advisory Services:

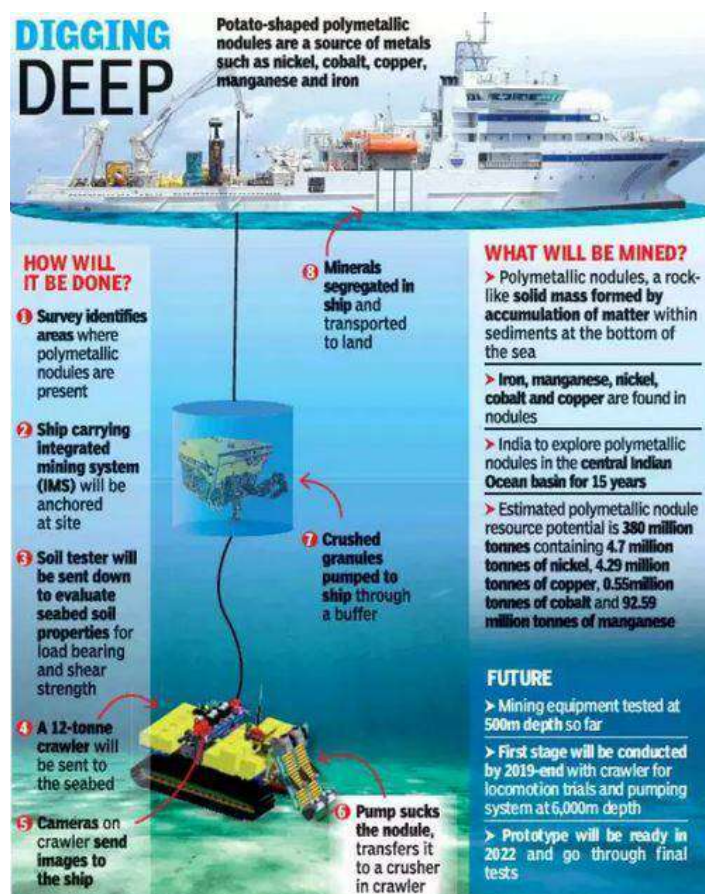
- It entails developing a suite of observations and models to understand and provide future projections of important climate variables on seasonal to decadal time scales.

(3) Technological innovations for exploration and conservation of deep-sea biodiversity

- Bio-prospecting of deep-sea flora and fauna including microbes and studies on sustainable utilization of deep-sea bio-resources will be the main focus.
- This component will support the Blue Economy priority area of Marine Fisheries and allied services.

(4) Deep Ocean Survey and Exploration

- To explore and identify potential sources of hydrothermal minerals that are sources of precious metals formed from the earth's crust along the Indian Ocean mid-oceanic ridges.



(5) Energy and freshwater from the Ocean

- Involves studying and preparing detailed engineering design for offshore Ocean Thermal Energy Conversion (OTEC) powered desalination plants.

(6) Advanced Marine Station for Ocean Biology

- Aimed at development of human capacity and enterprise in ocean biology and engineering.

Importance

- India's Exclusive Economic Zone spreads over 2.2 million square kilometers.
- India has been allotted a site of 75,000 square kilometres in the Central Indian Ocean Basin (CIOB) by the UN International Sea Bed Authority for exploitation of polymetallic nodules (PMN).
- These are rocks scattered on the seabed containing iron, manganese, nickel and cobalt.
- 380 million metric tonnes of polymetallic nodules are available at the bottom of the seas in the Central Indian Ocean.
- A fraction of that reserve can meet the energy requirement of India for the next 100 years.

DEEP OCEAN MISSION

<ul style="list-style-type: none"> ➤ Deep Sea Mining through 'Underwater Vehicles' and 'Underwater Robotics' ➤ Asserting exclusive rights to explore polymetallic nodules from seabed over 75,000 sq km of areas in international water ➤ Estimated polymetallic nodules resource potential: 380 million tonnes (MT) 	THESE POLYMETALLIC NODULES CONTAIN Manganese 92.6 MT Nickel 4.7 Copper 4.3 Cobalt 1 (*figures are rounded off)
<ul style="list-style-type: none"> ➤ Development of ocean climate change advisory services ➤ Technology for sustainable utilisation of marine bio-resources 	<ul style="list-style-type: none"> ➤ Deep ocean survey and exploration ➤ Energy from the ocean and offshore-based desalination ➤ Krill fishery from southern ocean

Samudrayaan Project under the Deep Ocean Mission

Samudrayaan
"India's own crawler to walk the Ocean bed"

AIM:
Exploration of polymetallic nodules (also known as manganese nodules) from Ocean.

ABOUT:

- It is a part of the Ministry of Earth Sciences' pilot project for deep ocean mining for rare minerals.
- It proposes to carry three persons in a submersible vehicle to a depth of 6,000 metres for 72 hours under sea.
- The project is expected to become a reality by 2021-22.
- The project has been undertaken by the National Institute of Ocean Technology (NIOT).

WtG

MILLIMETRE WAVE BAND IN 5G

GS-III SCIENCE & TECHNOLOGY

Context

- The Satcom Industry Association-India (SIA), has voiced concerns over the Government's plan to include the Millimetre Wave (mm Wave) bands in the 5G spectrum auction.

Decoding Spectrum and Bands in Telecommunication

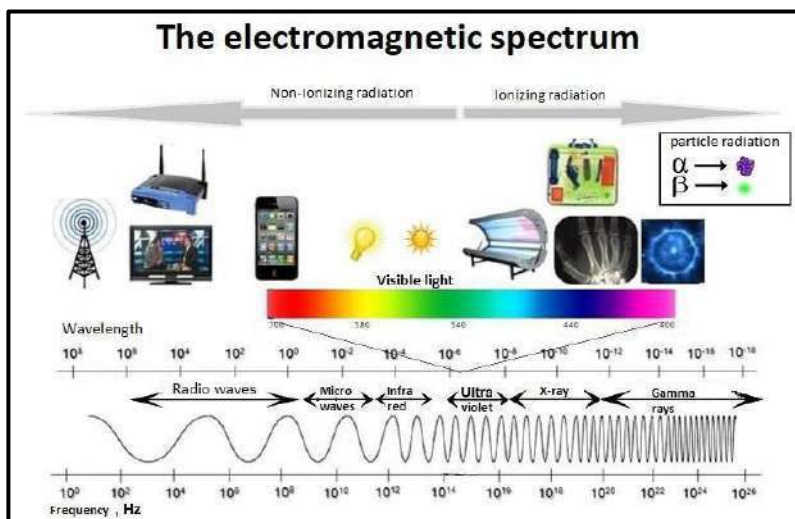
What is Spectrum?

- Spectrum refers to the invisible radio frequencies that wireless signals travel over.
- Those signals are what enable us to make calls from our mobile devices, tag our friends on Instagram, call an Uber, and do everything on our mobile devices.
- The frequencies we use for wireless are only a portion of what is called the electromagnetic spectrum.

Bands

- Portions of electromagnetic spectrum are grouped in "bands" depending on their wavelengths—the distance over which the wave's shape repeats.
- The full electromagnetic spectrum ranges from three Hz (extremely low frequency) to 300 EHz (gamma rays).
- The portion used for wireless communication sits within that space and ranges from about 20 KHz to 300 GHz.
- Different bands have slightly different characteristics. For the purposes of wireless communication, we can think of spectrum in three categories: low-, mid-, and high-band spectrum.

- These spectrum frequencies are transmitted between cell sites and our mobile devices.
 - Low-band spectrum (under 3 GHz)** travels longer distances with minimal signal interruption. Today's wireless networks are built primarily on low-band spectrum.
 - High-band spectrum (above 24 GHz)** travels much shorter distances—think meters, not miles—compared to low-band spectrum, but offers high capacity and ultra-fast speeds.
 - Mid-band spectrum (between 3 and 24 GHz)** blends the characteristics of both low- and high-band spectrum—providing a mix of coverage and capacity.



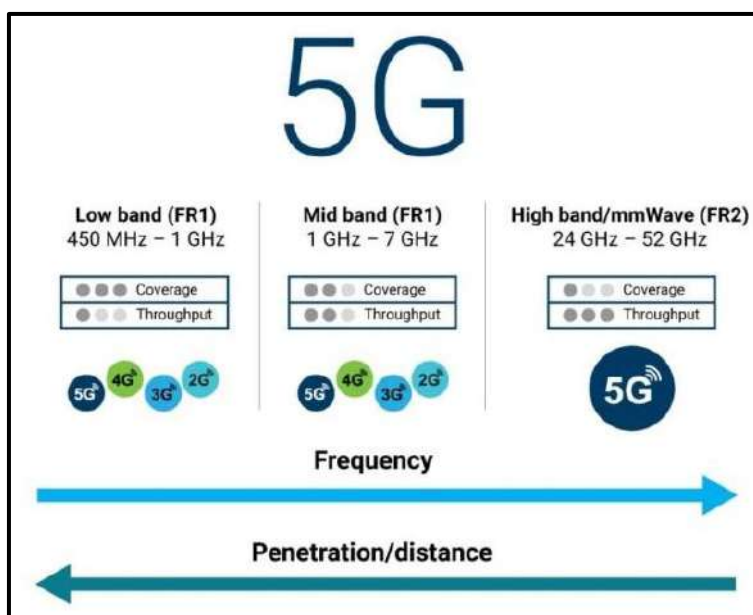
5G

- 5G is the **fifth generation of cellular technology**. It is a new global wireless standard after 1G, 2G, 3G, and 4G networks.
- 5G enables a new kind of network that is designed to connect virtually everyone and everything together including machines, objects, and devices.
- 5G wireless technology is meant to deliver **higher multi-Gbps peak data speeds, ultra low latency, more reliability, massive network capacity, increased availability, and a more uniform user experience to more users.**
- Network Standard:** MIMO

Comparison	2G	3G	4G	5G
Introduced in year	1993	2001	2009	2018
Technology	GSM	WCDMA	LTE, WiMAX	MIMO, mm Waves
Access system	TDMA, CDMA	CDMA	CDMA	OFDM, BDMA
Switching type	Circuit switching for voice and packet switching for data	Packet switching except for air interference	Packet switching	Packet switching
Internet service	Narrowband	Broadband	Ultra broadband	Wireless World Wide Web
Bandwidth	25 MHz	25 MHz	100 MHz	30 GHz to 300 GHz
Advantage	Multimedia features (SMS, MMS), internet access and SIM introduced	High security, international roaming	Speed, high speed handoffs, global mobility	Extremely high speeds, low latency
Applications	Voice calls, short messages	Video conferencing, mobile TV, GPS	High speed applications, mobile TV, wearable devices	High resolution video streaming, remote control of vehicles, robots, and medical procedures

Read more here: <https://www.iasgyan.in/daily-current-affairs/the-technology-behind-5-g>

Bands in 5G



About Millimetre Wave Band in 5g

- Millimetre Wave band or mmWave is a particular segment of radio frequency spectrum that ranges between 24 GHz and 100 GHz.

Advantages

Seamless data transfer

- This spectrum, has a short wavelength, and is apt to deliver greater speeds and lower latencies.
- This in turn makes data transfer efficient and seamless as the current available networks work optimally only on lower frequency bandwidths.

Cover greater distances

- 5G services can be deployed using lower frequency bands.
- They can cover greater distances and are proven to work efficiently even in urban environments, which are prone to interference.

Data speeds

- But, when it comes to data speeds, these bands fail to hit peak potential needed for a true 5G experience.
- So, mmWave is that quintessential thing in 5G for mobile service providers.

Concern

Disrupt of the satellite communication Industry

- 27.5-31 GHz and 17.7-21.2 GHz bands have been preserved for satellite-based broadband services as per the International Telecommunication Union (ITU).
- The 24.25-27.5 GHz band particularly had been the subject of controversy due to out-of-band emissions into the passive satellite band used for weather satellites at 23.6-24 GHz.

Denial of advanced broadband services

- Offering excessive spectrum resources in the upcoming 5G auction will result in Indian citizens being denied the benefits of high-demand, advanced satellite broadband services.

Loss in Economy

- It will result in a massive loss to the Indian economy, along with the loss of foreign direct investment (FDI) and employment generation benefits.

Suggestions

3.3-3.67 GHz band would suffice

- 330 MHz of spectrum in the 3.3-3.67 GHz band is enough to satisfy India's mid-band 5G needs.

Risk of excess allocation

- Providing excess spectrum could pose a downside risk of the bands going unsold, or even worse, underutilised by terrestrial players at the expense of satellite-based service providers.

Non-interference with the satellite industry

- The allocation of mmWave band is critical to the satellite communication industry, which needs a stronger regulatory support to ensure that 5G operations don't interfere with their existing operations.

Read: <https://www.iasgyan.in/daily-current-affairs/the-technology-behind-5-g>

Read: <https://www.iasgyan.in/blogs/5g-technology-a-primer>

NATIONAL SUPERCOMPUTING MISSION

GS-III SCIENCE & TECHNOLOGY

Context

- As per the ministry of science and technology's annual year-end review: Under the National Super-Computer Mission (NSM), four new Supercomputers have been installed since July 2021 at IIT-Hyderabad, NABI- Mohali, CDAC-Bengaluru and IIT Kanpur.

About NSM

- It is a first of its kind Mission to boost the country's computing power.
- The mission was set up to provide the country with supercomputing infrastructure to meet the increasing computational demands of academia, researchers, MSMEs, and startups by creating the capability design, manufacturing, of supercomputers indigenously in India.

Agencies involved

- The National Super Computing Mission is steered jointly by the **Ministry of Electronics and IT (MeitY)** and **Department of Science and Technology (DST)**.
- It is being implemented by the **Centre for Development of Advanced Computing (C-DAC)**, Pune and **the Indian Institute of Science (IISc)**, Bengaluru.

Target

- The target of the mission was set to establish a network of supercomputers ranging from a few Tera Flops (TF) to Hundreds of Tera Flops (TF).
- Plus, three systems with greater than or equal to 3 Peta Flops (PF) in academic and research institutions of National importance across the country by 2022.

Supercomputers

- Supercomputer, are a class of extremely powerful computers.
- They refer to the **fastest high-performance systems available at any given time**.
- Such computers have been used primarily for scientific and engineering work requiring exceedingly high-speed computations.
- Common applications for supercomputers include testing mathematical models for complex physical phenomena or designs, such as climate and weather, evolution of the cosmos, nuclear weapons and reactors, new chemical compounds (especially for pharmaceutical purposes), and cryptography.

Supercomputers in India

- India is ranked 23rd in the world in terms of number of supercomputers.
- Cray XC40-based Pratyush is the fastest supercomputer in India. Mihir ranks 67 in the world.
- The first supercomputer of India** assembled indigenously, called **ParamShivay**, was installed in IIT (BHU).
- By this year, the government aims to install **73 indigenous supercomputers across the country**.

Petaflop

- A petaflop is the ability of a computer to do one quadrillion floating point operations per second (FLOPS).
 - Floating-point numbers have decimal points in them. The number 2.0 is a floating-point number because it has a decimal in it. The number 2 (without a decimal point) is a binary integer.
 - Specific to floating-point numbers, a floating-point operation is any mathematical operation (such as +, -, *, /) or assignment that involves floating-point numbers (as opposed to binary integer operations).
- Pratyush and Mihir are the fastest supercomputer in India with a maximum speed of 6.8 PetaFlops**
- The world's fastest supercomputer today, Titan**, is capable of 20 petaflops.
- One peta FLOPS is equal to one thousand tera FLOPS.

CHANDRAYAAN 3

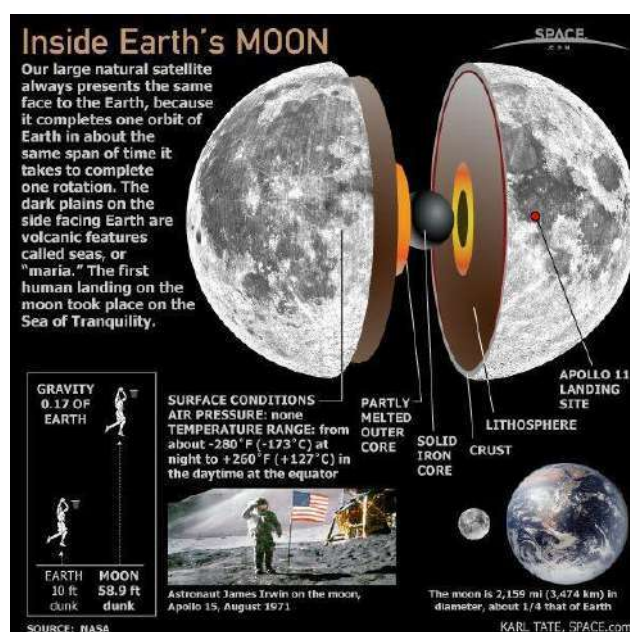
GS-III SCIENCE & TECHNOLOGY

Context

- The Indian Space Research Organisation (ISRO) is targeting the launch of **third lunar mission** Chandrayaan-3 by middle of the next year.

Details

- About:** Chandrayaan-3 is a lander-and rover-specific mission, which will demonstrate India's capability of soft landing on a celestial body, with the rover.
- Mandate:** It will then communicate with Earth via the existing orbiter from Chandrayaan-2 and take images 100 km from Moon's orbit. The orbiter has an estimated lifespan of seven years.
- Objective:** The unique exploration of Chandrayaan-3 aims at studying not just one area of the Moon but all the areas combining the exosphere, the surface as well as the sub-surface in a single mission.
- Significance:** With Chandrayaan-1, ISRO achieved immense success as the 'Moon Impact Probe' by Chandrayaan-1 lunar



remote sensing orbiter detected water in vapor form in trace amounts. With Chandrayaan-3, India aims to further the study of the lunar surface, focussing on the South Pole or dark side of the Moon that has not seen sunlight in billions of years, which is believed to have ice and vast mineral reserves.

Why exploring the Moon is imperative?

- The Moon is the closest cosmic body at which space discovery can be attempted and documented.
- Further, Moon is a promising testbed to showcase technologies required for deep-space missions.
- Exploring the Moon will enhance our understanding of the celestial body clearly, stimulating the advancement of technology, promoting global alliances and inspiring future generations of explorers and scientists.

Why Lunar South Pole of the Moon is targeted for exploration?

- The Moon provides the best linkage to Earth's early history and civilization.
- The exploration **will offer an undisturbed historical record of the inner Solar system environment.**
- The Lunar South pole is especially interesting **because the lunar surface area that remains in shadow is much larger than that at the North Pole.**
- Further, there could be a **possibility of the presence of water in permanently shadowed areas around it.**
- In addition, the South Pole region has craters that are cold traps and contain a fossil record of the early Solar System.

WEB 3.0

GS-III SCIENCE & TECHNOLOGY

Context

- The concept of Web3, also called Web 3.0, used to describe a potential next phase of the internet, created quite a buzz in 2021.

Details

- **About:** Web 3.0 is the upcoming third generation of the internet where websites and apps will be able to process information in a smart human-like way through technologies like machine learning (ML), Big Data, decentralized ledger technology (DLT), etc.
- **Aim:** It aims to create a level of transparency, where smart contracts will control user data and transactions instead of centralized organizations.
- **Significance:** Data will be interconnected in a decentralized way, which would be a huge leap forward to our current generation of the internet (Web 2.0), where data is mostly stored in centralized repositories.

Closing Thoughts

- The new internet will provide a more personal and customized browsing experience, a smarter and more human-like search assistant, and other decentralized benefits that are hoped will help to establish **a more equitable web.**
- This will be achieved by empowering **each individual user to become a sovereign over their data.**

Comparison between Web 1.0, Web 2.0 and Web 3.0

	Web 1.0	Web 2.0	Web 3.0
Definition (According to Burners-Lee)	Read-only	Read-write	Read-write-execute
Technologies associated with the era	File and Web Servers Content and Enterprise Portals Search Engines (AltaVista, Yahoo!) E-mail (Yahoo!, Hotmail) P2P File Sharing (Napster, BitTorrent) Publish and Subscribe Technologies	Ajax and JavaScript frameworks Adobe Flex Enterprise Java, Microsoft.NET Framework (Server side) Blogs Wikis Instant Messaging	Semantic Searching Knowledge Bases Ontologies Personal Intelligent Digital Assistants
Precedence Order	First Stage	Second Stage	Third Stage
Type of Web	Simply Web	Social Web	Semantic Web
No. of users	Millions	Billions	Trillions
Basic concept	Connect information	Connect people	Connect knowledge
Associated websites	CNN	Flickr, YouTube, Blogger	Google Maps, My Yahoo!

Years	1990-2000	2000-2010	2010-2020
Features	Hyper linking and bookmarking on pages. No communication between server and user. Websites were Static. It allowed only browsing of content.	Better interaction. Includes functions like Video streaming, Online documents, etc. Introduction of web applications. Everything becomes online and stores on servers.	Smart, web based applications and functionalities. An amalgamation of Web technology and Knowledge Representation (KR)

SMALL SATELLITE LAUNCH VEHICLE

GS-III SCIENCE & TECHNOLOGY

Context

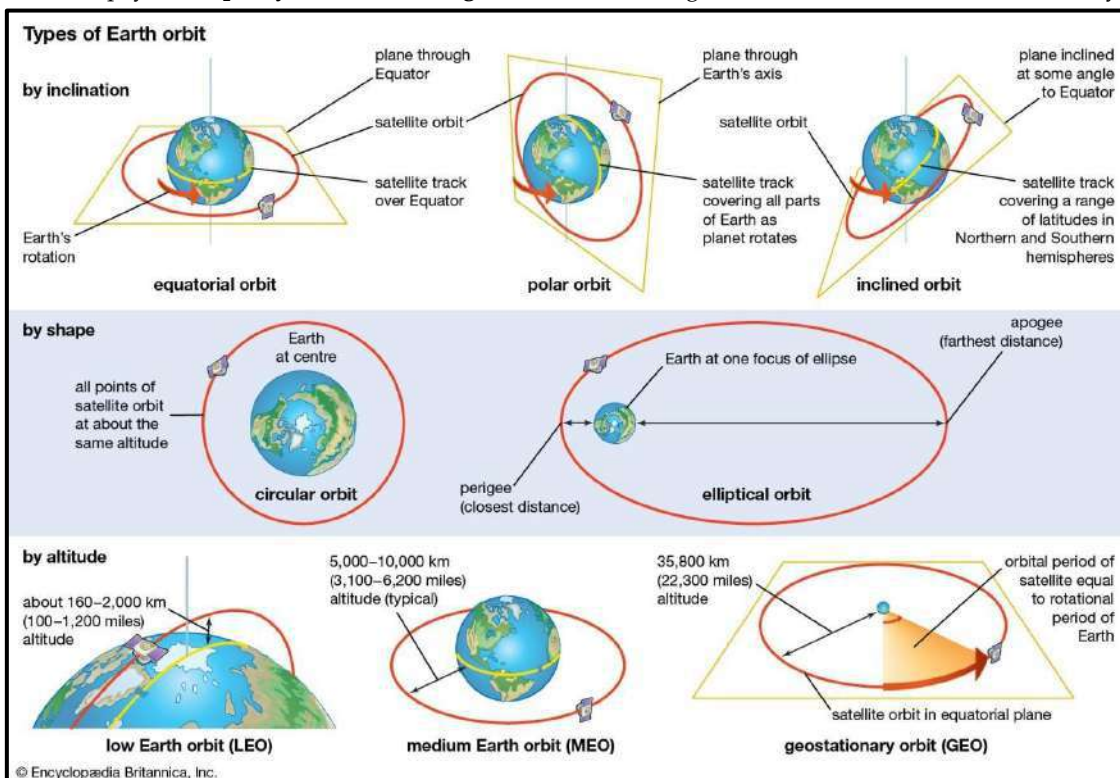
- ISRO indicated that its indigenous new launch rockets, called the Small Satellite Launch Vehicle (SSLV), will have its much-delayed, maiden development flight this April.

Launch vehicle

- A launch vehicle or carrier rocket is a rocket-propelled vehicle used to carry a payload from Earth's surface to space, usually to Earth orbit or beyond.

SSLV

- About:** The Small Satellite Launch Vehicle (or SSLV) is a small-lift launch vehicle being developed by the Indian Space Research Organisation (ISRO).
- Aim:** The SSLV was developed with the aim of launching small satellites commercially at drastically reduced price and higher launch rate as compared to Polar Satellite Launch Vehicle (PSLV).
- Capacity and Features:** It has a payload capacity to deliver 600 kg. SSLV is a three-stage, all-solid launch vehicle that can carry a payload weighing 500 kilograms to the polar orbit, 500 kilometers above Earth's surface and a 300-kilogram payload into Sun Synchronous Polar Orbit. It has the capability to support multiple orbital drop-offs. The SSLV is the smallest vehicle at 110-ton mass at ISRO. It can carry satellites weighing up to 500 kg to a low earth orbit while the tried and tested PSLV can launch satellites weighing in the range of 1000 kg.



Context

- China is building a bridge across the Pangong Tso lake within its territory connecting the North and South Banks which will reduce the time taken to go around the lake from 12 hours to 3-4 hours.
- Over the last few years, India has been focusing on infrastructure development and improving connectivity in forward areas.

What is the status on the ground in Eastern Ladakh?

- The two countries armies had prepared to keep over 1 lakh soldiers on both sides deployed.
- Since May 2020, the two sides have been holding regular **military to military talks, diplomatic level talks and Corps Commander level talks to resolve the standoff.**
- The two sides had agreed on a moratorium on patrolling in the disengaged areas and set up buffer zones.
- India holds one third of the 135 km long boomerang shaped lake i.e. **Pangong Tso** located at an altitude of over 14,000 feet.

