



drishti

Current Affairs (CONSOLIDATION)

OCTOBER 2021
(PART – I)

Drishti, 641, First Floor, Dr. Mukherjee Nagar, Delhi-110009
Phone: 87501 87501, WhatsApp: 92058 85200, IVR: 8010-440-440
Email: engweb@groupdrishti.com

Contents

Polity and Governance	1
● Suo-Motu Powers of National Green Tribunal	1
● Polity and Governance	1
● Indian Space Association (ISpA)	2
● Draft Regional Plan 2041: NCR	3
● National Human Rights Commission	4
● 2 nd Phase AMRUT Mission	5
● Public Interest Litigation	5
● Palk Bay Scheme and Marine Fisheries Bill	6
● Cybersecurity Guidelines for Power Sector	7
● Heli-Borne Survey for Water Management	8
● Anti-Defection Law	8
● Renunciation of Indian Citizenship Simplified	10
● 2 nd Phase of SBM-U	11
● Election Symbols	11
● Best Practices in the Performance of District Hospitals: NITI Aayog	12
● DigiSaksham Programme	14
● Jal Jeevan Mission App	14
● Loopholes in Aadhaar-Enabled Payments	15
● Swadesh Darshan Scheme	16
● Proposal to Amend the Forest (Conservation) Act, 1980	17
● Demand for Right to Health	18
● Application Ecosystem for Integration of Procurement Portals	19
● EWS Quota	20
● Draft EPR Notification: Plastic Packaging Waste	20
● Graded Response Action Plan (GRAP)	22
● Silicosis	22
Economic Scenario	24
● Coal Crunch in India	24
● 'Maharatna' Status to Power Finance Corporation	25
● PM Gati Shakti Scheme	26
● Tax Havens in the United States	27
● Quarterly Employment Survey (QES)	28
● Air India Disinvestment	29
● PM MITRA Parks	30
● Nobel Prize for Chemistry, 2021	31
● Pandora Papers Leak	32
● India's Ethanol Plan and Food Security	34
● Sovereign Credit Ratings	35
● World Bank GDP Projection for India	36
● Market Based Economic Despatch (MBED) Phase 1	37
● Global Minimum Tax Deal	37
● Tax Havens in the United States	39

International Relations	41
● Tax Inspectors Without Borders Programme	41
● CICA 6 th Foreign Ministers Meeting	41
● Rail Link between Nepal and India	42
● One Sun, One World, One Grid (OSOWOG)	43
● India's Path to Power: Foreign Policy	44
● China-Taiwan Issue.....	45
Science and Technology	47
● First Malaria Vaccine: Mosquirix	47
● New Biodegradable Polymer	48
● Intermediate-Mass Black Holes.....	48
● Quantum Key Distribution.....	49
● 6G Technology.....	51
● Katol Meteorite	52
● Mission Lucy: NASA.....	53
● Nobel Prize in Physics, 2021	54
● Nobel Prize for Physiology/Medicine, 2021	55
● Astro Robot	56
● Semi-Cryogenic Propellant Tank.....	57
Environment and Ecology	58
● Kunming Declaration on Biodiversity	58
● Right to Clean Environment.....	59
● High Ambition Coalition for Nature and People.....	61
● Javan Gibbon	61
● New Tiger Reserve: Chhattisgarh	62
● Hara Bhara: Aerial Seeding Campaign	62
● Marine Protected Areas in Antarctica	63
● State of Climate Services Report 2021: WMO.....	65
● Global Climate Risk Index 2021	66
History	68
● Shyamji Krishna Varma.....	68
● Gandhi Jayanti	68
● Republics in Ancient India	70
Geography	72
● Landslide and Flood Early Warning System.....	72
● Detoxification of Lukha River: Meghalaya.....	73
Social Issues	74
● Global Girlhood Report 2021: Girls Right in Crisis	74
● Digital Divide in Education.....	75
● Antimalarial Drug Resistance.....	76
● Ecological Threat Report 2021	77
● 2021 State of the Education Report for India: UNESCO	78
Security	80
● Exercise AJEYA WARRIOR-2021	80

Miscellaneous	81
● Indian Sandalwood	81
● Dr. Abdul Qadeer Khan.....	82
● Indian Peafowl.....	82
● Most Promising Astronomical Site: Hanle	83
● SACRED Portal for Elderly	84
● Giloy or Guduchi	84
● Nobel Prize for Literature, 2021	85
● Green Term Loan	85
● Drone-Based Vaccine Delivery Model: i-Drone	86
● Henley Passport Index 2021	87
● Nobel Prize for Economic Sciences, 2021	87
● New Cicada Species: Nagaland.....	88
● Flower Scorpionfish	89

Polity and Governance

Highlights

- *Suo-Motu Powers of National Green Tribunal*
- *Indian Space Association (ISpA)*
- *Draft Regional Plan 2041: NCR*
- *National Human Rights Commission*
- *2nd Phase AMRUT Mission*
- *Public Interest Litigation*
- *Palk Bay Scheme and Marine Fisheries Bill*
- *Cybersecurity Guidelines for Power Sector*
- *Heli-Borne Survey for Water Management*
- *Anti-Defection Law*
- *Renunciation of Indian Citizenship Simplified*
- *2nd Phase of SBM-U*
- *Election Symbols*
- *Best Practices in the Performance of District Hospitals: NITI Aayog*
- *DigiSaksham Programme*
- *Jal Jeevan Mission App*
- *Loopholes in Aadhaar-Enabled Payments*
- *Swadesh Darshan Scheme*
- *Proposal to Amend the Forest (Conservation) Act, 1980*
- *Demand for Right to Health*
- *Application Ecosystem for Integration of Procurement Portals*
- *EWS Quota*
- *Draft EPR Notification: Plastic Packaging Waste*
- *Graded Response Action Plan (GRAP)*
- *Silicosis*

Suo-Motu Powers of National Green Tribunal

Why in News

Recently, the Supreme Court has declared the **National Green Tribunal's (NGT)** position as a "unique" forum endowed with **suo motu** (on its own motion) **powers** to take up environmental issues across the country.

Key Points

➤ Highlights of the Judgement:

- **Not limited to Adjudicating Role:** The role of the NGT is not simply adjudicatory in nature. The Tribunal has to perform equally vital roles that are preventative, ameliorative or remedial in nature.
 - The functional capacity of the NGT is intended to leverage wide powers to do full justice in its environmental mandate.
 - **Article 21 rights** cannot stand on a narrow compass of interpretation. Article 21 of the

constitution **protects the right to life and personal liberty.**

- **Multidisciplinary Role:** NGT, as a complimentary, competent, specialised forum, to deal with all environmental multidisciplinary issues both as original and also as an appellate authority.
- **International Commitment:** The NGT embodied the international obligation India owed to the environment.
 - The NGT has been recognised as one of the most progressive Tribunals in the world.
 - This jurisprudential leap has allowed India to enter a rather exclusive group of nations which have set up such institutions with broad powers.
- **About National Green Tribunal:**
 - It is a specialised body set up under the **National Green Tribunal Act (2010)** for effective and expeditious **disposal of cases relating to environmental protection and conservation of forests and other natural resources.**
 - With the establishment of the NGT, India became the **third country** in the world to set up a specialised environmental tribunal, only after **Australia and New Zealand**, and the first developing country to do so.

Note:



- The **NGT Act provided a specialized role** to the tribunal to act on issues where a dispute arose **under seven specified laws** (mentioned in Schedule I of the Act): The Water Act, The Water Cess Act, The Forest Conservation Act, Air Act, Environment Protection Act, Public Liability Insurance Act and the Biological Diversity Act.
- NGT is mandated to make **disposal of applications or appeals finally within 6 months of filing the same**.
- The NGT has **five places of sittings**, New Delhi is the Principal place of sitting and Bhopal, Pune, Kolkata and Chennai are the other four.
- The Tribunal is **headed by the Chairperson** who sits in the Principal Bench and has at least ten but not more than twenty judicial members and at least ten but not more than twenty expert members.
- **Decisions of the Tribunal are binding**. The Tribunal has powers to review its own decisions. If this fails, the decision **can be challenged before the Supreme Court within ninety days**.
- **Associated Challenges:**
 - **Persistent Vacancies:** In the last nine years, the NGT has **never got the minimum strength of ten judicial and ten expert members** to address the increasing number of environmental litigations across the country.
 - **Implementation of Orders:** There are also serious challenges as far as implementation of the NGT's orders is concerned.
 - The NGT Act specifies that the compensation amount as ordered by the tribunal should be remitted to the authority of the Environmental Relief Fund within a period of 30 days from the date of order.
 - However, it is observed that the polluters don't abide by this rule.
 - Further, there is no institutional mechanism to ensure that the environmental regulatory authorities comply with the orders of the tribunal.
 - **Appeals to Supreme Court:** The NGT orders are increasingly challenged in the Supreme Court, where a heavy penalty has been imposed by the tribunal.

Indian Space Association (ISpA)

Why in News

Recently, the Prime Minister has launched the **Indian Space Association (ISpA)** via video conferencing. ISpA will act as a **single-window and independent agency** on matters related to space technology.

- The PM also remarked that the Government's approach to **space reforms is based on 4 pillars**.

Key Points

- **About ISpA:**
 - ISpA aspires to be the **collective voice of the Indian Space industry**. ISpA will be **represented by leading domestic and global corporations** that have advanced capabilities in space and satellite technologies.
 - ISpA will undertake **Policy Advocacy** and engage with all stakeholders in the Indian Space domain, including the Government and its Agencies, to make India self-reliant, technologically advanced and a leading player in the space arena.
 - ISpA will also **work towards building global linkages** for the Indian space industry to **bring in critical technology and investments** into the country to create more high skill jobs.
- **Significance of ISpA:**
 - One of the main goals of the organisation is to **supplement the government's efforts towards making India a global leader** in commercial space-based excursions.
 - Of late, ISRO's rockets have been carrying the payload and communication satellites of various countries; now, **private players will also look to touch on this space with the new organisation**.
 - Several private sector companies have shown an interest in India's space domain, with **space-based communication networks** coming to the fore.
- **Other Related Organisations:**
 - **IN-SPACE: Indian National Space Promotion and Authorization Centre (IN-SPACe) was approved in 2020** to provide a level playing field for private companies to use Indian space infrastructure.
 - **NSIL:** In the **2019 Budget**, the government had announced the setting up of a **New Space India**

Note:

Limited (NSIL), a public sector company that would serve as a marketing arm of **ISRO (Indian Space Research Organisation)**.

- Its main purpose is to market the technologies developed by ISRO and bring it more clients that need space-based services.
- That role, incidentally, was **already being performed by Antrix Corporation**, another public sector undertaking working under the Department of Space, and which still exists.

➤ Four Pillars of Space Reforms:

- **Allowing the private sector** freedom of innovation.
- **Government playing the enabler's role.**
- **Preparing youngsters** for the future.
 - Recently, **ATL Space Challenge 2021** has been launched. This is to ensure that students of classes 6 to 12 are given an open platform where they can innovate and enable themselves to solve digital age space technology problems.
- **Treating the space sector as a resource** for the progress of the common man.
 - Development projects are being monitored by satellite imaging, space technology is being used in settlement of **Fasal Bima Yojna claims** and disaster management planning, and the **NAVIC system** is helping fishermen.

Draft Regional Plan 2041: NCR

Why in News

The **National Capital Region Planning Board (NCRPB)** has recently approved the '**Draft Regional Plan 2041**' according to which the **National Capital Region (NCR)** is likely to reduce in size.

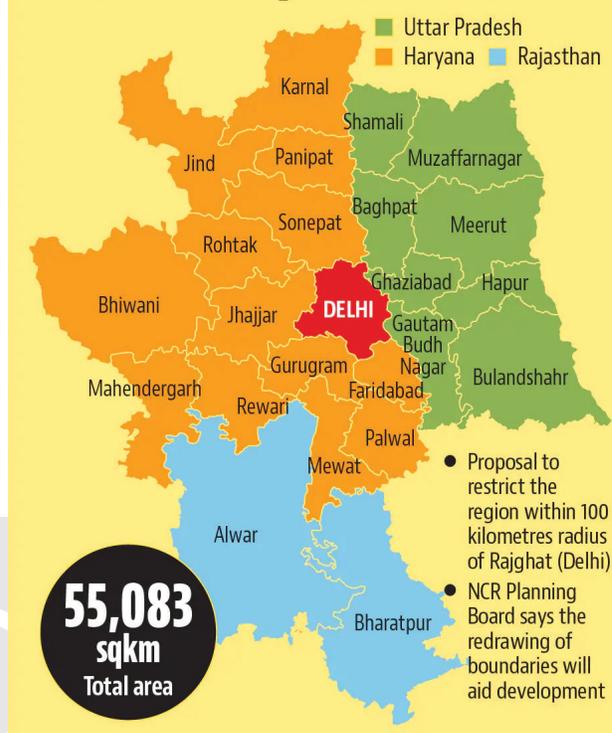
- **NCRPB was set up in 1985**, to promote balanced development of the NCR and to avoid haphazard development.

Key Points

➤ About:

- **New Boundary:**
 - The geographical size of the region will be a **contiguous circular region of 100km** radius from Rajghat (Delhi). The area in the 100km radius can be developed as a **core area**.

The NCR, as of now



- **NCR is a region envisaged in 1985** for coordinated urban development in and around Delhi.
- **Beyond 100 km radius** and up to the **existing NCR boundary**, all notified cities/ towns along with a corridor of one km on either side of connecting expressways/ national highways/ state highways/ Regional Rapid Transit System will be included.
 - Currently, the **NCR consists of 24 districts** in Uttar Pradesh, Haryana and Rajasthan and entire Delhi, spread across an area of 55,083 square kilometres.
- **Name of Natural Conservation Zones:**
 - The name of **natural conservation zones**, as introduced in the Regional Plan-2021 will be changed to "**natural zones**" in the upcoming Regional Plan-2041.
- **Empowering States:**
 - **States will be empowered to decide** whether tehsils that fall partly inside the NCR boundary should remain in it or not.
- **Slum-free NCR:**

Note:



- The DRP 2041 Plan will pave the way for a future-ready, slum-free National Capital Region with an air ambulance facility and high-speed connectivity through helitaxis, road, rail, and inland waterways.
- **Improved Rail Connectivity:**
 - The Plan proposes to explore the feasibility of a 30-minute Mass Transit Rail System (MTRS) from the nearest NCR boundaries to Delhi.
- **Implications of the Move:**
 - If implemented, **parts of Panipat in Haryana and Muzaffarnagar in Uttar Pradesh will be dropped** from the new NCR map.
 - The idea is to have **a compact area so that the development** can be planned in a better manner.
 - It will **benefit the rural areas**, as the state governments can plan for their development in a better manner.
- **Issues Involved:**
 - The **NCR currently spans around 150-175 kilometres**, covering entire districts and their rural areas. But with the approval of Regional Plan 2041, **areas beyond 100 km are not likely to be the main part of the NCR.**
 - **Lack of access to basic services** of water and sanitation and other facilities in the region.
 - Other issues included **legality of some of the properties**, narrow access roads, congestion, conflicts between commercial and residential uses, quality of drinking water and water logging.
 - **Vulnerability and risks related** to disasters such as fire, earthquakes, etc.
 - **Lack of coordination** between multiplicity of agencies like DDA, Delhi Jal Board, Flood and Irrigation Department, and various municipal corporations.

National Human Rights Commission

Why in News

The 28th anniversary of the **National Human Rights Commission (NHRC)** was observed on **12th October 2021**.

Key Points

- **About:**
 - It is a **watchdog of human rights in the country**, i.e. the rights related to life, liberty, equality and dignity of the individual guaranteed by Indian Constitution or embodied in the international covenants and enforceable by courts in India.
- **Establishment:**
 - Established on 12th October, 1993, under **Protection of Human Rights Act (PHRA), 1993**. It was **amended by** the Protection of Human Rights (Amendment) Act, 2006 and Human Rights (Amendment) Act, 2019
 - It was established in conformity with the **Paris Principles**, adopted for the promotion and protection of human rights in Paris (October, 1991) and endorsed by the **General Assembly of the United Nations** in December, 1993.
- **Composition:**
 - **Key Members:**
 - It is a multi-member body consisting of a chairman and four members. A person who has been the **Chief Justice of India** or a **judge of the Supreme Court** is a chairman.
 - **Appointment:**
 - The chairman and members are **appointed by the President on the recommendations of a six-member committee** consisting of the Prime Minister as its head, the **Speaker of the Lok Sabha**, the Deputy Chairman of the Rajya Sabha, leaders of the Opposition in both the **Houses of Parliament** and the Union Home Minister.
 - **Tenure:**
 - The chairman and members hold office **for a term of three years or until they attain the age of 70 years**, whichever is earlier.
 - The **President can remove the chairman** or any member from the office under some circumstances.
- **Role and Function:**
 - It has all the **powers of a civil court** and its **proceedings have a judicial character**.
 - It is empowered to **utilise the services of any officer or investigation agency of the Central government or any state government** for the purpose of investigating complaints of human rights violation.
 - It can look into a matter within one year of its occurrence, i.e. the Commission is **not empowered**

Note:



to inquire into any matter after the expiry of one year from the date on which the act constituting violation of human rights is alleged to have been committed.

- The functions of the commission are **mainly recommendatory in nature**.
 - It has no power to punish the violators of human rights, nor to award any relief including monetary relief to the victim.
- It has **limited role**, powers and jurisdiction **with respect to the violation of human rights by the members of the armed forces**.
- It is **not empowered to act when human rights violations through private parties take place**.

2nd Phase AMRUT Mission

Why in News

Recently, the Prime Minister launched the second phase of the **Atal Mission for Rejuvenation and Urban Transformation (AMRUT 2.0)**.

- The **Ministry of Housing and Urban Affairs (MoHUA)** is the nodal ministry for the scheme.

Key Points

- **About:**
 - It is the continuation of the **AMRUT mission** launched in June 2015 to ensure that every household has access to a tap with the assured supply of water and a sewerage connection.
 - AMRUT 2.0 aims to provide 100% coverage of water supply to all households in around 4,700 ULBs (Urban Local Bodies).
 - It also seeks to promote **Atmanirbhar Bharat** through encouraging Startups and Entrepreneurs (**Public Private Partnership**).
- **Objectives:**
 - It will build upon the progress of AMRUT to address water needs, rejuvenate water bodies, better manage aquifers, reuse treated wastewater, thereby **promoting a circular economy** of water.
 - It will provide 100% coverage of sewerage and septage in 500 AMRUT cities.
 - Recycling and reuse of treated wastewater is expected to cater to 20% of total water needs of the cities and 40% of industrial demand. Under

the Mission, fresh water bodies will be protected from getting polluted to make natural resources sustainable.

- **Pey Jal Survekshan** will be conducted in cities to ascertain equitable distribution of water, reuse of wastewater and mapping of water bodies.
- **Performance of AMRUT Phase-I:**
 - 1.14 crore water tap connections have been provided taking total connections to 4.14 crore in AMRUT cities. .
 - Credit rating work has been completed in 470 cities. Of which, 164 cities have received **Investable Grade Rating (IGR)**, including 36 cities with rating of A- or above.
 - Rs 3,840 crore has been raised through **Municipal Bonds** by 10 ULBs. The **Online Building Permission System** has been implemented in 2,471 cities including 455 AMRUT cities.
 - This reform has helped improve India's rank in **Ease of Doing Business** in construction permits to 27 in Doing Business Report (DBR) 2020 of World Bank from 181 in 2018.
 - 89 lakh conventional streetlights have been replaced with **energy efficient LED lights**, leading to estimated energy savings of 195 crore units per annum & reduction in CO₂ emission by 15.6 lakh tons per annum.

Public Interest Litigation

Why in News

The **Supreme Court (SC)** scolded a petitioner for filing a **Public Interest Litigation (PIL)** without adequate research.

Key Points

- **About:**
 - Public Interest Litigation (PIL) is the **use of the law to advance human rights and equality**, or raise issues of broad public concern.
 - The concept of "Public Interest Litigation" has been **borrowed from the American Jurisprudence**.
 - In Indian law, PIL means **litigation for the protection of Public Interest**. It is Litigation introduced in a court of Law, not by the aggrieved party but **by the court itself or by any other private party**.

Note:

- It is the power given to the public by courts through **Judicial activism**.
- It can be filed **only in the Supreme Court or the High Court**.
- It is **different from Writ Petition**, which is filed by individuals or institutions for their own benefit, whereas PIL is filed for the benefit of the general public.
- The concept of PIL is **suited to the Principles enshrined in Article 39 A of the Constitution of India** to protect and deliver prompt Social Justice with the help of Law.
- **Areas where PIL can be filed:** Pollution, Terrorism, Road safety, Constructional hazards etc.
- **Significance:**
 - PIL is an **important instrument of social change** and for maintaining the Rule of law and accelerating the balance between law and justice.
 - The original purpose of PILs have been to **make justice accessible to the poor and the marginalised**. It democratises the **access of justice to all**.
 - It helps in **judicial monitoring of state institutions** like prisons, asylums, protective homes, etc.
 - It is an important tool **for implementing the concept of judicial review**.
- **Issues:**
 - **Misuse:**
 - The number of cases pending in courts is already high, and the misuse of PILs is increasing.
 - In 2010, the SC had expressed considerable displeasure over PILs involving personal or irrelevant cases and issued certain guidelines to the courts for accepting PILs.
 - **Conundrum of Competing Rights:**
 - PIL actions may sometimes give rise to the problem of competing rights.
 - For instance, when a court orders the closure of a polluting industry, the interests of the workmen and their families who are deprived of their livelihood may not be taken into account by the court.
 - **Procrastination:**
 - PIL matters concerning the exploited and disadvantaged groups are pending for many years.

- Inordinate delays in the disposal of PIL cases may render many leading judgments merely of academic value.
- **Judicial Overreach:**
- Cases of Judicial Overreach by the Judiciary in the process of solving socio-economic or environmental problems can take place through the PILs.

Palk Bay Scheme and Marine Fisheries Bill

Why in News

The Union Government is considering **increasing the unit cost of deep-sea fishing vessels from Rs 80 L to Rs 1.3 Cr under the Palk Bay scheme** to make it more attractive to fisherfolk.

- Earlier, the **Marine Fisheries Bill 2021** was tabled in the Parliament during the **Monsoon session**.