What is the importance of the bridge over Pangong Tso?

- The bridge over Pangong Tso will connect the North and South Banks that **will reduce the time taken to go around the lake from 12 hours to 3-4 hours.**
- It will help in **faster troop deployment between both the banks of the lake** as it will ensure a swift movement in the **Southern Pangong Tso area.**
- China will build deep alternate roads behind the friction points away from the line of sight.

Point of concern

- This bridge is constructed at the narrowest point on the lake. It lies east of Khurnak Fort, which is considered borderline as per Indian Claims.
- It does not lie in the Indian Territory however it is **located right next to the Indian Claim line .**
- In **absence of no treaty between China and India** towards the development of infrastructure in border areas, things become further complicated and a point of discussion among the defense strategists.



How is India responding to developments on the ground?

- The bridge will have implications on the Indian Army's operational planning for the future.
- It will **hinder the process of disengagement and de-escalation** between the two armies.

Pangong Tso

- It is an **endorheic saline lake** spanning eastern Ladakh and West Tibet.
- It has a land-locked basin separated from the **Indus River basin** by a small elevated ridge.
- It is 134 km long and divided into five sublakes, called **Pangong Tso, Tso Nyak, Rum Tso (twin lakes) and Nyak Tso.**
- The lake, a glacial melt, has mountain spurs of the Chang Chenmo range jutting down, referred to as fingers.

Pangong Tso and LAC

- Pangong Tso is in **disputed territory**. The Line of Actual Control passes through the lake.
- Approximately **50% of the length of the overall lake lies within Tibet China, 40% in Ladakh India** and the rest is disputed and is a de-facto buffer zone between India and China.
- An Inner Line Permit is required to visit the lake as it lies on the Sino-Indian Line of Actual Control.
- The lake is in the process of being identified under the Ramsar Convention as a wetland of international importance.
- This will be the **first trans-boundary wetland** in South Asia under the convention.

What is way ahead?

- The problem is old, created by leaders, and cannot be resolved by military means.
- The political leadership of both countries will have to find out some way to resolve this.

Context

- In the first export order for the BrahMos supersonic cruise missile system, the Philippines has approved a \$374.96 million contract for the purchase of a shore-based anti-ship variant of the missile from India, while discussions are ongoing with a few other Southeast Asian countries.



Details

- Negotiated with the Government of India, it includes the delivery of three batteries, training for operators and maintainers as well as the necessary Integrated Logistics Support (ILS) package.
- The coastal defence regiment of the Philippine Marines will be the primary employer of this modern strategic defence capability of the Armed Forces of the Philippines.
- There is interest in acquiring BrahMos missiles from several countries and negotiations are in advanced stages with Indonesia and Thailand.
- Discussions with Indonesia are at a fairly advanced stage.

About BrahMos

- A combination of the names of Brahmaputra and Moskva rivers, BrahMos missiles are designed, developed and produced by BrahMos Aerospace, a joint venture company set up by Defence Research and Development Organisation (DRDO) and Mashinostroyeniya of Russia.
- Various versions of the BrahMos, including those which can be fired from land, warships, submarines and Sukhoi-30 fighter jets have already been developed and successfully tested in the past. The earliest versions of the ship-launched BrahMos and land-based system are in service of the Indian Navy and the Indian Army since 2005 and 2007 respectively.
- BrahMos is a two-stage missile with solid propellant booster as first stage and liquid ramjet as the second stage. The cruise missiles like BrahMos are a type of systems known as the "standoff range weapons" which are fired from a range sufficient to allow the attacker to evade defensive fire from the adversary. These weapons are in the arsenal of most major militaries in the world.
- The versions of the BrahMos that are being tested have an extended range of around 450 kilometres (planned to be extended to 600 kilometres), as compared to its initial range of 290 kilometres (before signing of MTCR), with more versions of higher ranges currently under development.
- Brahmos is one of the fastest cruise missiles currently operationally deployed with speed of Mach 2.8, which is 3 times more than the speed of sound. It operates on the "Fire and Forgets" principle i.e it does not require further guidance after launch.

On different platforms

- Ship-based Weapon Complex System:** BRAHMOS has been deployed on Indian Navy's frontline surface combat platforms, including Destroyers and Frigates, "prime strike weapon"
- Land-based Weapon Complex System:** The Land based Weapon Complex comprises four to six Mobile Autonomous Launchers (MAL) controlled by a Mobile Command Post (MCP), and a Mobile Replenishment Vehicle (MRV).
- Air Launched Weapon System:** The highly advanced BRAHMOS air-launched cruise missile (ALCM) with precision attack capability against sea and land targets has been designed and developed by BrahMos Aerospace for the Indian Air Force's frontline air combat platform Sukhoi-30MKI.
- Submarine Launch Version:** BRAHMOS missile is capable of being launched from a submarine from a depth of 40-50 metres. The missile can be installed in a modular launcher vertically in the pressure hull of the submarine. The missile has identical configuration similar to the ship based system.

About MTCR

- 35 nation (India is 35th member) grouping that controls export of missile technology, including drones
- Setup in 1987 by the G7 countries
- Aims to limit the proliferation of missile and other unmanned delivery systems that could be used for chemical or nuclear attacks
- It is an informal and voluntary partnership between 35 countries which urge each other to restrict their missile export and technologies capable of carrying a 500 kilogram payload a minimum of 300 kilometres
- India has become 35th member of MTCR in June 2016

FOREST SURVEY REPORT 2021

GS-III ENVIRONMENT & ECOLOGY

Context

- The 'India State of Forest Report (ISFR) 2021' released.

What is the India State of Forest Report?

- It is an **assessment of India's forest and tree cover**.
- It is **published every two years**.
- Published by:** the Forest Survey of India under the Ministry of Environment, Forests and Climate Change.
- First survey** was published in **1987**.
- ISFR 2021 is the **17th**.
- Data collection method:** Data computed through **wall-to-wall mapping** of India's forest cover through **remote sensing techniques**.
- Significance of the ISFR:**
 - Provide information provides inputs for various global level inventories, reports such as **GHG Inventory, Growing Stock, Carbon Stock, Forest Reference Level (FRL) and international reporting to UNFCCC targets under CBD Global Forest Resource Assessment (GFRA)** for planning and scientific management of forests.
 - Information given in the report would **provide valuable information for policy, planning and sustainable management of forest and tree resources in the country**.

What are the key findings of ISFR 2021?

- ISFR-2021 provides information on
 - forest cover and tree cover**
 - mangrove cover**
 - growing stock and carbon stock in India's forests**
 - forest fire monitoring**
 - forest cover in tiger reserve areas:**
 - above ground estimates of biomass using SAR data & climate change hotspots in Indian forests.**

Major findings

1) Total forest and tree cover

- Existing situation:** The **total forest and tree cover** of the country is 80.9 million hectare which is 24.62 percent of the geographical area of the country.
- Bamboo forests** have grown from 13,882 million culms (stems) in 2019 to 53,336 million culms in 2021.
- In comparison to 2019 report:**
 - As compared to the assessment of 2019, there is an **increase of 2,261 sq km** in the total forest and tree cover of the country.
 - Out of this, the increase in the forest cover has been observed as 1,540 sq km and that in tree cover is 721 sq km.
 - Increase in forest cover has been observed in **open forest followed by very dense forest**.
- Five states in the Northeast** – Arunachal Pradesh, Manipur, Meghalaya, Mizoram and Nagaland have all shown **loss in forest cover**.

Top three states: showing increase in forest cover are

- Andhra Pradesh (647 sq km) followed by**
- Telangana (632 sq km) and**
- Odisha (537 sq km).**
- Top states in terms of Area-wise forest cover are**
 - Madhya Pradesh has the largest forest cover in the country followed by**
 - Arunachal Pradesh,**
 - Chhattisgarh,**
 - Odisha and**
 - Maharashtra**
- Top states in terms of Forest cover as percentage of total geographical area are**
 - Mizoram (84.53%)
 - Arunachal Pradesh (79.33%)
 - Meghalaya (76.00%)
 - Manipur (74.34%) and
 - Nagaland (73.90%)



- States and UT's that have **more than 75 percent forest cover** are
 - Lakshadweep
 - Mizoram
 - Andaman & Nicobar Islands
 - Arunachal Pradesh and
 - Meghalaya

2) Mangrove cover

- Total mangrove cover** in the country is 4,992 sq km.
- In comparison to 2019 report:** An increase of 17 sq Km in mangrove cover has been observed as compared to the previous assessment of 2019.
- Top three states showing mangrove cover increase** are
 - Odisha (8 sq km) followed by
 - Maharashtra (4 sq km) and
 - Karnataka (3 sq km).

3) Total carbon stock

- Total carbon stock** in country's forest is estimated to be 7,204 million tones.
- In comparison to 2019 report:** There an increase of 79.4 million tonnes in the carbon stock of country as compared to the last assessment of 2019.

4) Forest fire

- 35.46 % of the forest cover is prone to forest fires.
- Out of this, 2.81 % is extremely prone, 7.85 % is very highly prone and 11.51 % is highly prone.
- The highest numbers of fires were detected in **Odisha, Madhya Pradesh and Chhattisgarh.**

5) Forest cover in the Tiger Reserve

- FSI has included a new chapter related to the **assessment of forest cover in the Tiger Reserves, Corridors and Lion conservation area of India for the 1st time.**
- Change in forest cover, during the period between ISFR 2011 (data period 2008 to 2009) and the current cycle (ISFR 2021, data period 2019-2020) within each Tiger Reserves has been analysed.
- The forest cover in tiger corridors **has increased** by 37.15 sq km (0.32%) between 2011-2021, but decreased by 22.6 sq km (0.04%) in tiger reserves.
- Pakke Tiger Reserve** in Arunachal Pradesh has the **highest forest cover**, at nearly 97%.
- Importance:** Decadal assessment of change in forest cover within Tiger Reserves, Corridors and Lion conservation area helps in **assessing the impact of conservation measures** and management interventions that have been implemented over the years.

6) Above Ground Biomass

- FSI, in collaboration with **Space Application Centre (SAC), ISRO, Ahmedabad**, initiated a special study for estimation of Above Ground Biomass (AGB) at pan-India level, using L- band of Synthetic Aperture Radar (SAR) data.
- The results for the States of **Assam and Odisha** (as well as AGB maps), were presented earlier in ISFR 2019.

7) 'Mapping of Climate Change Hotspots in Indian Forests'

- FSI in collaboration of with **Birla Institute of Technology & Science (BITS) Pilani, Goa Campus** has performed a study based on 'Mapping of Climate Change Hotspots in Indian Forests'.
- Objective was to map the climatic hotspots over the forest cover in India, using computer model-based projection of temperature and rainfall data, for the three future time periods i.e. year 2030, 2050 and 2085.

What kind of forests are growing?

- ISFR 2021 has shown an increasing trend in forest cover overall, the trend is not uniform across all kinds of forests.
- Three categories of forests are surveyed
 - very dense forests** (canopy density over 70%)
 - moderately dense forests** (40-70%) and
 - open forests** (10-40%)

Scrubs (canopy density less than 10%) are also surveyed but not categorised as forests.

ISFR 2021 findings

- Very dense forests:** increased by 501 sq km.
- Moderately dense forests**, or "natural forests: there is a 1,582 sq km decline.
- Open forest areas:** there is an increase of 2,621 sq km.
- Scrub area:** It has increased by 5,320 sq km.

COVER STORY

DENSE FOREST LOST

	2019-21	2003-13	2013-21
VDF to NF	150	288	982
MDF to NF	1,493	6,714	11,724
Total	1,643	7,002	12,706

EXPLAINED

E

VDF:

Very dense forest (over 70% canopy)

MDF:

Medium dense forest (40-70% canopy)

OF:

Open forest (10-40% canopy)

NF:

Non forest

GAINED IN PLANTATIONS

	2019-21	2003-13	2013-21
NF to VDF	37	43	427
NF to MDF	512	3,591	6,715
Total	549	3,634	7,142

All figures in sq km

All figures in sq km

What explains the decline in the Northeastern states?

- Northeast states account for 7.98% of total geographical area but 23.75% of total forest cover.
- **Forest cover** in northeast states shown an overall decline of 1,020 sq km.
- **Reason for decline in forested areas:** are natural calamities, particularly landslides and heavy rains, in the region as well as to anthropogenic activities such as shifting agriculture, pressure of developmental activities and felling of trees.
- **Challenge:** Northeastern states follow a different ownership pattern – community ownership and protected tribal land – which makes conservation activities challenging.

What impact has climate change had?

- The report estimates that by 2030, **45-64% of forests in India** will experience the effects of climate change.
- **Ladakh** (forest cover 0.1-0.2%) is likely to be the **most affected**.

How comprehensive a picture does the survey present?

- Survey results could be misleading as it **includes plantations** – such as coffee, coconuts or mango and other orchards – **under forest cover**.
- These plantations are distinctly different from natural forests where one hectare would be home to hundreds of species of trees, plants and fauna, whereas such plantations house only one species of tree.

Forest land in India

- The word '**forest**' is **not defined in any Central Forest Act**, namely the Indian Forest Act (1927), or the Forest Conservation Act (1980).
- The term '**forest**' is **yet to be defined by the Centre** as the Central government has not laid down any criterion to define forest.
- Out of the recorded forest area in the country, **4,34,853 sq km fall under the Reserved Forests category**, 2,18,924 sq km under the **Protected Forests category**, and 1,13,642 sq km are of **unclassified forests**.

Forest cover and tree cover

The Ministry of Environment, Forest & Climate Change defines

- '**Forest cover**' in India as "all lands, more than one hectare in area with a tree canopy density of more than 10%", and
- '**Tree cover**' as "tree patches outside recorded forest areas exclusive of forest cover and less than the minimum mappable area of one hectare".
- '**Trees outside forest**', or TOF as "trees existing outside the recorded forest area in the form of block, linear & scattered size of patches". Since tree cover measures only non-forest patches that are less than 1 hectare, it is only a part of TOF.
- Forest also has legal connotation. An area of land recorded as forest in revenue records or proclaimed to be forest under a forest law or Act is also described as forest.
- Thus, "forest area" is an area recorded as forest in the government records. Often this term is also written as "recorded forest area".
- The recorded forest area is categorized into "**Reserved Forest**", "**Protected Forest**" and "**Unclassed Forest**".
 - **Reserved Forest:** An area notified under the provisions of India Forest Act or the State Forest Acts having full degree of protection. In Reserved Forests all activities are prohibited unless permitted.
 - **Protected Forest:** An area notified under the provisions of India Forest Act or the State Forest Acts having limited degree of protection. In Protected Forests all activities are permitted unless prohibited.
 - **Unclassed Forest:** An area recorded as forest but not included in reserved or protected forest category. Ownership status of such forests varies from state to state.

Wasteland in India

- As per the **Wasteland Atlas, 2019**, published by the **Ministry of Rural Development**, the total wasteland in the country is 5,57,665.51 sq km.
 - Wasteland is defined not as desertified land, but **land that not used for agriculture, commercial use or as forest land**. For instance, it could use grasslands, that are used by communities for grazing.

State's Power

- **State are responsible for categorising forest land**, and **resolving dispute between these two departments**.
- The **Indian Forest Act, 1927** gives states the **rights to notify Reserved Forests** in their areas.

GREEN HYDROGEN

GS-III ENVIRONMENT & ECOLOGY

Context

- India & Denmark agreed to initiate joint research and development on green fuels including green hydrogen, during the Joint S&T Committee meeting.

Key highlights of the Joint Committee





- It emphasized on development of bilateral collaboration on mission-driven research, innovation, and technology development, including climate and green transition, energy, water, waste, food and so on.
- Green Strategic Partnership – Action Plan 2020-2025** adopted.

About Hydrogen

- There are **no natural hydrogen deposits on earth**, it has to be extracted from other compounds by a chemical process.
- The vast majority of industrial hydrogen is currently produced from natural gas through a process known as **steam methane reforming or SMR**.
- Producing hydrogen in this way is sometimes referred to as **brown or grey or even blue hydrogen**.

Types of Hydrogen

- Brown Hydrogen:** most of the gas that is already widely used as an industrial chemical is either brown, if it's made through the gasification of coal or lignite
- Grey Hydrogen:** if it is made through steam methane reformation, which typically uses natural gas as the feedstock. Neither of these processes is exactly carbon-friendly.
- Blue Hydrogen:** where the gas is produced by steam methane reformation but the emissions are curtailed using carbon capture and storage.
- Green Hydrogen:** Green hydrogen, in contrast, could almost eliminate emissions by using renewable energy – increasingly abundant and often generated at less-than-ideal times – to power the electrolysis of water.

Color	GREY HYDROGEN	BLUE HYDROGEN	TURQUOISE HYDROGEN*	GREEN HYDROGEN
Process	SMR or gasification	SMR or gasification with carbon capture (85-95%)	Pyrolysis	Electrolysis
Source	Methane or coal 	Methane or coal 	Methane 	Renewable electricity 

Note: SMR = steam methane reforming.
* Turquoise hydrogen is an emerging decarbonisation option.

Green hydrogen current status

- At present, **less than 1 per cent of hydrogen produced is green hydrogen**, according to IRENA's **World Energy Transitions Outlook**.
- India consumes about six million tonnes of hydrogen every year. This could increase to 28 million tonnes by 2050.
- India has favorable geographic location and abundance of sunlight and wind for the production of green hydrogen.
- India will become a net exporter of green hydrogen by 2030 due to its cheap renewable energy tariffs, according to the **Global Hydrogen Council**.

Challenge in making Green Hydrogen

- Storing and transportation:** H₂ is a highly flammable gas, it takes up a lot of space and has a habit of making steel pipes and welds brittle and prone to failure.
- High Cost:** The International Energy Agency put the cost of green hydrogen at \$3 to \$7.50 per kilo, compared to \$0.90 to \$3.20 for production using steam methane reformation.

- **Loss of Efficiency in every process:** Electrolyzer efficiencies range from around 60 percent to 80 percent.

Significance

- Achieve targets pledged under the Paris Climate Agreement i.e. to reduce the emission intensity of its economy **by 33-35 per cent from 2005 levels by 2030.**
- Provide an alternative to fossil fuels
- Provide a transition toward low emissions and work towards a clean, healthy environment.

Why India should opt for Green Hydrogen?

- Adoption of Green hydrogen technologies are **favorable in those sectors where direct electrification isn't feasible** for ex in Heavy duty, long-range transport and long-term storage in the power sector.
- With technological improvements, green hydrogen will become **more affordable and accessible.**
- It can be used in a wide range of existing applications such as **fertilisers, mobility, power, chemicals and shipping.**
- **It can be blended up to 10 per cent by city gas distribution networks** for wider acceptance.
- It is a cross-cutting solution that **may reduce emissions across a range of sectors.**

What can India do to build a global-scale green hydrogen industry?

- India should **announce ambitious national targets for green hydrogen** and electrolyser capacity by 2030.
- Launch an **incentive programme for the production of electrolyzers.**
- Implementing **complementary solutions** that create virtuous cycles for ex. building the hydrogen infrastructure for refueling, heating and generating electricity at airports.
- **Optimising distribution networks** to decarbonise the gas grid.

GREEN ENERGY CORRIDOR PHASE-II

GS-III ENVIRONMENT & ECOLOGY

Context

- Government approved the scheme on Green Energy Corridor Phase-II for Intra-State Transmission System (InSTS).

About Green Energy Corridor Phase II

- **Project Timeline:** 2021-22 to 2025-26 fiscal years.
- **Budget outlay:** Rs 12,031 crores.
- The **Central Financial Assistance (CFA)** will be 33% of the project cost, that is ₹3,970.34 crore.
- CFA will help in offsetting the intra-state transmission charges and keep the power costs down.

Aim

- to **facilitate grid integration and power evacuation of about 20 GW of renewable energy projects** in seven states – Gujarat, Himachal Pradesh, Karnataka, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh.
- to help **India meet the pledge it made at COP26 climate summit.**
- to add around 10,750 ckm of transmission lines and 27,500 MVA of transformation lines and substations under phase II

What is India's climate commitment?

- India has pledged to **increase its non-fossil fuel power generation capacity to 500 GW by 2030, meeting 50% of its energy requirements.**
- It would help India to bring down its **carbon footprint but also save on foreign exchange.**

What is the Green Energy Corridor project about?

- **Overseen by:** the Ministry of New and Renewable Energy (MNRE).
- **Aims:** to "synchronise electricity produced from renewable sources, such as solar and wind, with conventional power stations in the grid".
- **Significance:**
- It will evacuate the large-scale green energy produced under the Intra State Transmission System (InSTS) project sanctioned by the MNRE in 2015-16.
- Will link it to the load centre of the national grid so that it can be distributed for use.

Objective of Scheme on Green Energy Corridor

- To achieve the target of **450 GW installed RE capacity by 2030.**
- To contribute to **long-term energy security** of the country and **promote ecologically sustainable growth** by reducing the carbon footprint.

- To generate large direct and indirect employment opportunities for both skilled and unskilled personnel in power and other related sectors.

GEC Phase-I

- It is under implementation in **Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Tamil Nadu** for grid integration and power evacuation of about 24 GW of RE.
- The Phase-I is for addition of 9,700 km of transmission lines and 22,600 MVA capacity of substations having estimated cost of transmission projects of ₹10,141.68 crore, with CFA of ₹4,056.67 crore.

What is Renewable energy?

- Renewable energy is energy that is collected from renewable resources that are naturally replenished on a human timescale. It includes sources such as sunlight, wind, rain, tides, waves, and geothermal heat.

Type of Energy	Source	Advantage	Disadvantage
Solar Energy	Sunlight	Infinite resource Environmental friendly	Expensive Large space
Wind Energy (Wind Power)	Wind	Rapid growth Low operational costs	Environmental issue Noise problem
Geothermal Energy	Underground heat of Earth	Potential infinite	Limited area (Volcanic activity)
Biomass Energy	Decaying plant or animal waste	Carbon neutral Cost effective	Expensive Requires space
Hydropower (or Hydroelectric Power)	Gravitational force of falling or flowing water	Reliable Flexible	Expensive Environmental issues Limited reservoir
Tidal Energy	Movement tide	Predictable Long lifespans	Environmental issue Expensive
Wave Energy	Movement of seawater	Ideal for island	Environmental issue Expensive

Initiatives by the Indian Government



Green Energy Corridor
This is part of the country's plans to boost transmission capacity to enable a seamless flow of electricity.



Renewable Purchase Obligation (RPO)
Ministry of Power has notified the long term growth trajectory of RPO for solar and non-solar -energy where in 2018-19 for non-solar will be 10.25% and solar will be 6.75%



New Metering Policy
Net-metering and feed-in-tariff schemes to encourage rooftop solar plants has been rolled out in most States/UTs



Raising of Bonds
Ministry of Finance approved raising US\$620 million bonds for renewable energy sector by IREDA during 2016-17



Skill Development
Surya Mitra Scheme has been launched for creating 50,000 trained solar photovoltaic technicians by March 2020. 200 Institutions, spread all over the country, have been created for implementing this. Short term training programmes for small hydro, entrepreneurship development, operation & maintenance of solar energy devices and boiler operations in co-generation plants, have been organised.




FDI Policy
100 per cent FDI is allowed under automatic route for projects of renewable power generation and distribution subject to provisions of The Electricity Act, 2003



Source: Ministry of New and Renewable Energy

Other Fiscal Incentives






- Accelerated depreciation, concessional custom duty, excise duty exemption, income tax holidays for 10 years
- A capital subsidy of 30 percent of the project cost for general States/UTs and 70 percent for Special Category States
- Inclusion of roof top solar as part of housing loan by banks/NHB
- As part of Clean Energy Fund, Clean Environment Cess on coal, lignite and peat has been doubled
- Renewable energy projects included in priority sector lending norms of commercial banks
- New coal/lignite based thermal plants after specified date to also establish/procure/purchase renewable capacity
- Inter-state transmission charges and losses for Wind and Solar projects have been waived off
- Provision of rooftop solar and 10% renewable energy is now mandatory under Mission Statement and Guidelines for development of smart cities

T.S.R SUBRAMANIAN REPORT ON ENVIRONMENT

GS-III ENVIRONMENT & ECOLOGY

Context

- The Supreme Court has asked the Government if it will create an Indian Environmental Service (IES) as recommended by T.S.R Subramanian committee.

What is the T.S.R Subramanian committee report on environment?

- It was set up in August 2014.
- Aim:** to review the country's green laws and the procedures followed by the Ministry of Environment, Forest and Climate Change (MoEF&CC).
- It suggested several amendments to align with the Government's economic development agenda.
- Parliamentary Standing Committee rejected** the report on the grounds that it ended up diluting key aspects of environmental legislation designed to protect the environment.
- The **Centre never formally accepted this report** and neither constituted a new committee as recommended by the Parliamentary Standing Committee.

What did the T.S.R report recommend?

1) Constitution of Environmental Management Authority:

- Under 'Environmental Laws (Management) Act' (ELMA) – National Environmental Management Authority (NEMA) and State Environmental Management Authority (SEMA) – to be constituted to evaluate project clearance in a time bound manner, providing for single-window clearance.
- The existing Central Pollution Control Board and the State Pollution Control Boards, are proposed to be integrated into NEMA and SEMA once the new bodies come into existence.

2) Merging of laws:

- To accelerate the environmental decision-making process, a "fast track" procedure for "linear" projects (roads, railways and transmission lines), power and mining projects and for "projects of national importance."
- The **Air Act and the Water Act is to be subsumed within the Environment Protection Act.**

3) Appellate mechanism

- An appellate mechanism will be set up to hear against the decisions of NEMA/SEMA or MoEF&CC, in respect of project clearance, prescribing a three-month deadline to dispose appeals.

4) Accessing environmental reconstruction cost

- An "environmental reconstruction cost" should be assessed for each project on the basis of the damage caused by it to the environment and this should be added into the cost of the project.
- This cost has to be recovered as a **cess or duty** from the project proponent during the life of the project.

5) National Environment Research institute

- It proposed a National Environment Research institute "on the lines of the Indian Council of Forestry Research and Education" to bring in the application of high-end technology in environment governance.

6) Indian Environment Service

- It proposed an Indian Environment Service to recruit qualified and skilled human resource in the environment sector.

T-15 OR COLLARWALI

GS-III ENVIRONMENT & ECOLOGY

Context

- T-15 Or simply "Collarwali, MP's **Pench tiger reserve** tigress died due to old age.

Royal Bengal Tiger

- It forms a specific population of the *Pantheratigris* subspecies that is **native to the Indian subcontinent**.
- Threats:** poaching, loss and fragmentation of habitat.
- IUCN Status:** Endangered.
- Protected under **schedule 1** of Wildlife Protection Act.

Project Tiger

- This tiger conservation programme launched in April **1973** by the Government of India during Prime Minister **Indira Gandhi's** tenure.
- Aim:** Ensuring a viable population of Bengal tigers in their natural habitats, protecting them from extinction, and preserving areas of biological importance as a natural heritage forever.

- From 9 tiger reserves since its formative years, the Project Tiger coverage has increased to **50** at present, spread out in 18 of our tiger range states.
- The tiger reserves are constituted on a **core/buffer strategy**.
 - **Core areas** have the **legal status of a national park or a sanctuary**.
 - Whereas, **buffer or peripheral** areas are a mix of forest and non-forest land, managed as a **multiple use area**.
- The government has set up a **Tiger Protection Force** to combat poachers and funded relocation of villagers to minimize human-tiger conflicts.
- **National Tiger Conservation Authority** was established in 2005 following a recommendation of the Tiger Task Force, to reorganise management of Project Tiger and the many Tiger Reserves in India. It is the overarching body for conservation of tigers in India.

Structure of NTCA

- **Environment Minister is the Chairman of the NTCA.**
- Below chairman are **eight experts** or professionals having qualifications and experience in wildlife conservation and welfare of people including tribals, apart from three Members of Parliament (1 Rajya Sabha, 2 Lok Sabha).
- The Inspector General of Forests, in charge of project Tiger, serves as ex-officio Member Secretary.

Functions

- Its main administrative function is **to approve the Tiger Conservation Plan prepared by the State Governments** and then evaluate and assess various aspects of sustainable ecology and disallow any ecologically unsustainable land use such as, mining, industry and other projects within the tiger reserves.
- Regulation and standardization of tourism activities
- Provide for management focus and measures for addressing conflicts of men and wild animals.
- Provide information on protection measures.
- Ensure that the tiger reserves and areas linking one protected area or tiger reserve with another protected area or tiger reserve are not diverted for ecologically unsustainable uses, except in public interest and with the approval of the National Board for Wild Life and on the advice of the Tiger Conservation Authority.
- Facilitate and support the tiger reserve management in the State.
- Ensure critical support including scientific, information technology and legal support for better implementation of the tiger conservation plan.

About Pench National Park

- **Located in:** India's **Madhya Pradesh** state, established in 1975 .
- It derives its name from the Pench River that flows through the **park from north to south dividing the park into almost equal western and eastern halves**.
- It was declared a sanctuary in 1965, raised to the status of national park in 1975 and enlisted as a tiger reserve in 1992.

ENVIRONMENT IMPACT ASSESSMENT

GS-III ENVIRONMENT & ECOLOGY

Context

- Ecologists have been raising concerns about the Great Nicobar Island project.

What is the issue?

- The draft environment impact assessment (EIA) report for the mega development project in the Great Nicobar Island have raised serious questions related to submission of incorrect or incomplete information, scientific inaccuracy and failure to follow appropriate procedure.
- The NITI Aayog-piloted ₹72,000-crore integrated project in Great Nicobar includes construction of a mega port, an airport complex, a township spread over 130 sq. km of pristine forest and a solar and gas-based power plant.
- Andaman and Nicobar Islands Integrated Development Corporation Ltd. (ANIIDCO) is the project proponent.

What are the concerns raised in this project?

- Ecologists and researchers have raised concerns about this project as it **ignores tribal, ecological concerns**.
- This project can overrun leatherback nesting sites.
- There are also serious issues of scientific accuracy and integrity where the data presented is concerned.

What is EIA?

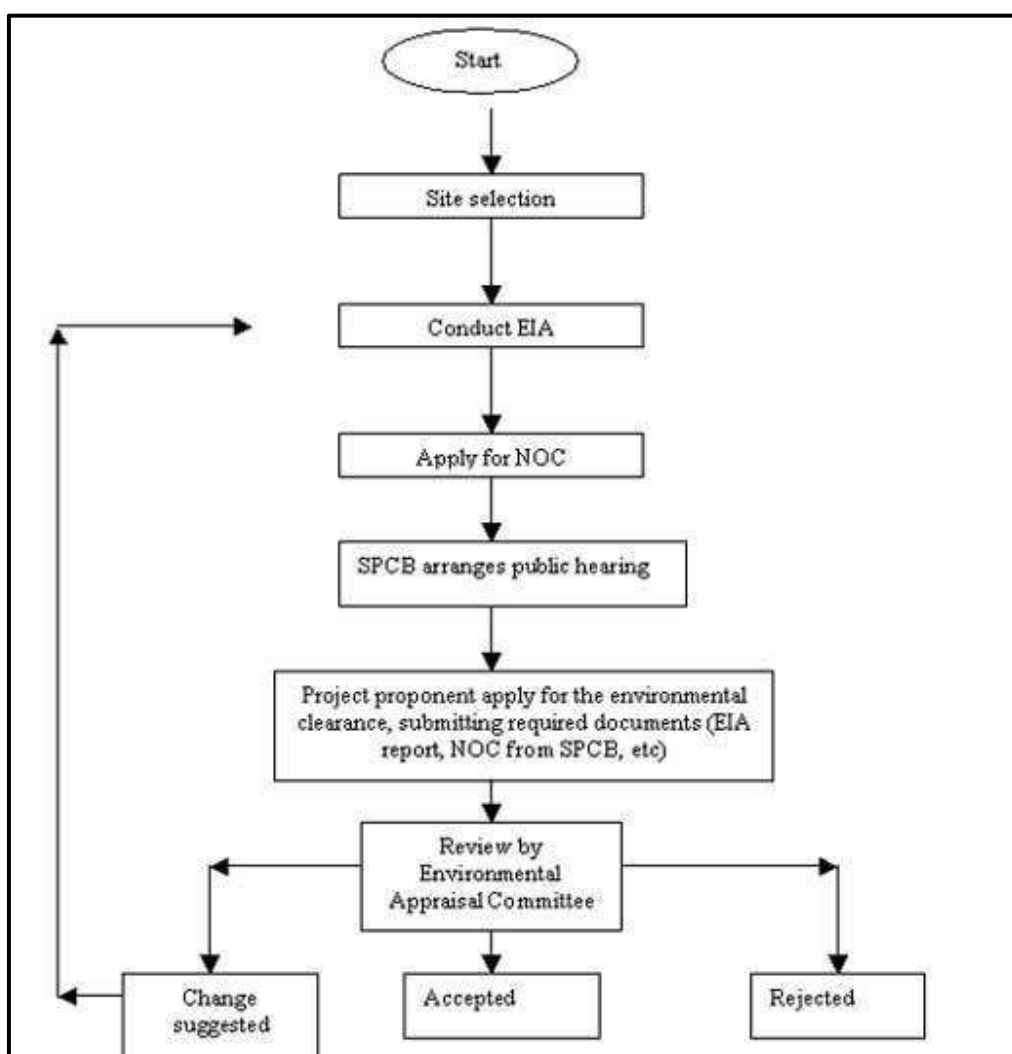
- Environment Impact Assessment or EIA can be defined as **the study to predict the effect of a proposed activity/project on the**

environment.

- As a decision making tool, EIA compares various alternatives for a project and seeks to identify the one which represents the best combination of economic and environmental costs and benefits.
- Properly conducted EIA lessens conflicts by promoting community participation, informing decision makers, and helping lay the base for environmentally sound projects.

The stages of an EIA process

- The environment impact assessment consists of eight steps with each step equally important in determining the overall performance of the project.
- **Screening:** First stage of EIA, which determines whether the proposed project, requires an EIA and if it does, then the level of assessment required.
- **Scoping:** This stage identifies the key issues and impacts that should be further investigated. This stage also defines the boundary and time limit of the study.
- **Impact analysis:** This stage of EIA identifies and predicts the likely environmental and social impact of the proposed project and evaluates the significance.
- **Mitigation:** This step in EIA recommends the actions to reduce and avoid the potential adverse environmental consequences of development activities.
- **Reporting:** This stage presents the result of EIA in a form of a report to the decision-making body and other interested parties.
- **Review of EIA:** It examines the adequacy and effectiveness of the EIA report and provides the information necessary for decision-making.
- **Decision-making:** It decides whether the project is rejected, approved or needs further change.
- **Post monitoring:** This stage comes into play once the project is commissioned. It checks to ensure that the impacts of the project do not exceed the legal standards and implementation of the mitigation measures are in the manner as described in the EIA report.



GENERAL STUDIES - IV

NEUTRALITY

GS-IV ETHICS

Context

- Recently, elections in **Uttar Pradesh** have highlighted the need for **political neutrality** among bureaucrats.

About Political Neutrality

- In the context of public administration, neutrality refers to political neutrality or non-partisanship. It indicates that you **are not owned or linked with any one group, party, or cause**.

Need for Neutrality

- Free and Frank advice:** If bureaucracy isn't impartial, it won't be able to **fully support the current political system, as well as the economic and political systems** if drastic changes are made.
- Prevent Crony Capitalism:** Without neutrality, a close relationship between bureaucracy and large-scale firms might develop, perhaps leading to crony capitalism.
- Constitutional's moral authority:** Neutrality implies that public servants are not beholden to politics or any other authority other than the Constitution's moral authority.
- Independence from Political objectives:** It demonstrates that the notion of neutrality entails a degree of independence from both the government's political objectives and the exogenous agenda that drives certain social groups to subject others to humiliating vulnerability.

Challenges in being Political Neutral

- Officers suffer from **frequent transfers since their focus is on setting up their homes** following each relocation.
- It has an impact on the **officer's morale because her hard work, honesty, and integrity** are not appreciated and are instead exploited against her.
- The officer's **family is the one that suffers the most as a result** of the frequent transfers.
- Education for **their children and access to health care for their parents** may be jeopardised.
- Because **politicians want to keep control over the bureaucracy, not all critical positions** are filled with the best officers.
- Because **investing in devotion to certain politicians provides an alternative road to professional achievement**, younger bureaucrats with career worries under invest in skill.

Consequences of Political Partisanship

- Secure Promotions:** There are distinct factions in each **government service based on language, religion, caste, and geography**. They would submit to the wills of politicians in order to **secure promotion** and rewards for their clique.
- Satisfy their illicit desires:** There will be more **secrecy in government operations**. As a result, a **nexus forms between the political executive and public officials in order to satisfy** their illicit desires.
- Seek preferred postings:** Due to the **lack of an independent board**, public servants affiliate with one political party or the other in order to obtain their preferred postings and other benefits.
- Rewarding and Punishing employees:** Transfers have been used to **reward and punish employees, as well as to regulate and tame the bureaucracy**. There is no transparency, and in the public view, a short-term stay following a transfer is seen as a stigma.

Way Forward

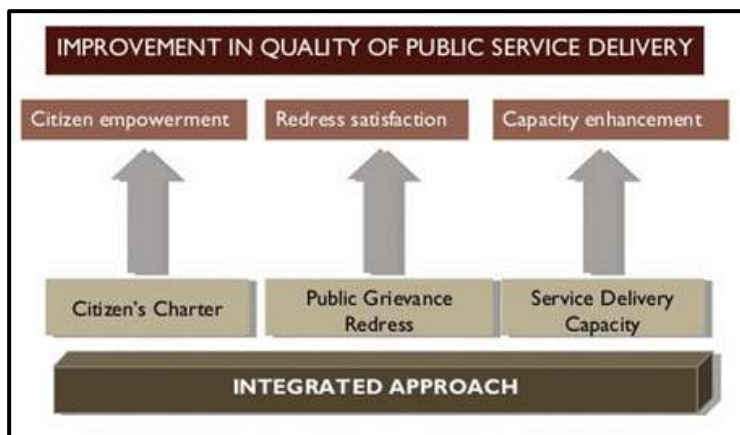
- Capable leaders and mentors:** New recruits must be taught ethical ideals that are fundamental to the country's steel frame. They must be guided by capable leaders and mentors who have a high level of integrity themselves.
- Establishment of neutral committee:** Transfer and posting powers must be taken away from the political executive, and a tribunal or neutral committee must be established whose findings are binding on the political executive.
- Rewards fair and impartial:** Civil officials are incentivised to be fair and impartial until the threat of retaliation and punitive postings has passed.
- E-governance:** E-governance can offer openness to administrative decisions and eliminate partiality or bias in favour of one party or another.
- Performance based incentives:** Performance-based incentives will aid in the transformation of the bureaucracy and the elimination of corruption in the system.

About

- BJP government has promised to set up a Citizen charter for all the panchayats in its manifesto.

About Citizen Charters

- The Citizen charter idea is a **response to the desire for solutions to the challenges that a citizen experiences on a daily basis when engaging with government agencies.**
- It is a document which represents a systematic effort to focus on the commitment of the Organisation towards its Citizens in respects of Standard of Services, Information, Choice and Consultation, Non-discrimination and Accessibility, Grievance Redress, Courtesy and Value for Money.
- This also includes expectations of the Organisation from the Citizen for fulfilling the commitment of the Organisation
- Citizen's Charter is a concept that **enshrines the relationship of trust between the service provider and its users.**
- In 1991, the concept was initially defined and put into practise in the United Kingdom.



Importance of Citizen Charters

- To make the Government more accountable and accessible to citizens.
- To ensure transparency in transactions.
- To improve customer service by making the Government responsive.
- To take a stakeholder-oriented strategy.
- Both the administration and the citizen's time will be saved.

Problems in Citizen Charters

- **One size fits all:** There is a tendency for all offices under the parent organisation to have a uniform CC. All Ministries and Departments have yet to implement CC. This ignores local concerns.
- **Operations in silos:** In the vast majority of cases, **there are no participatory processes in place, and it was not developed through a consultation process with cutting-edge personnel who will eventually implement it.**
- **Non-Dynamic:** Because **charters are rarely revised, they are a one-time exercise** that is frozen in time.
- **Poor design and content:** a lack of **meaningful and succinct CC, as well as important information that end-users require** in order to hold agencies accountable.
- **Lack of public awareness:** Because **adequate attempts to communicate and educate the public about the standards of delivery guarantee have not been done**, only a tiny fraction of end-users are aware of the commitments made in the CC.
- **End-users, civil society organisations, and non-governmental organisations are not consulted** when CCs are drafted. Consultation with stakeholders is essential because the major goal of a CC is to make public service delivery more citizen-centric.
- **Lack of Measurable parameters:** **Measurable delivery standards are rarely stated, making it impossible to determine whether or not the intended level of service has been met.**
- **Charters are rarely updated:** The review and updation process of the Citizen's Charter are rarely done, making it a one-time exercise

Way Forward

- **Wide-ranging consultations:** CC will be formulated following broad internal consultations and a genuine collaboration with civil society.
- **Process of participation:** Include **civil society in the process: to aid in the enhancement of the Charter's content, adherence, and citizen education** on the relevance of this critical mechanism.
- **Solid pledges must be made:** Wherever possible, CC must be precise and make firm commitments to citizens/consumers on service delivery standards in quantifiable ways.
- **Penal Provisions:** In the event of a default, **clearly state the remedy that the organisation is obligated to provide if it fails to meet the agreed delivery criteria.**
- **There is no one-size-fits-all approach to CC formulation:** it should be a decentralised process.

SHORT NEWS ARTICLES

GS-I

CULTURE & HISTORY

Living root bridges

Context

- The Zoological Survey of India (ZSI) has underlined some green rules for the living root bridges of Meghalaya to get the UNESCO World Heritage Site tag.

About living root bridge

- It is like a **suspension bridge** formed by guiding the pliable roots of the **rubber fig tree** (*Ficus elastica*) across a stream or river and allowing the roots to grow and strengthen over time.
- Meghalaya** is known for these living root bridge.
- Khasi and Jaintia tribes** have mastered the **art of wrapping thick roots** together to form this bridge structure that has a capacity to hold more than 50 people
- It is an example of **sympiotic relationship** between people and nature.
- Local name:** Such a bridge is locally called **jingkieng jri**.

200-year-old inscriptions

Context

- The 200-year-old inscriptions, temple, chathiram, found near Madurai

Key discoveries are

- Nine inscriptions
- A Vinayakar temple and
- An adjoining chathiram.
- The temple is now known as Marudaiya Temple and Shenbagavinayakar Temple.

Significance of this discovery

- It revealed the **philanthropic activity of the Chervaikarars of Pothumbu village**, who used to **provide shelter and food for travelers**.
- The inscriptions talk about Chervaikarars of six generations.
- One Subramanyam Chervaikarar belonging to the sixth generation had converted one chathiram into a temple for general public worship.
- While seven inscriptions were found in the temple, two were in the chathiram.

Ramanujacharya

Context

- Prime Minister Narendra Modi will unveil a 216-foot statue of Ramanujacharya, described as the 'Statue of Equality' in Hyderabad on February 5.

About the "Statue of Equality"

- The statue is made of 'panchaloha', a mix of five metals - gold, silver, copper, brass, and zinc.
- The complex has identical recreations of 108 Divya Desams, the 108 ornately carved Vishnu temples mentioned in the works of the Alwars, mystic Tamil saints.

About Ramanuja

- **Born** in 1017 at Sriperumbudur in Tamil Nadu.
- **Social reformer:**
 - Ramanujacharya liberated millions from social, cultural, gender, educational, and economic discrimination with the foundational conviction that every human is equal regardless of nationality, gender, race, caste, or creed.
 - He opened the doors of temples to all people, including those subjected to extreme discrimination.
- He was famous as the chief proponent of **Vishishtadvaita subschool of Vedānta**.
- **Literary contribution:** Ramanuja wrote Vedārthasangraha, Sri Bhāshya, Bhagavad Gita Bhāshya, and the minor works titled Vedāntadīpa, Vedāntasāra, Gadya Trayam (which is a compilation of three texts called the Saranāgati Gadyam, Sriranga Gadyam and the Srivaikunta Gadyam), and Nitya Grantham.
- The three of the largest works credited to Ramanuja – **Shri Bhāshya, Vedārthasangraha and the Bhagavad Gita Bhāshya**.

Chakma and Hajong communities

Context

- The National Human Rights Commission (NHRC) has directed the Ministry of Home Affairs and the Arunachal Pradesh government to submit an action taken report against the racial profiling and relocation of people belonging to the Chakma and Hajong communities.

About Chakma and Hajong communities

- Chakmas are predominantly **Buddhists while Hajongs are Hindus**.
- They were inhabitants of the Chittagong Hill Tracts of erstwhile East Pakistan (now Bangladesh) who migrated to India due to:
 - Submergence of their land by the Kaptai dam on the Karnaphuli River in the 1960s.
 - Religious persecution they faced in East Pakistan as they were non-Muslims.
- The Indian government set up relief camps in Arunachal Pradesh and a majority of them continue to live there even after 50 years.

Padma Awards

Context

- Padma Awards 2022 announced.

About Padma Awards

- **Historical facts:**
 - The Government of India instituted two civilian awards-Bharat Ratna & Padma Vibhushan in 1954. The latter had three classes namely Pehla Varg, Dusra Varg and Tisra Varg.
 - These were subsequently **renamed** as Padma Vibhushan, Padma Bhushan and Padma Shri vide Presidential Notification issued on **January 8, 1955**.
 - These are conferred on the recommendations made by the **Padma Awards Committee**, which is constituted by the Prime Minister every year.
 - The nomination process is **open to the public**.
 - They are announced every year on the occasion of Republic Day except for **brief interruption(s) during the years 1978 and 1979 and 1993 to 1997**.
- These are one of the **highest civilian Awards** of the country.
- The highest award in India is the **Bharat Ratna**.
- **Categories:** These are conferred in three categories, namely, Padma Vibhushan, Padma Bhushan and Padma Shri.
 - '**Padma Vibhushan**' is awarded for exceptional and distinguished service;
 - '**Padma Bhushan**' for distinguished service of high order and
 - '**Padma Shri**' for distinguished service in any field.
- **Fields of activities:** The Awards are given in various disciplines/ fields of activities, viz.- art, social work, public affairs, science and engineering, trade and industry, medicine, literature and education, sports, civil service, etc.

- **Eligibility of Padma Awards:**
 - All persons without distinction of race, occupation, position or sex are eligible for these awards.
 - However, except doctors and scientists, government servants including those working with PSUs are not eligible for the Padma Awards.
- The awards are announced on the occasion of Republic Day every year.
- These awards are conferred by the President of India at ceremonial functions which are held at Rashtrapati Bhawan usually around March/ April every year.

Kathakali dance

Context

- The Prime Minister, Shri Narendra Modi has expressed deep grief over the demise of noted Kathakali dancer Ms. Milena Salvini.

About Kathakali dance

- This classical dance arts of India, is indigenous to **state of Kerala**.
- **Themes:** Ramayana, the Mahabharata, and stories from Shaiva literature.
- Elements and aspects of Kathakali can be found in ancient Sanskrit texts such as the **Natya Shastra**.
- **Classification of characters:** reflects the three Gunas namely
 - **sattva** (goodness, virtuous, harmonious, constructive)
 - **rajas** (passion, egoistic, dynamic, action, aimless), and
 - **tamas** (darkness, viciousness, chaotic, destructive) of the 'Guna' theory of personalities that originated in the age-old 'Samkhya' school of Hindu philosophy.
- Kathakali is a harmonious combination of five forms of fine art:
 1. Literature (Sahithyam)
 2. Music (Sangeetham)
 3. Painting (Chithram)
 4. Acting (Natyam)
 5. Dance (Nritham)

Konark Sun Temple

Context

- The Archaeological Survey of India insists that Konark is among the best looked after monuments; however, its conservation history is uneven to say the least.

About

- It is a 13th-century CE Sun temple at Konark on the coastline of **Odisha, India**.
- The temple is attributed to **king Narasimhadeva I** of the **Eastern Ganga Dynasty** about 1250 CE.
- Dedicated to the **Hindu Sun God Surya**, also called the **Surya Devalaya**, it is a classic illustration of the Odisha style of Architecture or **Kalinga Architecture**.
- This temple was called the "**Black Pagoda**" in European sailor accounts as early as 1676 because it looked a great tower which appeared black.
- Similarly, the Jagannath Temple in Puri was called the "**White Pagoda**".
- Declared a UNESCO world heritage site in 1984, it remains a major pilgrimage site for Hindus, who gather here every year for the **Chandrabhaga Mela** around the month of February.
- Konark Sun Temple is depicted on the reverse side of the Indian currency note of Rs 10 to signify its importance to Indian cultural heritage.

Kaavi Art

Context

- Prime Minister spoke about a dying form of art known as Kaavi Art in his Mann Ki Baat address.

About Kaavi art

- Kaavi art is a form of murals found in Konkan region especially in temples of Goa, parts of coastal Maharashtra and Karnataka.
- Kaavi murals can also be seen in old houses, small shrines.
- The term Kaav in Konkani refers to Indian red pigment which is the only color used in this painting, is obtained from the laterite soil.
- Reddish brown murals against white sandblasted backgrounds are the specialties of Kaavi art.
- The painting is done on wet plaster in a manner similar to frescoes.
- Fresco is a technique of mural painting executed upon freshly laid ("wet") lime plaster.

Sant Ravidas

Context

- The postponement of the Punjab elections will allow Ravidassias to travel to Varanasi for Guru Ravidas Jayanti.

Ravidas Ji

- **About:** Sant Ravidas was a 14th-century saint and founder of the Bhakti movement in North India.
- **Founder of:** He was also the founder of Ravidassia religion during the 15th to 16th century CE.
- **Disciple:** Ravidas was the disciple of the Brahmin bhakti-poet Ramananda.
- **Contemporary:** He is traditionally considered as Kabir's younger contemporary.
- **Scripture:** Ravidas's devotional Verses were included in the Sikh scriptures known as Guru Granth Sahib. In the Adi Granth, forty of Ravidas's poems are included, and he is one of thirty six contributors to this foremost canonical scripture of Sikhism.
- **Teaching:** He taught removal of social divisions of caste and gender, and promoted unity in the pursuit of personal spiritual freedoms.
- **Literary works:** The Adi Granth of Sikhs, and Panchvani of the Hindu warrior-ascetic group Dadupanthis are the two oldest attested sources of the literary works of Ravidas. Ravidas's poetry covers topics such as the definition of a just state where there are no second or third class unequal citizens, the need for dispassion, and who is a real Yogi.