Key Points

➤ **About Palk Bay Scheme:**

- The Scheme, "**Diversification Of Trawl Fishing Boats From Palk Straits Into Deep Sea Fishing Boats**", was **launched in 2017** as a **Centrally Sponsored Scheme**.
- It was launched as part of the umbrella **Blue Revolution Scheme**.
 - The Blue Revolution is part of the Government's efforts to promote fishing as an allied activity for farmers in order to double their incomes.
- It is a **Tamil Nadu-specific scheme** aimed at **providing 2,000 vessels in three years to fishermen of the State** and motivating them to **abandon bottom trawling**.
 - **Bottom trawling**, an ecologically destructive practice, involves trawlers dragging weighted nets along the sea-floor, causing great depletion of aquatic resources.
- **Another objective** of the scheme is to "**reduce fishing pressure**" around the proximity of the **International Maritime Boundary Line (IMBL)** so that Tamil Nadu fishermen do not cross the IMBL and fish in Sri Lankan waters.
- The **Funding pattern** of the scheme is Centre 50%, State 20%, Institutional funding 10% and Beneficiary 20%.

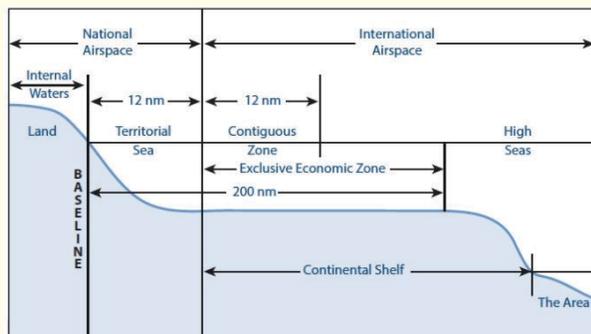
Note:



- The Scheme is **limited to vessels costing upto Rs. 80 Lakh.**
- The scheme is **not part of Pradhan Mantri Matsya Sampada Yojana.**
- **Marine Fisheries Bill:**
 - The Bill proposes to **only grant licenses to vessels registered under the Merchant Shipping Act, 1958, to fish in the Exclusive Economic Zone (EEZ).**
 - It also **proposes punishments for fishermen breaching the EEZ** without a licence, not complying with **Indian Coast Guard (ICG)** orders, and obstructing ICG officials.
 - The Bill **prohibits fishing by foreign fishing vessels,** thus nationalising our EEZ.

Maritime Zones

- Under **UNCLOS** (United Nations Convention on the Law of the Sea - 1982), which **India ratified in 1995,** the **sea and resources in the water and the seabed are classified into three zones - the Internal Waters (IW), the Territorial Sea (TS) and the Exclusive Economic Zone (EEZ).**
- The **IW** is on the landward side of the baseline - it includes gulfs and small bays.
- The **TS** extends outwards to 12 nautical miles from the baseline - coastal nations enjoy sovereignty over airspace, sea, seabed and subsoil and all living and non-living resources therein.
- The **EEZ** extends outwards to 200 nautical miles from the baseline. Coastal nations have sovereign rights for exploration, exploiting, conserving and managing all the natural resources therein.
- Since **fisheries is a state subject, fishing in the IW and TS come within the purview of the states concerned.**
- **Other activities in the TS and activities, including fishing beyond the TS up to the limit of the EEZ, are in the Union list.**



- It proposes **social security for fish workers and calls for protection of life at sea** during severe weather events.

Cybersecurity Guidelines for Power Sector

Why in News

Recently, the government released **cybersecurity guidelines for the power sector.**

- This is the **first time that a comprehensive guideline has been formulated** on cyber security in the power sector.
- The guidelines are a **precursor to cybersecurity regulations** that the **Central Electricity Authority (CEA, Ministry of Power)** is working on.

Key Points

- **About:**
 - CEA has framed the guidelines under the **Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2019.**
 - It **lays down a cyber assurance framework,** strengthens the regulatory framework, puts in place **mechanisms for security threat early warning,** vulnerability management and **response to security threats,** and secures remote operations and services, among others.
 - The **norms are applicable to all responsible entities** as well as system integrators, equipment manufacturers, suppliers/ vendors, service providers, and Information Technology (IT) hardware and software OEMs (Original Equipment Manufacturers) **engaged in the Indian power supply system.**
 - **Responsible Entities** include power generation utilities, distribution utilities, transmission companies and load dispatch centres among others.
- **Major Guidelines:**
 - **Procure from Trusted Source:**
 - Mandates Information & Communication Technology-based **procurement from identified 'trusted sources' and 'trusted products'** or else the product has to be tested for malware/

Note:

hardware trojan before deployment for use in the power supply system network.

- **Chief Information Security Officer:**
 - Appointment of a **Chief Information Security Officer (CISO) at each responsible entity** as well as the setting up of an Information Security Division headed by the CISO.
- **Procedure for Identifying and Reporting:**
 - The **entities will also be required to incorporate a procedure for identifying and reporting** any disturbances suspected or confirmed to be caused by sabotage and submit the report to the sectoral CERT and **Computer Emergency Response Team -India** (CERT-In) within 24 hours.

➤ **Significance:**

- It will **promote research and development** in cybersecurity and open up the market for setting up cyber testing infra in public as well as private sectors in the country.

Heli-Borne Survey for Water Management

Why in News

Recently, the **Ministry of Jal Shakti** has launched a **Heli-Borne Survey Technology for water management** in the arid areas of Rajasthan.

Key Points

- **About:**
 - Developed by **Council of Scientific and Industrial Research (CSIR)**-National Geophysical Research Institute (NGRI), it will provide information **about level, quantity, quality and information of ground water**.
 - The NGRI is a **geoscientific research organization** established in 1961 under the CSIR.
 - The Heli-borne geophysical mapping technique of CSIR-NGRI provides a **high-resolution 3D image** of the subsurface up to a depth of 500 metres below the ground.
 - The main advantages of the Heliborne geophysical survey is that it is **fast, highly data dense, precise and economical**.
 - This survey will be carried out in **two phases**, of

which the first phase comprises an area spanning 1 lakh sq km.

- This includes 65,000 sq km in **Rajasthan**, 32,000 sq km in **Gujarat** and 2,500 sq km in **Haryana**.
- It is to be implemented in collaboration with the **Ministry of Jal Shakti** as a part of **National Aquifer Mapping Project**.
- **Significance:**
 - Larger areas can be covered to derive more **accurate data** to help utilize groundwater for drinking purposes.
 - It will help in **water conservation, identification of new places for ground water recharging** and that too at **lesser cost** than the prevalent ones like digging tube wells using geophysics and remote sensing techniques.
 - It will **help in devising new schemes** for improvement in water level in water scant areas.
- **Other Related Initiatives:**
 - **Jal Jeevan Mission**.
 - **Jal Shakti Abhiyan**.
 - **National River Linking Project (NRLP)**
 - **National Hydrology Programme**.
 - **Pradhan Mantri Krishi Sinchayi Yojana (PMKSY)**.
 - **River Basin Management**.
 - **Atal Bhujal Yojana (ABHY)**.
 - **National Water Mission**.

National Aquifer Mapping Project

- It was initiated as a part of the **Ground Water Management and Regulation Scheme** to delineate and characterize the **aquifers** (water bearing formations) to develop plans for ground water management.
- It envisages mapping of aquifers, their characterization and development of Aquifer Management Plans to **facilitate sustainable management of groundwater resources**.

Anti-Defection Law

Why in News

Recently, the Calcutta High Court has given West Bengal Assembly Speaker a deadline to pass an order in the **defection case** involving a Member of Legislative Assembly (MLA).

Note:

- **Anti-defection** proceedings are also going on in other states such as Jharkhand and Rajasthan.

Key Points

➤ About:

- The anti-defection law **punishes individual** Members of Parliament (MPs)/MLAs **for leaving one party** for another.
- Parliament added it to the Constitution as the **Tenth Schedule in 1985**. Its purpose was to **bring stability to governments** by discouraging legislators from changing parties.
 - **The Tenth Schedule** - popularly known as the Anti-Defection Act - was included in the Constitution via the **52nd Amendment Act, 1985** and sets the provisions for disqualification of elected members on the grounds of defection to another political party.
 - It was a response to the toppling of multiple state governments by party-hopping MLAs after the general elections of 1967.
- However, it **allows a group of MP/MLAs to join (i.e. merge with) another political party** without inviting the penalty for defection. And it does not penalise political parties for encouraging or accepting defecting legislators.
 - As per the **1985 Act**, a **'defection' by one-third** of the elected members of a political party was considered a **'merger'**.
 - But the **91st Constitutional Amendment Act, 2003, changed this** and now at least **two-thirds of the members** of a party have to be in favour of a **"merger"** for it to have validity in the eyes of the law.
- The **members disqualified** under the law can **stand for elections** from any political party for a seat in the same House.
- The **decision** on questions as to disqualification on ground of defection are **referred to the Chairman or the Speaker of such House**, which is subject to **'Judicial review'**.
 - However, the law **does not provide a time-frame** within which the presiding officer has to decide a defection case.

➤ Grounds of Disqualification:

- If an elected member **voluntarily gives up his membership** of a political party.

- If he votes or **abstains from voting in such House contrary to any direction issued by his political party** or anyone authorised to do so, without obtaining prior permission.

- As a pre-condition for his disqualification, **his abstention from voting should not be condoned by his party** or the authorised person within 15 days of such incident.

- If any **independently elected member joins any political party**.
- If any **nominated member joins any political party after the expiry of six months**.

➤ Related Issues:

- **Undermining Representative & Parliamentary Democracy:**

- After enactment of the Anti-defection law, the MP or MLA has to follow the party's direction blindly and has no freedom to vote their judgment.
- Due to Anti-Defection law, the chain of accountability has been broken by making **legislators accountable primarily to the political party**.

- **Controversial Role of Speaker:**

- In many instances, the Speaker (usually from the ruling party) has **delayed deciding on the disqualification**.

- **No Recognition of Split:**

- Due to the 91st amendment, the anti-defection law created an exception for anti-defection rulings.
- However, the amendment **does not recognise a 'split' in a legislature party** and instead recognises a 'merger'.

- **Subversion of Electoral Mandates:**

- Defection is the **subversion of electoral mandates by legislators** who get elected on the ticket of one party but then find it convenient to shift to another, due to the lure of ministerial berths or financial gains.

- **Affects the Normal Functioning of Government:**

- The infamous **"Aaya Ram, Gaya Ram"** slogan was coined against the background of continuous defections by the legislators in the 1960s. The defection leads to instability in the government and affects the administration.

- **Promote Horse-Trading:**

Note:



- Defection also promotes **horse-trading of legislators** which clearly go against the mandate of a democratic setup.

➤ Suggestions:

- The **Election Commission** has suggested **it should be the deciding authority in defection cases**.
- Others have argued that the **President and Governors should hear defection petitions**.
- The **Supreme Court** has suggested that **Parliament should set up an independent tribunal** headed by a retired judge of the higher judiciary to decide defection cases swiftly and impartially.
- Some commentators have said the law has failed and recommended its removal. Former Vice President Hamid Ansari has suggested that **it applies only to save governments in no-confidence motions**.

Renunciation of Indian Citizenship Simplified

Why in News

The **Ministry of Home Affairs (MHA)** has simplified the process for Indians who want to renounce their citizenship.

- Earlier, the **Central Government issued a notification** granting powers related to citizenship applications under existing rules to authorities of five states.

Key Points

➤ About:

- Provisions have been made for applicants to **upload documents online**, with an **upper limit of 60 days** for the renunciation process to be completed.
- **Over 6.7 lakh Indians renounced** their citizenship **between 2015-19**.
- In 2018, MHA included a column on **“circumstances/ reasons** due to which applicant intends to acquire foreign citizenship and renounce Indian citizenship” (under the Citizenship Rules, 2009).

➤ Citizenship:

- **Constitutional Provisions:**
 - Citizenship is **listed in the Union List** under the Constitution and thus is under the exclusive jurisdiction of Parliament.

- The **Constitution does not define the term ‘citizen’** but details of various categories of persons who are entitled to citizenship are given in **Part 2 (Articles 5 to 11)**.

- Unlike other provisions of the Constitution, which came into being on **26th January, 1950**, these articles were enforced on **26th November, 1949** itself, when the Constitution was adopted.

○ Acquisition of Indian Citizenship:

- The **Citizenship Act of 1955 prescribes five ways** of acquiring citizenship, viz, **birth, descent, registration, naturalisation and incorporation of territory**.

○ Citizenship (Amendment) Act, 2019:

- The Act **amended** the law to **fast-track citizenship for religious minorities**, specifically Hindus, Sikhs, Buddhists, Jains, Parsis and Christians, from Afghanistan, Bangladesh and Pakistan who entered India prior to 2015.
- The requirement for them to stay in India for at least 11 years before applying for Indian citizenship **has been reduced to five years** (by naturalisation).

➤ Ways to Renounce Citizenship in India:

○ Voluntary Renunciation:

- If an **Indian citizen wishes**, who is of full age and capacity, he can relinquish citizenship of India by his will.
- When a person relinquishes his citizenship, **every minor child of that person also loses Indian citizenship**. However, when such a child attains the age of 18, he may resume Indian citizenship.

○ By Termination:

- The Constitution of India provides **single citizenship**. It means an Indian person can only be a citizen of one country at a time.
- If a person takes the citizenship of another country, then his Indian citizenship ends automatically. However, this provision does not apply when India is busy in war.

○ Deprivation by Government:

- The Government of India may **terminate the citizenship** of an Indian citizen if;
 - The citizen has **disrespected the Constitution**.

Note:

- Has **obtained citizenship by fraud**.
- The citizen has **unlawfully traded or communicated** with the enemy during a war.
- Within 5 years of registration or naturalisation, a citizen has been **sentenced to 2 years of imprisonment** in any country.
- The citizen has been **living outside India for 7 years continuously**.

2nd Phase of SBM-U

Why in News

Recently, the Prime Minister launched the second phase of **Swachh Bharat Mission-Urban** (SBM-U 2.0).

- The **Ministry of Housing and Urban Affairs** (MoHUA) is the nodal ministry for the scheme.

Key Points

- **About:**
 - SBM-U 2.0, announced in **Budget 2021-22**, is the continuation of SBM-U first phase. The government is trying to tap **safe containment, transportation, disposal of faecal sludge, and septage from toilets**.
 - **SBM-U** first phase was launched on 2nd October 2014 aiming at making urban India **Open Defecation Free (ODF)** and achieving 100% scientific management of municipal solid waste. It **lasted till October 2019**.
 - It will be implemented over five years **from 2021 to 2026** with an outlay of Rs.1.41 lakh crore
- **Aim:**
 - It focuses on **source segregation of garbage, reduction in single-use plastic and air pollution**, by effectively managing waste from construction and demolition activities and **bioremediation of all legacy dump sites**.
 - Under this mission, all wastewater will be treated properly before it is discharged into water bodies, and the government is trying to make maximum reuse a priority.
- **Mission outcomes:**
 - All statutory towns will become **ODF+ certified** (focuses on toilets with water, maintenance and hygiene)

- All statutory towns with less than 1 lakh population will become **ODF++ certified** (focuses on toilets with sludge and septage management).
- 50% of all statutory towns with less than 1 lakh population will become **Water+ certified** (aims to sustain toilets by treating and reuse of water).
- All statutory towns will be **at least 3-star Garbage Free rated** as per MoHUA's Star Rating Protocol for Garbage Free cities.
- Bioremediation of all legacy dumpsites.

➤ Progress under SBM-U Phase-I:

- 4,324 urban local bodies have been declared **Open Defecation Free**, which has been made possible through the construction of more than 66 lakhs individual household toilets and over 6 lakhs community/ public toilets, far exceeding the Mission's targets.
- **Digital enablements such as Swachhata App**, the digital grievance redressal platform introduced by MoHUA in 2016, has reinvented the way in which citizen grievance redressal is managed.
- **Swachh Survekshan**, the world's largest urban cleanliness survey covering over 4,000 Urban Local Bodies was initiated under SBM-Urban in 2016.

Election Symbols

Why in News

Recently, the **Election Commission of India (ECI)** has decided to freeze the election symbol of a Political Party.

- The **Election Symbols (Reservation and Allotment) Order, 1968** empowers the Election Commission to recognise political parties and allot symbols.

Key Points

- **About:**
 - An electoral or election symbol is a **standardized symbol** allocated to a political party.
 - They are **used by the parties during their campaigning** and are shown on **Electronic Voting Machines (EVMs)**, where the voter chooses the symbol and votes for the associated party.
 - They were **introduced to facilitate voting by illiterate people**, who can't read the name of the party while casting their votes.

Note:



- In the 1960s, it was proposed that the **regulation, reservation and allotment of electoral symbols** should be done through a law of Parliament, i.e. Symbol Order.
- In a response to this proposal, the ECI stated that the recognition of political parties is supervised by the provisions of **Election Symbols (Reservation and Allotment) Order, 1968** and so will the allotment of symbols.
 - The Election Commission registers political parties for the purpose of elections and grants them recognition as national or state parties on the basis of their poll performance. The other parties are simply declared as registered-unrecognised parties.
 - The **recognition determines their right to certain privileges** like allocation of the party symbols, provision of time for political broadcasts on television and radio stations and access to electoral rolls.
 - **Every national party and every state party is allotted a symbol exclusively reserved** for its use throughout the country and the states respectively.
- **Election Symbols (Reservation and Allotment) Order, 1968:**
 - Under **Paragraph 15 of the Order**, EC can decide **disputes** among rival groups or sections of a **recognised political party** staking claim to its name and symbol.
 - The **EC is the only authority to decide issues** on a dispute or a merger under the order. The **Supreme Court (SC)** upheld its validity in **Sadiq Ali and another vs. ECI in 1971**.
 - This applies to **disputes in recognised national and state parties**.
 - For **splits in registered but unrecognised parties**, the EC usually advises the warring factions to resolve their differences internally or to approach the court.
 - In almost all disputes decided by the EC so far, a **clear majority of party delegates/office bearers, MPs and MLAs** have supported one of the factions.
 - **Before 1968**, the EC issued notifications and executive orders under the **Conduct of Election Rules, 1961**.

- The **splinter group of the party** - other than the group that got the party symbol - **had to register itself as a separate party**.
 - They **could lay claim to national or state party status only** on the basis of its performance in state or central elections after registration.

Best Practices in the Performance of District Hospitals: NITI Aayog

Why in News

Recently, **NITI Aayog** has released a **performance assessment report of district hospitals** in India, titled 'Best Practices in the Performance of District Hospitals'.

Key Points

➤ About the Report:

- **Collaboration:** The report is an outcome of **collaboration** with the **Ministry of Health and Family Welfare** and **WHO India**.
- **Data Validation:** The **National Accreditation Board** for Hospitals and Healthcare Providers, a constituent board of the **Quality Council of India**, conducted the on-ground data validation.
 - The **Health Management Information System (HMIS)** data for the year 2017–18 has been used as the baseline for this exercise.
- **Categorisation:** For this performance assessment, district hospitals were categorised into small (up to 200 beds), mid-sized (201-300 beds) and large hospitals (more than 300 beds).
 - Of the total hospitals, 62% were small.
- **Key Performance Indicators (KPIs):** The assessment evaluated 707 district hospitals on 10 KPIs based on data from 2017-18.
 - Number of functional hospital beds per 1,00,000 population
 - Ratio of doctors, nursing staffs and paramedical staff in position to **Indian Public Health Standards (IPHS)** norm;
 - Proportion of support services available
 - Proportion of core health care services available
 - Proportion of diagnostic services available
 - Bed occupancy rate
 - C-section rate

Note:

- Surgical productivity index
- OPD per doctor
- Blood bank replacement rate

➤ Key Findings:

- **Beds per Population:** On an average, a district hospital had **24 beds for 1,00,000 people**.
 - For the assessment, it was set that **a hospital should have 22 beds** for that many people (IPHS 2012 guidelines).
 - The **World Health Organization (WHO) recommends five hospital beds for every 1,000 people**.
- **Doctor-to-Bed Ratio:** Only 27% of the total 707 districts assessed met the doctor-to-bed ratio of **29 doctors per 100 beds** in a hospital.
 - 88 hospitals out of 707 had the required ratio of staff nurses.
- **Ratio of Paramedical Staff:** Only 399 hospitals were found to have a ratio of paramedical staff in position as IPHS norms laid down (100 paramedical staff for 500 bed hospital).
- **Support Services:** On an average, every district hospital in India had **11 support services, compared to the required 14**.
- **Diagnostic Testing Services:** Only 21 hospitals fulfilled the criteria of having all diagnostic testing services available.
- **Bed Occupancy:** 182 hospitals out of the 707 had bed occupancy of 90% or more.
 - Occupancy of 80-85 % is considered ideal.
- **OPD Patients:** On an average, a doctor in a district hospital attends to **27 OPD patients**.

➤ Suggestions:

- **Increasing Resources:** Adequate resources may be provided to district hospitals towards digitization.
 - National and regional level training, workshops etc. may be organized to acknowledge as well as disseminate hospitals' best practices.
- **Linking with Medical Colleges:** District hospitals may be linked to the nearest medical college by employing a hub and spoke distribution model, which is a cost-effective and time-saving transport and service distribution mechanism.
- **Ensuring Optimal Resource Utilization:** Ensuring 24x7 availability of support services, diagnostic testing facilities, pharmacy, and well-planned shifts

of medical and paramedical staff would contribute to an optimal bed occupancy and resource utilization.

- **Tele-medicine Services:** Hospitals should encourage care seeking among the community through extension services, as also make seeking care a hassle-free and productive experience. Tele-medicine services can help increase OPD footfalls, with convenience to patients.
- **Leveraging the ANM (Auxiliary Nurse Midwife)–ASHA–Anganwadi Worker (AAA) network,** institutional deliveries over home deliveries should be encouraged and ensured.

Public Healthcare in India

➤ Constitutional Provisions:

- Policy making in the country's health sector is shaped by its **federal structure** and the **Central-State divisions** of responsibilities and financing.
 - **State List:** Public health and sanitation, hospitals and dispensaries are state subjects, which means the primary responsibility of their management and service delivery lies with the states.
 - **Union List:** The Centre also invests in health services through **Centrally Sponsored Schemes** such as the **National Health Mission (NHM)** and **Ayushman Bharat**.
 - **Concurrent List:** The Centre plays an important role in vital statistics, medical education, and drugs administration, among others, which are **subjects in the Concurrent List**, as also in planning, policy making, and funding for public health at state and national levels.