Significance

- Guru Ravidas was a great saint and a religious reformer, who devoted his life to serve humanity.
- He worked for promoting the principles of social harmony and brotherhood throughout his life.
- He called upon people to resolve to take inspiration from his teachings and strive for strengthening fraternity in the society for the benefit of humanity.
- The messages given by Sant Ravidas on equality, goodwill and compassion centuries ago, will inspire the countrymen for ages.

Tipu Sultan

Context

- Mysore King Tipu Sultan is at the centre of a controversy in Mumbai with the BJP claiming that Congress leader and Mumbai Suburban Minister Aslam Shaikh is planning to name a playground in the Muslim dominated Malwani locality after the 17th century ruler.

About

- Tipu Sultan was the ruler of the Kingdom of Mysore based in South India.
- He introduced a number of administrative innovations during his rule, including a new coinage system and calendar and a new land revenue system which initiated the growth of the Mysore silk industry.
- Tipu is credited as the pioneer of Rocket Technology in India.
- He expanded the iron-cased Mysorean rockets and commissioned the military manual Fathul Mujahidin.
- He deployed the rockets against advances of British forces and their allies during the Anglo-Mysore Wars, including the Battle of Pollilur and Siege of Seringapatam.
- Tipu's conflicts with his neighbours included the Maratha-Mysore War which ended with the signing of the Treaty of Gajendragad.

- In the Third Anglo-Mysore War, he was forced into the Treaty of Seringapatam, losing a number of previously conquered territories, including Malabar and Mangalore.
- He sent emissaries to foreign states, including the Ottoman Empire, Afghanistan, and France, in an attempt to rally opposition to the British.
- In the Fourth Anglo-Mysore War, a combined force of British East India Company troops supported by the Marathas & the Nizam of Hyderabad defeated Tipu.
- He helped restore the Sringeri Sharada Mutt which was destroyed by the Marathas.

Lala Lajpat Rai

Context

- PM pays tributes to Lala Lajpat Rai on his Jayanti.

About Lajpat Rai

- He was an Indian independence activist.
- He played a pivotal role in the Indian Independence movement.
- He was popularly known as Punjab Kesari.
- He was one of the three **Lal Bal Pal triumvirate**.

Contribution

- He was also associated with activities of Punjab National Bank and Lakshmi Insurance Company in their early stages in 1894.
- He was elected President of the Indian National Congress in the Calcutta Special Session of 1920.
- In 1921, he founded Servants of the People Society, a non-profit welfare organisation, in Lahore.
- Lala Lajpat Rai approved that the lower caste should be allowed to read them and recite the mantras from the Vedas.
- He helped to establish the nationalistic Dayananda Anglo-Vedic School and became a follower of Dayananda Sarasvati, the founder of the conservative Hindu society Arya Samaj ("Society of Aryans").
- Lajpat Rai's most important writings include The Story of My Deportation (1908), Arya Samaj (1915), The United States of America: A Hindu's Impression (1916), England's Debt to India: A Historical Narrative of Britain's Fiscal Policy in India (1917), and Unhappy India (1928).

Bir Bikram Kishore Dabbarman

Context

- PM inaugurates New Integrated Terminal Building of Maharaja Bir Bikram (MBB) Airport in Agartala.

About

- Maharaja Colonel Bir Bikram Kishore Debbarman was from the Manikaya dynasty.
- Popularly known as the "Modern Architect of Tripura" he was the first to set up Higher educational institution in Tripura.
- Bir Bikram is credited with planning the kingdom's capital, the city of Agartala.
- He is the first ruler who visited Europe and America from 1931 to 1939.
- He initiated land reforms, reserving vast tracks of land for Tripura's tribal population.
- It was for his farsightedness that he reserved land for the local indigenous people of Tripura (native Tripuri), whose outcome is said to be the present TTAADC (Tripura Tribal Area autonomous District councils) Areas.

Tai Khamti-British War

Context

- The Tai Khamti-British War of 1839 – and not the Sepoy Mutiny of 1857 – could well be India's first war of independence, believes Arunachal Pradesh Deputy Chief Minister Chowna Mein.

About

- Tai Khamti took place in 1839 between the Tai Khamti people and the British.
- The theatre of this war was some 2,400 km east of Meerut in Uttar Pradesh where the mutiny began.
- Tai Khamtis resisted colonisation by the British. Some 80 British soldiers, including Col. Adam White, were killed in the

resultant conflict.

About Tai Khamti

- The Khamti people, who follow Theravada Buddhism, number a little more than 1,00,000 today and live in areas straddling Arunachal Pradesh and Assam.
- They inhabit the region around the Tengapani basin were descendants of migrants who came during the century from the Hkamti long region, the mountainous valley of the Irrawaddy.
- They have their own script for their language, known as 'Lik Tai', which originated from the Shan (Tai) script of Myanmar.
- Sangken is the main festival of the Khamti.

Rani Velu Nachiyar

Context

- Prime Minister, Shri Narendra Modi has paid tributes to Rani Velu Nachiyar on her birth anniversary.

About

- Rani Velu Nachiyar was a queen of Sivaganga estate from c. 1780–1790.
- She was the first Indian queen to wage war with the East India Company in India.
- She is known by Tamils as Veeramangai ("brave woman").
- During this period, she formed an army and sought an alliance with Hyder Ali with the aim of launching a campaign against the East India Company in 1780.
- Acquired Skills: She was trained in war match weapons usage, martial arts like Valari, Silambam (fighting using the stick), horse riding and archery.
- She was a scholar in many languages and she had proficiency with languages like French, English and Urdu.
- War against the British: In collaboration with Hyder Ali and Gopala Nayaker, she waged a war against the British and emerged victoriously.

GEOGRAPHY

Pangong Tso

Context

- China is constructing a bridge in eastern Ladakh connecting the north and south banks of Pangong Tso (lake).

Geography

- About: Pangong Tso is an endorheic saline lake spanning eastern Ladakh and West Tibet.
- Type of Basin: It has a land-locked basin separated from the Indus River basin by a small elevated ridge.
- Sub-lakes: It is divided into five sublakes, called Pangong Tso, Tso Nyak, Rum Tso (twin lakes) and Nyak Tso.
- Mountain: The Lake, a glacial melt, has mountain spurs of the Chang Chenmo range jutting down, referred to as fingers.



Pangong Tso and LAC

- Pangong Tso is in disputed territory. The Line of Actual Control passes through the lake.
- Approximately 50% of the length of the overall lake lies within Tibet China, 40% in Ladakh India and the rest is disputed and is a de-facto buffer zone between India and China.
- An Inner Line Permit is required to visit the lake as it lies on the Sino-Indian Line of Actual Control.

Recognition

- The lake is in the process of being identified under the Ramsar Convention as a wetland of international importance.

- This will be the first trans-boundary wetland in South Asia under the convention.

Sudan

Context

- Sudan's Abdalla Hamdok has resigned as prime minister.

About

- Location:** Sudan is situated in northern Africa, bordering the Red Sea.
- Capital:** Its capital is Khartoum and its most populated city is Omdurman.
- Bordering Countries:** It has land borders with Egypt, Eritrea, Ethiopia, South Sudan, the Central African Republic, Chad, and Libya.
- Physical features:** Nubian Desert to the northeast and the Bayuda Desert to the east; the plain land is flanked by the Darfur Plateau and Nile-Congo watershed to the west, and the Red Sea Hills and Ethiopian Plateau to the east. The Marrah Mountains rising from the Darfur Plateau hosts the tallest peak in the country,
- Local Sandstorm:** The dry regions are plagued by sandstorms, known as haboob, which can completely block out the sun.
- Rivers and Lakes:** The Blue Nile and White Nile rivers meet in Khartoum to form the Nile, which flows northwards through Egypt to the Mediterranean Sea. There is also Lake Nubia on the Sudanese-Egyptian border.



Horn of Africa

Context

- China said it will appoint a special envoy to the Horn of Africa region, where Ethiopia and Eritrea have been fighting.

About

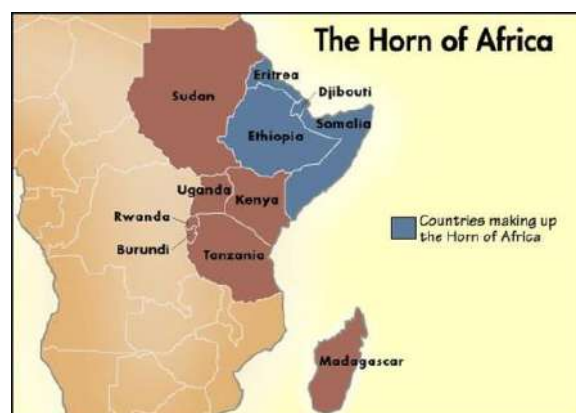
- The Horn of Africa also known as the Somali Peninsula, is a large peninsula of East Africa.

Location

- It lies along the southern boundary of the Red Sea and extends hundreds of kilometres into the Guardafui Channel, Gulf of Aden, and Indian Ocean.
- The Horn of Africa is equidistant from the equator and the Tropic of Cancer.

Physical Features

- It consists chiefly of mountains uplifted through the formation of the Great Rift Valley. The Great Rift is a fissure in the Earth's crust extending from Turkey to Mozambique and marking the separation of the African and Arabian tectonic plates.
- The Horn contains Ethiopian Plateau, the Ogaden desert, and the Eritrean and Somalian coasts.



- Its coasts are washed by the Red Sea, the Gulf of Aden, and the Indian Ocean.

Countries

- The region that is home to the countries of Djibouti, Eritrea, Ethiopia, and Somalia.



The Mahakali River

Context

- The Cabinet approved the Memorandum of Understanding (MoU) between India and Nepal to build a bridge over the Mahakali River at Dharchula in Uttarakhand.

Details

Origin

- The Sharda River, also called Kali River and Mahakali River, originates at Kalapani in the Himalayas in the Pithoragarh district of Uttarakhand.

Course

- It flows along Nepal's western border with India and joins Ghaghra River, a tributary of the Ganges.
- It takes the name Kali River from the union of the two streams at Gunji as it flows through the hills.
- After Brahmadev Mandi near Tanakpur, it enters the Terai plains, where it is called Sharda River.



Infrastructure

- The Pancheshwar Dam, a joint venture of India and Nepal for irrigation and hydro-electric power generation was proposed on this river.

South China Sea

Context

- Faced with South China Sea challenges, Philippines buys missile system from India.

About

- **Location:** The South China Sea is a marginal sea of the Western Pacific Ocean.
- **State Boundaries:** Clockwise from north: the People's Republic of China, Taiwan, the Philippines, Malaysia, Brunei, Indonesia and Vietnam.
- **Straits nearby:** It communicates with the East China Sea via the Taiwan Strait; the Philippine Sea via the Luzon Strait; the Sulu Sea via the straits around Palawan; the Strait of Malacca via the Strait of Singapore; and the Java Sea via the Karimata and Bangka Strait.
- **Gulf that are its parts:** The Gulf of Thailand and the Gulf of Tonkin are part



of the South China Sea.

- **Economic and Geostategic importance:** One-third of the world's maritime shipping passes through it. Huge oil and natural gas reserves lie beneath its seabed. It contains lucrative fisheries - crucial for the food security of Southeast Asia.
- **Rivers flowing in it:** Pearl, Min, Jiulong, Red, Mekong, Rajang, Pahang, Agno, Pampanga, and Pasig Rivers.
- **Maritime and Territorial claims:** Brunei, the People's Republic of China (PRC), Taiwan (Republic of China/ROC), Indonesia, Malaysia, the Philippines, and Vietnam.

Islands and seamounts

- The South China Sea contains over 250 small islands, atolls, cays, shoals, reefs, and sandbars, most of which have no indigenous people. The features are:
 - The Spratly Islands
 - The Paracel Islands
 - Pratas Island and the Vereker Banks
 - The Macclesfield Bank
 - The Scarborough Shoal
- The **nine-dash line** refers to the ill-defined demarcation line used by China for its claims on South China Sea.

Tonga

Context

- The Pacific country of Tonga experienced a large volcanic eruption followed by a tsunami that flooded parts of the capital, Nuku'alofa, which is just 65km north of the volcano.

About

- **Location:** Located in Oceania, Tonga is an archipelago in the South Pacific Ocean.
- **Capital:** The capital city of Nuku'alofa is located on the largest island.
- **Islands:** Its 169 islands, are divided into three main groups - Vava'u, Ha'apai, and Tongatapu.
- **Climate:** Tonga has a tropical rainforest climate (Af).
- **Volcano:** Hunga Tonga-Hunga Ha'apai volcano in Tonga is part of the highly active Tonga-Kermadec Islands volcanic arc, a subduction zone extending from New Zealand north-northeast to Fiji. The island arc is formed **at the convergent boundary where the Pacific Plate subducts under the Indo-Australian Plate.**



Yemen And Uae

Context

- A suspected drone attack in Abu Dhabi, the capital of UAE, caused multiple explosions in which three people were killed.
- The Shia Houthis rebels of Yemen have claimed responsibility for the attack.

Yemen

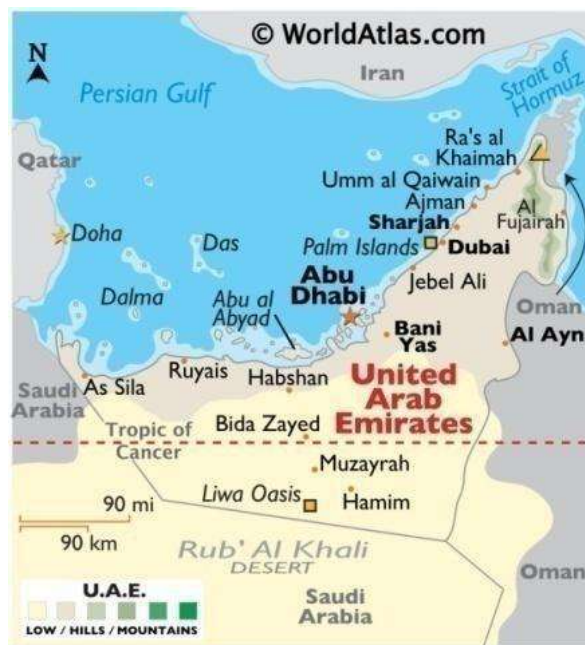
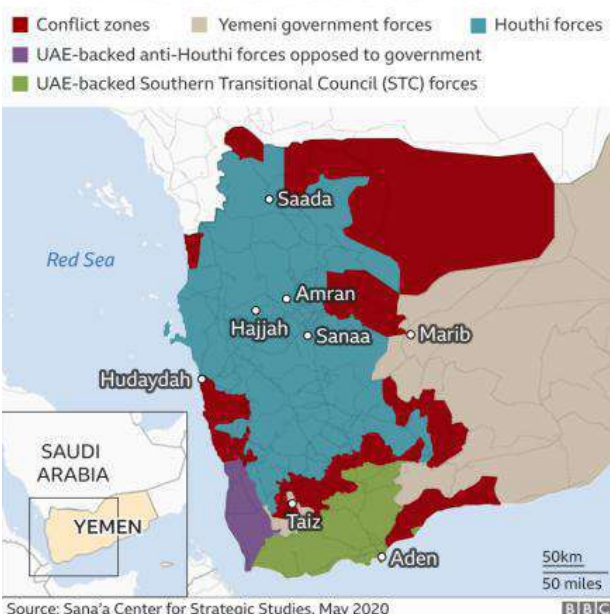
- **Location:** Yemen is situated in south-western corner of the Arabian Peninsula in Western Asia. Yemen is strategically located at the entrance of the Bab-el-Mandeb Strait. The strait links the Indian Ocean to the Red Sea via the Gulf of Aden.
- **Borders:** It is bordered by Saudi Arabia to the north, the Red Sea to the west, the Gulf of Aden and Guardafui Channel to the south, and Oman to the east.
- **Islands:** Red Sea islands, including the Hanish Islands, Kamaran, and Perim, as well as Socotra in the Arabian Sea, belong to Yemen. Socotra faces the Guardafui Channel and the Somali Sea.
- **Geographic divisions:** the coastal plains in the west, the western highlands, the eastern highlands, and the Rub' al Khali desert in the east.
- **Capital:** Sana'a is the largest city in Yemen and the capital of the country.
- **Major Cities:** Sana'a, Aden, Al-Hudaydah



UAE

- **Location:** United Arab Emirates is located on the north east edge of the Arabian Peninsula. It is in a strategic location slightly south of the Strait of Hormuz.
- **Borders:** It shares borders with Oman and Saudi Arabia, while having maritime borders in the Persian Gulf with Qatar and Iran.
- **Geographic divisions:** Outer reaches of the Rub' Al Khali Desert stretch into the country. The Hajar Mountains dominate the landscape in the northeast. Jabal Yibir, the country's highest point, is located there.

Yemen: Areas of control and conflict



Nusantara: Indonesia's New Capital

In News

- Indonesia's parliament passed a law approving the relocation of its capital from slowly sinking Jakarta to a site 2,000 kilometres away on the jungle-clad Borneo Island that will be named "Nusantara".
- The new capital is in East Kalimantan province on the Indonesian part of Borneo.

Borneo Island

- About:** Borneo is the third-largest island in the world and the largest in Asia.
- Location:** At the geographic centre of Maritime Southeast Asia, it is located north of Java, west of Sulawesi, and east of Sumatra. It spans both the Northern and Southern hemispheres.
- Adjoining areas:** The Island is surrounded by the South China Sea to the north and northwest, the Sulu Sea to the northeast, the Celebes Sea and the Makassar Strait to the east, and the Java Sea and Karimata Strait to the south.



Ukraine

Context

- Joe Biden predicted that Vladimir Putin will order Ukraine invasion, but 'will regret having done it'.

Ukraine

- About:** Ukraine is a country in Eastern Europe.
- Borders:** Ukraine also shares borders with Belarus to the north; Poland, Slovakia, and Hungary to the west; Romania and Moldova to the south; and has a coastline along the Sea of Azov and the Black Sea.



Somalia

Context

- Recently, Somalia suspended its Prime Minister.

About

- Location:** Somalia is a country located in the Horn of Africa.
- Borders:** It is bordered by Ethiopia to the west, the Gulf of Aden to the north, the Somali Sea and Guardafui Channel to the east, and Kenya to the southwest.
- Nearby region:** Somalia is separated from Seychelles by the Somali Sea and is separated from Socotra by the Guardafui Channel.



Darvaza Gas Crater

Context

- Turkmenistan President Gurbanguly Berdimukhamedov has ordered experts to find a way to extinguish a fire in a huge natural gas crater, the Darvaza gas crater also known as the 'Gateway to Hell'.

About

- The Darvaza gas crater also known as the Door to Hell or Gates of Hell, is a natural gas field collapsed into a cavern near Darvaza, Turkmenistan.



- The crater has been burning for the past 50 years in the Karakum desert, 260 kilometres from Turkmenistan's capital, Ashgabat.
- The gas reserve found here is one of the largest in the world. The name "Door to Hell" was given to the field by the locals, referring to the fire, boiling mud, and orange flames in the large crater, which has a diameter of 70 metres.

Burkina Faso

Context

- Burkina Faso's army said it had ousted President Roch Kabore, suspended the constitution, dissolved the government and the national assembly, and closed the country's borders.

Burkina Faso

- Location:** Burkina Faso is a landlocked country in West Africa.
- Burkina Faso lies mostly between latitudes 9° and 15° N (a small area is north of 15°), and longitudes 6° W and 3° E.
- Borders:** It is bordered by Mali to the northwest, Niger to the northeast, Benin to the southeast, Togo and Ghana to the south, and the Ivory Coast to the southwest.
- Rivers crossing it:** three rivers cross it: the Black Volta, the White Volta and the Red Volta.
- The basin of the Niger River also drains 27% of the country's surface.



Najafgarh Jheel

Context

- Recently, the National Green Tribunal (NGT) has directed Delhi and Haryana to enforce the Environment Management Plan (EMP) that the two governments have prepared for the rejuvenation and protection of the Najafgarh Jheel,

About

- About:** Najafgarh Jheel is a transboundary wetland.
- Location:** It is located along the borders of Delhi and Haryana. The Najafgarh Lake is under the control of Delhi.
- Fed by:** The Lake is fed by the Sahibi River. It was connected with river Yamuna through the Najafgarh drain.
- Migratory Birds:** Migration of Egyptian vulture, Sarus Crane, Steppe Eagle, Greater Spotted Eagle, and Imperial Eagle along the Central Asian Flyway has been reported at the lake.



➤ Najafgarh drain is a part of the dying Sahibi river, which originates in the Aravalis on the Rajasthan-Haryana border

FROM RIVER TO A DRAIN & LAKE

➤ The 41km-long drain is one of the most polluted in Delhi-NCR as untreated sewage flows into it

➤ Located in south-west Delhi and Haryana, the Najafgarh lake was created by the drain. Currently, the 7km-long lake lies both in Delhi & Haryana

Peru

Context

- The Peruvian government declared a 90-day “environmental emergency” in damaged coastal territories, after an oil spill that saw 6,000 barrels of crude oil pour into the sea.

Peru

- Location:** Peru is a country in western South America. It lies wholly in the Southern Hemisphere.
- Borders:** It is bordered in the north by Ecuador and Colombia, in the east by Brazil, in the southeast by Bolivia, in the south by Chile, and in the south and west by the Pacific Ocean.



Sela Tunnel

Context

- BRO conducted final blast concluding all excavation on Sela Tunnel Project.

Sela Tunnel

- About:** Sela is a strategic tunnel under construction in located in West Kameng district of Arunachal Pradesh.
- Connectivity:** It will ensure all-weather connectivity between Guwahati in Assam and Tawang in Arunachal Pradesh. The tunnel will provide access to Tawang by an all-weather road in the western region of Arunachal Pradesh throughout the year.
- Strategic importance:** It will permit swifter and soldier to forward areas near the Line of Actual Control (LAC) in Tawang sector in all-weather conditions.
- Length:** Sela will be the longest twin-lane tunnel above 13,000 feet in the world, and will cut down travel time to Tawang by at least one hour as well as provide all-weather connectivity,
- Umbrella Project:** The Sela tunnel is a part of the Balipara-Charduar-Tawang road, one of the key strategic projects near the Chinese border.



Central Asia

Context

- PM Narendra Modi to host first ever India-Central Asia Summit today.

About

- Extent:** Central Asia is a region in Asia which stretches from the Caspian Sea in the west to China and Mongolia in the east, and from Afghanistan and Iran in the south to Russia in the north.
- Region:** The region consists of the former Soviet republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.
- Historical ties:** Central Asia was historically closely tied to the Silk Road trade routes, acting as a crossroads for the movement

of people, goods, and ideas between Europe and the Far East.

- **Physical Features:** It includes high passes and mountains (Tian Shan), vast deserts (Kyzyl Kum, Taklamakan), and especially treeless, grassy steppes. Steppe areas of Central Asia are considered together with the steppes of Eastern Europe as a homogeneous geographical zone known as the Eurasian Steppe. The Gobi desert extends from the foot of the Pamirs, 77° E, to the Great Khingan (Da Hinggan) Mountains.



- **Rivers and water Bodies:** Major rivers of the region include the Amu Darya, the Syr Darya, Irtysh, the Hari River and the Murghab River. Major bodies of water include the Aral Sea and Lake Balkhash, both of which are part of the huge west-central Asian endorheic basin that also includes the Caspian Sea.

Nord Stream Pipeline

Context

- The US has threatened to halt the opening of Nord Stream Pipeline that would send Russian gas to Western Europe, if Russia invades Ukraine.

About

- **Location:** Nord Stream is a system of offshore natural gas pipelines in Europe, running under the Baltic Sea from Russia to Germany. The gas for Nord Stream comes mainly from the Bovanenkovo oil and gas condensate deposit in Western Siberia.



GS-II POLITY

First information report (FIR)

Context

- The high court of Delhi **dismissed** an officer's complaint to dissolve the FIR registered against him for rape because he married the victim.

Delhi high court observation on rape

- Rape is not an act against an individual, but a crime against society.
- Rape FIR cannot be overturned on the basis of a settlement between a woman and a man and a subsequent marriage. Because it does not overturn the crime.
- The high court stated that the Rape Motion could not be dismissed on the basis of a settlement between the parties.

About first information report (FIR)

- The first information report means **an information recorded by a police officer on duty given either by the aggrieved person or any other person** to the commission of an alleged offence.
- On the basis of first information report, the **police commence its investigation**.

- Section 154 of the **code of criminal procedure, 1973** defines as to what amounts to **first information**.

Where to file

- A FIR can be filed in the **police station of the concerned area in whose jurisdiction the offence** has occurred.

Supreme Court guidelines on FIR

- **Registration of FIR is mandatory under section 154 of the code**, if the information discloses commission of a cognizable offence and no preliminary inquiry is permissible in such a situation.
- If the **information received does not disclose a cognizable offence but indicates the necessity for an inquiry, a preliminary inquiry may be conducted** only to ascertain whether cognizable offence is disclosed or not.
- The police officer cannot avoid his duty of registering offence if cognizable offence is disclosed. **Action must be taken against erring officers who do not register the FIR if information** received by him discloses a cognizable offence.
- The **scope of preliminary inquiry is not to verify the veracity or otherwise of the information** received but only to ascertain whether the information reveals any cognizable offence.

Census and NPR

Context

- The first phase of Census and data collection to update the National Population Register (NPR) has been postponed to at least September.

Background

- In December 2021, the **Indian Registration Authority (RGI)** notified the state that the **freeze on the borders of districts, sub-districts, Tehsil, Tarka**, police stations, etc. was postponed to June 2022.
- A **prerequisite for conducting a Census is to freeze the boundaries of administrative** units at least three months in advance.