➤ Digitisation of Healthcare:

- **National Digital Health Mission (NDHM):** The NDHM is a complete digital health ecosystem. The digital platform will be launched with four key features: health ID, personal health records, Digi Doctor and health facility registry.
- **Aarogya Setu App:** It has an objective of enabling bluetooth based contact tracing and mapping of likely hotspots and dissemination of relevant information about **Covid-19**.

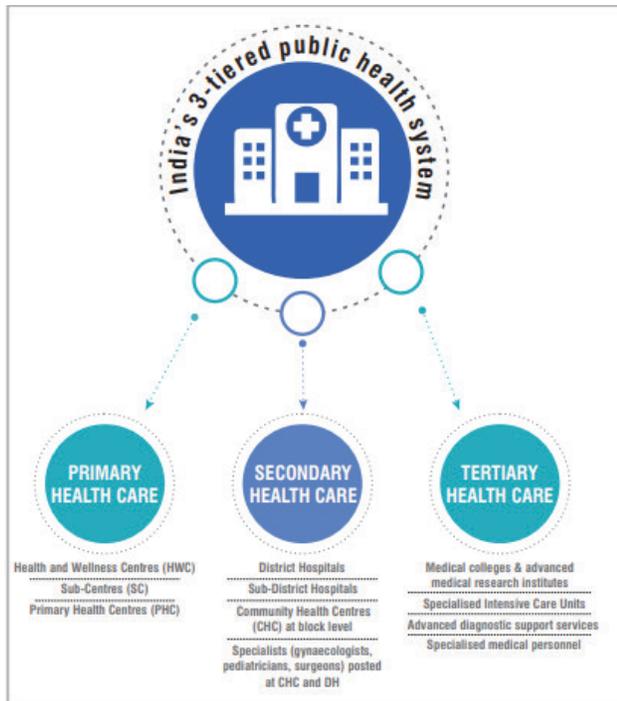
➤ National Health Policy 2017:

- The **policy** aims to achieve **universal access to good quality health care services** without anyone having to face financial hardship as a consequence.

Note:



- It intends to **gradually increase public health expenditure to 2.5% of the GDP by 2025.**
- It also envisages a **three-dimensional integration of AYUSH systems** encompassing cross referrals, co-location and integrative practices across systems of medicines.



DigiSaksham Programme

Why in News

Recently, the **Union Labour Ministry and Microsoft India** have jointly launched a **digital skilled platform -- DigiSaksham -- to enhance youth employability.**

- This joint initiative is an extension of the ongoing programs to support the **youth from rural and semi-urban areas.**

Key Points

- **About:**
 - **Free of cost training in digital skills** including basic skills as well as advanced computing, will be provided to more than 3 lakh youths in the first year.
 - **Priority will be given** to the job-seekers of semi urban areas belonging to disadvantaged

communities, including those who have lost their jobs due to **Covid-19** pandemic.

- Training would be **conducted at** the Model Career Centres (MCCs) and National Career Service Centres (NCSC) **for Scheduled Castes (SCs)/Scheduled Tribes (STs)** across the country.
- **Implemented by:** Aga Khan Rural Support Programme India (AKRSP-I).
 - AKRSP-I is a **non-denominational, non-government development organization.** It works as a catalyst for the betterment of rural communities by providing direct support to local communities.
- **Role of NCS Portal:** The Job Seekers can access the training through **National Career Service (NCS) Portal.**
 - NCS Portal is a one-stop solution that provides a wide array of employment and career related services to the citizens of India. It is implemented by the **Ministry of Labour and Employment.**

➤ Need:

- To bridge the gap of India's digital divide, placing the country on the path to inclusive economic recovery and preparing India's talent to thrive in a digital future catering not only to the needs of the domestic economy but also to tap the overseas employment opportunities.

➤ Other Initiatives for Youth Employment:

- **Pradhan Mantri Kaushal Vikas Yojana 3.0**
- **Generation Unlimited in India (YuWaah)**
- **National Career Service**
- **Prime Minister's Employment Generation Programme (PMEGP)**
- **Pradhan Mantri Mudra Yojana (PMMY)**
- **Pradhan Mantri Rojgar Protsahan Yojana (PMRPY)**
- **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGA)**

Jal Jeevan Mission App

Why in News

Recently, the **Prime Minister** launched the **Jal Jeevan Mission (JJM) mobile application** on the occasion of **Gandhi Jayanti (2nd October).**

Note:

- The PM also released the **progress report of the JJM** and a **manual** for the utilisation of the **15th Finance Commission** grant for rural local bodies.

Key Points

➤ About:

- The mobile application will provide details of water infrastructure, an **Aadhaar**-verified data set of beneficiaries, and water quality and contamination-related information for each village.
- The application **aims** to improve awareness among stakeholders and for greater transparency and accountability of schemes under the Jal Jeevan mission.
- The **Jal Shakti ministry has been maintaining a JJM dashboard** to show the coverage of tap water connections across states.
 - The **water quality management information system** provides details of water samples received and tested across labs and states. The **mobile app will bring all this data under one umbrella**.

➤ Jal Jeevan Mission:

○ About:

- **Launched in 2019**, it envisages **supply of 55 litres of water per person per day to every rural household** through Functional Household Tap Connections (FHTC) **by 2024**.
- JJM looks to create a jan andolan for water, thereby making it everyone's priority.
- It comes **under Jal Shakti Ministry**.

○ Aims:

- The mission ensures **functionality of existing water supply systems** and water connections; **water quality** monitoring and testing as well as **sustainable agriculture**.
- It **also ensures conjunctive use** of conserved water; drinking water source augmentation, drinking water supply system, **grey water** treatment and its reuse.

○ Features:

- JJM **focuses on integrated demand and supply-side management of water** at the local level.
- **Creation of local infrastructure** for source sustainability measures as mandatory elements, like rainwater harvesting, groundwater recharge and management of household wastewater for

reuse, is undertaken in convergence with other government programmes/schemes.

- The Mission is **based on a community approach** to water and includes extensive Information, Education and Communication as a key component of the mission.

○ Implementation:

- **Paani Samitis** plan, implement, manage, operate and maintain village water supply systems.
 - These consist of 10-15 members, with at least 50% women members and other members from **Self-Help Groups, Accredited Social and Health Workers, Anganwadi** teachers, etc.
- The committees prepare a one-time village action plan, merging all available village resources. The plan is approved in a **Gram Sabha** before implementation.

○ Funding Pattern:

- The fund sharing pattern between the Centre and states is 90:10 for Himalayan and North-Eastern States, 50:50 for other states, and 100% for Union Territories.

○ Progress So Far:

- When the mission was launched, only 17% (32.3 million) of the country's rural households had a tap water supply.
- Today, **7.80 Crore (41.14%) households** have tap water supply. **Goa, Telangana, Andaman & Nicobar Islands and Puducherry** have achieved 100% household connection in rural areas and have become '**Har Ghar Jal**'.
 - To complement the Jal Jeevan Mission (Rural), **Jal Jeevan Mission (Urban)** was announced in the Budget 2021-22.

Loopholes in Aadhaar-Enabled Payments

Why in News

A series of recent scams have **exposed the vulnerabilities of the Aadhaar-enabled Payment System (AePS)**.

Key Points

- **Aadhaar-enabled Payment System (AePS):**

Note:



- AePS is a **bank led model which allows online interoperable financial transactions at PoS** (Point of Sale / Micro ATM) through the Business Correspondent (BC)/Bank Mitra of any bank using the Aadhaar authentication.
- This system **adds another layer of security to financial transactions** as bank details would no longer be required to be furnished while carrying out these transactions.
- It was **taken up by the National Payments Corporation of India (NPCI)** - a joint initiative of **Reserve Bank of India (RBI)** and **Indian Banks' Association (IBA)**.
- **Advantages Associated with AePS:**
 - **Decongesting Banks:** Like other micro-ATM systems, it has helped to decongest banks. It can be particularly useful to migrant workers who have no ATM facility.
 - **Deepening Social Security:** It will help in deepening social services after the proliferation of cash transfer schemes from governments to vulnerable citizens.
 - **Enabling Last-Mile Service:** It will ease the payments which will be done at the doorstep instead of travelling long distances.
 - Interoperable system ensures that the customer is not tied to one bank's BC.
 - **Removing Middlemen:** The middlemen who exploited the poor and illiterate would now be eliminated.
- **Existing Loopholes:**
 - **Fraudulent BC:** Sometimes BC, leveraging the financial illiteracy of people, provides less money to the consumer but enters more money to be credited into the BC's account.
 - Manytimes, BCs deny receipts to poor people, if they demand one at all.
 - A corrupt BC can even get away with asking a gullible customer to put her finger in the PoS machine under some pretext, without giving her any money.
 - **No accounting of Fraudulent Transactions:** AePS has no record of the fraudulent BC, it only shows the transaction records.
 - This makes poor people more vulnerable, who already are facing scarcity of funds.
 - **Systemic Issues:** Failure in transactions owing

to biometric mismatches, poor connectivity or weaker systems of certain banking partners, also affect the AePS.

Swadesh Darshan Scheme

Why in News

Recently, under the **Swadesh Darshan Scheme**, the Tourism Ministry sanctioned 5 projects of Rs 325.53 crore for Buddhist circuit development.

- It has also organised a **Buddhist Circuit Train FAM Tour** as part of the Union government's **Dekho Aapna Desh initiative**.
- The tour **covers the destinations Gaya-Bodhgaya, Rajgir-Nalanda in Bihar** as well as **Sarnath-Varanasi in Uttar Pradesh**.

Key Points

- **About:**
 - Swadesh Darshan, a **Central Sector Scheme**, was **launched in 2014-15** for integrated development of theme based tourist circuits in the country.
 - This scheme is envisioned to synergise with other schemes like **Swachh Bharat Abhiyan, Skill India, Make in India** etc.
 - Under the scheme, the **Ministry of Tourism provides Central Financial Assistance (CFA)** to State Governments/Union Territory Administrations for infrastructure development of circuits.
 - One of the objectives of the scheme is to **develop theme-based tourist circuits** on the principles of **high tourist value, competitiveness and sustainability** in an integrated manner.
- **Tourism Circuits:**
 - Under the scheme, **fifteen thematic circuits have been identified**- Buddhist Circuit, Coastal Circuit, Desert Circuit, Eco Circuit, Heritage Circuit, Himalayan Circuit, Krishna Circuit, North East Circuit, Ramayana Circuit, Rural Circuit, Spiritual Circuit, Sufi Circuit, Tirthankar Circuit, Tribal Circuit, Wildlife Circuit.
- **Other Related Initiatives:**
 - **PRASHAD Scheme:**
 - 30 projects for development of infrastructure have also been undertaken under the **PRASHAD Scheme**.

Note:

- **Iconic Tourist Sites:**
 - Buddhist Sites at **Bodhgaya, Ajanta & Ellora** have been identified to be developed as **Iconic Tourist Sites** (aimed at enhancing India's soft power).
- **Buddhist Conclave:**
 - **Buddhist Conclave** is organised **every alternate year** with the objective of promoting India as a Buddhist Destination and major markets around the globe.
- **Dekho Apna Desh' Initiative:**
 - It was **launched by the Ministry of Tourism in 2020** to encourage the citizens to travel widely within the country thus enabling the development of Domestic Tourism tourist facilities and infrastructure.

Proposal to Amend the Forest (Conservation) Act, 1980

Why in News

Recently, the **Union Ministry of Environment, Forests and Climate Change (MoEFCC)** has proposed an amendment to the **Forest (Conservation) Act, 1980** to bring significant changes to forest governance in India.

Key Points

- **About:**
 - **Aim:**
 - To liberalise forest laws through facilitating private plantations for harvesting and exploration or extraction of oil and natural gas deep beneath forest land by drilling holes from outside the forest areas.
 - **Definition of Forest:**
 - The Supreme Court in **TN Godavarman Thirumulpad versus Union of India and Others (1996)**, have defined forest as, all areas which are recorded as 'forest' in any government record, irrespective of ownership, recognition and classification.
 - **Need of Amendment:**
 - **Forests on Private Land:** Identification of forests on private land is **subjective and arbitrary** to some extent.
 - This results in a lot of resentment and

resistance particularly from private individuals and organisations.

- Considering any private area as forest, would restrict the right of an individual to use his/her own land for any non-forestry activity.
- This has led to the tendency to keep most of the private lands devoid of vegetation even if there's scope for planting activities.
- **Changes in the Ecological and Economic Needs:** There has been considerable change in the ecological, social and environmental regimes in the country in the last few years.
 - Present circumstances, particularly for accelerated integration of conservation and development, have become necessary to amend the Act.
- **Achieving India's Climate Target:** To achieve the **Nationally Determined Contribution (NDC)** extensive plantations in all possible available lands outside the government forests was necessary.

➤ **Highlights of the Proposal:**

- **Defining 'Forests': Deemed forests** listed by state governments up to 1996 will **continue to be considered forest land.**
 - Land that was **acquired by the Railways and the road ministries** before 1980, but on which forests came up, **will no longer be considered forests.**
- **Strategic Projects:** The forest land for strategic and security projects of national importance should be exempted from the need to obtain prior approval from the Central government.
 - Doing this will allow states to permit diversion of forest land for strategic and security projects that are to be completed in a given time frame.
- **Oil and Natural Gas Extraction:** Facilitate new technologies such as **Extended Reach Drilling (ERD)** for extraction of oil and natural gas found deep beneath the forest land by drilling holes from outside the forest areas.
 - The use of such technology is quite environment-friendly and as such should be kept outside the purview of Act.
- **Building in Forests:** To ease the grievances of the individuals whose land fall in state specific private forests act or within the purview of dictionary meaning of forest.

Note:



- The proposal allows them the **right to construct structures for bonafide purposes** including forest protection measures and residential units up to an area of 250 sq mtr as one time relaxation.

Forest in India

- According to **India State of Forest Report, 2019**, the **Total Forest and Tree cover is 24.56%** of the geographical area of the country.
 - **Forest Cover (Area-wise):** Madhya Pradesh > Arunachal Pradesh > Chhattisgarh > Odisha > Maharashtra.
 - **National Forest Policy of India, 1988** envisages a goal of achieving 33% of the geographical area of the country under forest and tree cover.
- **Constitutional Provisions:**
 - Through the **42nd Amendment Act, 1976** Forests and Protection of Wild Animals and Birds were **transferred from State to Concurrent List** along with Education, Weights & Measures and Administration of Justice.
 - **Article 51 A (g)** of the Constitution states that it shall be the **Fundamental Duty** of every citizen to protect and improve the natural environment including forests and Wildlife.
 - **Article 48 A** in the **Directive Principles of State policy**, mandates that the State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country.

Demand for Right to Health

Why in News

Recently, the demand for the enactment of a legislation on the **right to health** has been revived in Rajasthan.

- The health activists have affirmed that the law would streamline medical services and guarantee the availability of essential facilities to citizens.

Key Points

- **About:**
 - **Right to Health:** The right to health, as with other rights, includes both freedoms and entitlements:
 - Freedoms include the **right to control one's health and body** (for example, sexual and

reproductive rights) and to be free from interference (for example, free from torture and non-consensual medical treatment and experimentation).

- Entitlements include the **right to a system of health protection** that gives everyone an equal opportunity to enjoy the highest attainable level of health.
- **Significance:**
 - The people are entitled to the right to health and it **puts a compulsion for the government** to take steps toward this.
 - **Enables everyone to access the services** and ensures that the quality of those services is good enough to improve the health of the people who receive them.
 - **Protects people from the financial consequences** of paying for health services out of their own pockets and reduces the risk of people getting pushed into poverty.
- **Challenges:**
 - The **existing public primary health care** model in the country is **limited in scope**.
 - Even where there is a well-functioning public primary health centre, only **services related to pregnancy care, limited childcare** and certain services related to **national health programmes** are provided.
 - Expenditure on **public health funding** has been consistently low in India (approximately 1.3% of GDP).
 - As per **OECD**, India's total **out-of-pocket expenditure** is around 2.3% of GDP.
 - The government is committed to spend 2.5% of GDP on health by 2025.
 - **Sub-optimal health system.** Due to this, it is challenging to tackle **Non-communicable Diseases**, which is all about prevention and early detection.
 - It diminishes preparedness and effective management for new and emerging threats such as pandemic like Covid-19.
- **Obligations of Government:**
 - **Constitutional:**
 - **Fundamental Rights: Article 21** of the Constitution of India guarantees a fundamental right to life &

Note:

personal liberty. The right to health is inherent to a life with dignity.

- **Directive Principles of State Policy (DPSP):** **Articles 38, 39, 42, 43, & 47** put the obligation on the state in order to ensure the effective realization of the right to health.
- **Judicial Pronouncements:**
 - The **Supreme Court** in **Paschim Bangal Khet Mazdoor Samity case (1996)** held that in a **welfare state**, the primary duty of the government is to secure the welfare of the people and moreover it is the obligation of the government to provide adequate medical facilities for its people.
 - In **Parmanand Katara Vs Union Of India (1989)** judgement, the Supreme Court had ruled that every doctor whether at a government hospital or otherwise has the professional obligation to extend his services with due expertise for protecting life.
- **International Commitments:**
 - **Universal Declaration of Human Rights:** India is a signatory of the Article 25 of the **Universal Declaration of Human Rights (1948)** by the United Nations.
 - It grants the right to a standard of living adequate for the health and well-being of humans including food, clothing, housing and medical care and necessary social services.

Application Ecosystem for Integration of Procurement Portals

Why in News

Recently, the **Department of Food and Public Distribution** has developed an **application ecosystem for integration of procurement portals of all state governments**.

Key Points

- **About:**
 - The Application Ecosystem will allow the integration of procurement portals of all state governments having **Minimum Threshold Parameters (MTPs)** for monitoring and strategic decision making.

- The introduction of MTPs in procurement operations are **necessitated to avoid middlemen** in procurement and **ensure that farmers get the best value for their produce**.

- **MTPs will ensure uniformity and interoperability** among the states.

- The MTPs are five key details which states are required to capture in their procurement portals, which are related to **online registration, farmer data, digitized mandi and procurement, and billing**.
- The integration of state portals with the central portal will go a long way in **expediting the reconciliation of procurement figures with States** and release of funds by the Centre Government to the States.

➤ Need:

○ Challenges in Implementing Schemes:

- Due to variations in the procurement systems, there emerge both **systemic and implementation challenges** for implementing the schemes of the central government.

○ Delays in Funding:

- Reconciliation of the procurement operations with various states is sometimes a **long-drawn exercise, leading to delays in the release of funds to states**.

○ Inefficiencies:

- Moreover, the non-standard procurement operations also **lead to avoidable inefficiencies**, which manifest in the form of middlemen in the procurement operations.

○ Standardization:

- There is **no pan-India standard procurement ecosystem** for monitoring and strategic decision making.
- Standardization of the operations are **essential in helping the country achieve greater levels of transparency and efficiency** in procurement operations, which ultimately lead to ensuring food security for the people of the country.

➤ Benefits:

- **Farmers:** Will be able to sell their produce at suitable prices and avoid distress sale.
- **Procuring Agencies:** With better management of procurement operations, the State agencies and **Food Corporation of India** will be able to procure efficiently with the limited resources at hand.

Note:



- **Other Stakeholders:** The automation and standardization of procurement operations shall provide an integrated view of procurement of foodgrains and its storage in godowns.

EWS Quota

Why in News

Recently, the **Supreme Court (SC)** has questioned the methodology adopted by the government in fixing Rs. 8 lakh as the annual income limit to identify the **Economically Weaker Section (EWS)** for providing 10% quota in public jobs and educational institutions.

Key Points

- **About:**
 - The **10% EWS quota** was introduced under the **103rd Constitution (Amendment) Act, 2019** by amending **Articles 15 and 16**.
 - It inserted **Article 15 (6) and Article 16 (6)**.
 - It is for **economic reservation** in jobs and admissions in education institutes for **Economically Weaker Sections (EWS)**.
 - It was enacted to promote the welfare of the poor not covered by the 50% reservation policy for **Scheduled Castes (SCs), Scheduled Tribes (STs) and Socially and Educationally Backward Classes (SEBC)**.
 - It enables both **Centre and the states** to provide reservation to the **EWS of the society**.
- **Significance:**
 - **Addresses Inequality:**
 - The **10% quota is progressive** and could **address the issues of educational and income inequality in India** since the **economically weaker sections of citizens have remained excluded** from attending higher educational institutions and public employment due to their financial incapacity.
 - **Recognition of the Economic Backwards:**
 - There are many people or classes other than backward classes who are living under hunger and poverty-stricken conditions.
 - The proposed reservation through a constitutional amendment would **give constitutional recognition to the poor from the upper castes**.

- **Reduction of Caste Based Discrimination:**
 - Moreover, it will **gradually remove the stigma associated with reservation because reservation has historically been related with caste** and most often the upper caste look down upon those who come through the reservation.

➤ **Concerns:**

- **Unavailability of Data:**
 - The Statement of Object and Reason in the EWS bill clearly mentioned that the economically weaker sections of citizens have **largely remained excluded from attending the higher educational institutions and public employment** on account of their financial incapacity to compete with the persons who are economically more privileged.”
 - This is at **best a wild guess or a supposition** because the government has **not produced any data to back this point**.
- **Breaches Reservation Cap:**
 - In the **Indira Sawhney case 1992**, the nine-judge Constitution bench put a **cap of 50%**.
 - The **EWS quota breaches this limit**, without even putting this issue into consideration.
- **Arbitrary Criteria:**
 - The criteria used by the government to decide the eligibility for this reservation is vague and is not based on any data or study.
 - Even the SC questioned the government whether they have checked the **GDP per capita for every State** while deciding the monetary limit for giving the EWS reservation.
 - Statistics show that the **per capita income in states differs widely** - Goa is the state having the highest per capita income of almost Rs. 4 lakh whereas Bihar is at the bottom with Rs. 40,000.

Draft EPR Notification: Plastic Packaging Waste

Why in News

Recently, the Union Environment Ministry has come out with a draft notification for regulation of **Extended Producer Responsibility (EPR)** under **Plastic Waste Management rules 2016**.

Note:

- The draft specifies the quantity of waste that will have to be managed by producers, importers and brand owners who generate plastic packaging waste in India.
- Earlier, the Ministry had notified the **Plastic Waste Management Amendment Rules, 2021**. These rules prohibit specific **single-use plastic** items which have “low utility and high littering potential” by 2022.

Key Points

➤ Producers' Mandate:

- It mandates **producers of plastic packaging material to collect all of their produce by 2024** and ensure that a minimum percentage of it be recycled as well as used in subsequent supply.
- Producers of plastic will be **obliged to declare to the government**, via a centralised website, how much **plastic they produce annually**.

➤ EPR Certificates:

- It has also specified a system whereby **makers and users of plastic packaging can collect certificates** — called EPR certificates — **and trade in them**.
 - EPR means the **responsibility of a producer** for the environmentally sound **management of the product** (plastic packaging) until the **end of its life**.
- The certificates will **help organisations in making up for their shortfall** from other organisations that have used recycled content in excess of their obligation.

➤ End-of-Life Disposal:

- Only a fraction of **plastic that cannot be recycled** — such as **multi-layered multi-material plastics** — **will be eligible to be sent for end-of-life disposal** such as road construction, waste to energy, waste to oil and cement kilns.
- The methods only prescribed by the **Central Pollution Control Board (CPCB)** will be permitted for their disposal.

➤ Categorization of Plastic Packaging:

- **Rigid Plastic:**
 - They are plastic products that **do not give easily when squeezed**. Many are large, bulky items like lawn chairs, buckets, toddler toys etc.
- **Flexible Plastic:**
 - It includes **packaging of single layer or multilayer (more than one layer with different types of**

plastic), plastic sheets and covers made of plastic sheet, carry bags (including carry bags made of compostable plastics), plastic sachet or pouches.

○ Multi-Layered Plastic Packaging:

- They are the plastics which **have at least one layer of plastic and at least one layer of material other than plastic**.

➤ Targets:

- Companies will have to collect at least:
 - **35%** of the target in **2021-22**.
 - **70%** of the target by **2022-23**.
 - **100%** of the target by **2024**.
- In 2024, a minimum **50% of their rigid plastic** will have to be recycled as will 30% of their category 2 and 3 plastic.
- Every year will see **progressively higher targets** and after 2026-27, 80% of their category 1 and 60% of the other two categories will need to be recycled.
- There are **similar targets**, with slight variations, for companies that use packaging material as well as import them.

➤ Buying EPR Certificates:

- If entities **cannot fulfil their obligations**, they will on a “case by case basis” be **permitted to buy certificates**.
- The **CPCB will develop a mechanism** for such exchanges on a centralised online portal.

➤ Non Compliance:

- Non-compliance, however, **will not invite a traditional fine**. Instead an **environmental compensation** will be levied, though the rules do not specify how much this compensation will be.

➤ Fine:

- Entities that **do not meet their targets or do not purchase enough credits** to meet their annual target must **pay a fine**.
 - Were they to meet their targets within three years, they stand to get a 40% refund. Beyond that, however, the money will be forfeited.
- **Funds** collected in this way will be put in an **escrow account** and can be **used in collection and recycling/end of life disposal** of uncollected and non-recycled/ non-end of life disposal of plastic packaging waste on which the environmental compensation is levied.

Note:

➤ Banning Plastics:

- From **July 2022**, the manufacture of a **range of plastic products will be banned**. The list includes: Earbuds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks etc.

Graded Response Action Plan (GRAP)

Why in News

Recently, the **Commission for Air Quality Management (CAQM)** has said that the measures under the “**very poor**” and “**severe**” category of the **Graded Response Action Plan (GRAP)** will kick in only when the **air quality deteriorates** further and stays in prescribed levels for 48 hours.

Key Points

➤ Graded Response Action Plan (GRAP):

- **About:**
 - In pursuant to the Supreme Court’s order in the matter of **M. C. Mehta vs. Union of India (2016)** regarding **air quality in the National Capital Region of Delhi**, a Graded Response Action Plan has been prepared for implementation under different **Air Quality Index (AQI)** categories namely, **Moderate & Poor**, **Very Poor**, and **Severe**.
 - A new category of “**Severe+ or Emergency**” has been added.
 - The Plan was **notified by the Ministry of Environment, Forests & Climate Change in 2017**.
 - It **institutionalised measures** to be taken when air quality deteriorates.
 - The plan is **incremental in nature** - therefore, when the air quality moves from ‘Poor’ to ‘Very Poor’, the measures listed under both sections have to be followed.
 - It **prevents PM10 and PM2.5 levels** from going beyond the ‘moderate’ national AQI category.
- **Implementation:**
 - Till 2020, the Supreme Court-appointed **Environment Pollution (Prevention & Control) Authority (EPCA)** used to order States to implement GRAP measures.

- The EPCA was **dissolved and replaced by the Commission for Air Quality Management (CAQM)** in 2020.
 - CAQM is a **statutory mechanism** to coordinate and oversee diverse efforts to improve air quality in **Delhi, Punjab, Haryana, Rajasthan** and **UP**, with the underlying remedial approach.

Category	Ambient Particulate Matter (PM) Concentration	Measures
Moderate to Poor	<ul style="list-style-type: none"> ■ PM 2.5 between 61-120 $\mu\text{g}/\text{m}^3$ ■ PM10 between 101-350 $\mu\text{g}/\text{m}^3$ 	<ul style="list-style-type: none"> ■ Enforce pollution control in thermal power plants ■ Mechanized sweeping on roads ■ Ban on firecrackers ■ Stop garbage burning
Very Poor	<ul style="list-style-type: none"> ■ PM2.5 between 121-250 $\mu\text{g}/\text{m}^3$ ■ PM10 between 351-430 $\mu\text{g}/\text{m}^3$ 	<ul style="list-style-type: none"> ■ Stop use of diesel generator sets ■ Increase bus and metro services and increasing frequency of metro service ■ Stop use of coal/firewood in hotels and open eateries
Severe	<ul style="list-style-type: none"> ■ PM2.5 more than 250 $\mu\text{g}/\text{m}^3$ ■ PM10 more than 430 $\mu\text{g}/\text{m}^3$ 	<ul style="list-style-type: none"> ■ Increase frequency of mechanized sweeping of road and sprinkling of water on roads ■ Close brick kilns, Hot Mix plants, Stone Crushers ■ Shut down Badapur power plant ■ Introduce concessional rates to encourage off-peak travel in public transport.
Severe+ or Emergency	<ul style="list-style-type: none"> ■ PM2.5 of or more than 300 $\mu\text{g}/\text{m}^3$ ■ PM10 of or 500 $\mu\text{g}/\text{m}^3$ <p>(persist for 48 hours or more)</p>	<ul style="list-style-type: none"> ■ Stop entry of diesel trucks into Delhi (except essential commodities) ■ Stop construction activities ■ Introduce odd and even scheme ■ Shutting of schools

➤ Other Measures:

- **Environment Protection Charge (EPC):** In 2016, the SC imposed an EPC of **1% on the sale of 2000cc and above diesel cars** in Delhi and NCR.
- **Environment Compensation Charge (ECC):** In the year 2015, the SC imposed ECC on trucks entering Delhi.

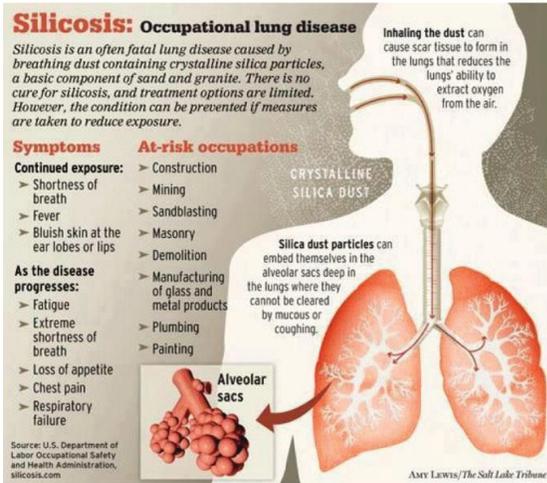
Silicosis

Why in News

In India, countless workers engaged in mines, construction and factories are silently dying of exposure to dust. This is better referred to as **silicosis**.

- Silicosis can be described as an **occupational disease or hazard** due to dust exposure. It is incurable and can cause permanent disability.
- However, it is **totally preventable by available control measures and technology**.

Note:



Key Points

➤ About Silicosis:

- Silicosis occurs most commonly in people working in the quarrying, manufacturing, and building construction industries.
 - **Silica (SiO₂/silicon dioxide)** is a crystal-like mineral found in abundance in sand, rock, and quartz.
- It is a **progressive lung disease** caused by the **inhalation of silica over a long period of time**, characterized by shortness of breath, cough, fever and bluish skin.
- It is one of the **most prevalent occupational health illnesses in the world**. It is also reported from the population with non-occupational exposure to **silica dust** from industrial as well as non-industrial sources.
- Exposure to large amounts of free silica may not be noticed because silica is **odourless, non-irritant** and does not cause any immediate health effects, but long-term exposure is associated with **pneumoconiosis, lung cancer, pulmonary tuberculosis, and other lung diseases**.
 - **Pneumoconiosis** is one of a group of interstitial lung diseases caused by breathing in certain kinds of dust particles that damage your lungs.
- **Diagnosis** is a challenge because it is **difficult** to even find out if a person has **tuberculosis or silicosis**.
- The nodules that collect to form a mass can take up to 20 years to be identified in chest x-rays and the victim notices symptoms only after many years of exposure to silica.

- Grossly, silicotic **nodules** are **firm, discrete, rounded lesions** that contain a variable amount of black pigment.
- The nodules tend to **occur around respiratory bronchioles** and small pulmonary arteries.
- In India **silicosis is prevalent in Gujarat, Rajasthan, Pondicherry, Haryana, Uttar Pradesh, Bihar, Chhattisgarh, Jharkhand, Orissa and West Bengal** among the workers of construction and mining.
- **Steps Taken by The Government:**
 - **Legal Protections:** Silicosis is a notified disease under the Mines Act (1952) and the Factories Act (1948).
 - **Factory Act of India (1948)** mandates a well-ventilated working environment, provisions for protection from dust, reduction of overcrowding and provision of basic occupational health care.
 - **Silicosis Portal:** A 'silicosis portal' was hosted by the Department of Social Justice and Empowerment.
 - **Self-Registration:** A system of worker self-registration, diagnosis through district-level pneumoconiosis boards and compensation from the **District Mineral Foundation Trust (DMFT)** funds to which mine owners contribute.
 - **Occupational Safety, Health, and Working Condition Code 2020 (OSHCW):**
 - The code makes it mandatory for all employers to provide annual health checks free of cost as prescribed by the appropriate Government.
- **Associated Challenges:**
 - **Low rates of notification:** Low rates of notification of silicosis by the mining sector. Most of the time silicosis is diagnosed as tuberculosis.
 - **Inhuman Cycle:** Present system is designed to consume workers in the mining sector and dispense them with small compensation and replace them with next able workers.
 - **Loopholes in OSHWC Code:** The code places **no obligation on the mine owner** to provide any form of rehabilitation in terms of alternative employment in the mine, or payment of a disability allowance/lump sum compensation for a worker found medically unfit.
 - **Underutilized Funds:** The DMFT funds are both underutilised and spent in an entirely ad hoc manner.



Note:



drishti

Economic Scenario

Highlights

- Coal Crunch in India
- 'Maharatna' Status to Power Finance Corporation
- PM Gati Shakti Scheme
- Tax Havens in the United States
- Quarterly Employment Survey (QES)
- Air India Disinvestment
- PM MITRA Parks
- Nobel Prize for Chemistry, 2021
- Pandora Papers Leak
- India's Ethanol Plan and Food Security
- Sovereign Credit Ratings
- World Bank GDP Projection for India
- Market Based Economic Despatch (MBED) Phase 1
- Global Minimum Tax Deal
- Tax Havens in the United States

Coal Crunch in India

Why in News

India's thermal power plants are facing a severe coal shortage, with **coal stocks having come down to an average of four days of fuel** across an increasing number of thermal stations.

Key Points

➤ Reasons:

- **Eruption in Power Demand:**
 - Economy recovering from the **Covid-19 pandemic** coupled with supply issues have led to the current coal shortage.
 - India is suffering from the impacts of a sharp surge in electricity demand, a squeeze on domestic mine output and surging prices of seaborne coal.
- **Increased Share of Thermal Power Plants:**
 - Coal fired thermal power plants have also supplied a higher proportion of the increase in demand leading the share of thermal power in India's power mix increasing to 66.4% from 61.9% in 2019.
- **Flooding and Rainfall:**
 - Lower than normal stock accumulation by thermal power plants in the April-June period

and continuous rainfall in coal bearing areas in August and September which led to lower production and fewer despatches of coal from coal mines.

○ Lowering Imports:

- A consistent move to lower imports coupled with high international prices of coal have also led to plants cutting imports.

➤ Impact:

- If Industries face electricity shortages, it could **delay India's economic reopening.**
- Some businesses **might downscale production.**
- Providing India's population and underdeveloped energy infrastructure, the **power crisis could hit long and hard.**

➤ Steps that can be Taken:

- **Ram-up Mining:**
 - Government is working to closely monitor stocks and also State run Coal India and NTPC are working to raise output from mines to boost supply.
- **Supply Controls:**
 - Rationing domestic power supplies, especially in rural and semi-urban areas, may emerge as one of India's easiest solutions.
 - Indian power distributors do typically cut supplies to certain areas on a rotational basis when generation is lower than demand, and

Note:



drishti

an extension of load-shedding would likely be considered if power plants take any further hits.

○ Increase Imports:

- India will need to amplify its imports despite the financial cost. From Indonesia for instance, the price rose from USD 60 per tonne in march to 200 per tonne in September.

○ Hydro-Power Generation:

- The same monsoon rains that have flooded coal mines are likely to boost hydro-power generation.
- Large hydro-electric projects on dams are India's major electricity source after coal and the sector performs at its peak around the rainy season which typically extends from June to October.

○ Turn to Natural Gas Powered Generators:

- There could be a larger role for natural gas to play, even with global prices currently surging.
- In a desperate situation, the gas-powered fleet could help prevent any widespread power outages. State-run generator NTPC Ltd., for example, has idle capacity that can be fired up in around 30 minutes if needed and is connected to a gas grid.

Coal

- This is the **most abundantly found fossil fuel**. It is used as a domestic fuel, in industries such as iron and steel, steam engines and to generate electricity. Electricity from coal is called **thermal power**.
- The coal which we are using today was formed millions of years ago when giant ferns and swamps got buried under the layers of earth. Coal is therefore referred to as **Buried Sunshine**.
- The **leading coal producers of the world** include China, US, Australia, Indonesia, India.
- The **coal producing areas of India** include Raniganj, Jharia, Dhanbad and Bokaro in Jharkhand.
- Coal is also **classified into four ranks**: Anthracite, bituminous, subbituminous, and lignite. The ranking depends on the types and amounts of carbon the coal contains and on the amount of heat energy the coal can produce.

'Maharatna' Status to Power Finance Corporation

Why in News

Recently, the government has accorded the '**Maharatna**' status to state-owned **Power Finance Corporation (PFC)**.

- An order to this effect was issued by the **Department of Public Enterprises, under the Ministry of Finance**.
- PFC has become the **11th public sector enterprise** to get the '**Maharatna**' status in the country and joins the ranks of other such companies like **ONGC, Indian Oil Corporation, Steel Authority of India Limited (SAIL)** and **BHEL** among others.

Key Points

➤ Maharatna" Status:

- The **Maharatna dispensation** was ushered in by the **Union government for mega Central Public Sector Enterprises (CPSEs) to become global giants** (introduced in 2010).
 - CPSEs are those companies in which the direct holding of the Central Government or other CPSEs is 51% or more.
- "Maharatna" status is **granted to a company** which has recorded more than Rs. 5,000 crore of net profit for three consecutive years, an average annual turnover of Rs. 25,000 crore for three years or should have an average annual net worth of Rs. 15,000 crore for three years. It should also have global operations or footprints.
 - A CPSE **should also have a Navratna status**, be listed on an Indian stock exchange.
 - The **Government has laid down criteria** for grant of Maharatna, Navratna and Miniratna status to CPSEs.

➤ Power Finance Corporation (PFC):

- Incorporated in 1986, PFC is the **largest infrastructure finance company** dedicated to the power sector under the administrative control of the **Ministry of Power**.

➤ Significance of the Recognition:

- **Greater Financial and Operational Efficiency:**
 - PFC can invest up to **Rs. 5,000 crore, or 15% of its net worth**, in a single project apart from being

Note:

granted enhanced powers by the government for undertaking mergers and acquisitions.

- Navratna and Miniratna CPSEs can invest up to Rs. 1,000 crore and Rs. 500 crore, respectively.
- The PFC Board can also **structure and implement schemes** relating to personnel and human resource management and training.
- **Offer Competitive Financing:**
 - Enable PFC to offer competitive financing for the power sector, which will go a long way in making available **affordable & reliable 'Power For All 24x7'**.
- **Push Government Agenda:**
 - The enhanced powers that come with **Maharatna Status** will also help PFC in pushing the government's agenda of funding under the **National Infrastructure Pipeline**, national commitment of **40% green energy by 2030** and effective monitoring and implementation of the **new revamped distribution sector scheme** with an outlay of more than Rs. 3-lakh crore.

PM Gati Shakti Scheme

Why in News

Recently, the government of India has launched the **ambitious Gati Shakti scheme or National Master Plan for multi-modal connectivity plan**, with the aim of **coordinated planning and execution of infrastructure projects to bring down logistics costs**.

Key Points

- **About the Scheme:**
 - **Aim:** To ensure **integrated planning and implementation of infrastructure projects in the next four years**, with focus on **expediting works on the ground, saving costs and creating jobs**.
 - The Gati Shakti scheme **will subsume the Rs 110 lakh crore National Infrastructure Pipeline** that was launched in 2019.
 - Besides cutting logistics costs, the scheme is also aimed at **increasing cargo handling capacity and reducing the turnaround time at ports** to boost trade.

- It also aims to have **11 industrial corridors and two new defence corridors** -- one in Tamil Nadu and other in Uttar Pradesh. **Extending 4G connectivity to all villages** is another aim. **Adding 17,000 kms to the gas pipeline network** is being planned.
- It will **help in fulfilling the ambitious targets** set by the government for 2024-25, including expanding the length of the national highway network to 2 lakh kms, creation of more than 200 new airports, heliports and water aerodromes.
- **Integrated Approach:** It intends to **bring together 16 infrastructure related Ministries**.
 - This will help in **removing long-standing issues** such as disjointed planning, lack of standardisation, problems with clearances, and timely creation and utilisation of infrastructure capacities.
 - **Gati Shakti Digital Platform:** It involves the creation of a **common umbrella platform** through which infrastructure projects can be planned and implemented in an efficacious manner by way of coordination between various ministries/ departments on a **real-time basis**.
 - **Expected Outcomes:**
 - The scheme will help mapping the existing and proposed connectivity projects.
 - Also, there will be immense clarity on how different regions and industrial hubs in the country are linked, particularly for **last mile connectivity**.
 - A holistic and integrated transport connectivity strategy will greatly support **Make in India** and integrate different modes of transport.
 - It will help India become the **business capital of the world**.
- **Need for Integrated Infrastructure Development:**
 - There exists a **wide gap between macro planning and micro implementation** due to the lack of coordination and advanced information sharing as departments think and work in silos.
 - According to a study, the **logistical cost in India is about 13% of GDP**, which is higher than developed countries.
 - Due to this high logistical cost, the **competitiveness of India's exports is greatly reduced**.

Note:

- It is globally accepted that the **creation of quality infrastructure for Sustainable Development** is a proven way, which gives rise to many economic activities and creates employment on a large scale.
- The scheme is in synergy with the **National Monetisation Pipeline (NMP)**.
 - The NMP has been announced to provide a clear framework for monetisation and give potential investors a ready list of assets to generate investment interest.
- **Associated Concerns:**
 - **Low Credit Off-take:** Although the government had taken up 'strong' banking sector reforms and the **Insolvency and Bankruptcy Code** had yielded about Rs. 2.4 lakh crore of recoveries on bad loans, there are concerns about declining credit offtake trends.
 - Banks give credit off-takes to help businesses acquire financing for future projects through the promise of future income and proof of an existing market.
 - **Lack of Demand:** In the post-Covid-19 scenario, there is a lack of private demand and investment demand.
 - **Structural Problems:** Due to land acquisition delays and litigation issues, the rate of implementation of projects is very slow on global standards.
 - Getting approvals is very difficult in terms of land access, environmental clearances; also impending litigation in court delays the infrastructure projects.

Tax Havens in the United States

Why in News

Recently, a report informed how world leaders and some of the **world's wealthiest people hide their riches in the United States (US)**.

- The information on the report has drawn new scrutiny to the growth of **tax havens**.
- The release of the **Pandora Papers** has shed light on the financial dealings of the **elite and the corrupt and how they have used offshore accounts and tax havens** to shield trillions of dollars in assets.

Key Points

- **About:**
 - Along with the familiar offshore havens, the report also disclosed **secret accounts** in trusts scattered **throughout the United States**, including **81 in South Dakota, 37 in Florida and 35 in Delaware..**
- **Reasons for US' States Becoming Tax Havens:**
 - **No Rule against Perpetuity:**
 - Lawmakers in these states have abolished the **rule against perpetuities** which has **allowed the establishment of so-called dynasty trusts**, in which wealth can be passed from generation to generation while avoiding federal estate taxes.
 - A **perpetuity** is a type of annuity that lasts forever. The stream of cash flows continues for an infinite amount of time.
 - **Asset Protection Trusts:**
 - Some **states also allow asset protection trusts, which protect wealth from claims against creditors**. Such trusts can be attractive to wealthy lawyers and doctors as a way to shield their assets from malpractice claims.
 - **Trusts not Taxed:**
 - Tax avoidance is another big draw. While most states levy a tax on trust income, trusts established in Delaware are not subject to state income tax if the beneficiaries are not Delaware residents.
 - South Dakota **does not tax personal income, corporate income or capital gains**.
 - **Privacy Protection:**
 - South Dakota provides **extensive privacy protections for assets held in trusts**, including the sealing of trust-related court documents and court proceedings.
 - Delaware is a popular venue for registering **Limited Liability Companies (LLC)**, which can include shell companies set up specifically to hide assets or financial transactions. Delaware **law does not require the public disclosure of the names of LLC owners or members**.
- **Benefits of States:**
 - The trust industry can be **lucrative**, not just for wealthy people and the companies that help them shield assets, but also for **government reserves**. The state governments are earning **high franchise taxes paid by trust companies**.