About National Population Register

- The National Population Register (NPR) is a **Register of usual residents of the country**.
- Objective of the **NPR is to create a comprehensive identity database of every usual resident in the country**. The database would contain demographic as well as biometric particulars.
- It is **being prepared at the local (Village/sub-Town), sub-District, District, State and National level under provisions of the Citizenship Act 1955** and the Citizenship (Registration of Citizens and Issue of National Identity Cards) Rules, 2003.
- It is mandatory for every usual resident of India to register in the NPR.
- **Definition:** A usual resident is defined for the purposes of NPR as a person who has resided in a local area for the past 6 months or more or a person who intends to reside in that area for the next 6 months or more.
- The **NPR database would contain demographic as well as biometric details**.
- As per the provisions of the NPR, a **Resident Identity Card (RIC)** will be issued to individuals over the age of 18. This will be a **chip-embedded smart card containing the demographic and biometric attributes of each individual**. The UID number will also be printed on the card.

Usual resident of India

- Is a person who has resided in a local area for the past six months or more, or a person who intends to reside in that area for the next six months.

About Updation of NPR

- Data for the **NPR was first collected in 2010, and updated in 2015**.
- All **government officials, will “modify and correct the demographic data items”**.
- In cases where date of birth or age was not known, the enumerator could help the respondent by “stimulating her/his memory” with reference to historical events well known in the area such as a “war, flood, earthquake, and change in political regime.

Census drive

- It will have two phases:
 - ‘Population enumeration’ phase
 - House Listing and Housing Census
- ‘Population enumeration’ phase:
 - It will have the facility of online self-enumeration for the public.

- Respondent could register online and fill in the details and share the reference number with the enumerators when they arrive.
- It will not be available in the first phase.
- House Listing and Housing Census
 - The National Population Register (NPR) will also be updated simultaneously in the first phase.
 - The information asked would be whether the respondent has access to LPG/PNG connection.
 - If the person owns a radio, transistor or television has access to the Internet; whether they own a laptop, computer, telephone, mobile phone, among other things.
- 2021 would be the first-ever Census to be conducted with a mixed mode approach
 - A mobile app (created in-house by the RGI office)
 - Will have the facility for online self-enumeration for the public during the population enumeration phase.

About Census

- The Indian Census is the largest administrative and statistical exercise in the world, with more than 30 lakh functionaries and at the cost of about 8700 crore rupees.
- Confidentiality of data is guaranteed by Census Act, 1948.
- Same law specifies penalty for BOTH public AND Census officials for non-compliance or violation of any provision of the Act.
- The decennial Census of India has been conducted 15 times as of 2011.
- It has been undertaken every 10 years, beginning in 1872 under British Viceroy Lord Mayo, the first complete Census was taken in 1881.

Differences between Census and NPR

- The Database for the NPR and census are not same and different details are recorded in both.
- The 10-year **Census is the largest source of various statistics** on the diverse characteristics of India's population.
- Census has been given legal sanctity by the Census act-1948 while NPS is governed by the rules mentioned under Citizenship act-1955.
- Census has widespread details ranging to socio-economic status of individual while NPR only has basic demographic and biometric information.

Pradhan Mantri Matru Vandana Yojana (PMMVY)

Context

- India accounts for a fifth of the total childbirths in the world, with a decline in maternal mortality ratio.

About PMMVY (Pradhan MantriMatruVandanaYojana)

- The PMMVY is targeted only at women delivering their first child.
- A cash amount of Rs. 6,000 is transferred to the bank account of the beneficiary in three installments upon meeting certain conditions.
- These conditions include early registration of pregnancy having at least one antenatal check-up and registration of childbirth.
- Under the Pradhan Mantri Matru Vandana Yojana (PMMVY), it is **envisaged to give a benefit of Rs.5,000 to pregnant and lactating mothers** for the birth of their first child.
- The PMMVY is a **maternity benefit program introduced in 2017** and is implemented by the Ministry of Women and Child Development.

Challenges

- Only **50% of pregnant women and 57% of nursing women surveyed were eligible** for the scheme.
- The scheme **brings under its ambit 23% of all births and pays full benefits to a mere 14% of all births.**
- **Lack of Awareness:** only 66% of pregnant women and 69% of nursing women knew about the scheme.
- **Lengthy documentation:** An application form of about 23 pages. A slew of documents such as mother-child protection card, Aadhaar card, husband's Aadhaar card and bank passbook aside from linking their bank accounts with Aadhaar.
- **Exclusion of single mothers:** The requirement to produce the husband's Aadhaar card results in excluding single mothers.

Way Forward

- **Make it Universal:** There is a need for reviewing the scheme and **making it universal by removing restrictions on the number of children as well as including all women**, whether they are in the formal or informal sector, engaged in paid or

unpaid work.

- **On Par Wages:** Government needs to provide atleast on par with the minimum wages to the women engaged in self-employment and unpaid work.
- **Check the documentation:** Documentation process should be curtailed and single mother should also be brought in the ambit of process.

GOVERNANCE

Corruption Perception Index (2021)

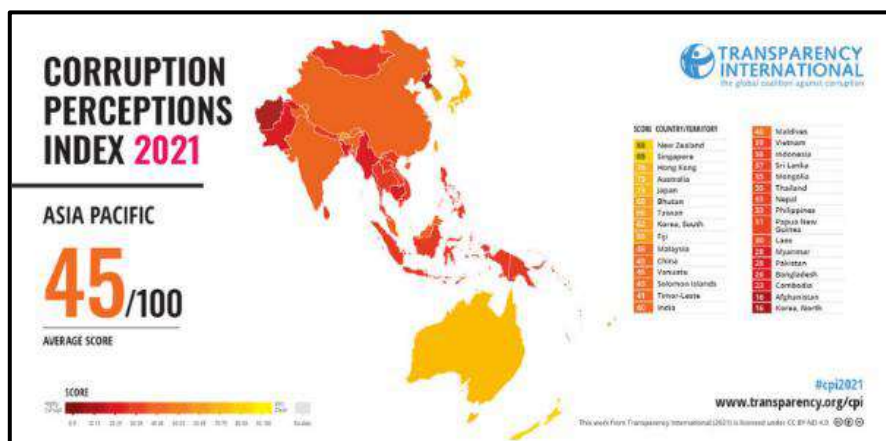
Context

- India ranks 85 in Transparency International's corruption index

Findings

World

- On a scale of 0 (most corrupt) to 100 (least corrupt), two-thirds of the 168 countries on the 2015 index scored below 50. (perceived to be very clean).
- For the second year in a row, Denmark has taken the top rank.
- North Korea and Somalia were the poorest achievers, with each receiving only 8 points.
- Some of the world's most populous countries are among those with low scores, including:
 - China (45) and
 - India (40), and
 - Indonesia (38),
 - Pakistan (28) and
 - Bangladesh (26)
- For the third year in a row, the common rating in Asia Pacific remains at 45. Over 70% of the countries in the region are ranked in the bottom 50.
- The pandemic provided a reason for the governments of Bangladesh, Pakistan, and Singapore to "tighten control and weaken accountability."



India Specific

- India placed 86th in 2021, with the same CPI score of 40. It has moved up one position to 85th this year.
- While the country's score has stayed relatively stable over the last decade, several of the processes that could assist combat corruption are deteriorating.

Issues with India

- **Democracy:** As fundamental freedoms and institutional checks and balances deteriorate, there are questions about the country's democratic character.
- **Journalists are at risk:** The research raised concerns about the dangers facing journalists and activists who have been targeted by police, political militants, criminal gangs, and corrupt local officials.
- **The Freedom to Speak:** Security, defamation, sedition, hate speech, and contempt-of-court charges have been leveled against civil society organisations that speak out against the government.

About Corruption Perception Index

- Transparency International is the organisation that created it.
- The measure looked at public sector corruption perceptions in 168 countries.
- It evaluates 180 nations and territories based on experts' and business people's perceptions of public sector corruption on a

scale of 0 to 100, with 0 being severely corrupt and 100 being very clean.

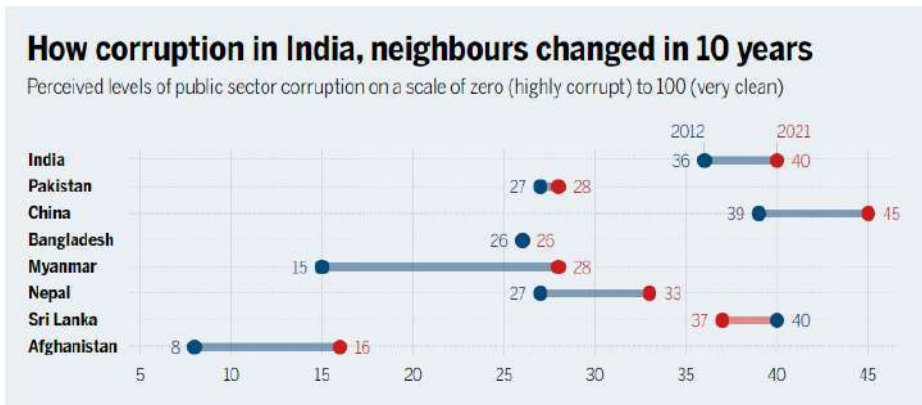
- It is a **composite index that ranks countries around the world based on 12 surveys.**

About Transparency International

- Transparency International is a **global movement fighting corruption in over 100 countries.**
- It is a **Berlin-based international non-governmental organisation** that was created in 1993.
- Focus:** Issues with the **greatest influence on people's lives are prioritised, and the powerful are held accountable** for the greater good.

Definition of Corruption

- Corruption is defined as the **misuse of entrusted authority for personal gain.**
- Corruption **undermines confidence, undermines democracy, stifles economic development, and exacerbates inequality, poverty, social division, and the environmental disaster.**
- We can **only expose corruption and hold corrupt people accountable if we understand how corruption works** and the mechanisms that support it.



Suggestions to Improve

- Protect the rights that allow people to hold power accountable.
- re-establish and enhance institutional checks and balances on power
- Combat corruption on a global scale.
- Maintain the right to know about government spending.
- Economic recovery strategies should address the **fundamental flaws that have contributed to many countries' corrupt institutions in order to move forward jointly** in long-term anti-corruption initiatives.
- Participation of informed people who are free to assemble, talk openly, and blow the whistle on corruption without fear of retaliation.**
- Adherence to the **2012 Jakarta Statement on Principles for Anti-Corruption Agencies, its Colombo Commentary, and regional commitments like the Teieniwa Vision, as well as all other UN Convention against Corruption requirements.**
- The **only legally binding universal anti-corruption instrument is the United Nations Convention against Corruption.**

Design Linked Initiative

Context

- Recently, Government is seeking applications from startups and MSME for design linked initiatives.

About Design Linked initiatives

- Announced by MeitY in December 2021.
- As part of this, **financial incentives and design infrastructure support for domestic companies, start-ups and MSMEs** at various stages of development and deployment of semiconductor design for Integrated Circuits (ICs), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design for over 5 years.

Objective

- To create a **vibrant semiconductor chip design ecosystem** in the country.
- Promote domestic manufacturing of semiconductors** and related equipment.
- The program **aims to provide companies in the semiconductor** and display manufacturing and design industries with a globally competitive incentive package.

Implementation

- The Center for Development of Advanced Computing (CDAC), a scientific society operated under MeitY, acts as a **node agency for the implementation of DLI schemes.**

Components

- There are three components Chip design infrastructure support:
 - Chip Design infrastructure support:** C-DAC will set up the India Chip Centre to host the state-of-the-art design infrastructure (viz. EDA Tools, IP Cores and support for MPW (Multi Project Wafer fabrication) & post-silicon validation) and facilitate its access to supported companies. Easier access to supported enterprises.
 - Product Design Linked Incentive:** Under this, a reimbursement of up to 50% of the eligible expenditure subject to a ceiling of Rs.15 Crore per application will be provided as fiscal support to the approved applicants who are engaged in semiconductor design.
 - Deployment Linked Incentive component:** under this an incentive of 6% to 4% of net sales turnover over 5 years subject to a ceiling of ₹30 Crore per application will be provided to approved applicants whose semiconductor design for Integrated Circuits (ICs), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design are deployed in electronic products.

SOCIAL JUSTICE

Desh ka Mentor Scheme

Context

- Recently, suspension of the Desh Ke Mentor scheme of Delhi government by the Children's Rights Commission (NCPCR) has led to new controversy.

About the program

- The program, launched in 2021, aims at connecting students in classes IX to XII with voluntary mentors.
- People between the ages of 18 and 35 can sign up to be mentors through an app created by a team at the Delhi Technological University and will be connected with students based on mutual interests.
- It involves mentoring through regular phone calls for at least two months and can optionally continue for another four months. Young mentors need to accompany students through their learning and career choices: preparing for college entrance exams and dealing with pressure.
- Volunteers must enter information about themselves, such as date of birth, education level, profession, and organization of employment.

DESIGN LINKED INCENTIVE (DLI) SCHEME

NOTIFIED

- Fiscal support from Government of India:
 - Product Design Linked Incentive - Reimbursement of up to 50% of the eligible expenditure subject to a ceiling of ₹15 Crore per application
 - Deployment Linked Incentive - Incentive of 6% to 4% of net sales turnover over 5 years subject to a ceiling of ₹30 Crore per application will be provided to approved applicants
- C-DAC to establish the semiconductor design infrastructure under the scheme and make available to the supported companies
- Tenure of Scheme:
5 years starting from 01.01.2022
- Beneficiaries:
100 Domestic semiconductor design companies

Academic Bank of Credit


Context

- The Center has all recognized institutions of higher education under the jurisdiction of the Academic Bank of Credit (ABC), regardless of accreditation or ranking.
- The government has placed IIT, IIM, and other nationally important institutions (INIs) under the Academic Bank of Credit (ABC) framework.
- This allows students to take up to 50% of the course from an institution other than their own.

Objective

- To allow students to move between educational institutions and enter and leave the program multiple times.
- The ABC Framework is part of the National Education Policy (NEP) 2020.
- This allows higher education institutions to maintain digital records of credits earned by students.

- Students can **choose to study at one institution for a year and then transfer to another institution the following year.**
- The framework **also allows students to complete courses online and earn credits.** Educational institutions have the flexibility to adopt it when they choose.
- Registration:** Higher education institutions that have obtained an "A" grade from the National Assessment and Accreditation Council (NAAC) or are on the National Institutions Rank Framework (NIRF) Top 100 list are required by law to be registered with ABC.
- Under the UGC (Establishment and Operation of Credits Academic Banks in Higher Education) (1st Amendment) Regulations, all universities, regardless of 2021 regulations, regardless of rank, participate in the ABC Framework. This includes both central and state universities, equivalent universities, and autonomous institutions.

A BANK FOR STUDENTS		HOW WILL IT HELP?
How academic bank of credit (ABC) works ➤ It will be a digital entity where students can store their credit data ➤ It is similar to net banking for bank accounts		➤ Students can select courses/combinations ➤ They can choose the pace of studies ➤ They can tailor their degree by making modifications/specializations
Students will be account holders. ABC will provide services such as: ➤ Credit accumulation ➤ Credit transfer/redemption ➤ Credit verification ➤ Degree authentication		➤ Multiple entry-exit allowed to complete degrees ➤ Students can shift from one institution to the other
➤ Validity of credits earned will be as per UGC/minister of education guidelines ➤ Credits earned through online platforms such as SWAYAM, NPTEL, V-LAB shall also be considered for accumulation and transfer		

National Commission for Safai Karamcharis

Context

- The Union Cabinet, chaired by India's Prime Minister, has **accepted a three-year extension of the National Commission for Safai Karamcharis' (NCSK) term beyond 31.3.2022.**
- The Safai Karamcharis and **recognised manual scavengers in the country would be the main benefactors**, since the NCSK has been extended for three more years beyond 31.3.2022.
- As of **December 31, 2021, there were 58098 Manual Scavengers** recognised in the MS Act Survey.

About

- The National Commission for Safai Karamcharis (NCSK) was **established as a statutory entity on August 12, 1994, by an Act of Parliament called the "National Commission for Safai Karamcharis Act, 1993."**
- Government Resolutions are **used to extend the tenure from time to time.**
- It works under the **Ministry of Social Justice and Empowerment.**

Functions

- It has been making **suggestions to the government on special welfare programmes for Safai Karamcharis, examining and reviewing current welfare programmes for Safai Karamcharis**, and investigating specific grievance cases, among other things.
- It also keeps track of **how the Prohibition of Employment as Manual Scavengers and Rehabilitation Act of 2013 is being implemented.**

Composition

- The National Commission for Safai Karamcharis comprises of
 - One Chairman**
 - 4 members, including a lady member (in the rank and status of the Secretary to the Government of India) and the Secretary (in the rank of Joint Secretary to the Govt. of India).**

Broadcast Audience Research Council

Context

- Evaluation of the Broadcast Audience Research Council (BARC) on the news channel has been resumed after the organization has revised procedures and protocols.

About Broadcast Audience Research Council (BARC)

- A joint industry association founded by stakeholders representing broadcasters, advertisers, advertising and media institutions.
- **Purpose:** BARC India owns and manages a transparent, accurate and comprehensive television viewer measurement system.

Changes made and what they mean

- The reorganization of the **Board and Technical Committee** to allow the inclusion of independent members has also been initiated by BARC.
- A **permanent board of corporate auditors** has also been established.
- The **data access protocol** has been revised and enhanced.
- Shashi Shekhar Vempati, a working group chaired by Prasar Bharati, **was also established to consider leveraging the Return Path Data (RPD) feature to use the TRP services** identified by TRAI, and the TRP Committee report is recommended.
- **RPD feature:** Means that the **set-top box that receives the signal can send data about how the subscriber is using the box.** The idea is that **set-top boxes automatically capture subscriber behavior and provide an accurate estimate of viewership.**

Significance of Ratings

- Resuming viewership data is important because TV ratings are a measure of advertising revenue.
- **Indian TV commercials are worth over 32,000 crore.**
- Both advertisers and broadcasters pay high fees to subscribe to weekly viewer statistics.
- **The operation loses the profits of the parties involved.**
- TRP helps determine the market in which to invest in advertising, especially for small businesses.

NEAT 3.0

Context

- The Union **Minister of Education** recently launched the **National Educational Alliance for Technology (NEAT) 3.0.**
- Currently, More than 12 lakh socially and economically disadvantaged students have received free ed-tech course coupons worth over ₹253 crore under NEAT 3.0.

About

- The Ministry of Education has announced **NEAT as a public-private partnership model** between the government (via the implementing agency AICTE) and **educational technology companies** across India.
- It provides for a single platform for the benefits of learners to improve the youth employability.
- These solutions **use artificial intelligence to provide a personalized and customized learning experience** to improve learning outcomes and skill development in niche areas.

INTERNATIONAL RELATIONS

Non-Nuclear Aggression Agreement

Context

- India, Pakistan exchange list of nuclear installations and facilities, covered under the **Agreement on the Prohibition of Attack against Nuclear Installations and Facilities** between India and Pakistan.

About Non-nuclear aggression agreement:

- It is a **bilateral and nuclear weapons control treaty** between the **India and Pakistan,**
- **Objectives**
 - It was signed to **limit nuclear arms race** and **pledged not to attack or assist foreign powers to attack on each's nuclear installations and facilities.**
 - It **barred its signatories to carry out a surprise attack (or to assist foreign power to attack) on each other's nuclear installations and facilities.**
- **Significance:** The treaty **provides a confidence-building security measure environment** and refrained each party from "undertaking, encouraging, or participating in directly or indirectly, any action aimed at causing destruction or damage to any

nuclear installation or facility in each country".

- The treaty was drafted in 1988 and it **entered into force on January 1991**.
- Starting in January 1992, India and Pakistan have **annually exchanged lists of their respective military and civilian nuclear-related facilities**.

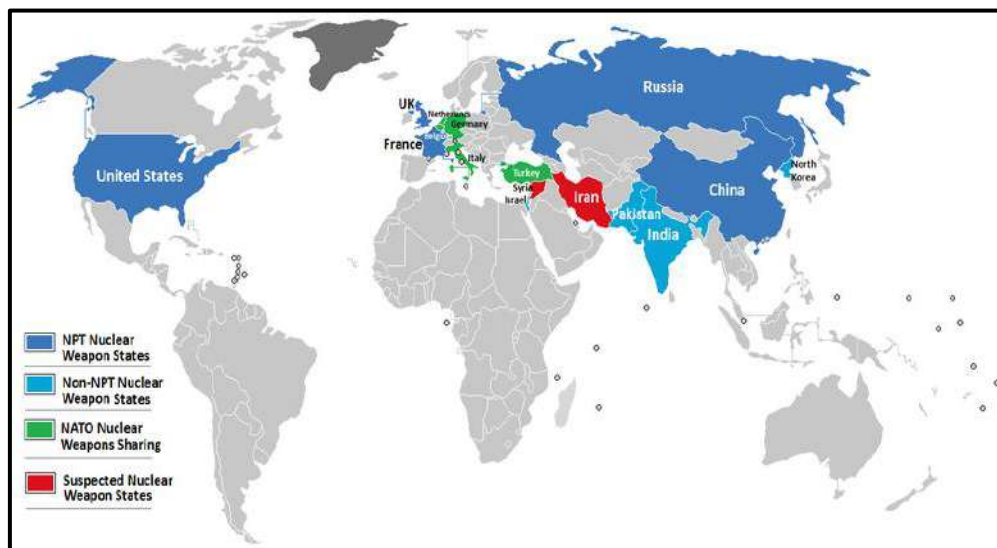
Treaty on the Non-Proliferation of Nuclear Weapons (NPT)

Context

- **China, Russia, U.S., U.K., France** five global nuclear powers pledged to **prevent atomic weapons spreading** and to **avoid nuclear conflict**, in joint statement ahead of a review of a key nuclear treaty.

Significance of this declaration

- It would **reduce level of international tensions** currently growing between U.S. and Russia.
- Help to revive nuclear deal with Iran.



About Treaty on the Non-Proliferation of Nuclear Weapons (NPT)

- It is an **international treaty**.
- **Objectives:**
 - To prevent the spread of nuclear weapons and weapons technology
 - To promote cooperation in the peaceful uses of nuclear energy, and
 - To achieve nuclear disarmament and general and complete disarmament.
- **Entered in force** in 1970.
- **Parties to the treaty:** 191 states have become parties to the treaty, though **North Korea**, which acceded in 1985 but **never came into compliance**, announced its withdrawal from the NPT in 2003.
- **Non-signatory states:** Four UN member states have never accepted the NPT, three of which possess or are thought to possess nuclear weapons: **India, Israel, and Pakistan**. In addition, **South Sudan**, founded in 2011, has not joined.
- **Defines nuclear-weapon states:** States that have built and tested a nuclear explosive device before 1 January 1967; these are the United States, Russia, the United Kingdom, France, and China.
- The treaty is **reviewed every five years** in meetings called Review Conferences.

Why India is reluctant to sign this treaty?

- India did not sign NPT because it found **NPT a flawed treaty with no basis of recognizing states** which should have the nuclear energy.

Africa 50

Context

- Power Grid Corporation of India Limited (POWERGRID) has signed a Joint Development Agreement with Africa50.

About Africa 50

- It is an **infrastructure investment platform** that was **founded by the African Development Bank (AfDB) and African states**
- **Aim:** contributes to Africa's economic growth by developing and investing in bankable infrastructure projects by catalyzing public sector capital, and mobilizing private sector funding, with differentiated financial returns and impact.
- **Membership:** It currently has **31 shareholders**, comprised of 28 African countries, the African Development Bank, the Central Bank of West African States (BCEAO), and Bank Al-Maghrib.

NATO-Russia Council

Context

- The North Atlantic Treaty Organisation (NATO) and Russia discussed the ongoing situation in Ukraine and its implications for security in Europe.
- The talks happened at the NATO-Russia Council (NRC).

About NRC

- It was established by the **2002 Rome Declaration** on "NATO-Russia Relations: a New Quality".
- It is a **mechanism for consultation, consensus-building, cooperation, joint decision and joint action**, in which the **individual NATO member states and Russia** work as equal partners on a wide spectrum of security issues of common interest.
- **Key focus areas:** fight against terrorism, crisis management, non-proliferation, arms control and confidence-building measures, theatre missile defence, logistics, military-to-military cooperation, defence reform and civil emergencies.
- Since **April 2014**, civil and military cooperation under the NRC with Russia has been **suspended in response** to Russia's military intervention in Ukraine and its **annexation of Crimea** from Ukraine

About NATO

- It was **founded in 1949**.
- **Aim:**
 - To ensure collective protection for its members — the **United States**, Canada, and American allies in Europe — against the threat of possible post-War communist expansion and aggression by the Soviet Union.
 - NATO has traditionally **focused on Russia and the European neighbourhood**
 - recognises the need to **deter "revisionist" and "militarily advanced" Russia**, and the threat posed by rogue nations such as North Korea.
- NATO allies do not recognise annexation of Crimea from Ukraine and have referred to as **"illegal" and "illegitimate"**.

Warsaw Pact

- It was **founded by the Soviet Union** for its own defence and political alliance with Eastern European nations as a counterbalance to NATO.
- Warsaw Pact that was signed in 1955.
- This alliance was **disbanded** after the dissolution of the Union of Soviet Socialist Republics (USSR) **in 1991**.