Note:



- A **franchise tax** is a state tax levied on certain businesses for the right to exist as a legal entity and to do business within a particular jurisdiction.

➤ Steps Taken:

- While some in the US Congress are calling for **tighter scrutiny of trust companies** working with foreign clients, the response to the Pandora Papers in Delaware has thus far been muted.
- Federal officials, meanwhile, **have taken aim at some privacy protections with enactment earlier this year of the Corporate Transparency Act.**

Tax Havens

➤ About:

- A tax haven is generally an **offshore country that offers foreign individuals and businesses little or no tax liability** in a politically and economically static environment.
- **Characteristics of tax haven** countries generally include no or low-income taxes, minimal reporting of information, lack of transparency obligations, lack of local presence requirements, and marketing of tax haven vehicles.
- Generally, tax havens **do not require residency or business presence** for individuals and businesses to benefit from their tax policies.
- Individuals and corporations can **potentially benefit from low or no taxes charged** on income in foreign countries where loopholes, credits, or other special tax considerations may be allowed in accordance with the law.

➤ Popular Tax Havens:

- A list of some of the most popular tax haven countries includes Andorra, the Bahamas, Bermuda, the British Virgin Islands, the Cayman Islands, the Channel Islands, the Cook Islands, Hong Kong, Mauritius, Lichtenstein, Monaco, Panama, British Virgin Islands, and the Cayman Islands.

➤ Regulatory Oversight:

- Worldwide, there are some programs in place to increase the enforcement of offshore investment reporting.
- The **Automatic Exchange of Financial Information** is one example, overseen by the **Organization for Economic Co-operation and Development (OECD).**

- It is **aimed at banning anonymous shell companies** that criminals and foreign officials have used to hide financial dealings and launder money, but it includes exemptions and exceptions.

Quarterly Employment Survey (QES)

Why in News

The **Labour Bureau, Ministry of Labour and Employment** released the results of the **Quarterly Employment Survey (QES)** for the **First Quarter (FQ) of 2021 (April to June).**

Key Points

➤ QES Survey:

○ About:

- The Quarterly Employment Survey (QES) is **part of the All-India Quarterly Establishment-based Employment Survey (AQEES).**
- It **covers establishments employing 10 or more workers in the organised segment in 9 sectors.**
- The **9 sectors** are Manufacturing, Construction, Trade, Transport, Education, Health, Accommodation and Restaurants, **IT/BPO**, Financial Service Activities.

○ Objective: To enable the government to frame a "sound national policy on employment."

- **India ratified the International Labour Organization's (ILO) Employment Policy Convention, 1964,** in the year 1998, which requires the ratifying countries to implement "an active policy designed to promote full, productive and freely chosen employment." **India does not have a National Employment Policy (NEP) yet.**

○ QES vs PLFS:

- While the **QES provides a demand side picture,** the **National Sample Survey or Periodic Labour Force Survey (PLFS) gives the supply side picture** of the labour market.
 - **PLFS** is conducted by the **National Statistical Organization (NSO), MoSPI (Ministry of Statistics and Programme Implementation).**

Note:



drishti

- **Issue with QES Data:** As the QES covers only establishments with at least 10 workers, it provides **data essentially on the formal economy**.
 - Considering that **informal workers (with no written contracts, and benefits) account for roughly 90% of the labour force** in India, the QES thus provides only a partial glimpse of the labour market.
- **Highlights of QES 2021 Data:**
 - Shows a **29% increase in employment** in nine sectors during the peak **Covid-19** months of April-June 2021 over a base of 2013-14 (**Sixth Economic Census - EC**).
 - There has been a **decline in the share of female workers**. From 31% in the 6th EC (2013) to 29% in QES (2021) data.
 - Out of the 9 sectors, 7 sectors saw growth in employment while **only 2 sectors (Trade, and Accommodation & Restaurants) saw a decline in employment figures**.
 - The **IT/BPO sector saw the most growth** of 152% during 2013-2021 period.
 - Between **1998-2021**, there has been an **absolute increase in employment figures**. Since 1998 (4th EC), the **highest growth rate in employment (38%) was in the period 2005-2013**.
 - The simple growth rate of employment between 1998-2021 has been fluctuating, and not linear.
- **All-India Quarterly Establishment-based Employment Survey (AQEES):**
 - The AQEES has been **taken up by the Labour Bureau** to provide frequent (quarterly) updates about the employment and related variables of establishments, in both organised and unorganised segments of nine selected sectors.
 - These sectors altogether account for a majority of the total employment in the non-farm establishments.
 - There are **two components** under AQEES:
 - Quarterly Employment Survey (**QES**) and
 - Area Frame Establishment Survey (**AFES**).
 - **QES** would provide the employment estimates for the establishments employing 10 or more workers.
 - **AFES** covers the **unorganised segment (with less than 10 workers)** through a sample survey.

Economic Census

- Economic Census is the complete count of **all Establishments** located **within the geographical boundary of India**.
- It also provides valuable insight into **geographical spread/clusters of economic activities, ownership pattern**, persons engaged, etc. of **all economic establishments** in the country.
- It is conducted **every five years** and is very crucial for framing of policies and planning for the government and other organisations.
- Six Economic Censuses, (EC) have been conducted till date. **The first EC was undertaken in 1977 by the Central Statistical Organization (CSO)**. The Second in 1980 followed by 3rd in 1990. The 4th edition took place in 1998 while the fifth was held in 2005. The **Sixth EC was conducted in 2013**.
- The **7th Economic Census (7th EC)** is being conducted by **Ministry of Statistics and Programme Implementation (MoSPI)** since 2019.
 - It is being carried out by the **MoSPI** in collaboration with **Common Service Centre (CSC)**, a Special Purpose Vehicle (SPV) under **Ministry of Electronics and IT**.
 - **For the first time**, an IT-based digital platform is being used for data capture, validation, report generation and dissemination.
 - The 7th EC will cover **all establishments** including household enterprises, engaged in **production or distribution of goods/services (other than for the sole purpose of own consumption)** in **non-farm agricultural and non-agricultural sectors**.

Air India Disinvestment

Why in News

- Recently, the government approved the highest price bid of Talace Pvt Ltd, a wholly owned subsidiary of Tata Sons Pvt. Ltd for **sale (Disinvesting) of 100% equity shareholding of Government of India in Air India (AI)**.
- The Tatas will own **100% stake in AI**, as also 100% in its international low-cost arm Air India Express and **50% in the ground handling joint venture, AI SATS**.

Key Points

Note:



Tata in the sky | Tata Sons will be the new owner of debt-laden national carrier Air India. The sale marks the return of Air India to the Tata group, a pioneer in aviation

1932: JRD Tata pilots Tata Airlines' inaugural flight from Karachi to Bombay

1946: Tata Airlines becomes a public company; renamed Air India Limited

1948: Govt. of India acquires a 49% stake in the carrier

1953: Government nationalises Air India

2007: Air India merges with Indian Airlines, that operates only domestic routes

2012: Govt. approves ₹30,000 crore bailout for Air India, which has over ₹67,000 crore in debt

May, 2018: Govt. attempts to sell 76% stake in Air India; attracts no bidders

Jan, 2020: Govt. launches a second attempt, this time offers 100% stake in Air India

Oct, 2020: Govt. confirms Tata Sons' subsidiary Talace Pvt. Ltd. as the winning bidder



➤ Reasons for Disinvestment:

- It is hoped that with AI passing into the private sector, its **operations and costs will get streamlined**, services on board will improve and basic services like wi-fi will also be made available.
- A strong international carrier in India will **give a boost to the large airports** built in Delhi, Hyderabad, Mumbai and Bengaluru which along with AI will be able to win back some of the tourist dollars from Indians travelling abroad who are currently travelling on foreign carriers.
- A successful turnaround of Air India **could also help the Indian economy as it is a well-established fact that aviation has a multiplier effect on the economy.**
- There is a **pressure on the government to raise resources** to support the economic recovery and meet expectations of higher outlays for healthcare.

➤ Significance:

- It will **save taxpayers money** from paying for daily losses of AI.
- It **will help push other tough decisions the government** is keen on taking.
- It will possibly **give the option of flying one more low-cost carrier** domestically.

Disinvestment

- Disinvestment means **sale or liquidation of assets by the government**, usually Central and state public sector enterprises, projects, or other fixed assets.
- **The government undertakes disinvestment** to **reduce the fiscal burden** on the exchequer, or to raise money for meeting specific needs, such as to bridge the revenue shortfall from other regular sources.
- **Strategic disinvestment** is the **transfer of the ownership and control of a public sector entity** to some other entity (mostly to a private sector entity).
 - Unlike the simple disinvestment, strategic sale implies a kind of privatization.

- The **disinvestment commission defines strategic sale as the sale of a substantial portion of the Government shareholding of a central public sector enterprises (CPSE) of upto 50%**, or such higher percentage as the competent authority may determine, along with transfer of management control.
- The **Department of Investment and Public Asset Management (DIPAM)** under the Ministry of Finance is the nodal department for the strategic stake sale in the Public Sector Undertakings (PSUs).
- Strategic disinvestment in India has been guided by the basic economic principle that the **government should not be in the business to engage itself in manufacturing/producing goods and services** in sectors where competitive markets have come of age.
 - The economic potential of such entities may be better discovered in the hands of the strategic investors due to various factors, **e.g. infusion of capital, technology up-gradation and efficient management practices etc.**

DIFFERENT APPROACHES TO DISINVESTMENT

- **Minority Disinvestment:** A minority disinvestment is one such that, at the end of it, the government retains a majority stake in the company, typically greater than 51%, thus ensuring management control.
- **Majority Disinvestment:** A majority disinvestment is one in which the government, post disinvestment, retains a minority stake in the company i.e. it sells off a majority stake.
- **Complete Privatisation:** Complete privatisation is a form of majority disinvestment wherein 100% control of the company is passed on to a buyer.

PM MITRA Parks

Why in News

Recently, the Union Cabinet approved the setting up of **seven Mega Integrated Textile Region and Apparel (PM MITRA) Parks** at an outlay of Rs. 4,445 crore.

- The MITRA park **aims to** integrate the entire textile value chain from spinning, weaving, processing/dyeing, printing to garment manufacturing at one location.

Key Points

- **About:**

Note:

- PM MITRA park **will be developed by a Special Purpose Vehicle** which will be owned by the Central and State Government and in a **Public Private Partnership (PPP) Mode**.
- Each MITRA Park will have an **incubation centre, common processing house and a common effluent treatment plant** and other textile related facilities such as design centres and testing centres.
- The **Master Developer** will not only develop the Industrial Park but also maintain it during the concession period.
- **Funding:**
 - Under the scheme, the **centre will provide development capital support** for the development of common infrastructure of Rs 500 crore for each **greenfield MITRA park** and upto Rs 200 crore for each **brownfield park**.
 - Greenfield describes a completely new project that has to be executed from scratch, while a brownfield project is one that has been worked on by others.
- **Eligibility for Incentives:**
 - **An additional Rs 300 crore** will be provided as **Competitiveness Incentive Support** for the early establishment of textiles manufacturing units in each of these parks.
 - **Investors who set up “anchor plants” that employ at least 100 people** will be eligible for incentives of **upto Rs 10 crore every year** for upto three years.
- **Significance:**
 - **Reduce Logistics Cost:** It will **reduce logistics cost and strengthen the value chain** of the textile sector to make it globally competitive.
 - High logistics costs are considered a key hurdle to India’s goal of boosting textile exports.
 - India had witnessed disruption in supply of key raw materials from China in the recent past as global supply chains got affected during the pandemic.
 - **Generate Employment:**
 - Each MITRA park is **expected to directly generate 1 lakh jobs** and indirectly generate a further 2 lakh jobs.
 - **Attract FDI:**
 - The parks are crucial to attract **Foreign Direct Investment (FDI)**.

- From April 2000 to September 2020, India’s textile sector received Rs 20,468.62 crore of FDI, which is just 0.69% of the total FDI inflows during the period.

➤ **Other Related Initiatives:**

- The **Production Linked Incentive Scheme** for man-made fibre segment (MMF) apparel, MMF fabrics and ten products of technical textiles for five years has been approved.
- A **National Technical Textiles Mission** has already been launched to promote research and development in that sector.

Nobel Prize for Chemistry, 2021

Why in News

The **2021 Nobel Prize in Chemistry** was awarded to **Benjamin List and David MacMillan** for the development of **asymmetric organocatalysis**.

- **Last year**, the honour went to **Frenchwoman Emmanuelle Charpentier and American Jennifer Doudna**, for developing the gene-editing technique known as **CRISPR-Cas9 - DNA snipping “scissors”**.
- **Nobel prizes in physics and medicine** for 2021 have already been announced.

Key Points

➤ **About the Development:**

- They have developed a **new and ingenious tool for molecule building: organocatalysis**.
 - Many research areas and industries are **dependent on chemists’ ability to construct molecules** that can form elastic and durable materials, store energy in batteries or inhibit the progression of diseases. This **work requires catalysts**.
 - According to researchers, there were **just two types of catalysts available: metals and enzymes**. **Catalysts** are any substance that **increases the rate of a reaction** without itself being consumed.
- In 2000, they, independent of each other, **developed a third type of catalysis**. It is called **asymmetric organocatalysis** and **builds upon small organic molecules**.

Note:



➤ **Significance:**

- Its uses include **research into new pharmaceuticals** and it has also **helped make chemistry greener**.
- Both these sets of **catalysts (metals and enzymes) had limitations**.
- **Heavier metals are expensive**, difficult to mine, and toxic to humans and the environment.
 - Despite the best processes, **traces remained in the end product**; this posed problems in situations where compounds of very high purity were required, like in the manufacture of medicines.
 - Also, metals **required an environment free of water and oxygen**, which was difficult to ensure on an industrial scale.
- **Enzymes** on the other hand, **work best when water is used** as a medium for the chemical reaction. But that is **not an environment suitable for all kinds of chemical reactions**.

➤ **Organocatalysis:**

- Organic compounds are **mostly naturally-occurring substances**, built around a framework of carbon atoms and usually containing hydrogen, oxygen, nitrogen, sulphur, or phosphorus.
- **Life-supporting chemicals like proteins**, which are long chains of **amino acids** (carbon compounds containing nitrogen and oxygen) **are organic**.
- **Enzymes are also proteins**, and therefore, organic compounds. These are responsible for many essential biochemical reactions.
- **Organocatalysts allow several steps** in a production process to be performed in an unbroken sequence, considerably reducing waste in chemical manufacturing.
- Organocatalysis **has developed at an astounding speed since 2000**. Benjamin List and David MacMillan remain leaders in the field, and have shown that **organic catalysts can be used to drive multitudes of chemical reactions**.
 - Using these reactions, researchers can now more efficiently construct anything from new pharmaceuticals to molecules that can capture light in solar cells.

➤ **Asymmetric Organocatalysis:**

- The process called asymmetric organocatalysis, has **made it much easier to produce asymmetric**

molecules - chemicals that exist in two versions, where one is a mirror image of the other.

- **Chemists often just want one of these mirror images** - particularly when producing medicines - but it has been difficult to find efficient methods for doing this.
- Some molecules with mirror versions have different properties. An example is the **chemical called carvone**, which has one form that smells like spearmint and a counterpart that smells like the herb, dill.
- **Different versions of the same molecule might have different effects** when ingested. Then it becomes important to be able to make only the mirror image of a drug that has the desired physiological effect.

Pandora Papers Leak

Why in News

Recently, several prominent Indian names have been included in the **Pandora Papers leak**.

- There are over **300 Indian names** in the leak, including over **60 prominent ones**.
- Pandora Papers are **11.9 million leaked files from 14 global corporate services firms** which set up about 29,000 **off-the-shelf companies and private trusts**.

Trust

➤ **About:**

- A trust can be described as a **fiduciary arrangement where a third party, referred to as the trustee, holds assets** on behalf of individuals or organisations that are to benefit from it.
- A trust is **not a separate legal entity, but its legal nature comes from the 'trustee'**. At times, the 'settlor' appoints a 'protector', who has the powers to supervise the trustee, and even remove the trustee and appoint a new one.

➤ **Indian Law:**

- The **Indian Trusts Act, 1882**, gives legal basis to the concept of trusts. Indian laws **recognise the trust as an obligation of the trustee** to manage and use the assets settled in the trust for the benefit of 'beneficiaries'. India also recognises offshore trusts.

Note:



Off-the-Shelf Company

- An 'off-the-shelf' company or **ready-made company** is a **pre-registered limited company**, however, it has never been traded. An 'off-the-shelf' company is **ready for immediate use** and can be purchased after paying a certain cost for it.

Key Points➤ **About:**

- The Pandora Papers **reveal how trusts are used as a vehicle in conjunction with offshore companies set up for the sole purpose of holding investments** and other assets by business families and ultra-rich individuals.
 - The trusts can be set up in known **tax havens which offer relative tax advantages**.
 - **For Example:** Samoa, Belize, Panama, and the British Virgin Islands.
- They reveal **how the rich set up complex multi-layered trust structures for estate planning**, in jurisdictions which are loosely regulated for tax purposes, but characterised by air-tight secrecy laws.
- Businesses have created a **new normal** after countries have been forced to tighten the laws on such offshore entities with rising concerns of **money laundering, terrorism funding, and tax evasion**.
 - The **Panama and Paradise Papers** dealt largely with offshore entities set up by individuals and corporations respectively.

➤ **Reasons for Setting up Trusts Overseas:**

- **Secrecy:**
 - Overseas trusts offer remarkable secrecy because of **stringent privacy laws** in the jurisdiction they operate in.
- **Maintain a Degree of Separation:**
 - Businesspersons set up private offshore trusts to project a degree of **separation from their personal assets**.
- **Avoid Tax in the Guise of Planning:**
 - Businesspersons avoid their Non-resident Indians (NRI) children being taxed on income from their assets by transferring all the assets to a trust.
- **Prepare for Estate Duty Eventuality:**
 - There is a pervasive **fear that estate duty**, which was abolished back in 1985 will likely be re-introduced soon.

- Setting up trusts in advance will **protect the next generation from paying the death/ inheritance tax**, which was as high as 85% in the more than three decades after its enactment (The Estate Duty Act, 1953).

○ **Flexibility in a Capital-Controlled Economy:**

- India is a **capital-controlled economy**. Individuals can invest only USD 2,50,000 a year under the **Reserve Bank of India's Liberalised Remittance Scheme (LRS)**.
- To get over this, businesspersons have turned to NRI, and under **Foreign Exchange Management Act, 1999**, NRIs can remit USD 1 million a year in addition to their current annual income, outside India.
 - Further, the tax rates in overseas jurisdictions are much lower than the 30% personal Income-Tax rate in India

➤ **Grey Areas of Indian Taxation:**

- There are certain **grey areas of taxation where the Income-Tax Department is in contest with offshore trusts**.
- After the **Black Money (Undisclosed Foreign Income and Assets) and Imposition of Tax Act, 2015**, came into existence, resident Indians have to report their foreign financial interests and assets.
 - **NRIs** are not required to do so.
- The I-T Department may consider an offshore trust to be a resident of India for taxation purposes if the trustee is an Indian resident.
- In cases where the trustee is an offshore entity or an NRI, if the tax department **establishes the trustee is taking instructions from a resident Indian, then too the trust may be considered a resident of India** for taxation purposes.

➤ **Government's Initiatives:**

- **Legislative Action:**
 - **The Fugitive Economic Offenders Act, 2018**
 - **The Central Goods and Services Tax Act, 2017**
 - **The Benami Transactions (Prohibition) Amendment Act, 2016**
 - **The Black Money (Undisclosed Foreign Income and Assets) and Imposition of Tax Act, 2015**
 - **Prevention of Money Laundering Act, 2002**
- **International Cooperation:**
 - **Double Taxation Avoidance Agreements (DTAAs):**

Note:



- India is proactively engaging with foreign governments with a view to facilitate and enhance the exchange of information under **Double Taxation Avoidance Agreements (DTAAs)/Tax Information Exchange Agreements (TIEAs)/Multilateral Conventions**.
- **Automatic Exchange of Information:**
 - India has been a leading force in the efforts to forge a **multilateral regime for proactive sharing of financial information** known as Automatic Exchange of Information which will greatly assist the global efforts to combat tax evasion.
- **Foreign Account Tax Compliance Act of USA:**
 - India has entered into an information sharing agreement with the USA under the act.

India's Ethanol Plan and Food Security

Why in News

India's ambitious plan to cut the use of fossil fuels by promoting **ethanol** derived from rice, corn and sugar could **undermine its food security**.

Key Points

➤ About:

- **Ethanol:** It is an agro-based product, mainly produced from a by-product of the sugar industry, namely molasses.
 - It is one of the principal **biofuels**, which is naturally produced by the fermentation of sugars by yeasts or via petrochemical processes such as **ethylene hydration**.
- **Ethanol Blending Programme (EBP):** It **aims** at **blending ethanol with petrol**, thereby bringing it under the category of biofuels and saving millions of dollars by cutting fuel imports and decreasing carbon emissions.
- **Blending Target:** The Government of India has advanced the target for **20% ethanol blending in petrol** (also called E20) to 2025 from 2030.
 - Currently, 8.5% of ethanol is blended with petrol in India.

➤ Associated Issues:

- **National Policy on Biofuel:** The new ethanol blending target primarily focuses on food-based feedstocks, in light of grain surpluses and wide availability of technologies.
 - The blueprint is a departure from the **2018 National Policy on Biofuels**, which prioritized grasses and algae; cellulosic material such as bagasse, farm and forestry residue; and, items like straw from rice, wheat and corn.
- **Risk of Hunger:** The food grains meant for the impoverished are being **sold to distilleries at prices cheaper** than what states pay for their public distribution networks.
 - **Competition** between the **distilleries and the public distribution system** for subsidized food grains could have adverse consequences for the rural poor and expose them to enhanced risk of hunger.
 - India still ranks **94th on the Global Hunger Index 2020** comprising 107 nations.
 - The **Food and Agriculture Organization (FAO)** estimates that about 209 million Indians, or about 15% of its population, were undernourished between 2018 and 2020.
 - The **Covid-19 pandemic** is also pushing more people into poverty, dealing a blow to decades of progress.
- **Cost:** Production of biofuels requires land, this impacts the cost of biofuels as well as that of food crops.
- **Water use:** Massive quantities of water are required for proper irrigation of biofuel crops as well as to manufacture the fuel, which could strain local and regional water resources.
- **Efficiency:** Fossil Fuels produce more energy than some of the biofuels. E.g. 1 gallon of ethanol produces less energy as compared to 1 gallon of gasoline (a fossil fuel).
- **Government's Arguments:**
 - **Enough Stockpiles of Grains:** The push for ethanol poses no threat to India's food security because the government has enough stockpiles of grains at warehouses of the state-run **Food Corporation of India (FCI)**.
 - State reserves stood at 21.8 million tons of rice, against a requirement of 13.54 million tons.

Note:



- **Capacity Creation:** The long-term planning of the government involves the **creation of sufficient capacities** so that half of the requirement of 20% blending is catered by grains, predominantly maize and the rest by sugar cane.
- **Benefit of Farmers:** The blending plan would benefit corn and rice farmers, while addressing the issue of surplus.

Sovereign Credit Ratings

Why in News

Ratings agency Moody's has changed India's sovereign rating outlook to **"Stable" from "Negative"** and affirmed the country's rating at **"Baa3"**.

- "Baa3" rating is the lowest investment grade, just a notch above junk status (Speculative).

SOVEREIGN RATINGS FOR INDIA

Agency	Rating	Meaning	Outlook
Moody's	Baa3	Lowest investment	Stable
S&P	BBB-	Lowest investment	Stable
Fitch	BBB-	Lowest investment	Negative

Source: Respective agencies

RATIONALE FOR CHANGE

- Receding financial risks to allow growth to support debt stabilisation
- An economic recovery is underway
- Downside risks to growth from subsequent coronavirus infection waves mitigated by rising vaccination rates
- Selective use of restrictions on economic activity, as seen during the second wave

Key Points

- **Sovereign Credit Rating (SCR):**
 - SCR is an **independent assessment of the creditworthiness of a country or sovereign entity**.
 - It can **give investors insights into the level of risk associated with investing in the debt of a particular country**, including any political risk.

- In addition to issuing bonds in external debt markets, another common motivation for countries to obtain a sovereign credit rating is **to attract Foreign Direct Investment (FDI)**.
- At the request of the country, a credit rating agency will evaluate its economic and political environment to assign it a rating.
 - Moody's considers a Baa3 or higher rating to be of investment grade, and a rating of Ba1 and below is speculative.
 - S&P gives a BBB- or higher rating to countries it considers investment grade, and grades of BB+ or lower are deemed to be speculative or "junk" grade.

➤ Economic Survey's Stance on SCRs:

- India has consistently been **rated below expectation as compared to its performance** on various parameters **during the period 2000-20**.
 - India remained a clear outlier on several parameters such as **GDP growth rate, inflation, general government debt, political stability, rule of law, control of corruption, investor protection, Ease Of Doing Business, sovereign default history, etc.**
- India's ability to pay can be gauged not only by the extremely low foreign currency-denominated debt of the sovereign **but also by the comfortable size of its foreign exchange reserves** that can pay for the short term debt of the private sector as well as the entire stock of India's sovereign and non-sovereign external debt.
- India's **fiscal policy should be guided by considerations of growth and development** rather than be restrained by "biased and subjective" sovereign credit ratings.
- It recommended that **developing economies must come together to address this bias** and subjectivity inherent in sovereign credit ratings methodology to prevent exacerbation of crises in future.

Credit Rating

- A credit rating is a quantified assessment of the **creditworthiness of a borrower** in general terms or with respect to a particular debt or financial obligation.
- A credit rating can be assigned to any entity that seeks to borrow money—an individual, corporation, state or provincial authority, or sovereign government.

Note:



- A **rating agency** is a company that assesses the financial strength of companies and government entities, especially their ability to meet principal and interest payments on their debts.
- **Fitch Ratings, Moody's Investors Service and Standard & Poor's (S&P)** are the big 3 international credit rating agencies controlling approximately 95% of global ratings business.
- In **India**, there are six credit rating agencies registered under **Securities and Exchange Board of India (SEBI)** namely, **CRISIL, ICRA, CARE, SMERA, Fitch India and Brickwork Ratings**.

World Bank GDP Projection for India

Why in News

According to the **World Bank**, **India's economy**, South Asia's largest, is **expected to grow by 8.3% in the fiscal year 2021-22**.

- The **South Asia economic focus report** projects the **region to grow by 7.1% in 2021 and 2022**. It is a **biannual economic update** presenting recent economic developments and a near-term economic outlook for South Asia.
- **Other Major reports** of the World bank include **Human Capital Index, World Development Report**. Recently, it has decided to **discontinue the practice of issuing 'Doing Business reports'**.

Key Points

- **GDP Growth:**
 - The projected growth (8.3%) is supported by an **increase in public investment** to bolster domestic demand and schemes like the **Production Linked Incentive (PIL)** to boost manufacturing.
 - **India's Gross Domestic Product (GDP) increased by 20.1% in the first quarter** (April-June quarter) of financial year **2021-22** in the backdrop of "a significant base effect, limited damage to domestic demand and strong export growth".
 - In the **first quarter of financial year 2020-21**, **GDP of India contracted by 24.4%** because of nationwide coronavirus lockdown.
 - The World Bank also observed that the **disruption**

in **India's economy during the second wave of the pandemic was limited**, compared to the first.

➤ On Economic Recovery:

- Economic recovery across various sectors in India **has been unequal**.
- **Manufacturing & construction sectors recovered steadily** in 2021 but low-skilled individuals, self-employed people, women and small firms were left behind.
- The extent of recovery in the financial year 2021-22 will **depend on how fast household incomes recover** and activity across informal sector & smaller firms normalises.
- India's economic prospects will be **determined by its pace of vaccination against Covid-19** and successful implementation of agriculture & labour reforms.

➤ Base Effect:

- Economic data such as 'GDP growth rate' are calculated on a year-on-year basis.
- Thus, a low growth rate in the previous year leads to a low base for the number in the current year.

➤ Associated Risks:

- Risks associated with the extent of recovery include-worsening of financial sector stress, slowdown in vaccination, higher **inflation** constraining **monetary-policy** support etc.

➤ Suggestions:

○ Medium Term Growth:

- It is **time to start rethinking policies about medium term growth** by learning lessons from Covid-19 like crisis.
- It's time to build **social protection and adopt greener policies**, because the next shock might be from the environment.
- To reduce inequality, it is very important to **integrate the informal sector and women into the economy**. So that should be also an important element of the medium term growth strategy.

○ Need for Regulatory Experimentation:

- The Bank called on **South Asian countries to lower entry barriers in the services sector**, creating more national and international competition while curbing the "emergence of new monopoly powers"; aiding labour market mobility and upgrading of skills; and enabling the absorption of these new services by households and firms.

Note:

Market Based Economic Despatch (MBED) Phase 1

Why in News

Recently, the **Ministry of Power** released Framework for Implementation of **Market Based Economic Despatch (MBED) Phase 1** to **reduce consumers' power purchase costs** by 5%.

- It is an important step in reforming electricity market operations and in moving towards the **"One Nation, One Grid, One Frequency, One Price"** framework. Its implementation is planned to start **with effect from 1st April 2022**.

Key Points

- **About:**
 - The **power demand by all states is proposed to be met through a central pool** allocating power at the optimal price.
 - **Currently**, power distribution companies (discoms) have been sourcing power from available sources within the states, invariably ending with a higher energy cost.
 - MBED will ensure that the **cheapest generating resources** across the country are dispatched to meet the overall system demand.
 - It will thus be a **win-win for both the distribution companies (discoms) and the generators** and ultimately result in significant annual savings for the electricity consumers.
 - MBED **aims to establish a uniform pricing framework** that prioritizes the least cost and most efficient generators while backing down more expensive ones, thereby creating a national merit order.
 - This is **in line with the draft National Electricity Policy (NEP) 2021**, which aims to more than double the penetration of short-term power markets by 2023–2024.
- **One Nation, One Grid, One Frequency:**
 - India has a **significant inter-regional power transmission capacity** through its complex interconnected power grid that requires close coordination between grid operators and power project generators across coal, gas, hydro, nuclear

and green energy sources run by the Centre, states, and the private sector.

- With **significant investments** over the last decade, the Indian power system has **achieved larger inter-regional transfers of electricity** and eliminated most constraints to realise its status as "One Nation, One Grid, One Frequency".
- It is the **state-owned Power System Operation Corp. Ltd (Posoco)**, which manages these complex functions through the National Load Despatch Centre (NLDC), Regional Load Despatch Centres (RLDCs) and State Load Despatch Centres (SLDCs).
 - The country has 33 SLDCs, five RLDCs (for the five regional grids that form the national grid) and one NLDC.
- Despite this enablement, the **existing electricity scheduling and despatch mechanisms in the country are siloed** and the day-ahead procedures result in **sub-optimal utilization of the country's generating resources**.
 - The **day-ahead market** is a financial market where market participants purchase and sell electric energy at financially binding day-ahead prices for the following day.

Global Minimum Tax Deal

Why in News

Recently, the **Organisation for Economic Cooperation and Development (OECD)** has announced that a **global deal to ensure big companies pay a Global Minimum Tax (GMT) rate of 15%** has been agreed by **136 countries (including India)**.

- The countries behind the accord together accounted for over **90% of the global economy**.

Key Points

- **About GMT:**
 - **Objective:** GMT is tailored to **address the low effective rates of tax shelled out by some of the world's biggest corporations**, including Big Tech majors such as Apple, Alphabet and Facebook.
 - These companies typically rely on complex webs of subsidiaries to Hoover profits out of major markets into **low-tax countries or Tax Havens** such as Ireland, the British Virgin Islands, the Bahamas, or Panama.

Note:





A look at how the global minimum tax will work

that go untaxed or lightly taxed in one of the world's tax havens, their home country will impose a top-up tax that will bring the rate to 15%

■ Out of the 140 countries involved, 136 supported the deal. Kenya, Nigeria, Pakistan and Sri Lanka have abstained for now

■ According to some developing countries and advocacy groups, the 15% rate is too low and leaves far too much potential tax revenue on the table

SOURCE: AP

- Countries will legislate a global minimum corporate tax rate of at least 15% for companies with annual revenues more than \$864 billion
- If companies have earnings

- GMT aimed at squeezing the opportunities for **MultiNational Enterprises (MNEs)** to indulge in profit shifting, ensuring they pay at least some of their taxes where they do business.
- **Proposed Two Pillar Solution:** The global minimum tax rate would **apply to overseas profits of multinational firms with \$868 billion in sales globally.**
 - **Pillar 1 (Minimum tax and subject to tax rules):** Governments could still set whatever local corporate tax rate they want, but if companies pay lower rates in a particular country, their home governments could “top up” their taxes to the 15% minimum, eliminating the advantage of shifting profits.
 - **Pillar 2 (Reallocation of additional share of profit to the market jurisdictions):** Allows countries where revenues are earned to tax 25% of the largest multinationals’ so-called excess profit – defined as profit in excess of 10% of revenue.
- **Timeline:** The agreement calls for countries to bring it into law in 2022 so that it **can take effect by 2023.**
 - Countries that have in recent years created national digital services taxes (For example, **equalization levy** by the Indian Government) will have to repeal them.
- **Impact:** The minimum tax and other provisions **aim to put an end to decades of tax competition between governments to attract foreign investment.**
 - The economists expect that the deal will encourage multinationals to repatriate capital

to their country of headquarters, giving a boost to those economies.

➤ **Need for GMT:**

- **Stopping Financial Diversion to Tax Havens:** Increasingly, income from intangible sources such as drug patents, software and royalties on intellectual property has migrated to Tax Havens, allowing companies to avoid paying higher taxes in their traditional home countries.
- **Mobilising Financial Resources:** With budgets strained after the Covid-19 crisis, many governments want more than ever to discourage multinationals from shifting profits – and tax revenues – to low-tax countries regardless of where their sales are made.
 - The OECD has estimated that the minimum tax will generate \$150 billion in additional global tax revenues annually.
- **Global Tax Reforms:** Since the inception of the **Base Erosion and Profit Shifting (BEPS) programme**, the proposal for GMT is another positive step towards global taxation reforms.
 - **BEPS** refers to tax avoidance strategies that exploit gaps and mismatches in tax rules to artificially shift profits to low or no-tax locations. OECD has issued **15 Action Items** to address this.
- **Associated Challenges:**
 - **Impending Sovereignty:** It impinges on the right of the sovereign to decide a nation’s tax policy.
 - A global minimum rate would essentially take away a tool countries use to push policies that suit them.
 - **Tight Timeline:** Also, bringing in laws by next year so that it can take effect from 2023 is a tough task.
 - **Question of Effectiveness:** The deal has also been criticised for lacking teeth: Groups such as Oxfam said the deal would not put an end to tax havens.

Organisation for Economic Cooperation and Development

- The OECD is **an intergovernmental economic organisation**, founded to stimulate economic progress and world trade.
- **Founded:** 1961.
- **Headquarters:** Paris, France.
- **Total Members:** 36.
- **India is not a member**, but a key economic partner.

Note:

Tax Havens in the United States

Why in News

Recently, a report informed how world leaders and some of the **world's wealthiest people hide their riches in the United States (US)**.

- The information on the report has drawn new scrutiny to the growth of **tax havens**.
- The release of the **Pandora Papers** has shed light on the financial dealings of the **elite and the corrupt and how they have used offshore accounts and tax havens** to shield trillions of dollars in assets.

Key Points

- **About:**
 - Along with the familiar offshore havens, the report also disclosed **secret accounts** in trusts scattered **throughout the United States**, including **81 in South Dakota, 37 in Florida and 35 in Delaware..**
- **Reasons for US' States Becoming Tax Havens:**
 - **No Rule against Perpetuity:**
 - Lawmakers in these states have abolished the **rule against perpetuities** which has **allowed the establishment of so-called dynasty trusts**, in which wealth can be passed from generation to generation while avoiding federal estate taxes.
 - A **perpetuity** is a type of annuity that lasts forever. The stream of cash flows continues for an infinite amount of time.
 - **Asset Protection Trusts:**
 - Some **states also allow asset protection trusts, which protect wealth from claims against creditors**. Such trusts can be attractive to wealthy lawyers and doctors as a way to shield their assets from malpractice claims.
 - **Trusts not Taxed:**
 - Tax avoidance is another big draw. While most states levy a tax on trust income, trusts established in Delaware are not subject to state income tax if the beneficiaries are not Delaware residents.
 - South Dakota **does not tax personal income, corporate income or capital gains**.
 - **Privacy Protection:**
 - South Dakota provides **extensive privacy**

protections for assets held in trusts, including the sealing of trust-related court documents and court proceedings.

- Delaware is a popular venue for registering **Limited Liability Companies (LLC)**, which can include shell companies set up specifically to hide assets or financial transactions. Delaware **law does not require the public disclosure of the names of LLC owners or members**.

Tax Havens

- **About:**
 - A tax haven is generally an **offshore country that offers foreign individuals and businesses little or no tax liability** in a politically and economically static environment.
 - **Characteristics of tax haven** countries generally include no or low-income taxes, minimal reporting of information, lack of transparency obligations, lack of local presence requirements, and marketing of tax haven vehicles.
 - Generally, tax havens **do not require residency or business presence** for individuals and businesses to benefit from their tax policies.
 - Individuals and corporations can **potentially benefit from low or no taxes charged** on income in foreign countries where loopholes, credits, or other special tax considerations may be allowed in accordance with the law.
- **Popular Tax Havens:**
 - A list of some of the most popular tax haven countries includes Andorra, the Bahamas, Bermuda, the British Virgin Islands, the Cayman Islands, the Channel Islands, the Cook Islands, Hong Kong, Mauritius, Lichtenstein, Monaco, Panama, British Virgin Islands, and the Cayman Islands.
- **Regulatory Oversight:**
 - Worldwide, there are some programs in place to increase the enforcement of offshore investment reporting.
 - The **Automatic Exchange of Financial Information** is one example, overseen by the **Organization for Economic Co-operation and Development (OECD)**.
- **Benefits of States:**
 - The trust industry can be **lucrative**, not just for

Note:



wealthy people and the companies that help them shield assets, but also for **government reserves**. The state governments are earning **high franchise taxes paid by trust companies**.

- A **franchise tax** is a state tax levied on certain businesses for the right to exist as a legal entity and to do business within a particular jurisdiction.

➤ **Steps Taken:**

- While some in the US Congress are calling for **tighter scrutiny of trust companies** working with

foreign clients, the response to the Pandora Papers in Delaware has thus far been muted.

- Federal officials, meanwhile, **have taken aim at some privacy protections with enactment earlier this year of the Corporate Transparency Act**.
 - It is **aimed at banning anonymous shell companies** that criminals and foreign officials have used to hide financial dealings and launder money, but it includes exemptions and exceptions.



Note:

International Relations

Highlights

- Tax Inspectors Without Borders Programme
- CICA 6th Foreign Ministers Meeting
- Rail Link between Nepal and India
- One Sun, One World, One Grid (OSOWOG)
- India's Path to Power: Foreign Policy
- China-Taiwan Issue

Tax Inspectors Without Borders Programme

Why in News

Recently, the **United Nations Development Programme** (UNDP) and the **Organisation for Economic Cooperation and Development** (OECD), have launched the **Tax Inspectors Without Borders (TIWB) Programme in Seychelles**.

- India has been chosen as the **Partner Administration** and has provided **Tax Expert** for this programme.

Key Points

- **About:**
 - It is expected to be of **12 months duration** where India aims to aid Seychelles in **strengthening its tax administration by transferring technical know-how and skills** to its tax auditors through sharing of best audit practices.
 - It focuses on **Transfer Pricing cases** of tourism and financial services sectors.
 - **Transfer Price**, also known as transfer cost, is the price at which related parties transact with each other, such as during the trade of supplies or labor between departments. Multinational companies can manipulate transfer prices in order to shift profits to low tax regions.
 - It is the **sixth TIWB programme** which India has supported by providing **Tax Expert**.
 - **Fifth TIWB programme** with India was launched in Bhutan in June 2021.
- **Tax Inspectors Without Borders Programme:**
 - TIWB is a **capacity-building programme**.

- It is a **joint OECD/UNDP initiative launched in July 2015** to strengthen developing countries' auditing capacity and multinationals' compliance worldwide.
- It deploys qualified experts in developing countries **across Africa, Asia, Eastern Europe, Latin America and the Caribbean** to help build tax capacity in the areas of audit, criminal tax investigations and the effective use of automatically exchanged information.
- TIWB assistance **has led to increased domestic resource mobilisation** in some of the least developed countries in the world.

CICA 6th Foreign Ministers Meeting

Why in News

Recently, the External Affairs Minister addressed the **6th Ministerial (2021) meeting of the Conference on Interaction and Confidence-Building Measures (CICA) in Nur-Sultan, Kazakhstan**.

- Last year, **Kazakhstan** assumed the **chairmanship of CICA**.
- The **5th Meeting** of the Ministers of Foreign Affairs of the CICA was **held in Beijing in the year 2016**.

Key Points

- **On Vaccine Maitri:**
 - India's internationalism (Vasudhaiva Kutumbakam) drives its **Vaccine Maitri**.
 - In January 2021, India launched the Vaccine Maitri (Vaccine Friendship) initiative – a major diplomatic effort to gift and supply made-in-India vaccines to low-income and developing countries globally.
- **On Cross Border Terrorism:**

Note:



- Advised the forum to strengthen collective resolve to tackle terrorism, arms trafficking, narcotics trade, and other forms of trans-national crimes.
- **On Multilateralism:**
 - **Asia** especially, but also **Africa and Latin America**, are **inadequately represented in United Nations' (UN) decision-making**.
 - The **limitations of the multilateral response to the Covid pandemic** were starkly evident. This only **makes a case for reformed multilateralism** more urgent with each passing day.
- **On Afghanistan:**
 - India underscored the importance of the Taliban regime meeting the expectations of the international community as elaborated in the **UN Security Council Resolution 2593**.
 - The **UNSC resolution 2593** unequivocally demands that Afghan territory not be used for sheltering, training, planning or financing terrorist acts; and specifically refers to terrorist individuals proscribed by the UN Security Council, including Lashkar-e-Taiba and Jaish-e-Mohammad.
- **On Connectivity:**
 - Connectivity must respect the most basic principle of international relations—**respect for sovereignty and territorial integrity**.
 - An apparent reference to India's objection to China's ambitious infrastructure development plans in Pakistan under the **China-Pakistan Economic Corridor (CPEC)**.
 - **CPEC, which connects Gwadar Port in Balochistan with China's Xinjiang province**, is the flagship project of Chinese President Xi Jinping's ambitious **Belt and Road Initiative (BRI)**.
 - India has protested to China over the CPEC as it is being laid through PoK.

About CICA

- The CICA is an **intergovernmental forum** aimed at strengthening regional cooperation and ensuring peace, security, and stability in Asia.
- The **idea of creating the organization** was first voiced by Kazakhstan's First President Nursultan Nazarbayev in 1992 at the 47th session of the **United Nations General Assembly**, while the **first CICA summit** was held in June of 2002.

- The **highest decision making organ** of CICA is the **Meeting of the CICA Heads of State and Government (Summit)**. The CICA Summit is **convened every four years** in order to conduct consultations, review the progress of, and set priorities for CICA activities.
 - The **Meeting of the Ministers of Foreign Affairs** is required to be held **every two years**.
- CICA **members include 27 Asian countries**, including Azerbaijan, Bahrain, China, Egypt, India, Iran, Israel, Russia, South Korea, and Turkey, **nine observer states**, and **five international organizations**.
- **India co-chairs two CICA CBMs** (Confidence Building Measures) on 'Development of Secure and Effective Systems of Transportation Corridors,' and 'Energy Security'.
- The CICA **Secretariat** has been located in **Almaty (Kazakhstan) since June 2006**.