HEALTH

Reovirus

Context

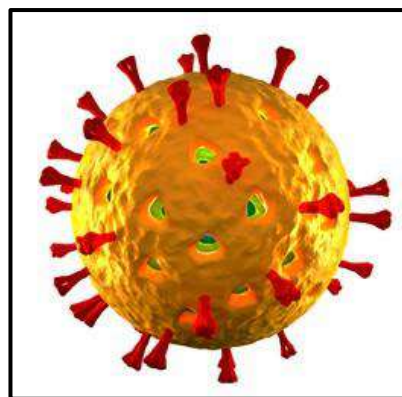
- Mud Crab Reovirus (MCRV) has been found to be the reason for the mass mortality of wild crab (*Scylla serrate*) in Andhra Pradesh State.

Details

- The MCRV, **known as Sleeping Disease**, has taken a toll on wild crab.
- The viral pathogen mainly affects the connective tissue of hepatopancreas, gills, and intestine.

About ReoVirus

- **Family:** ReoVirus belongs to Reoviridae - a family of double-stranded RNA viruses.
- **Host Range:** Member viruses have a wide host range, including vertebrates, invertebrates, plants, protists and fungi.
- **Structure:** They lack lipid envelopes and package their segmented genome within multi-layered capsids.
- **Human Infection:** Reovirus infections occur often in humans, but most cases are mild or subclinical.



Anti Leprosy Day

Context

- In India, Anti Leprosy Day is observed on 30th January every year. 30th January is Mahatma Gandhi's martyrdom day.
- He was deeply committed to the cause of leprosy-affected persons. Today is also World Neglected Tropical Diseases Day.

Details

- **About:** Leprosy/ Hansen's Disease is one of the neglected tropical diseases. It is an infectious disease caused by a bacillus, *Mycobacterium leprae*, which multiplies slowly.
- **Incubation Period:** On average, the disease incubation period is 5 years but symptoms may occur within 1 year. It can also take as long as 20 years or even more to occur.
- **Affects:** Leprosy mainly affects the skin, the peripheral nerves, mucosa of the upper respiratory tract, and the eyes.
- **Transmission:** The bacillus is likely transmitted via droplets, from the nose and mouth, during close and frequent contact with untreated cases.
- **Treatment:** Leprosy is curable with multidrug therapy (MDT). Untreated, it can cause progressive and permanent damage to the skin, nerves, limbs, and eyes.
- **Prevalence:** It is most prevalent in India (69% of cases), Brazil, Indonesia, Nigeria, Democratic Republic of the Congo, Madagascar and East Africa, Mozambique to Ethiopia, Brazil and Nepal.
- **Vaccine:** The BCG vaccine has some preventative effect against leprosy.
- **National Program:** National Leprosy Eradication Programme is a centrally sponsored scheme. Its vision is "Leprosy-free India". Under this, action is taken for early case detection, complete treatment of detected cases and to contain the onset of disease in close contacts. It also includes leprosy awareness campaigns. Under the programme, Reconstructive Surgeries are conducted and welfare allowance is paid to each patient undergoing Reconstructive Surgeries.

NeoCov

Context

- The World Health Organisation said that the NeoCov coronavirus, discovered by Chinese scientists, requires further study.

What is NeoCoV?

- NeoCoV is a bat coronavirus that was first identified in 2011.
- It was identified in a species of bats known as Neoromicia, which is where the name NeoCoV was derived from.
- Commonly known as aloe bats, this species is distributed in the Afro-Malagasy region.
- NeoCoV shares an 85% similarity to MERS-CoV in the genome sequence, making it the closest known relative of MERS-CoV.
- NeoCoV cannot interact with human receptors, implying that in its current form the virus cannot infect humans.

R- Value

Context

- Although the government has not described it as such, there are now unmistakable signs that India has entered the third wave of the Covid-19 pandemic.

About

- The reproduction number or R, an indicator of how quickly a disease is spreading in the population.

What is 'R0', or reproduction number?

- R0 (pronounced "R-naught") is the rate at which a virus is transmitted.
- Also called the basic reproduction number, it indicates the average number of people who will contract the virus from a person who has already been infected, in a population that does not have immunity for the said disease.
- R0 is the division of the number of new infections by the number of existing infections, or the average number of new infections over an infectious period ($R_0 = \text{new infections} / \text{existing infections}$).
- An R-value of 1, which signifies that every infected person is passing on the infection to at least one person on an average, is a key threshold after which cases begin to rise rapidly.
- If the number of people diagnosed with a disease increases from four to eight in two days, it is likely to increase to 16 two days later, or in four days from the start. This makes the R0 two. The higher the R0, the more contagious the infection.

- By this logic, the ideal scenario is when the R_0 is below 1. This means the infection is transmitted to fewer people. When such a rate is maintained over a considerable period of time, the disease is eradicated.

Avascular Necrosis

Context

- Many patients are being diagnosed with the long post-Covid complications of Avascular Necrosis (AVN), referred to as bone death.

Avascular necrosis

- Avascular necrosis is the death of bone tissue due to a lack of blood supply.
- Also called osteonecrosis, it can lead to tiny breaks in the bone and the bone's eventual collapse.
- A broken bone or dislocated joint can interrupt the blood flow to a section of bone. Hip bones are more prone to this.

Why are the Covid-19 recovered patients developing AVN?

- Primarily, there are two causes of AVN among such patients.
- It could be because of excessive use of steroids during Covid-19 treatment or the inherent ability of Covid-19 to cause blood clots which disrupts the blood flow.

What are the symptoms of AVN?

- A patient with AVN develops pain around the hip, joints and the movements get restricted.
- The patients find it difficult to walk and may start limping. Also, they will exhibit pain around the knee and lower back.

Treatment

- When the disease progresses in the first or second stage, core decompression surgeries are conducted.
- When it reaches the third and fourth stages, then joint replacement surgeries are done.

GS-III AGRICULTURE

Bureau of Indian Standards (BIS)

Context

- Bureau of Indian Standards (BIS) completed 75 glorious years of its existence on 6th January 2022. BIS came into existence as Indian Standards Institution (ISI) in 1947.

About

- The Bureau of Indian Standards (BIS) is the National Standards Body of India under Department of Consumer affairs, Ministry of Consumer Affairs, Food & Public Distribution
- It is established by the Bureau of Indian Standards Act, 2016.
- The Minister in charge of the Ministry or Department having administrative control of the BIS is the ex-officio President of the BIS.
- Bureau of Indian Standards (BIS) comes under the aegis of the International Organization for Standardization (ISO standards) and govern all the industrial standardization and the industrial product certifications in India. It is thus a national standards organization of India.

Examples

- ISI marks issued by BIS for industrial products in India. (electrical appliances, medical equipment, steel products etc)
- BIS Hallmark to certify the purity of gold jewelry and gold.
- AGMARK for agricultural products. (approved by the Directorate of Marketing and Inspection)
- Compulsory FPO Mark on all processed fruit products sold in India.
- India Organic Certification approved by testing centers of APEDA.
- ECOMARK for products which conform to a set of standards aimed at causing the least impact on the ecosystem.
- Non-Polluting Vehicle Mark - mandatory certification mark required on all new motor vehicles sold in India.

2 Vs 2 Agri Market Access Issues

Context

- India and US Department of Agriculture (USDA) has signed a framework agreement for implementing the 2 Vs. 2 Agri market access issues.

Details

- 2 Vs. 2 Agri market access issues involves inspection / oversight transfer for Indian mangoes & pomegranate and market access for pomegranate arils from India and market access for US cherries and U.S Alfalfa hay.

Significance

- In a boost to the export of India's agri-products, the country's mangoes and pomegranates will now get market access in the United States.

Agri-Import Stats

Context

- The Agricultural and Processed Food Products Export Development Authority (APEDA) said it is focusing on creating infrastructure and clusters in collaboration with state governments to promote outbound shipments.

Stats

- Exports of agricultural & processed food products have **risen to \$20.6 billion during 2020-21 from \$17.3 billion in 2011-12.**
- Non-basmati rice contributed close to one-fourth of the total exports in 2020-21**, followed by basmati rice and buffalo meat.
- Benin, Nepal, Bangladesh, Senegal and Togo were the top importers of non-basmati rice.**
- Major export destinations for basmati rice in 2020-21 were Saudi Arabia, Iran, Iraq, Yemen and the United Arab Emirates.
- For buffalo meat exports, the top importing nations were Hong Kong, Vietnam, Malaysia, Egypt and Indonesia.
- India's share in the world agricultural exports stood at 2.1% in 2019**, up from 1.71% in 2010.

About APEDA

- Agriculture and processed food production export Development Authority (APEDA) is an apex body that **promotes export trade of agricultural products in India.**
- Set-up **by the Ministry of Commerce and Industry, APEDA** was formed under the act passed by parliament in 1985.
- APEDA is mandated with the responsibility of export promotion and development of the following scheduled products:
 1. Fruits,
 2. vegetables and their products
 3. Meat and meat products
 4. Poultry and poultry products
 5. Dairy products
 6. Confectionery biscuits and Bakery products
 7. Honey, jaggery and sugar products
 8. Cocoa and its products, Chocolates of all kinds.
 9. Alcoholic and non-alcoholic beverages
 10. Cereal and cereal products
 11. Groundnuts peanuts and walnuts
 12. Pickles, papads and chutney
 13. Guar gum
 14. Floriculture and its products
 15. Herbal and Medicinal plants
- The above product categories are almost covered 50% of all Agriculture products exported from India.
- APEDA has also been entrusted with the responsibility to monitor import of sugar.

Aroma Mission

Context

- Union Minister Dr. Jitendra Singh said, "Purple Revolution" is Jammu & Kashmir's contribution to "Start-ups India"

Aroma Mission

- Launched by:** CSIR under the aegis of Union Ministry of Science & Technology in 2016.
- About the mission:** Aroma Mission is one of its kind of project where an end-to-end technology on cultivation,



processing, and marketing of high-value aromatic crops was provided to the farmers and other stakeholders.

- **Feature:** Along with planting material, distillation units are provided and farmers are trained in extraction and many of them have become entrepreneurs as lavender oil is quite sought after.
- **Impact:** The Aroma Mission, also popularly referred as "Lavender or Purple Revolution", started from J&K and transformed the lives of farmers who are able to grow lavender, make lucrative profit and improve their lives.
- **Expansion:** Along with Lavender, many high value Aromatic and Medicinal cash crops have been introduced by CSIR in J&K.
- **Significance:** This will fetch in the much needed transformation in lives of farmers and women.

SCIENCE & TECHNOLOGY

E-DNA

Context

- Researchers from two teams have independently shown that environmental DNA (e-DNA) can potentially identify and monitor terrestrial animals.

What is e DNA?

- Environmental DNA or eDNA is **DNA that is collected from a variety of environmental samples such as soil, seawater, snow or air, rather than directly sampled from an individual organism.**
- As various organisms interact with the environment, DNA is expelled and accumulates in their surroundings from various sources.
- Example sources of eDNA include, **feces, mucus, gametes, shed skin, carcasses and hair.**
- **Thus, in a nutshell:** Animals shed DNA through their breath, saliva, fur or faeces into the environment. These samples are called e-DNA.

Analysis

- Such samples can be analyzed by high-throughput DNA sequencing methods, known as **metagenomics, metabarcoding, and single-species detection, for rapid monitoring and measurement of biodiversity.**

Recent Studies

- Spotting animals can be challenging, especially if they inhabit inaccessible habitats.
- The research shows that findings could help understand the composition of animal communities and detect the spread of non-native species.
- This further indicates a big potential of airborne e-DNA to be used for conservation of terrestrial vertebrates.
- The e-DNA technique can now provide accurate data for population census.

Significance

- With eDNA, all pathogens can be monitored in an environment regardless of where they come from.
- An integrated eDNA monitoring program could cost-effectively provide advanced warning of human, livestock and wildlife diseases.

EDN Ameta barcoding

EDN Ameta barcoding is a novel method of assessing biodiversity wherein samples are taken from the environment via water, sediment or air from which DNA is extracted, and then amplified using general or universal primers in polymerase chain reaction and sequenced using next-generation sequencing to generate thousands to millions of reads. From this data, species presence can be determined, and overall biodiversity assessed. It is an interdisciplinary method that brings together traditional field-based ecology with in-depth molecular methods and advanced computational tools.

Altimeters

Context

- The US Federal Aviation Administration (FAA) has warned that the new 5G technology could interfere with instruments such as altimeters.

About

- An altimeter or an **altitude meter is an instrument used to measure the altitude of an object above a fixed level.**
- So, in aviation it measures how far above the ground an airplane is travelling.
- In addition to altitude, altimeter readouts are also used to facilitate automated landings and to help detect dangerous currents called wind shear.
- Concern:** Altimeters operate in the 4.2-4.4 GHz range and the concern is that the auctioned frequencies sit too close to this range.

Read about 5G technology: <https://www.iasgyan.in/blogs/5g-technology-a-primer>



Artificial Moon by China

Context

- China has now built an artificial moon facility that will simulate lunar conditions and the environment for scientists to test new tech and future missions.

About the project

Features in the Research Facility

- This “first of its kind in the world”, facility is located in the eastern city of Xuzhou, in Jiangsu province.
- It can replicate low gravity environments for as long as one wants, making China less dependent on zero-gravity planes to train astronauts, and environments to test new rovers and technologies.
- The facility, will use powerful magnetic fields inside a 2-foot-diameter (60 centimeters) vacuum chamber to make gravity disappear.

The mini-moon

- The mini-moon is about two feet in diameter and the artificial surface has been made with rocks and dust that are as light as those on the moon.
- Note:** The gravity on the Moon is not zero, it is one-sixth as powerful as the gravity on Earth due to the magnetic field.

Significance

- This project will aid scientists in resolving technical challenges and determining whether certain buildings may survive on the surface of the moon. It will also aid in the evaluation of the feasibility of human settlement on the moon.

Open-Source Software

In News

- The open-source software repository service Git Hub is in the news after it was used to create and share an offensively named app that sexually harassed Muslim women in India.
- The app used pictures of the women stolen from their social media handles and invited “users” to bid for them.

About

- The term open source refers to something people can modify and share because its design is publicly accessible.
- In a nutshell, Open source software is software with source



code that anyone can inspect, modify, and enhance.

Closed vs Open Source

- Some software has source code that only the person, team, or organization who created it—and maintains exclusive control over it—can modify.
- This kind of software is called "proprietary" or "closed source" software.
- Open source software is different. Its authors make its source code available to others who would like to view that code, copy it, learn from it, alter it, or share it.
- Open source licenses affect the way people can use, study, modify, and distribute software.

Dark Matter

Context

- Scientists are investigating how the shape of dark matter halo affects the motion of stars in stellar bars (found at the centre of some galaxies).

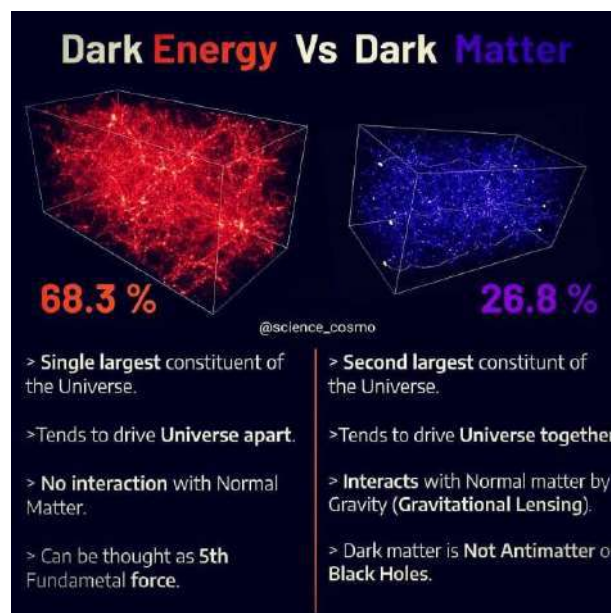
About

- Dark energy is the name given to the mysterious force that's causing the rate of expansion of our universe to accelerate over time, rather than to slow down.
- Dark matter is a component of the universe whose presence is discerned from its gravitational attraction rather than its luminosity.

Features

- Unlike normal matter, dark matter does not interact with the electromagnetic force.
- This means it does not absorb, reflect or emit light, making it extremely hard to spot.
- In fact, researchers have been able to infer the existence of dark matter only from the gravitational effect it seems to have on visible matter.

Read more at: <https://www.iasgyan.in/blogs/dark-matter>



DEFENSE & SECURITY

BrahMos Supersonic Cruise Missile

Context

- Philippines signed a \$374.96-million deal with BrahMos Aerospace Private Ltd. for the supply of shore-based anti-ship variant of the BrahMos supersonic cruise missile. This is the first export order for the missile.

Why Philippines acquired BrahMos?

- As the world's fastest supersonic cruise missiles, the BrahMos missiles will **provide deterrence** against any attempt to undermine their sovereignty and sovereign rights, especially in the West Philippine Sea.
- Tensions have high between Philippines and China over the disputed islands in the South China Sea.
- Manila had accused Chinese Coast Guard of "intimidation and harassment" of its Navy personnel.
- It will help to achieve the objective of a **free and peaceful Indo-Pacific**.

About BrahMos

- It is a medium-range **ramjet supersonic cruise missile** that can be launched from submarine, ships, aircraft, or land.
- **Developed by:** It is a joint venture between the **Russian Federation's NPO Mashinostroyeniya** and India's Defence Research and Development Organisation (DRDO), who together have formed BrahMos Aerospace.
- It is the **world's fastest anti-ship cruise missile** in operation.



- **Version in use:** land-launched and ship-launched versions.
- **Recent development:** In 2016, India became a member of the **Missile Technology Control Regime (MTCR)**, India and Russia are now jointly developing a new generation of Brahmos missiles with **600 km-plus range**.
- In 2019, India upgraded the missile with a new range of 500 km.

Missile Technology Control Regime (MTCR)

- It is a **multilateral export control regime**.
- It is an **informal political understanding** among 35 member states that seek to limit the proliferation of missiles and missile technology.
- The regime was formed in **1987 by the G-7 industrialized countries**.
- **Aim:**
 - to curb the spread of unmanned delivery systems for nuclear weapons, specifically delivery systems that could carry a payload of **500 kg for a distance of 300 km**.
 - to limit the risks of proliferation of weapons of mass destruction (WMD) by controlling exports of goods and technologies that could make a contribution to delivery systems (other than manned aircraft) for such weapons.
- The MTCR is **not a treaty** and **does not impose any legally binding obligations** on Partners (members).
- It seek to limit the proliferation of **missiles and missile technology**.

Intermediate Jet Trainer

Context

- Intermediate Jet Trainer cleared a major milestone.

About the Intermediate Jet Trainer

- **Designed and developed** by the Hindustan Aeronautics Limited (HAL).
- It is meant to replace the ageing Kirans of the IAF fleet.
- It uses **new Anti-Spin Parachute system [ASPS]**, which is mandated for the safety of the aircraft and test crew during spin flight testing.

Sudhir Kumar Saxena committee

Context

- Union Home Ministry constitutes a three member committee to probe lapses in PM Modi's security during Punjab visit.

About Sudhir Kumar Saxena committee

- **Headed by:** The three-member committee will be led by **Sudhir Kumar Saxena Secretary** (Security).
- **Other members:** It will comprise Balbir Singh, Joint Director, IB and S. Suresh, IG, SPG.
- **Committee purpose:** To probe lapses in PM Modi's security during Punjab visit.

Sea Dragon 22 exercise

Context

- India and five other nations begin anti-submarine exercise with US.
- Participating nation:** Six Indo-Pacific nations participated in a multi-lateral anti-submarine warfare exercise that includes navies of India, Australia, America, Canada, Japan and South Korea.
- Purpose:** Anti-submarine warfare training and excellence.

The Light Combat Aircraft programme


Context

- The Hindustan Aeronautics Limited (HAL), expects to deliver all Final Operational Clearance (FOC) variant aircraft to the Indian Air Force (IAF) in 2022 pending some systems from Israel, while the LCA-MK1A is expected to take flight in June this year.
- Tejas will only be the second indigenously built fighter aircraft in India's history.

About Tejas'

- 1983: first time when the Government of India cleared a project to build a new Light Combat Aircraft as a replacement for MiG 21s.
- Tejas is 50 per cent indigenous.
- It has a GE American engine, an Israeli Elta radar, and British aerospace, avionics, and other engines

Tejas to add teeth to Indian air combat



Indigenously developed Light Combat Aircraft (LCA), Tejas has been formally inducted to Indian Air Force. The induction occurred almost 15 years after its first test flight and 33 years after the project was taken up

Project first conceived and launched in 1983	Maiden test flight took place on Jan 4, 2001	Designed for air-to-air, air-to-ground and air-to-sea combat roles	Intended to replace the phased out MiG-21 fighter jets
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Specifications (LCA AF MK2)

Crew	Length	Height	Wingspan	Max speed	Engine
One	13.7 m	4.4 m	8.2 m	1.6 mach	GE-F414-INS6

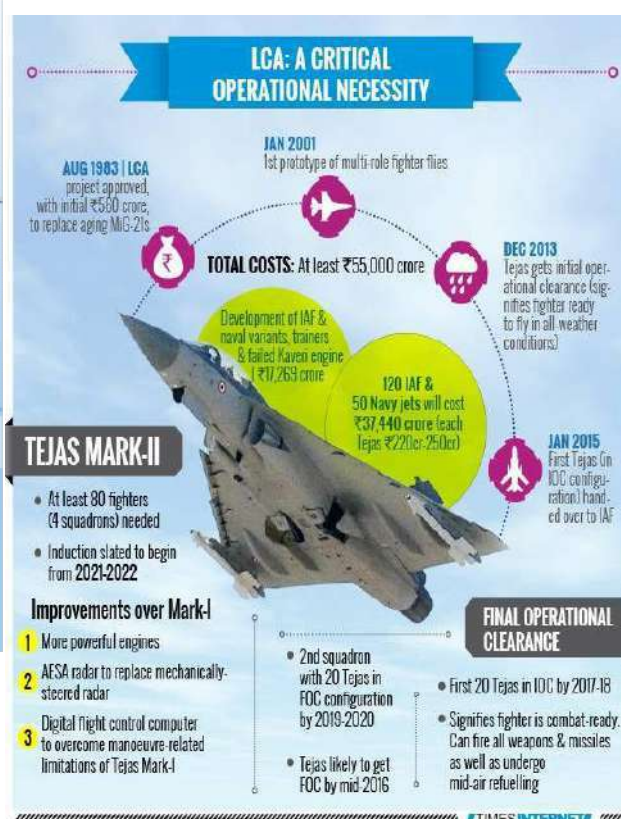
Smallest and lightest multi-role supersonic fighter aircraft of its class

First advance Fly-by-wire (FBW) fighter aircraft designed, developed and manufactured in India

Project executed by Aeronautical Development Agency (ADA) along with Hindustan Aeronautics Limited (HAL)

Inducted on July 1, 2016 into Squadron No. 45 of IAF, also called the "Flying Daggers"

KBK InfoGraphics



IAC Vikrant

Context

- IAC Vikrant heading out for the next set of sea trials.

About

- It is country's maiden indigenous aircraft carrier (IAC-1).
- Built by:** Cochin Shipyard Ltd.
- The IAC would be commissioned as **INS Vikrant** in the first half of 2022, which would be the most potent sea-based asset.
- Capabilities:** can project Air Power over long distances, including Air Interdiction, Anti-Surface Warfare, offensive and

defensive Counter-Air, Airborne Anti-Submarine Warfare and Airborne Early Warning.

- It has a **STOBAR** (short take off but arrested recovery) system of aircraft launch and recovery on the flight deck.
- It is armed with the **Barak LR-SAM** (long range surface-to-air missile) air defence and **AK-630** close-in weapon system besides a slew of advanced sensors and an electronic warfare suite.
- **Other specifications**
 - It is expected to have a top speed of 30 knots (approximately 55 kmph) and is propelled by four gas turbines.
 - Its endurance is 7,500 nautical miles at 18 knots (32 kmph) speed.
 - The vessel can carry up to 1,500 personnel and has 2,300 compartments.
 - The ship shall operate MiG-29K fighter aircraft, Kamov-31 Air Early Warning Helicopters, the soon to be inducted MH-60R multi-role helicopter and the indigenously manufactured Advanced Light Helicopters.

Italian, Russian help

- While the **design was done with help from the Italian firm Fincantieri**, the Russians collaborated in designing and developing the aviation complex.

Significance of IAC

- Shining example of 'AatmaNirbhar Bharat' as it has nearly **75 per cent indigenous content - from design to steel used in construction to key weapons and sensors**.
- It help secure India's interests in maritime domain.
- It will help to realize the **vision of SAGAR** (Security and Growth for All in the Region) and the wider goal of a **free, open and inclusive Indo-Pacific to ensure peace and stability** in the region.

Man-Portable Anti-Tank Guided Missile

Context

- India's Defence Research and Development Organisation (DRDO) successfully flight tested Man-Portable Anti-Tank Guided Missile.

About Man-Portable Anti-Tank Guided Missile

- **Developed by:** It is indigenously developed by DRDO.

Specifications:

- It is an Indian **third-generation, low weight** fire-and-forget anti-tank guided missile derived from **Nag ATGM**.