Rail Link between Nepal and India

Why in News

The **first stretch of rail link between Nepal and India** is ready to resume on the neighbouring country's **first-ever**

Note:

broad gauge passenger service (Jainagar-Bijalpura-Bardibas railway project).

Key Points

- **Background:**
 - The rail link between Nepal and India has been popular since the early 20th century.
 - In 1937, the British had built a **narrow gauge line** to ferry cargo, mainly logs, from Nepal to India.
 - However, over time it became a popular passenger service before it was stopped in 2014 for conversion to broad gauge.



- **Revamped Project:**
 - **First Stretch:** A 34-km line between Bihar's Jainagar and Nepal's Kurtha, with the Hindu pilgrimage city of **Janakpur Dham (in Nepal)** in between.
 - **Second Stretch:** A 17 km of railway line from Kurtha to Bijalpura is also getting the finishing touches.
 - For the remaining portion up to Bardibas, land is being handed over to IRCON International Limited (a Government of India Undertaking).
 - **Cost of Project:** The construction cost of Rs 784 crore for the entire stretch is **being borne by India** in the form of a grant to Nepal.
 - **Managing Body:** The **Konkan Railway Corporation Limited** has got the contract for operations and maintenance of the line, and will train and develop manpower provided by Nepal, as per the bilateral understanding.
- **Electric Rail Track:**
 - MoUs have been signed between both the governments for laying an **electric rail track linking Kathmandu with Raxaul (Bihar)** in India.

➤ Freight Train Services:

- India and Nepal have signed a **Letter of Exchange (LoE)** to the India-Nepal **Rail Services Agreement (RSA) 2004**.
- It will allow all **authorized cargo train operators to utilize the Indian railway network** to carry Nepal's container and other freight - both bilateral between Indian and Nepal or third country from Indian ports to Nepal.

➤ Significance:

- The line is being seen as a small link to a larger plan of deepening India's ties with Nepal through the Railways, bypassing the influence of other neighbouring countries in this strategically vital region.

Other Connectivity Project

- **Inland Waterways:** India is looking to develop the **inland waterways for the movement of cargo**, within the framework of trade and transit arrangements, providing additional access to sea for **Nepal calling it linking Sagarmatha (Mt. Everest) with Sagar (Indian Ocean)**.
- **Petroleum Pipeline:** In 2019, India and Nepal had jointly inaugurated a cross-border petroleum products pipeline.
 - Pipeline carries **petroleum products** from **Motihari (Bihar) in India to Amlekhgunj in Nepal**.
 - This is South Asia's first cross-border petroleum products pipeline.

One Sun, One World, One Grid (OSOWOG)

Why in News

India and the UK are likely to announce a joint declaration on "one sun, one world, one grid" — or **OSOWOG** at the upcoming **Conference of Parties (COP26)**.

- The **UN Climate Change Conference, or COP26**, is scheduled to be held between 31st October and 12th November in Scotland.
- The concept of OSOWOG is what the British have called a **green grid**.
- The idea behind the concept is a **trans-national electricity grid supplying solar power** across the globe.

Note:

Key Points➤ **OSOWOG or the Green Grid:**

- The vision behind the **OSOWOG** is 'The Sun Never Sets' and is a constant at some geographical location, globally, at any given point of time.
- This is by far **one of the most ambitious schemes** undertaken by any country (India) and is of global significance in terms of sharing economic benefits.
- It has been taken up under the technical assistance program of the **World Bank**.
- The OSOWOG plan may also leverage the **International Solar Alliance (ISA)**, co-founded by India that has 80 countries as members.
- With India in the middle, the **solar spectrum can easily be divided into two broad zones**, which are:
 - Far East including countries like Myanmar, Vietnam, Thailand, Lao, Cambodia etc.
 - Far West covering the Middle East and the Africa Region.

➤ **Three Phases of the Plan:**

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

➤ **Significance of the Project:**

- **Help all the participating entities in attracting investments** in renewable energy sources as well as utilizing skills, technology and finances.
- **Lead to reduced project costs**, higher efficiencies and increased asset utilization for all the participating entities.
- **Resulting economic benefits would positively impact poverty alleviation** and support in mitigating water, sanitation, food and other socio-economic challenges.
- Allow **national renewable energy management centres in India to grow** as regional and global management centres.
 - This move, during the time of the **Covid-19 pandemic**, gives India the opportunity to be seen as taking a lead in evolving global strategies.

➤ **Issues with the Project:**

- **Geopolitics:**

- The project is seen as an Indian endeavour for world leadership but under **Covid-19 uncertainties**, the geopolitical implications of projects like OSOWOG are hard to decipher.

- The **mechanism of cost-sharing will be challenging**, given the varied priorities of participating countries depending on their socio-economic orders.

○ **Globalisation vs De-Globalisation:**

- The OSOWOG will turn out to be an **expensive, complex and very slow progress project**.

- The strategic benefits, if any, of having a single grid will be obliterated in the wake of any geopolitical problem.

- In India, the **major issue of renewable energy developers is to deal with different state governments** and hence, different laws and regulations.

- Further, the project also contradicts the **Prime Minister's Aatmanirbhar Bharat (self-dependent India) vision**, as it extends the reliance for a major strategic entity, energy supply, to other countries through this grid.

○ **Centralised vs Distributed Generation:**

- There is a difference in **voltage, frequency and specifications of the grid** in most regions.
- Maintaining grid stability with just renewable generation would be technically difficult.

India's Path to Power: Foreign Policy

Why in News

Recently, a report titled "India's Path to Power: Strategy in a World Adrift" highlighted **several foreign policy recommendations for India** in the present context.

- It underlined that **strategic autonomy, openness and inclusive economic growth** are the key guiding principles.

Key Points

- **Shift of Global Economy:** With the **rise of China and India**, and parallel **decline of European Union and US' hegemony**, the global balance of power is shifting towards Asia.

Note:



- This gets reflected in the **growing popularity of the Indo-pacific region among western countries.**
- **Reinforcing Multipolar World Order:** There is an increasing trend towards **multipolarity** in Asia and the world. It is in India's interest to reinforce this trend.
 - In this context, India should **re-orient its foreign policy** towards mobilising the larger constituency of developing countries and emerging economies with which it has convergent interests.
 - Such interests should be advanced through **reinforcing multilateral institutions and processes.**
- **Maintaining Strategic Autonomy:** Strategic autonomy must go in parallel with the further strengthening of partnerships with the **US, Japan and Europe**, which share India's security concerns and development prospects.
 - Also, India-Russia relations will continue to be relevant in dealing with issues in the region and in responding to global challenges.
- **Keeping Up With Globalisation:** Even though in some respects, globalisation may have stalled, in the past and in the coming future, it will be **driven by rapid technological advancement.**
 - Therefore, in order to enhance its economic prospects and improve the welfare of its people, India **must maintain an outward orientation of its economy.**
- **Managing the Neighbourhood First:** If India wants to play an expanded regional & global role and become a **net security provider**, it needs to better manage the threats and opportunities emanating from neighbouring countries.
 - In this context, India should deal with the **Chinese challenge.**
 - This is because China acknowledges that **India is the only country in the neighbourhood** with the comparable area, population, history, manpower, and scientific and technological capabilities, who can surpass it.
 - It also asserted that **China-Pakistan collusion** demands India to adopt a politically guided strategic approach.
- **Preventing Domestic Politics Affecting Foreign Policy:** There have been several instances where many countries have cited reservations to various domestic policies of India. **Citizenship Amendment Act, 2019** is an example.

- In this context, domestic policies should reflect inclusivity, reducing inequalities, and delivering core responsibilities of health, education and public security to all its citizens.
- Also, there is a need to realise that **India's innate cosmopolitanism is derived from its extraordinary diversity.**

China-Taiwan Issue

Why in News

China-Taiwan relationship has been strained for years, but the latest escalation comes from a series of air incursions by the Chinese military.

- While a **country's airspace is internationally recognised by law**, its **air defence zone is a self-declared region** which is monitored by the country's military for defence purposes.



Key Points

- **Conflict between China and Taiwan (Background):**
 - China and Taiwan **separated amid civil war in 1949** and **China considers Taiwan part of its territory** to be taken control of by force if necessary.
 - But **Taiwan's leaders say that Taiwan is a sovereign state.**
 - After decades of hostile intentions and angry rhetoric, relations between China and Taiwan **started improving in the 1980s. China put forward a formula, known as "one country, two systems"**, under which Taiwan would be given significant autonomy if it accepted Chinese reunification.
 - In Taiwan, the offer was rejected, but the **government did relax rules** on visits to and investment in China.

Note:



- There were also limited talks between the two sides' unofficial representatives, though Beijing's insistence that **Taiwan's Republic of China (ROC) government is illegitimate** prevented government-to-government contact.
- China's implementation of a **national security law in Hong Kong** in 2020 was seen by many as yet another sign that Beijing was becoming significantly more assertive in the region.

➤ **China's Concerns:**

- **One China Policy Challenged:**
 - This means that countries seeking diplomatic relations with the People's Republic of China (PRC, Mainland China) must break official relations with the Republic of China (ROC, Taiwan) and vice versa.
 - The existent diplomatic relationship of the Taiwan and its membership in intergovernmental organizations challenges this policy:
 - The ROC, Taiwan has diplomatic relations with 15 countries and substantive ties with many others such as Australia, Canada, EU nations, Japan and New Zealand.
 - Besides, Taiwan has full membership in 38 intergovernmental organizations and their subsidiary bodies, including the **World Trade Organization, Asia-Pacific Economic Cooperation, Asian Development Bank** and Central American Bank for Economic Integration.
- **Agreements/Exercises Countering China:**
 - Recently, the US has announced a new trilateral

security partnership for the Indo-Pacific, between **Australia, the UK and the US (AUKUS)**, which is also seen as an effort to counter China.

- **Malabar Exercise** (US, Japan, India and Australia) is also a major step towards building a sustainable Indo-Pacific coalition thereby addressing the massive strategic imbalance generated by an economically and militarily powerful China.
- **Strategic and Defense Support to Taiwan by US:**
 - Taiwan has sought to improve its defenses with the purchase of US weapons, including upgraded F-16 fighter jets, armed drones, rocket systems and Harpoon missiles.
 - A US aircraft carrier group led by the warship Theodore Roosevelt has entered the **South China Sea** to ensure freedom of the seas, and build partnerships that foster maritime security.

➤ **India's Stand on the Issue:**

- Since 1949, India has **accepted the "One China" policy** that accepts Taiwan and Tibet as part of China.
- However, India **uses the policy to make a diplomatic point**, i.e., if India believes in "One China" policy, **China should also believe in a "One India" policy**.
- Even though India has stopped mentioning its adherence to One China policy in joint statements and official documents since 2010, its engagement with Taiwan is still restricted due to the framework of ties with China.
- India and Taiwan **do not have formal diplomatic relations** but since 1995, both sides have maintained representative offices in each other's capitals that function as de facto embassies.



Note:



drishti

Science and Technology

Highlights

- *First Malaria Vaccine: Mosquirix*
- *New Biodegradable Polymer*
- *Intermediate-Mass Black Holes*
- *Quantum Key Distribution*
- *6G Technology*
- *Katol Meteorite*
- *Mission Lucy: NASA*
- *Nobel Prize in Physics, 2021*
- *Nobel Prize for Physiology/Medicine, 2021*
- *Astro Robot*
- *Semi-Cryogenic Propellant Tank*

First Malaria Vaccine: Mosquirix

Why in News

Recently, the **World Health Organisation (WHO)** endorsed the world's first Malaria Vaccine in the hope that it will spur stalled efforts to curb the spread of the parasitic disease.

- **Malaria** is a life-threatening disease caused by parasites that are transmitted to people through the bites of infected female *Anopheles* mosquitoes. It is preventable and curable.

Key Points

- **About:**
 - **RTS,S/AS01**, trade name **Mosquirix**, is an injectable vaccine targeting ***P. falciparum***, the most prevalent malaria strain in Africa. It is the **first and only vaccine to show partial protection in young children**.
 - It was developed by British drugmaker GlaxoSmithKline in 1987.
 - The active substance in Mosquirix is **made up of proteins found on the surface of the *Plasmodium falciparum* parasites (PFP)**.
 - **RTS,S aims to trigger the immune system to defend against the first stages of malaria** when the PFP enters the human host's bloodstream through a mosquito bite and infects liver cells.
 - It also helps **protect against infection of the liver with the *Hepatitis B* virus**.

➤ Potency:

- The **vaccine's effectiveness at preventing severe cases of malaria in children is only around 30%**, but it is the only approved vaccine.
 - The **European Union's** drugs regulator approved it in 2015, saying its benefits outweighed the risks.
- Its **side effects are rare**, but sometimes include a **fever that may result in temporary convulsions**.

➤ Challenges:

- **Inconvenient:** A child must receive four injections before age 2, sometimes at intervals that do not match the routine vaccine schedules for most other diseases.
- **Partly Effective:** Testing in more than 10,000 African children from 2009 to 2014 showed that, even after four doses, the vaccine prevented only about 40% of detectable malaria infections.
- **Not Long Lasting:** It is unclear how long even those relatively low levels of protection last; previous trials followed vaccinated children for four years. Experts also worry that parents whose children are vaccinated will become less vigilant about using mosquito nets, and less likely to seek medical care when their children develop fevers.
- **Develop Resistance:** The vaccine reduced the occurrence of severe malaria by about 30%, and the occurrence of **severe anemia** - a complication that often kills children - by about 60%. It did not protect well against parasite strains that were poor genetic matches, raising a concern that, over time, parasites could evolve resistance to the vaccine as they have to drugs.

Note:



➤ **Burden of Malaria:**

○ **Global:**

- In 2019, there were an estimated 229 million cases of malaria worldwide, and the estimated number of malaria deaths that year stood at 4,09,000.
- **Children** aged under 5 years are the most vulnerable group affected by malaria in 2019, they accounted for **67% (2,74,000) of all malaria deaths worldwide.**

○ **India:**

- In 2019, India had an estimated 5.6 million cases of malaria compared to about 20 million cases in 2020, according to WHO.

➤ **Countries that Eliminated Malaria:**

- Over the last two decades, 11 countries have been certified by the WHO Director-General as malaria-free: **United Arab Emirates (2007), Morocco (2010), Turkmenistan (2010), Armenia (2011), Sri Lanka (2016), Kyrgyzstan (2016), Paraguay (2018), Uzbekistan (2018), Algeria (2019), Argentina (2019), and El Salvador (2021).**
- Countries that have achieved at least 3 consecutive years of zero indigenous cases of malaria are eligible to apply for the WHO certification of malaria elimination.

high water-solubility, and low barrier properties, they are not preferred.

- **Guar Gum, and Chitosan** are polysaccharides extracted from guar beans and shells of crab and shrimps.

➤ **Properties of the Film:**

- **High water stability, high mechanical strength** as well as **excellent resistance** towards harsh environmental conditions.
- The fabricated cross-linked film is **not easily soluble in water.** As per scientists, it did not dissolve even after 240 hours.
- It is **highly water repellent or hydrophobic** because of its high contact angle of 92.8°.
- **Water vapor permeability is low** as compared to the film made only from chitosan.
- **Vapour permeability** is a material's ability to allow a vapour (such as water vapour or, indeed any gas) to pass through it.

➤ **Significance:**

- It is likely to **help effectively deal with the menace of piling non-biodegradable packaging materials**, including water and soda bottles.
- Normally, Polymers have a **wide variety of industrial and commercial uses** but it is not biodegradable and hence poses a **major challenge to the environment and earth's ecosystem.**

New Biodegradable Polymer

Why in News

Recently, scientists have developed a **New biodegradable polymer**, using **Guar Gum, and Chitosan**, which has high potential for packaging material.

Key Points:

➤ **About:**

- It is a **guar gum-chitosan composite film** which is a **cross-linked polysaccharide** developed with the help of **solution casting method** (a simple technique to make polymer films). It overcomes the challenges of polysaccharides.
- **Polysaccharides** is one of the **biopolymers with high potential for use in synthesis of packaging material.**
- However, due to some drawbacks of polysaccharides, such as low mechanical properties,

Intermediate-Mass Black Holes

Why in News

Scientists from Chennai Mathematical Institute and Ors. have analysed data from the **LIGO-VIRGO observatories** and estimated the fraction of the **binary Black Hole mergers** detected so far that show potential to **form Intermediate-Mass Black Holes.**

Key Notes

➤ **About Black Hole Mergers:**

- It is the phenomenon of **merging of two or more black holes.**
- Indian scientists have already observed **merger of three supermassive black holes.**
- Merging of two or more black holes results in

Note:

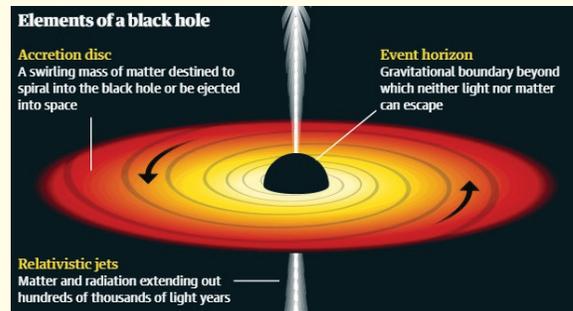
different types of black holes. For eg, **Intermediate-Mass Black Holes** and **Binary Black Holes**.

- **Intermediate-Mass black hole (IMBH)** is a class of black hole with mass in the range 10^2 – 10^5 solar masses: significantly **more than stellar black holes but less than supermassive black holes**.
- One of the **theories of intermediate mass black hole formation** has to do with ‘**hierarchical growth**’.
- That is, if the black holes exist among a dense cluster of stars, the remnant (black hole) of a merger can pair up with another black hole close by to form a binary. This can eventually merge to form a second remnant which is more massive. This process, happening in a hierarchical manner, **can explain intermediate mass black hole formation**.
- **Gravitational Waves (GW)** are created when **two black holes orbit each other and merge**.
- **Kicks in Mergers:**
 - “Kicks” is the **opposite momentum acquired by a remnant black hole during mergers**. It is a reaction to **Gravitational Waves taking away energy and linear momentum** during mergers.
 - These kicks can be quite large, giving it a **velocity of up to 1000 kilometres per second**.
 - If this **kick velocity is above the escape velocity of the star cluster in which the black hole is formed, it escapes from the environment and moves out**. This hinders further hierarchical mergers.
 - The **extent of the kick received** by the remnant can be calculated from the **masses of the merging black holes and their spin**. The kick estimates help understand **which mergers have the possibility of forming Intermediate-Mass black holes**.

Black Hole

- It refers to a **point in space where the matter is so compressed** as to create a **gravity field** from which **even light cannot escape**.
- The **concept was theorized by Albert Einstein** in 1915 and the **term ‘black hole’ was coined by John Archibald Wheeler**.
- Black holes **form** when a **massive star undergoes a supernova explosion** towards the end of its lifetime. The black hole forms from the remnants of the explosion.

- It is not necessary that a star at the end of its lifetime will become a black hole. As stars reach the ends of their lives, most will inflate, lose mass, and then cool to form **white dwarfs**. But the largest of them, those **at least 10 to 20 times as massive as our own sun**, are destined to **become either super-dense neutron stars or so-called stellar-mass black holes**.
- Usually, the black holes belong to **two categories**:
 - One category is of **Stellar black holes** ranges **between a few solar masses and tens of solar masses**. These are thought to **form when massive stars die**.
 - The other category is of **supermassive black holes**. These range from **hundreds of thousands to billions of times that of the Sun** from our Solar system. These are thought to form when two or more black holes merge.
- In April 2019, the scientists at the Event Horizon Telescope Project released the **first-ever image of a Black Hole** (more precisely, of its shadow).



Quantum Key Distribution

Why in News

Recently, the government has inaugurated **C-DOT’s (Centre for Development of Telematics)** Quantum Communication Lab and unveiled the indigenously developed **Quantum Key Distribution (QKD) solution**.

- The government has also allocated **USD 1 billion for the National Mission on Quantum Technologies and Applications** spanning over a period of 8 years.

Key Points

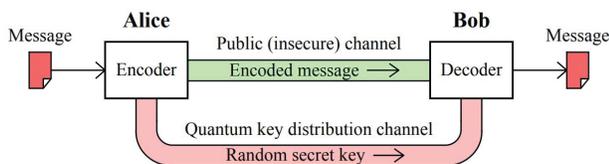
- **About:**
 - QKD, also called **Quantum Cryptography**, is a mechanism to develop secure communication.

Note:

- It provides a way of **distributing and sharing secret keys** that are necessary for cryptographic protocols.
 - **Cryptography** is the **study of secure communications techniques** that allow only the sender and intended recipient of a message to view its contents.
 - **Cryptographic algorithms and protocols** are necessary to keep a system secure, particularly when communicating through an untrusted network such as the Internet.
- The **conventional cryptosystems** used for data-encryption **rely on** the complexity of **mathematical algorithms**, whereas the security offered by **quantum communication is based on the laws of Physics**.

➤ Mechanism:

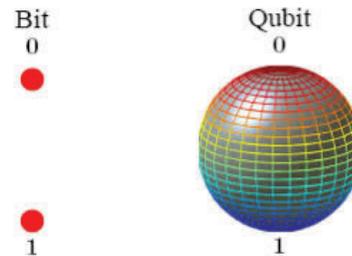
- In the QKD, **encryption keys are sent as 'qubits' (or quantum bits) in an optical fibre**.
 - **Optical fibers** are capable of transmitting more data over longer distances and faster than other mediums. It works on the principle of **total internal Reflections**.
- QKD implementation requires **interactions between the legitimate users**. These interactions **need to be authenticated**. This can be achieved through various cryptographic means.
 - QKD allows two distant users, who do not share a long secret key initially, to produce a common, random string of secret bits, called a **secret key**.
- The end-result is that QKD can **utilize an authenticated communication channel and transform it into a secure communication channel**.
- It is designed in a way that **if an illegitimate entity tries to read the transmission, it will disturb the qubits** – which are encoded on photons.
- This will generate transmission errors, leading to legitimate **end-users being immediately informed**.



➤ Qubits:

- **Conventional computers process information in 'bits' or 1s and 0s**, following classical physics under which our computers can process a '1' or a '0' at a time.

- Quantum computers compute in **qubits**. They exploit the properties of quantum mechanics, the science that governs how matter behaves on the atomic scale.
 - In this scheme of things, **processors can be a 1 and a 0 simultaneously**, a state called **quantum superposition**.
 - Because of quantum superposition, a quantum computer — if it works to plan — **can mimic several classical computers working in parallel**.