About Nag missile

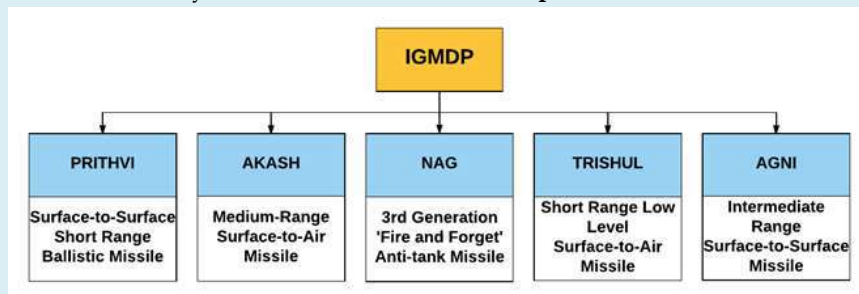
- It is an Indian **third-generation**, all-weather, **fire-and-forget**, lock-on after launch, anti-tank guided missile (ATGM).
- It is also called "**Prospina**" for the land-attack version.
- It is developed under the **Integrated Guided Missile Development Program (IGMDP)**, run by DRDO.
- **Manufactured by:** Bharat Dynamics Limited (BDL).
- **Specifications:**
 - Has **night strike capabilities**.
 - Has a minimum range of **500 metres** and maximum range of **four kilometres**.
 - Uses an imaging infra-red seeker to lock on to the target before launch.
- It is fit for **deployment across India's frontiers** in both eastern and western theatre.

Nag variants that are under development

- A land version, for a mast-mounted system; the helicopter-launched Nag (**HELINA**);
- A "man-portable" version (**MPATGM**);
- The Nag Missile Carrier (**NAMICA**) "tank buster".
- **SANT or Standoff Anti-tank Guided Missile** is a fourth generation upgraded variant of HELINA missile developed for long distance airborne anti-armour role.

Integrated Guided Missile Development Programme (IGMDP)

- It was an Indian Ministry of Defence programme for the research and development of the comprehensive range of missiles.
- The programme was managed by the Defence Research and Development Organisation (DRDO) and Ordnance Factories Board in partnership with other Indian government political organisations.
- The project started in 1982–83 under the leadership of Abdul Kalam.
- In 2008, the DRDO formally announced the successful completion of the IGMDP.



Counter-terrorism grid

Context

- Home Ministry push to Intelligence Bureau's counter-terrorism grid i.e. Multi Agency Centre (MAC).

About Multi Agency Centre

- Multi Agency Centre (MAC), a common counter-terrorism grid under the Intelligence Bureau (IB) that was made operational in 2001 post-Kargil war.
- 28 organisations, including the Research and Analysis Wing (R&AW), armed forces and State police are part of the platform.
- There are around 400 secured sites connected with the MAC headquarters.

Concerns with MAC

- System existed to share information, but it was not being implemented effectively.
- States are reluctant to share information on the platform, it was also highlighted in the parliamentary standing committee report in 2020
- Gaps in sharing critical information at the right time, although all the States have a subsidiary multi-agency centre (SMAC) located in all State capitals.

Why there is need of intelligence sharing?

- Lack of quick information to intelligence and enforcement agencies is considered to be one of the major hurdles in mitigating crimes.
- For handling and mitigating the continued threats of terrorism and global terror groups, terror financing, narco-terrorism, organised crime-terror nexus, illicit use of cyber space, movement of foreign terrorist fighters.
- Help in building better coordination and synergy among the central and state security agencies in countering the ever-changing counter terrorism and security challenges.

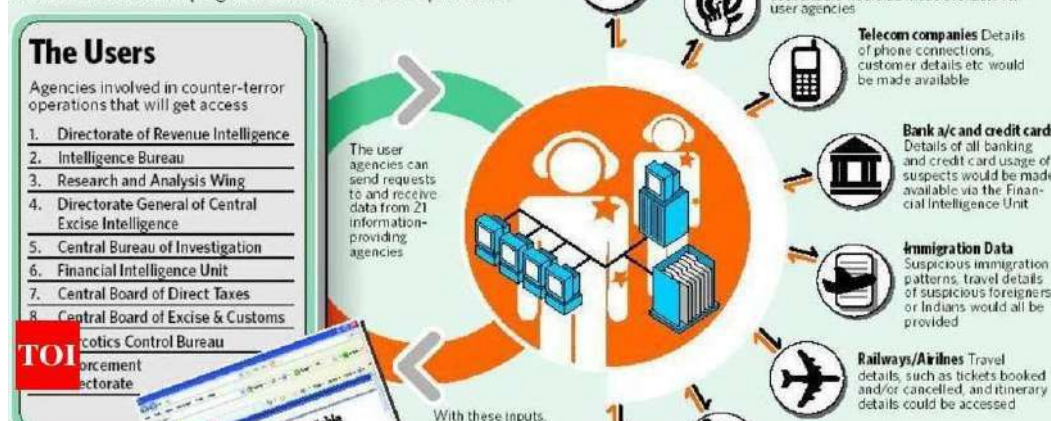
India's other counter-terrorism platform

- National Intelligence Grid (NATGRID) aimed at providing cutting-edge technology to boost India's counter-terror capabilities.
- NATGRID is conceptualised as a seamless and secure database for information on terrorists, economic crimes and similar incidents to help bolster India's capabilities.
- It track suspects and prevent terrorist attacks with real-time data and access to classified information like immigration, banking, individual taxpayers, air and train travels.
- 26/11 prompted India to launch the NATGRID database

How will NATGRID work?

UNLOCKING THE GRID

Just how will the complex system that goes by the name of Natgrid work? TOI-Crest pieces together the processes that are meant to help agencies fine-tune their operations



WHAT IS NATGRID

It looks to bring to one platform intelligence from more than 20 agencies like Railways, banks, IB, R&AW, CBI, ED, Central Board of Direct Taxes and some others can receive information

WHY IS IT IMPORTANT

An active NatGrid would have prevented the 2008 Mumbai terror attacks

HOW IT WORKS

Telephone, residential, travel, banking or even fingerprint details on a suspect available on a common platform

THE DELAY

- 70 personnel working from where they are
- Conceived in 2010-11, to be put in place in four phases
- Two phases to be completed by 2014 at ₹1,100 cr
- Even phase 1 not complete by 2015
- Green nod comes two years after foundation-laying

'Passage Exercise'

Context

- The Indian Navy participated with Russian Federation Navy in a 'Passage Exercise' or PASSEX in the Arabian Sea.
- 'Passage Exercise' is an exercise done between two navies to ensure that the navies are able to communicate and cooperate in times of war or humanitarian relief.
- It is a **strategic outreach exercise** with the defence forces of friendly foreign countries" to "focus on multiple areas including enhancing aspects of interoperability, nuances of international integrated maritime (Search and Rescue) operations and exchange of best practices in the maritime airpower domain."

Aims

- To strengthen the bilateral relationship and cooperation by demonstrating the ability to integrate and coordinate comprehensively in maritime operations.

Significance

- It showcased **cohesiveness and interoperability** between the two navies.
- It included tactical manoeuvres, cross-deck helicopter operations and seamanship activities.

ENVIRONMENT & ECOLOGY

Pangolin

Context

- Odisha radio-tags rescued Indian pangolin to standardise the rehabilitation protocol for the animal in the State.
- After Madhya Pradesh, **Odisha is the second State** in the country to release a radio-tagged Indian pangolin into the wild.

About Pangolins

- Pangolins, despite being listed in **Schedule I of Wildlife (Protection) Act, 1972** continue to be the **world's most trafficked mammal**.
- The **Indian pangolin is the largest among eight pangolin species**.
- The nocturnal animal lives in burrows and **feed on ants and termites**.
- It practices **Volvation**.
 - **Volvation is a defensive behavior in certain animals, in which the animal rolls its own body into a ball, presenting only the hardest parts of its integument, or its spines to predators.**

Pangolins in India

- Both Indian Pangolin (*Manis crassicaudata*) and the Chinese Pangolin (*Manis pentadactyla*) are found in India.

Habitat

Indian Pangolin

- Widely distributed in India, except the arid region, high Himalayas and the North-East.
- The species is also found in Bangladesh, Pakistan, Nepal and Sri Lanka.

Chinese Pangolin

- Found in the Himalayan foothills in Eastern Nepal, Bhutan, Northern India, North-East Bangladesh and through Southern China.

Threats to Pangolins in India:

- **Hunting and poaching** for use as a **protein source and traditional medicine** and international trade for its meat and scales in East and South East Asian countries, particularly China and Vietnam.

Protection Status


IUCN Red List

- Indian Pangolin: **Endangered**
- Chinese Pangolin: **Critically Endangered**
- Both these species are listed under **Schedule I, Part I of the Wildlife (Protection) Act, 1972.**

Endangered pangolins

The world's most heavily trafficked mammal

No reliable global population estimates but drastic local declines documented

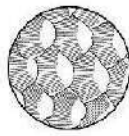


Behaviour

- Solitary, nocturnal
- Digs long burrows to hunt termites and for shelter
- Can climb trees
- Good swimmer


Diet: ants, termites

Scales



- Made from keratin, the substance that also forms human hair and nails
- Sought on the black market for supposed medicinal benefits

Defence



- Rolls into a ball
- Easy to catch for illegal meat and medicine market

Trafficking

- Increasing **demand for their meat and body parts** is fuelling illegal hunting
- More than **1 million pangolins** believed to have been **poached** from the wild in the past decade

CITES* in September 2016 banned all international trade

Eight species of pangolin worldwide

Four Asian species

Critically endangered

- Chinese
- Malayan

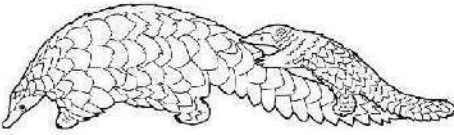
Endangered

- Indian
- Philippine

Four African species

Vulnerable

- African white-bellied
- Giant ground
- Temminck's ground
- Long-tailed



Young travel on mother's tail

*Convention on International Trade in Endangered Species

Red Sanders

Context

- Red Sanders falls back in IUCN's 'endangered' category. It was classified as 'near threatened' in 2018

About Red Sanders (Red Sandalwood)

- The species, *Pterocarpus santalinus*, is an **Indian endemic tree species**.
- **Geographical range:** restricted in the Eastern Ghats. It is endemic to a distinct tract of forests in Andhra Pradesh
- **Protection status:** 'Endangered' category in the International Union for Conservation of Nature's (IUCN) Red List.
 - **IUCN Red list:** The IUCN maintains a list called the Red List — of **flora and fauna species** and categorises them based on their conservation status.

- The status ranges from 'least concern' for the species that are abundant in numbers to 'extinct' for those that have completely disappeared from the planet.
- Species that come under 'critically endangered', 'endangered' and 'vulnerable' categories are considered threatened, according to the IUCN categorisation.

Uses

- Known for their **rich hue and therapeutic properties**.
- Are high in demand across Asia, particularly in China and Japan, for use in **cosmetics and medicinal products** as well as for **making furniture, woodcraft and musical instruments**.

Why its status is downgraded?

- **Threats:** Over-exploitation and smuggling.

RED SANDERS: FACTFILE

- ▶ Grows naturally in Andhra Pradesh and north Tamil Nadu in India
- ▶ Listed as endangered by the International Union for Conservation of Nature (IUCN)
- ▶ Highly prized in China for making exquisite furniture, musical instruments and use in alternative medicines
- ▶ A kilo of red sanders bought at around Rs 500 in India can fetch as much as Rs 3000 to Rs 12000 in China
- ▶ Scientists have also found traces of radioactive materials like Thorium and Uranium in red sanders; but experts say the quantity is too small to be used in nuclear reactors as suspected by many
- ▶ The wood is mainly smuggled out of India through northeast and Bhutan

THE COST AND THE CRIME

PRECIOUS COMMODITY

- Red Sanders — *Pterocarpus santalinus* — is a tree species native to Andhra Pradesh's Chittoor, Kadapa, Kurnool, Nellore & Prakasam districts
- The tree is on the endangered species list. Extraction of live trees is prohibited
- The brick red wood has immense value in countries like Japan, China and Myanmar where it is also used to make expensive furniture and musical instruments
- Smuggled wood is sent by land route through the Northeast states to Myanmar and by sea route to Singapore and Dubai
- In a recent auction, one tonne of

A-grade logs were sold for ₹1.9 crore. Most of the wood is of B-and C-grades, valued at ₹55 lakh and ₹25 lakh, respectively

- In November 2014, AP earned ₹900 crore by auctioning 2,600 tonne of seized wood
- Bidders from China, Hong Kong, Singapore & Japan took part. Yoga guru Ramdev's Patanjali Yogpeeth also bought the wood, for 'medicinal purposes'
- Second batch auctioning of 3,500 tonne planned for June 17.

WELL-OILED NETWORK

- The smuggling racket operates from forest villages to international markets
- An order placed from abroad is

communicated through middlemen to the local operator, who then calls the foreman who supplies the wood-cutters from TN

- Labourers are brought in trains or buses and, in the dark of the night, walk long distances to the heart of the forests where the trees are found
- Lower level forest officials guide them to the right patches
- The logs are chipped, cured and then loaded onto vehicles, concealed in rice husk, watermelons, oil tankers and even ambulances
- Red sanders smuggling involves various independent gangs. Often, it's the turf war that leads to a leak in information and the busting of a network.

- **Natural causes**
 - Slow growth of the species and continued harvesting leaves no time for recovering naturally
 - Cattle grazing and invasive species.

What is the difference between Red sander and sandalwood?

SANDAL VS SANDERS

RED SANDERS

Highly valued in China, Japan and Middle East countries, it is used for decorative purposes and also traditional medicine. The wood costs between Rs 1,500 and 2,000 a kg. It is illegal to possess and sell it.

SANDALWOOD

Renowned for aromatic and cosmetic value, it is the second costliest wood after African Blackwood - a kilo cost up to Rs 10,000. Individuals can grow the tree, but it is illegal to cut and harvest, use it or sell it in the open market.

4th Asia Ministerial Conference on Tiger Conservation

Context

- India 4th Asia Ministerial Conference on Tiger Conservation adopted the **Kuala Lumpur Joint Statement**.

Organised by

- The Government of Malaysia and Global Tiger Forum (GTF)

Key highlights of the conference

- Asked for **formalising collaboration and sharing intelligence information** among law enforcement agencies to **combat wildlife poaching and trafficking**.
- Will implement a **South East Asia Tiger Recovery Plan**, focused on where tiger poaching and trafficking are acute.

India's achievements

- India has **doubled the tiger population in 2018** itself, 4 years ahead of the targeted year 2022.
- The budgetary allocation for tiger conservation has increased from Rs 185 crore in 2014 to **Rs 300 crore in 2022**.
- 14 Tiger Reserves in India have already been awarded with international CA|TS accreditation and efforts are on to bring in more Tiger Reserves under CA|TS accreditation.

The 14 tiger reserves, which have been accredited are

- Manas, Kaziranga and Orang in Assam
- Satpura, Kanha and Panna in Madhya Pradesh
- Pench in Maharashtra
- Valmiki Tiger Reserve in Bihar
- Dudhwa in Uttar Pradesh
- Sunderbans in West Bengal
- Parambikulam in Kerala
- Bandipur Tiger Reserve of Karnataka and
- Mudumalai and Anamalai Tiger Reserve in Tamil Nadu

Why to conserve Tigers?

- Tigers, the top predators in ecosystem, are vital in **regulating and perpetuating ecological processes**.
- Conservation of top carnivore guarantees the **wellbeing of forested ecosystems, the biodiversity as well as water and climate security**.
- It is as an **umbrella species** for majority of the ecosystem in the Indian sub-continent.

Key challenges to tiger conservation

- rise in **organised poaching** driven by an international demand for tiger body parts and products
- **depletion of tiger prey** and
- habitat loss

Global Tiger Forum

- It is the only inter- governmental international body established with members from willing countries to embark on a global campaign to protect the Tiger.
- India is one of the **Founding members** of the intergovernmental platform of Tiger Range Countries (Nepal, Bhutan, Vietnam, Bangladesh, Cambodia, India and Myanmar).
- It calls upon Range Countries to prepare and update their National Action Plans for Tiger conservation.



Action Plan for Introduction of Cheetah in India

Context

- At the 19th meeting of the National Tiger Conservation Authority (NTCA) Action Plan for Cheetah returning launched.

Need of re-introduction

- Cheetah became the **only large carnivore to have gone extinct in India in the 1950s** due to **hunting and loss of habitat**.
- Action Plan for Introduction of Cheetah in India', is an effort to bring the **world's fastest cat back** to the country after 70 years.

Relocation details

- **Source:** Wildlife Institute of India and the Wildlife Trust of India, are translocating around 8-12 cheetahs from **South Africa, Namibia and Botswana** – which have the world's largest populations of the animal.
- **Destination:** The big cats will live at **Kuno Palpur National Park in Madhya Pradesh** as it is most suitable for cheetah translocation in terms of habitat and an adequate prey base.

Kuno national park

- **Located in:** Madhya Pradesh, India.
- Also known as **Kuno-Palpur and Palpur-Kuno Wildlife Sanctuary**.

Action Plan for Introduction of Cheetah in India' details:

- A cohort of around **12 to 14 cheetahs** will be imported from South Africa or Namibia and each of them will be **fitted with a satellite-GPS-very high frequency radio-collar**.
- The animals' **lineage and condition shall be checked** in the host country to **ensure that they are not from an excessively inbred stock and are in the ideal age group**, so as to conform to the needs of a founding population.
- Ministry of environment and the **Cheetah Task Force**, will **create a formal framework to collaborate** with governments of Namibia and/or South Africa, through the ministry of external affairs.

About Cheetah

- The cheetah (*Acinonyx jubatus*) is a **large cat native to Africa and central Iran**.
- It is the **fastest land animal**, capable of running at 80 to 128 km/h,
- **Habitat:** The cheetah occurs in a variety of habitats such as **savannahs in the Serengeti**, arid mountain ranges in the **Sahara and hilly desert terrain in Iran**.
- **Threats:** Habitat loss, conflict with humans, poaching and high susceptibility to diseases.
- **Protection status:** It is listed as Vulnerable on the IUCN Red List.
- **Re-introduction:** Cheetah was declared extinct from India in 1952 and is considered the only large mammal that has gone extinct since the country's independence. If the cheetah is reintroduced, **India would become probably the only country in Asia to have all the major big cats in the wild** (lions, tigers and leopards included).

Halodule uninervis- Marine Seagrass

Context

- Researchers have found strong anti-cancer activity in the ethyl acetate fraction of **Halodule uninervis**, a species of seagrass found in the coastal region of Tamil Nadu.
- **Halodule uninervis:** This seagrass is abundantly available in the Gulf of Mannar.

About Seagrass

- It is one of the **groups of marine angiosperms**.
- They often live entirely submerged.
- Seagrasses are believed to be the **third most valuable ecosystem** in the world (only preceded by estuaries and wetlands).
- **Usage**
 - **Traditional medicine:** used for a variety of therapeutic purposes such as wound-healing, fever, stomach aches, muscle pains and skin diseases.
 - **Biomedical applications** such as anti-cancer, anti-diabetic, anti-inflammatory, anti-fungal, anti-bacterial and anti-viral activities.
 - Seagrasses are used to **fertilize fields, insulate houses, weave furniture, thatch roofs, make bandages, and fill mattresses** and even car seats.
 - It supports **commercial fisheries and biodiversity**, clean the surrounding water and help take **carbon dioxide out of the atmosphere**.

Van Vihar National Park

Context

- India's oldest sloth bear Gulabo dies at Bhopal's Van Vihar national park.

About Van Vihar National Park

- **Location:** located on the banks of Bhopal's Upper Lake (Madhya Pradesh).
- It also runs a **rescue and breeding centre for sloth bears**.
- It is developed and managed as a **modern zoological park**.
- It categorizes animals in two categories, **captive and herbivores**. All carnivorous animals are kept inside enclosed areas and herbivores are allowed to roam freely.

Sloth bear

- The sloth bear species are **native to the Indian subcontinent**.
- **Habitation:**
 - It mostly occurs in areas with forest cover, low hills bordering the outer range of the Himalayas from Punjab to Arunachal Pradesh.
 - It is **absent in the high mountains** of Himachal Pradesh and Jammu and Kashmir, the northwestern deserts of Rajasthan, and a broad unforested swath in the south.
- **Protection status:** It is listed as **Vulnerable** on the IUCN Red List.
- **Threats:** habitat loss and degradation.



Whale sharks

Context

- Rare rescue mission led by the Andhra Pradesh Forest Department is an exemplary success story of active involvement of the local community in species conservation.

Facts about whale shark

- Whale sharks (*Rhincodon typus*) are the **world's largest fish**.
- **Protection status:**
 - Endangered in the IUCN Red list
 - Schedule I of the Wild Life Protection Act
- **Habitat and distribution:**

- Found in **all the tropical oceans of the world**, whale sharks have white spotted colouration, which make these gentle giants easy to distinguish.
- **Gujarat has the maximum density of whale shark population** in the Indo-Pacific region.
- **Indicator species:** The **presence of whale sharks** indicates the **availability of plankton** and the overall health of the oceans.

Kerala Bird Atlas

Context

- Kerala gets its first ever scientific bird atlas.

About Kerala Bird Atlas (KBA)

- It is first-of-its-kind state-level bird atlas in India.
- KBA was prepared based on systematic surveys held twice over 60 days a year during the wet (July to September) and dry (January to March) seasons between 2015 and 2020.

Significance

- It has created solid **baseline data** about the distribution and abundance of various bird species across all major habitats giving an impetus for futuristic studies.
- It is Asia's largest bird atlas in terms of geographical extent, sampling effort and species coverage derived from the aggregation of 25,000 checklists.
- It is considered to be a **valuable resource for testing various ecological hypotheses** and suggesting science-backed conservation measures.

Key outcomes

- It accounted for nearly three lakh records of 361 species, including 94 very rare species, 103 rare species, 110 common species, 44 very common species, and 10 most abundant species.
- Species count was higher during the dry season than in the wet season.
- Species richness and evenness were higher in the northern and central districts than in the southern districts.
- Most of the endemics were concentrated in the Western Ghats while the threatened species were mostly along the coasts.

Oriental darters

Context

- Oriental darters have made a comeback in world-famous Bharatpur bird sanctuary (officially Keoladeo National Park) after a gap of 22 years.

Oriental darters

- It is also known as **snakebirds as it** has a long and slender neck which looks like a snake when it swims and dives into water to catch a fish.
- The darter hunts for fish while its body is submerged in the water.
- **Habitation:** It is a water bird of **tropical South Asia and Southeast Asia**.
- **Protection status:**
 - **"Near-threatened"** by the International Union for Conservation of Nature.

About Keoladeo National Park (KNP)

- It is also known as the **Bharatpur Bird Sanctuary**.
- It is located in **Bharatpur, Rajasthan, India**.
- It was declared a protected sanctuary in 1971.
- It is also a **UNESCO World Heritage Site**.
- It is a **man-made and man-managed wetland** and one of the national parks of India.
- The reserve **protects Bharatpur from frequent floods, provides grazing grounds for village cattle**.
- It is a mosaic of **dry grasslands, woodlands, woodland swamps and wetlands**.

Asian Waterbird Census

Context

- **Asian Waterbird Census (AWC)**, an annual count of waterbirds, has found lower waterbird species diversity at East Delhi's **Sanjay Lake** compared to past three years.

AWC

- It is an **annual exercise to count the waterbirds** and monitor the wetlands for conservation of migratory birds and their habitats along the **Central Asian Flyway**.
- The census is being carried out across **Asia and Australasia simultaneously**.
- The AWC is conducted in January each year i.e annually.
- It is coordinated by the **Wetlands International South Asia** and the **Bombay Natural History Society**. It is part of the International Waterbird Census.
- It is being carried out across seven wetlands in the NCR that are
 - Hastinapur Wildlife Sanctuary
 - Dhanauri and Surajpur wetlands in Greater Noida
 - Delhi Zoo and Sanjay Lake
 - Okhla Bird Sanctuary
 - Najafgarh Jheel; and
 - Yamuna River.

Census showing decline

- Only 13 species are recorded.
- The lower species diversity is a **sign of degradation of the lake**, since **waterbirds are an indicator of its health**.

Sanjay Lake

- **Located in Delhi**.
- **Maintained by** the Delhi Development Authority.

Clouded leopard

Context

- A clouded leopard photographed near the summit of Mt Saramati in Nagaland's Thanamir village.

About clouded leopard (*Neofelis nebulosa*)

- **Local name:** In the local dialect of the indigenous Yimkhiung tribe, the clouded leopard is known as "Khephak", which means a greyish big cat.
- It **uses its tail for balancing** when moving in trees and is **able to climb down vertical tree trunks head first**.
- It rests in trees during the day and hunts by night on the forest floor.
- **Threats for its survival:** large-scale deforestation and commercial poaching for the wildlife trade.
- **Range:** This wild cat inhabiting dense forests from the **foothills of the Himalayas** through **mainland Southeast Asia into South China**.
- **Distribution or habitat in India:** In India, it occurs in Sikkim, northern West Bengal, Meghalaya subtropical forests, Tripura, Mizoram, Manipur, Assam, Nagaland and Arunachal Pradesh.
- **Protection status:**
 - 'Vulnerable' under the IUCN Red List of Threatened Species.
 - CITES: APPENDIX 1
- **Conservation efforts:** The Clouded Leopard Project is dedicated to the conservation of clouded leopards and their habitat by supporting field research, implementing education initiatives in range countries, and bringing global awareness to clouded leopard conservation issues.

Himalayan Mallard

Context

- Himalayan Mallard spotted in Hyderabad.

About Himalayan Mallard

- **Scientific name:** *Anas platyrhynchos*, and commonly called the wild duck.
- **Habitat and distribution:**
 - It prefers shallow inland waterways, such as ponds, lakes, rivers, reservoirs, and marshes.
 - It is commonly seen in the colder regions of north India but not seen in the western and southern regions of the country.
- **Distinctive feature:**
 - iridescent green or blue-headed plumage of the male.
 - feeds on all aquatic plants and vegetation near the surface of the water as well as insects and snails.
- **Conservation status:** **Least concern..** This duck is not the threatened species.

Spot-billed pelicans

Context

- A nematode infestation has led to mass mortality of spot-billed pelicans (*Pelicanus philippensis*) at Telineelapuram Important Bird Area (IBA) in Andhra Pradesh.

More about news

- **Cause of death:** Preliminary inquiry suggests that nematode infestation is the cause for the death of the spot-billed pelicans.
- The nematode parasite is suspected to be transferred through fish and snails in particular, when the birds prey in the aqua ponds.

About spot-billed pelican

- **Habitat:**
 - It breeds in southern Asia from southern Iran across India east to Indonesia.
 - It is a bird of large inland and coastal waters, especially large lakes.
- It is **not migratory**, but is known to make local movements and are more widely distributed in the non-breeding season.
- **Conservation status:** Near Threatened under IUCN Red list.

Eastern swamp deer

Context

- The population of the **vulnerable eastern swamp deer**, extinct elsewhere in South Asia, has dipped in the Kaziranga National Park and Tiger Reserve.

Recent findings

- During the Eastern Swamp Deer Estimation a **decrease from 907 individuals in 2018 to 868 in 2019 and 2020 are found.**
- Earlier eastern swamp deer was endemic to Kaziranga but now has **moved to other areas such as Orang National Park and Laokhowa-Burachapori wildlife sanctuaries.**

About Swamp Deer

- The barasingha, also called swamp deer, is a deer species distributed in the Indian subcontinent.
- It differs from all other Indian deer species in that the **antlers carry more than three tines.**
- **Threats:** Poaching for antlers and meat, habitat loss.
- Barasingha is the **state animal** of the Indian states of **Madhya Pradesh and Uttar Pradesh.**

Three subspecies of swamp deer are

- **Western swamp deer** is adapted to the flooded tall grassland habitat in the Indo-Gangetic plain and are found in the Sukla Phanta Wildlife Reserve of Nepal.
- **Southern swamp deer** has hard hooves and is adapted to hard ground in open sal forest with a grass under storey survives only in the Kanha National Park. It was reintroduced into Satpura Tiger Reserve.
- **Eastern swamp deer** is only found in Assam i.e. it is endemic to Assam.

Protection Status

- It is listed as **Vulnerable in the IUCN Red list.**
- It is listed on **CITES Appendix I.**
- In India, it is included under **Schedule I** of the **Wildlife Protection Act of 1972.**

About KNP

- It is located in **Assam**.
- Kaziranga National park's is home to more than 2200 Indian one-horned rhinoceros, approximately 2/3rd of their total world population.
- It is located in the edge of **the Eastern Himalayan biodiversity hotspots** – Golaghat and Nagaon district.
- In 1985, it was declared as a **World Heritage Site by UNESCO**.
- It was declared as Tiger Reserve in 2006.
- It is recognized as an **Important Bird Area by BirdLife International** for the conservation of avifaunal species.

Laokhowa-Burachapori wildlife sanctuaries

- It is a protected area located in the state of **Assam**, on the south bank of the Brahmaputra River.
- This reserved forest became a sanctuary in 1995.
- It forms an integral part of the Laokhowa-Burachapori eco-system and is a **notified buffer of the Kaziranga Tiger reserve**.
- It is considered to be an **ideal habitat for the Bengal florican**.

Aquamation

Context

- The body of Nobel Peace Prize winning Anglican archbishop and anti-apartheid campaigner Desmond Tutu underwent **aquamation**.

What is aquamation?

- It is a **green alternative to traditional cremation methods**.
- This “**flameless cremation**” is considered to be an **environmentally friendly way to dispose of a body**, the process is also known as **water cremation, green cremation or chemical cremation**.
- In this **alkaline hydrolysis process**, **body of the deceased is immersed for a few hours in a mixture of water and a strong alkali in a pressurized metal cylinder and heated to around 150 degree centigrade**.
- The combination of gentle water flow, temperature and alkalinity accentuate the breakdown of the organic materials.
- The process leaves behind bone fragments and a neutral liquid called **effluent**.

Environmental importance

- This **process is a greener alternative** as it uses significantly **less fuel** and has an **overall lower carbon footprint than cremation**.

Denison barb (Miss Kerala)

Context

- Denison barb, a native **freshwater fish species** commonly found in parts of **Karnataka and Kerala**, has been included in **Schedule I of the Wild Life (Protection) Amendment Bill, 2021**.

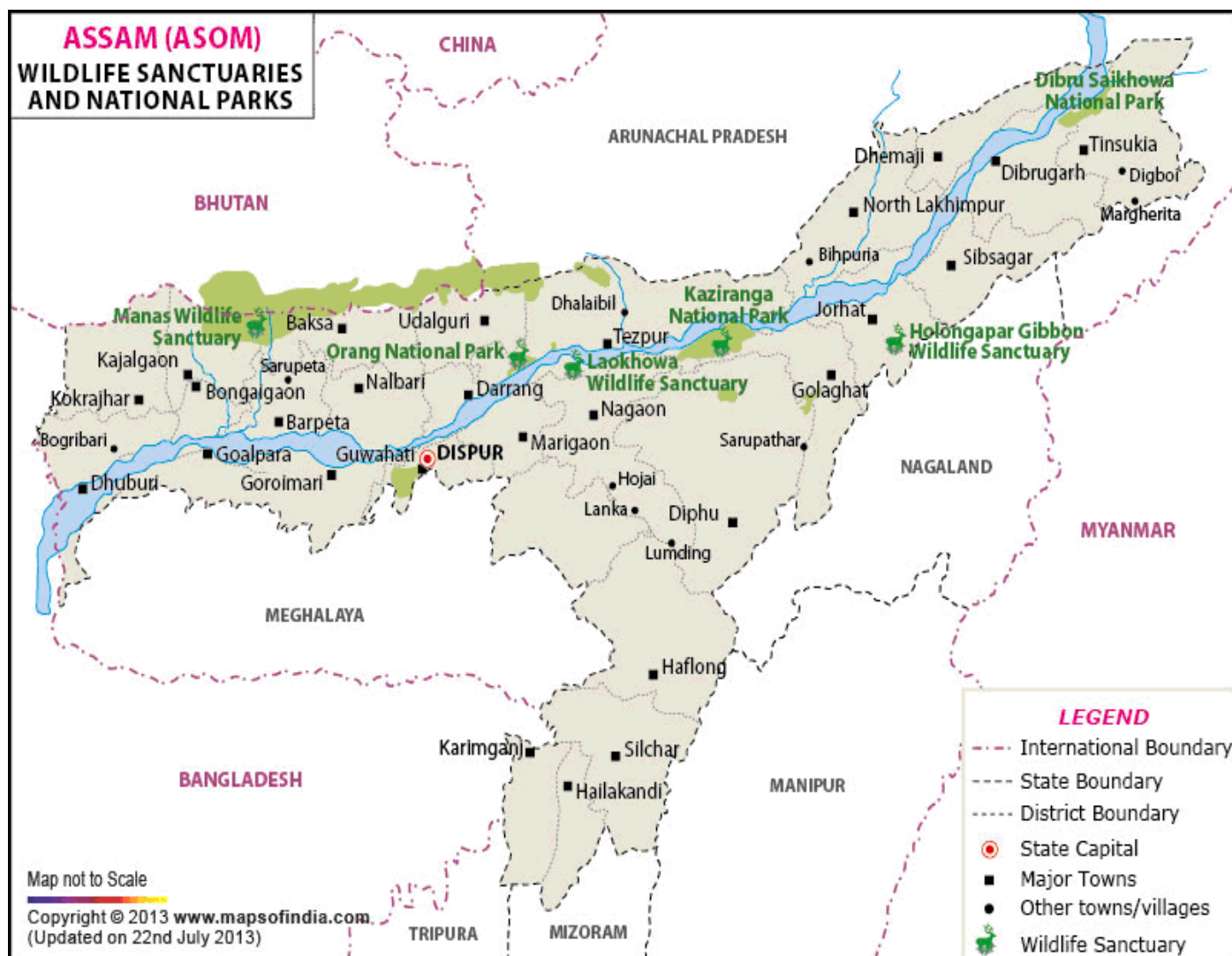
About Denison barb

- It is an **endangered species of freshwater fish endemic** to the fast-flowing hill streams and rivers of the **Western Ghats in India**.
- **Threats**: Aquarium trade; pet collection.
- Conservation status: **Endangered** under IUCN Red list.

Schedules of the Wild Life (Protection) Act

- The Wild Life (Protection) Act, 1972 is an Act of the Parliament of India enacted for **protection of plants and animal species**.
- It has six schedules which give varying degrees of protection.
- **Schedule I and part II of Schedule II** provides absolute protection - offences under these are prescribed the highest penalties.
- **Schedule III and Schedule IV**: Penalties for Species listed in Schedule III and Schedule IV are much lower than above category.
- **Schedule V**: Animals under Schedule V, e.g. common crows, fruit bats, rats and mice, are legally considered vermin and may be hunted freely.
- **Schedule VI**: The specified endemic plants in Schedule VI are prohibited from cultivation and planting.

Other protected Areas of Assam



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MCQs

1. With reference to the Jal Jeevan Mission, consider the following statements:

1. It is a Central Sector Scheme of the Ministry of Jal Shakti to improve ground water management through community participation.
2. It implements source sustainability measures as mandatory elements.

Which of the statements given above are correct?

- a) 1 only
- b) 2 only
- c) Both 1 & 2
- d) Neither 1 nor 2

2. Which of the following initiatives or mechanisms has recognized the role of land (forests and agricultural land) as a part of mitigation pathway to reduce CO₂ emissions?

1. LEAF Coalition
2. Bonn Challenge
3. Kyoto Protocol

Which of the statements given above are correct?

- a) 1 and 2 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) 1, 2 and 3

3. Consider the following statements:

1. Bhitarkanika Mangroves is a notified Ramsar wetland in Odisha.
2. Bhitarkanika Mangroves get fresh water intakes from the Vamsadhara river.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 & 2
- d) Neither 1 nor 2

4. In context of the National Investigation Agency, consider the following statements:

1. It is a non-statutory body.
2. This central counter-terrorism law enforcement agency was established in the backdrop of the Pulwama attack.
3. NIA needs consent from states to begin an investigation within their borders

Which of the statements given above are not correct?

- a) 1 and 2 only
- b) 1 and 3 only
- c) 1 and 3 only
- d) 1, 2 and 3

5. Consider the following statements:

1. The concept of integrated coastal zone management was born in 1992 during the Earth Summit of Rio de Janeiro.
2. Reducing resource-use conflicts and facilitating the progress of multisectoral development are some of the goal of ICZM.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 & 2
- d) Neither 1 nor 2

6. At the 26th Conference of Parties (COP26) of the United Nations Framework Convention on Climate Change (UNFCCC), India became a party to

1. Sustainable agriculture action agenda
2. Green grids initiative
3. Global Methane Pledge

Select the correct answer using the code given below:

- a) 1 and 2 only
- b) 1 and 3 only
- c) 1 and 3 only
- d) 1, 2 and 3

7. With reference to the LEADS report, consider the following statements:

1. It is released by the Reserve Bank of India.
2. As per the LEADS report 2021, Gujarat has emerged as top performer.

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 & 2
- d) Neither 1 nor 2

8. Consider the following statements:

1. Neolithic culture used to practice agriculture, domestication of animals, polishing of stone tools and the manufacture of pottery.
2. First villages emerged in Neolithic culture with a sedentary lifestyle which uses wheels to make pottery which was used for cooking and storage.
3. There was a great improvement in technology of making tools and other equipments used by man. Stone tools were now polished which made more effective tools for hunting and cutting trees.

Which of the statements given above is/are correct?

- a) 1 and 2 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) 1, 2 and 3

9. With reference to enlightenment of Gautam Buddha consider the following statement

1. He left home at the age of twenty nine in search of Truth.
2. He wandered for seven years and got enlightened under a bodhi tree at Bodh Gaya after intense penance.
3. He delivered his first sermon at Sarnath near Benares and died at the age of eighty at Kusinagara.

Which of the statements given above is/are correct?

- a) 1 and 2 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) 1, 2 and 3

10. With reference to Mahajanpad era, consider the following statements:

1. Jaina literature Anguttara Nikaya gives a list of sixteen great kingdoms called 'Sixteen Mahajanapadas'.
2. Vatsa, Avanti, Kosala and Magadha were the only four Mahajanpads that survived by mid 6th Century B.C.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

11. With reference to Magadha, consider the following statements:

1. Saisunaga uprooted the kshatriya dynasties in north India and assumed the title ekarat.
2. The Hathigumpha inscription of Kharavela of Kalinga refers to the conquest of Kalinga by the Nandas.
3. Tamil Sangam work Ahananuru mentions about the enormous wealth of the Nandas.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

12. With reference to Mauryan Empire, consider the following statements:

1. Mauryan Empire achieved the political unity in India for the first time.
2. Arthasashtra's manuscript was discovered by Vishnu Sharma in 1904.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

13. Which of the following statements about Sher Shah Suri is/are correct?

1. He appointed Afghan soldiers in higher post.
2. He introduced "branding of horses".
3. The espionage system was widely prevalent before his time.

Select the correct answer using code given below

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

14. Consider the following statements about the Marginal Standing Facility:

1. It helps to stabilise the volatility of the overnight interbank lending rates.
2. This long-term borrowing scheme facilitates the scheduled banks to get funds from the central bank of India in case of serious cash shortage by offering their approved government securities.
3. It was introduced by Reserve Bank of India in its Monetary Policy of 1990-91.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

15. With reference to the Jnanpith Award, consider the following statements:

1. This award is bestowed only on Indian writers writing in Indian languages included in the Eighth Schedule to the Constitution of India and English.
2. This is not awarded posthumously.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

16. With reference to the Global Health Security Index 2021, consider the following statements:

1. It measured capacities of countries to prepare for epidemics and pandemics.
2. It is developed by the World Health Organisation.
3. It showed that no country is fully prepared for epidemics or pandemics.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

17. In context of the Ken river, which of the following statement is/are correct?

1. It forms the boundary between Madhya Pradesh and Uttar Pradesh.
2. It passes through Panna National Park.
3. It is a tributary of Ganga river.

Select the correct answer using the code given below:

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

18. Consider the following statements about the Volvation:

1. It is a defensive behavior in certain animals, in which the animal rolls its own body into a ball.
2. It is used by earthworms during periods of extreme heat to protect itself from dehydration.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

19. With reference to the Sahitya Akademi Award, consider the following statements:

1. This literary honour is annually conferred on writers of the most outstanding books of literary merit published in any of the 24 major Indian languages.
2. In order to be eligible for the award, an author must be of Indian nationality.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

20. In context of the G20, which of the following statement is/are correct?

1. India is a founding member of the G20.
2. Recently, India has joined the G20 Troika, along with Indonesia and Italy.
3. India will convene the G20 Leaders' Summit for the first time in India in 2023.

Select the correct answer using the code given below:

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

21. Consider the following statements:

1. Nuclear power is a zero-emissions energy source.
2. Nuclear energy is immune from the impact of climate change.
3. Nuclear power generation is more expensive than wind or solar power generation.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 3 only d) 1, 2 and 3

22. In context of the PM-KISAN scheme, which of the following statement is/are correct?

1. Under the Scheme, the entire financial liability towards transfer of benefit to targeted beneficiaries is borne by Government of India.
2. It was first announced in the 2021 Budget.
3. It was first conceived and implemented by Government of Telangana as the Rythu Bandhu scheme.

Select the correct answer using the code given below:

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

23. With reference to the Gender Inclusion Fund (GIF), consider the following statements:

1. The National Education Policy 2020 provided for setting up this fund.
2. It aims to provide equitable quality education for all girls and transgender students.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

24. The FRBM Act that aims to introduce transparency in India's fiscal management systems made it mandatory for the government to place which of the following documents along with the Union Budget documents in Parliament annually?

1. Long Term Fiscal Policy Statement
2. Macroeconomic Framework Statement
3. Fiscal Policy Strategy Statement

Select the correct answer using the code given below:

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

25. Under the Indian constitution, certain fundamental rights are available only to the citizens, they are

1. Right to equality of opportunity in matter of public employment
2. Right against discrimination
3. Right to vote and become members of the union and state legislatures

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

26. With reference to the Build Back Better World (B3W), consider the following statements:

1. It is an initiative undertaken by G7 countries.
2. It builds on the Blue Dot Network.
3. It aims to catalyze funding for quality infrastructure from the private sector.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

27. Consider the following statements regarding Tropical Cyclones?

1. East coast of India is more prone to tropical cyclones as compared to West coast of India.
2. Tropical cyclones are larger as compared to temperate cyclones.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

28. Consider the following statements about the Special drawing rights:

1. It is an international reserve asset created by the IMF to supplement the official reserves of its member countries.
2. It is a type of currency that can provide a country with liquidity.
3. US dollar, Euro, Chinese Yuan, Japanese Yen, and the British Pound are part of the basket of currencies that defines the SDR.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

29. With reference to the Universal Postal Union (UPU) Congress, consider the following statements:

1. It was established by the Treaty of Bern.
2. It is a specialized agency of the United Nations.
3. India is a member of this organization.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

30. With reference to the National Industrial Manufacturing Zone (NIMZ), consider the following statements:

1. NIMZs can be larger than SEZs in terms of area.
2. The responsibility of the Environmental Impact Assessment rests with the State Government.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

31. With reference to the 'Sovereign credit Ratings', which of the following statements is correct?

1. It is assessment of the creditworthiness of a country made by the International Monetary Organisation
2. India's high credit ratings reflect its high creditworthiness.

3. Lower credit ratings could lead to adverse effect on the Foreign Portfolio Investments.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 3 only d) 1, 2 and 3

32. Consider the following statements:

- Western disturbances are also known as the primary monsoon of Tamil Nadu.
- October rains in India are mainly caused due to western disturbance and withdrawal of southwest monsoon.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

33. With reference to the Northeast Green Summit, Which of the following statements is/are correct?

- This Sustainable Development Initiative was initiated in 1992.
- It has been organized by The Energy and Resources Institute (TERI) with World Bank support.

Select the correct answer using the code given below:

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

34. With reference to the LEADS report, consider the following statements:

- It is released by the Reserve Bank of India.
- As per the LEADS report 2021, Gujarat has emerged as top performer.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

35. With reference to the Pangong Tso, consider the following statements:

- Eastern part of this lake is fresh, while its western part is saline.
- It is a popular lake because it keeps changing colors.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

36. Consider the following statements:

- The concept of integrated coastal zone management was born in 1992 during the Earth Summit of Rio de Janeiro.
- Reducing resource-use conflicts and facilitating the progress of multisectoral development are some of the goal of ICZM.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

37. In context of the NATGRID, which of the following statement is/are correct?

- It is the integrated intelligence master database structure for counter-terrorism purpose.
- It came into existence after the 2008 Mumbai attacks
- It collects information from government databases including credit/debit card transactions, visa and immigration records and itineraries of rail and air travel.

Select the correct answer using the code given below:

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

38. With reference to the Project TRISHNA, consider the following statements:

- Under this mission, natural resource assessment will be done by Thermal infrared Imaging Satellite to have better understanding of water management.
- It is an initiative of the Ministry of Earth Sciences.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

39. Consider the following statements about the Treaty on the Non-Proliferation of Nuclear Weapons (NPT):

- It aims to achieve nuclear disarmament.
- This treaty is reviewed every five years through Review Conferences
- India acceded NPT in 1985 and announced its withdrawal in 2003.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

40. Consider the following statements:

- Lok Sabha must pass a resolution for revocation of President's rule.
- A law made during President's rule continues to operate even after it is revoked.
- A proclamation imposing President's rule must be approved by both the Houses of Parliament.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

41. Consider the following statements:

- Provident fund deposits and savings bank deposits constitute the Public Account of India.
- Expenditure from Consolidated Fund of India on salary and allowances of Comptroller Auditor General and Members of UPSC are subject to vote by the Parliament.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

42. Consider the following statements regarding Sambhar Lake.

- Sambhar Lake is India's largest inland saltlake located

in Gujarat.

2. The lake is surrounded by the Aravali hills on all sides.
3. It has been designated as a Ramsar site because it is a key wintering area for tens of thousands of pink flamingo and other birds.

Which of the above statements is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

43. With reference to the Digital Embossing Technology, consider the following statements:

1. This technology emits no pollutants and reduces overall energy usage.
2. This technology is not useful for producing Braille Maps.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

44. With reference to later Vedic period consider the following statements:

1. The king performed various rituals and sacrifices to strengthen his position such as Rajasuya, Asvamedha, and Vajpeya.
2. Nishka along with, gold and silver coins like satamana and krishnala were used as media of exchange.
3. Indra and Agni lost their importance and Prajapathi, Vishnu and Rudra became prominent.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

45. Consider the following statements:

1. In 1948, for the first time the JVP Committee accepted the idea of reorganisation of states on a linguistic basis.
2. Post-independence, the first state to be created on a linguistic basis was Punjab.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

46. With reference to the Global Methane Pledge, Which of the following statements is/are correct?

1. It was first announced by India and France.
2. It aims to cut down methane emissions by up to 30 per cent from 2020 levels by the year 2030.

Select the correct answer using the code given below:

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

47. In context of the Coalition for Disaster Resilient Infrastructure (CDRI), consider the following statements:

1. It is a European Union led initiative.
2. Infrastructure for Resilient Island States is the first major initiative by the CDRI.
3. Germany, Bangladesh and Afghanistan are part of this

coalition.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

48. With reference to the Purchasing Managers' Index (PMI), consider the following statements:

1. It is an economic indicator of business activity that measures economic trends in the manufacturing and service sectors
2. In PMI, a print above 50 means expansion, while a score below 50 denotes contraction.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

49. Consider the following statements about the IAC Vikrant:

1. It is built by the Cochin Shipyard Ltd.
2. It was designed with help the help of Israel and France.
3. It will help to realize the wider goal of a free, open and inclusive Indo-Pacific to ensure peace and stability in the region.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

50. Consider the following statements about the Cheetah:

1. It is listed as Endangered on the IUCN Red List.
2. It has long, muscular tail helps them to keep their balance when running very fast.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

51. With reference to Ordinance making power of the President, consider the following statements:

1. It can be retrospective in nature
2. It can alter the tax law
3. It can amend the Constitution

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

52. With reference to Ashgabat Agreement, consider the following statements:

1. It is an international transport and transit corridor facilitating transportation of goods between Central Asia and the Persian Gulf.
2. India is a party to this agreement.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

53. Consider the following statements about the

Partnership on New Industrial Revolution (PartNIR):

1. It is an initiative of G20 countries.
2. The partnership will focus on Maximising the opportunities arising from the fourth industrial revolution.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

54. Consider the following statements about the Great Escarpment of India:

1. It is a UNESCO World Heritage Site and hotspot of biological diversity in the world.
2. It forms a major water divide in the Peninsula.

Choose the correct answer using the code given below:

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

55. Consider the following statements about the Mid Day Meal scheme:

1. It gets its legal backing from the National Food Security Act, 2013.
2. Currently, students studying in pre-primary or Balvatikas running in government and government aided primary schools are not covered under the mid day meal scheme.
3. Recently, it got renamed as National Scheme for PM Poshan Shakti Nirman.

Choose the correct answer using the code given below:

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

56. In context of the Primary Agricultural Credit Societies (PACs), consider the following statements:

1. It provides both short-term and long-term agricultural loans to the farmers for the various agricultural and farming activities.
2. PACS are outside the purview of the Banking Regulation Act, 1949 and are not regulated by the Reserve Bank of India.

Which of the statements given above are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

57. Consider the following statements with regard to the Right to Protest:

1. The United Nations Human Rights Committee (UNHRC) has reiterated Right to Protest as a fundamental human right.
2. Indian Constitution grants Right to protest peacefully as a fundamental right.

Which of the above statements is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

58. Consider the following statements about the Jagannath temple:

1. It was constructed by the rulers of the Eastern Ganga Dynasty.
2. Nimbarkacharya and Ramananda were closely associated with the temple.
3. It is also called as the White Pagoda.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

59. Consider the following statements about the Atal Bhujal Yojana:

1. It is a Central Sector Scheme for facilitating sustainable ground water management.
2. Funds under the scheme shall be provided to the states as loans with a minimal interest rate.
3. The World Bank is financing this scheme through the Program for Results instrument.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

60. Consider the following statements:

1. No other cell in the body except the stem cells have the natural ability to regeneration.
2. Stem cells are useful in testing new drugs for safety and effectiveness.
3. Stem cell therapy or regenerative medicine, promotes the repair response of dysfunctional or injured tissue using stem cells.

Which of the statements given above is/are correct?

- a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only d) 1, 2 and 3

ANSWERS

1. b	16. c	31. c	46. b
2. d	17. a	32. b	47. b
3. a	18. c	33. d	48. c
4. d	19. c	34. b	49. c
5. c	20. c	35. c	50. b
6. a	21. c	36. c	51. a
7. b	22. c	37. d	52. c
8. d	23. c	38. a	53. b
9. d	24. b	39. a	54. c
10. b	25. d	40. b	55. d
11. b	26. d	41. a	56. b
12. a	27. a	42. b	57. c
13. a	28. d	43. a	58. d
14. a	29. d	44. d	59. c
15. c	30. c	45. d	60. d