➤ Need:

- QKD is **essential to address the threat that rapid advancement in Quantum Computing poses to the security** of the data being transported by various critical sectors through the current communication networks.

➤ Benefits:

- The technology would be useful in **enabling various start-ups and small and medium enterprises** in the domain of quantum information.
- It is expected to **create a definition of standards and formulate crypto technology-related policies**.

➤ Significance:

- **Detection of Leak:**
 - It **allows the detection of data leak or hacking** because it can detect any such attempt.
- **Predetermined Error Levels:**
 - It also **allows the process of setting the error level** between the intercepted data.
- **Unbreakable Encryption:**
 - The **encryption is unbreakable** and that's mainly because of the way data is carried via the photon.
 - A photon cannot be perfectly copied and any attempt to measure it will disturb it. This means that a person trying to intercept the data will leave a trace.

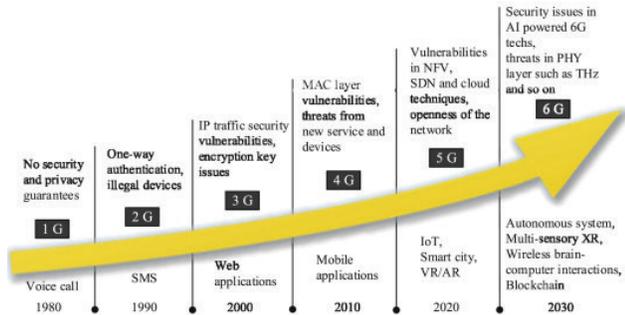
Note:

6G Technology

Why in News

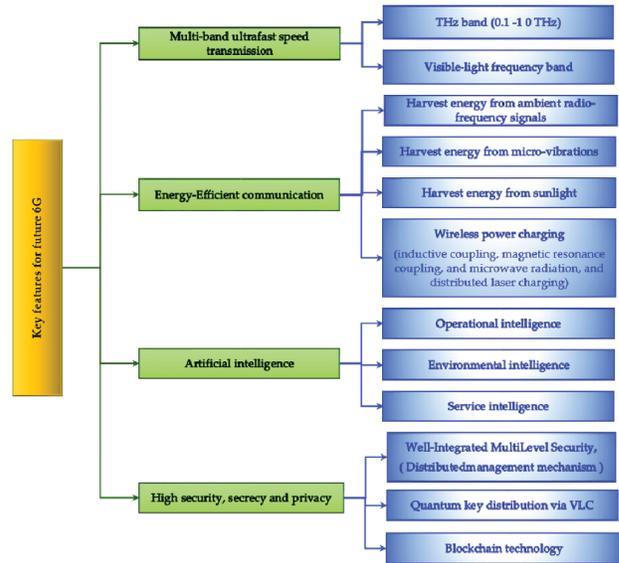
Recently, the government has asked the **Centre for Development of Telematics (C-DOT)** to begin developing 6G and other futuristic technologies to catch up with the global market in time.

- The next generation telecom technology (6G) is said to be **50 times faster than 5G** and is **expected to be commercially launched between 2028-2030**.



Key Points

- **About:**
 - 6G (sixth-generation wireless) is the successor to 5G cellular technology.
 - It will be able to **use higher frequencies than 5G networks** and provide substantially higher capacity and **much lower latency (delay)**.
 - One of the goals of 6G internet will be to support **one microsecond-latency communication** (delay of one-microsecond in communication).
 - This is **1,000 times faster** – or 1/1000th the latency – than one millisecond throughput.
 - It seeks to **utilize the terahertz band of frequency** which is currently unutilized.
 - Terahertz waves **fall between infrared waves and microwaves** on the electromagnetic **spectrum**.
 - These waves are extremely **tiny and fragile**, but there's a huge amount of free spectrum up there that would allow for spectacular data rates.
- **Significance:**
 - **More facilitation:**
 - The 6G technology market is expected to facilitate **large improvements** in imaging, presence technology and location awareness.



- 6G's higher frequencies will **enable much faster sampling rates**, in addition to providing significantly better throughput and higher data rates.
- **Advancement in Wireless sensing technology:**
 - The combination of sub-mm waves (e.g., wavelengths smaller than one millimeter) and frequency selectivity to determine relative electromagnetic absorption rates could **potentially lead to significant advances in wireless sensing technology**.
- **Emergence of Digital Capabilities:**
 - It will see the **emergence of simple, easy-to-wear-and-carry devices with a huge set of digital capabilities**.
 - This will help the paramedics, educators and agro-technicians to jumpstart the village ecosystems with little or limited need for on-site presence of doctors, professors and agro-experts.
- **Optimising mass public transportation:**
 - For India, such an enabling set of technologies will **bring manifold utilisation of scarce rail, air and road networks and make mass transportation far more efficient; Artificial Intelligence (AI)** and massively parallel computing architectures will help solve transportation and scheduling operations research problems.
- **Challenges:**
 - **Maintaining Protection Mechanisms:**
 - The key technical challenges are energy efficiency, avoiding signal attenuation due to obstructions

Note:

and water droplets in the air, and, of course, maintaining end-to-end trust through robust cyber security and data protection mechanisms.

- **Adoption of New Models:**
 - Need **innovations in antenna design, miniaturisation, edge cloud and distributed AI models**. In addition, we need to ensure end-to-end security and privacy by design, instead of as an afterthought.
- **Availability of Semiconductor:**
 - We **don't have semiconducting materials that can use multi-THz frequencies**. Getting any kind of range out of those frequencies may require enormous arrays of extremely tiny antennas.
- **Complex Design for Carrier Wave:**
 - Water vapor in the atmosphere blocks and reflects THz waves, so mathematicians will have to **design models that allow data to take very complex routes** to its destination.

Centre for Development of Telematics (C-DOT)

- It was established in **1984**. It is an **autonomous Telecom R&D (Research and Development) centre** of DoT (Department of Telecom), Ministry of Communications.
- It is a registered society under the **Societies Registration Act, 1860**.
- It is a registered public-funded research institution with the **Department of Scientific and Industrial Research (DSIR)**, Ministry of Science & Technology.
- Currently, C-DOT is working towards realising the objective of various flagship programmes of Govt. of India which include **Digital India, BharatNet, Smart Cities** etc.

Katol Meteorite

Why in News

Recently, some researchers studied a **meteorite from Katol**, Maharashtra which was from the meteor shower of 2012.

- A **meteorite** is a solid piece of debris from an object, such as a **comet, asteroid, or meteoroid**, that originates in outer space and survives its passage through the atmosphere to reach the surface of a planet or moon.

Key Points

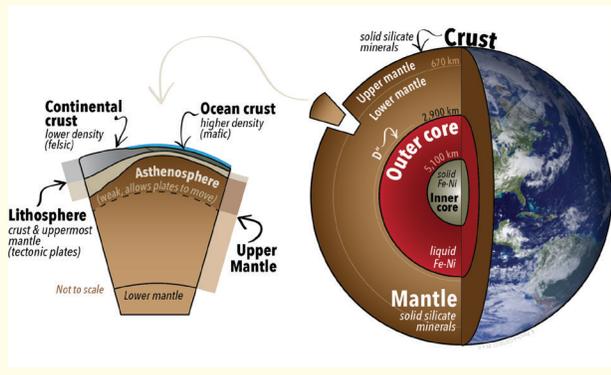
- **Findings:**
 - **Depth of Olivine:**
 - Initial studies revealed that the **host rock was mainly composed of olivine, an olive-green mineral**.
 - **Olivine is the most abundant phase in our Earth's upper mantle**.
 - Earth is composed of different layers including the outer **crust**, followed by the **mantle** and then the inner **core**.
 - It was believed that we can reach the **upper mantle if we drill for about 410 kilometers**.
 - However, by studying the composition of these meteorite fragments, researchers have unravelled the composition expected to be present in the **Earth's lower mantle which is at about 660 km deep**.
 - **Formation of Bridgmanite:**
 - Various computational and experimental studies have shown that about **80% of the Earth's lower mantle is made up of bridgmanite**. By studying this meteorite sample, **scientists can decode how bridgmanite crystallized** during the final stages of our Earth's formation.
 - **Bridgmanite** is a magnesium-silicate mineral, $MgSiO_3$, the most abundant mineral on earth.
 - The mineral was **named in 2014 after Prof. Percy W. Bridgman**, recipient of the 1946 **Nobel Prize in Physics**.
 - As the **bridgmanite of the Katol meteorite** sample closely **matches with the bridgmanite on Earth**.
- **Bridgmanite on Earth vs Meteorite:**
 - The bridgmanite in the meteorite was found to be formed at **pressures of about 23 to 25 gigapascals generated by the shock event**.
 - The high temperature and pressure in our Earth's interior have **changed over billions of years** causing crystallisation, melting, remelting of the different minerals before they reached their current state.
- **Significance:**
 - Studying the meteorite could also **tell us more about how our Earth evolved** from being a magma ocean to a rocky planet and researchers can unearth more details about the formation of Earth.

Note:

- It is important to study these individual minerals to get a thorough idea of **how and when the Earth's layers formed**.
- Scientists can also **decode how bridgmanite crystallized** during the final stages of our **Earth's formation**.

Formation of Inner Planets (Earth)

- The **inner planets or terrestrial planets or rocky planets Mercury, Venus, Earth, and Mars** are formed by **accretion or by rocky pieces coming together** and forming a planet by increased pressure and high temperature caused by radioactive elements and gravitational forces.
- Earth was an **ocean of magma before the elements crystallised and stabilised** and the **different layers such as core, mantle and crust were formed**.
 - The **heavier elements like iron went to the core** while the lighter silicates stayed in the mantle.



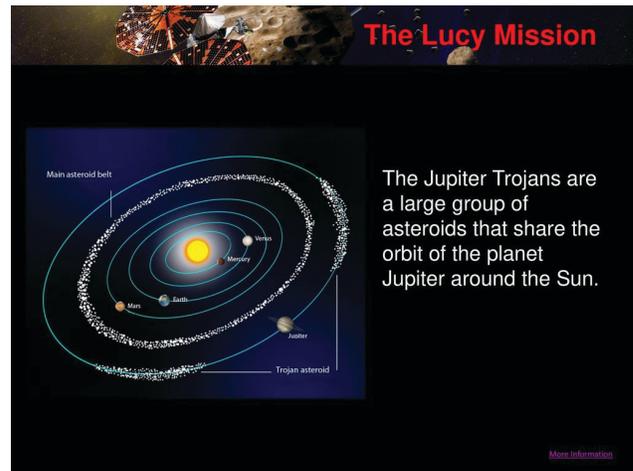
Mission Lucy: NASA

Why in News

National Aeronautics and Space Administration (NASA) is set to launch '**Lucy**', its **first mission to explore the Jupiter Trojan Asteroids**.

Key Notes

- **Mission Lucy:**
 - **Duration:**
 - The solar-powered mission is estimated to be **over 12 years long**, during which the spacecraft will visit **eight asteroids covering a distance of about 6.3 billion km** to deepen the understanding of the "young solar system".



- **Name and Launch:**
 - The mission is named after '**Lucy**', a **3.2 million-year-old ancestor** who belonged to a species of **hominins** (which include humans and their ancestors). The spacecraft will be **launched on an Atlas V 401 rocket**.
- **Asteroid Donald Johnson:**
 - The spacecraft's first encounter will be with an asteroid that lies in the main belt that can be found between **Mars and Jupiter**. This asteroid is named '**Donald Johnson**' after the paleoanthropologist who discovered the fossilised remains of 'Lucy'.
- **Significance:**
 - The Trojan asteroids are believed to be **formed from the same material that led to the formation of planets nearly 4 billion years ago** when the solar system was formed.
 - Therefore, the mission is designed to **understand the composition of the diverse asteroids** that are a part of the Trojan asteroid swarms, to **determine the mass and densities of the materials** and to look for and study the satellites and rings that may orbit the Trojan asteroids.
 - Studying them will **help scientists understand its origins and evolution**, and why it looks the way it does.

Asteroids

- **About:**
 - Asteroids are **rocky objects that orbit the Sun**, much smaller than planets. They are also called **minor planets**.

Note:

➤ **Categories:**

○ **Main Belt of Asteroids:**

- First, those found in the **main asteroid belt, between Mars and Jupiter**. This region is estimated to contain somewhere between 1.1-1.9 million asteroids.

○ **Trojan:**

- The second group is that of **trojans** (the name comes from Greek mythology), which are asteroids that **share an orbit with a larger planet**.
- NASA reports the presence of **Jupiter, Neptune and Mars trojans**. In 2011, they reported an Earth trojan as well.
- The Jupiter asteroids can be found in what are referred to as **“swarms” that lead and follow the planet Jupiter along its orbit around the Sun**.
 - ‘Lucy’ will reach the first swarm of these asteroids that precede Jupiter by August 2027.
- These asteroids are believed to be the **remnants of the early solar system**.

○ **Near-Earth Asteroids:**

- The third classification of asteroids is under **Near-Earth Asteroids (NEA)**, which has **orbits that pass close to the Earth**. Those that cross the Earth’s orbit are called **Earth-crossers**.
- More than 10,000 such asteroids are known, of which over 1,400 are classified as **Potentially Hazardous Asteroids (PHAs)**.

Jupiter

- Fifth in line from the Sun, Jupiter is, by far, the **largest planet in the solar system** – more than twice as massive as all the other planets combined.
 - **Jupiter, Saturn, Uranus and Neptune are called Jovian or Gas Giant Planets**. These have thick atmospheres, mostly of helium and hydrogen.
- Jupiter **rotates once about every 10 hours** (a Jovian day), but takes about 12 Earth years to complete one orbit of the Sun (a Jovian year). Jupiter has more than 75 moons.
 - The major moons of Jupiter are named **Io, Europa, Ganymede, and Callisto**, which are each distinctive worlds.
- In 1979, the **Voyager mission discovered Jupiter’s faint ring system**. **Nine spacecraft have visited Jupiter**. Seven flew by and two have orbited the gas giant. **Juno**, the most recent, arrived at Jupiter in 2016.

Nobel Prize in Physics, 2021

Why in News

The 2021 Nobel Prize in Physics is awarded with **one half jointly to Syukuro Manabe, Klaus Hasselmann** and the **other half to Giorgio Parisi** “for groundbreaking contributions to our understanding of complex physical systems.”

- This is the **first time climate scientists** (Manabe and Hasselmann) have been awarded the Physics Nobel. Last year, the award was given for the **research into black holes**.
- The **Nobel Prize in Physiology or Medicine 2021** has already been announced.

Key Points

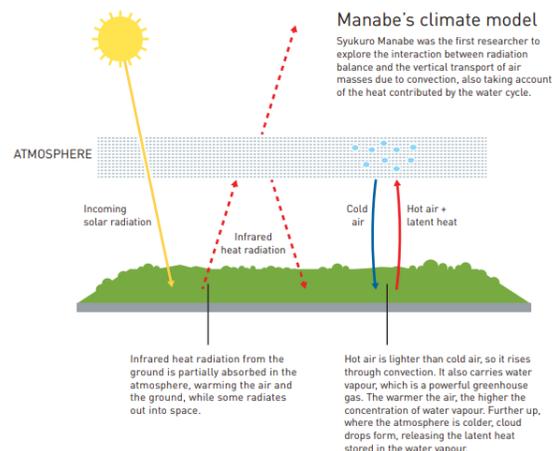
➤ **About:**

○ **Manabe and Hasselmann:**

- Awarded for work in **physical modelling of Earth’s climate**, quantifying variability and reliably predicting **global warming**.
 - Demonstrated how **increases in the amount of carbon dioxide** in the atmosphere would **increase global temperatures**, laying the foundations for current climate models.

○ **Parisi:**

- Awarded for **“the discovery of the interplay of disorder and fluctuations in physical systems from atomic to planetary scales.”**
 - He **“built a deep physical and mathematical model”** that made it possible to understand complex systems in fields such as mathematics, biology, neuroscience and machine learning.



Note:

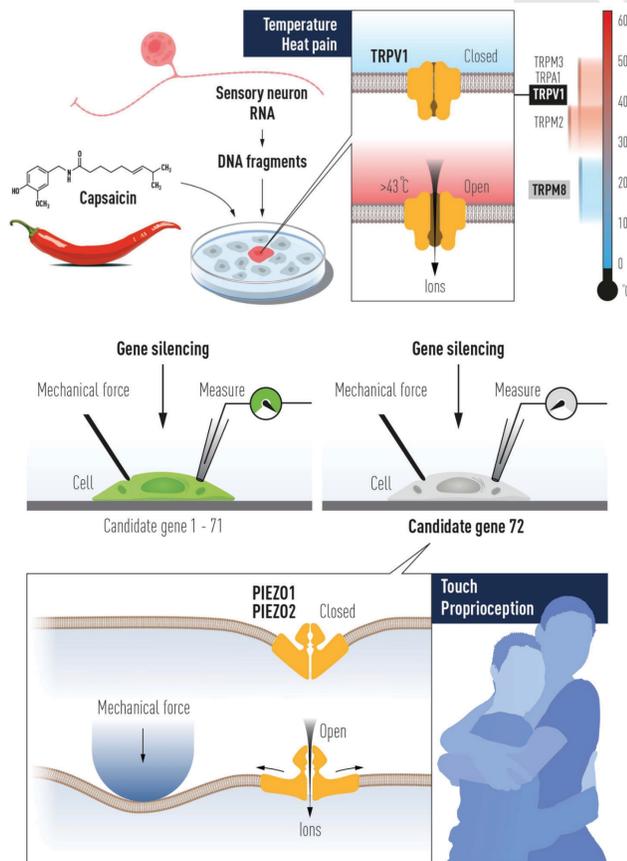
- **Climate Science and Nobel Prize Recognition:**
 - The **Intergovernmental Panel on Climate Change (IPCC)** had won the **Peace Nobel in 2007**, an acknowledgement of its efforts in creating awareness for the fight against climate change.
 - A **Chemistry Nobel to Paul Crutzen in 1995**, for his work on the **ozone layer**, is considered the only other time someone from atmospheric sciences has won this honour.

Nobel Prize for Physiology/Medicine, 2021

Why in News

Recently, two United States-based scientists, **David Julius** and **Ardem Patapoutian**, have been awarded the **2021 Nobel Prize for Physiology/Medicine** for their discoveries of receptors for temperature and touch.

- They have focused their work on the **field of somatosensation**, that is the ability of specialised organs such as eyes, ears and skin to see, hear and feel.



Key Points

- **About the Discoveries:**
 - **David Julius:**
 - He discovered **TRPV1**, a **heat-sensing receptor**.
 - His findings on the **skin's sense of temperature** was based on how certain cells react to **capsaicin**, the molecule that makes chili peppers spicy, by simulating a false sensation of heat.
 - **Ardem Patapoutian:**
 - He discovered two **mechanosensitive ion channels** known as the **Piezo channels**.
 - The **Piezo1** is named after the Greek word for **pressure**, 'πίεσι'.
 - He is credited for finding the **cellular mechanism** and the **underlying gene** that **translates a mechanical force on our skin into an electric nerve signal**.
- **Significance of Discoveries:**
 - The findings have allowed us to **understand how heat, cold and mechanical force can initiate the nerve impulses** that allow us to perceive and adapt to the world around us.
 - This knowledge is being **used to develop treatments for a wide range of disease conditions**, including chronic pain.

Note:

- **Somatosensation** is a collective term for the sensations of touch, temperature, body position, and pain recognized through neural receptors in the skin and certain internal organs.
 - It includes processes such as" mechanoreception, thermoreception, proprioception.
- **Mechanosensitive channels** are fascinating proteins, being able to serve both as sensors and effectors.
 - Embedded in membranes, they convert mechanical stimuli such as in-plane membrane tension and curvature into electrical or biochemical signals, leading to regulation of a wide repertoire of cellular processes allowing adaptive response.

About Nobel Prizes

- The will of the **Swedish scientist Alfred Nobel** established the five **Nobel prizes** in 1895.
- The Nobel Prizes are a set of recognition given to fields of **Chemistry, Literature, Peace, Physics, and Physiology or Medicine** by The Nobel Foundation.

Note:

- The Nobel Foundation is a private institution established in 1900, has ultimate responsibility for fulfilling the intentions in Alfred Nobel's will.
- The prizes in Chemistry, Literature, Peace, Physics, and Physiology or Medicine were first awarded in 1901.
- In 1968, **Sveriges Riksbank** established the Sveriges Riksbank Prize in **Economic Sciences** in Memory of Alfred Nobel.

Astro Robot

Why in News

Recently, **Amazon** has unveiled its '**Astro**' home robot, which is designed to help customers with a range of tasks like home monitoring and keeping in touch with family.

- However, civil society has highlighted the **concerns of privacy** issues of **24x7 surveillance**.

Key Points

➤ About Astro Robot:

- Astro is primed to be a **home security device**. It is **designed to move around the home** and keep a check on pets, and detect something unusual in the absence of the owner.
- It comes with a "**periscope**" camera that pops up from its head and can be used to keep an eye on the home.
- It is basically a combination of the **Echo Show (smart speaker)** and **sophisticated Ring security camera** integrated into one single device.
- The device captures live videos, recognises faces, plays music or videos, and delivers a beer across the home.
- It can **recognise the faces of people and analyse them** until it figures out if it's a family member or an outsider.



➤ Issues Related to Privacy:

- Civil society is worried that the **amount of data** Amazon gets to fetch with the Astro, giving the company easy access to the household,
 - This is going one step beyond Alexa which had access to vocals and sound until now.

- Amazon has asserted that **Astro stores face data locally** rather than in the cloud, but it is still a privacy concern as with any internet-connected device.

- There are **concerns of stealing or hacking of the device**. Due to this, the perpetrator can get access to the digital map that the robot creates of someone's home.
- The prime concern, in the long-run, could contribute to greater public acceptance of **Artificial Intelligence**-powered surveillance.
 - In the past, hackers have managed to access Ring cameras, used in the devices of Amazon technologies.
- **Other Recent Experiments:**
 - Softbank earlier this year "suspended" the production of **Pepper**, one of the first humanoid robots able to "read" emotions.
 - Jibo has started an **Indiegogo project**, which aims to build a world's first social robot for the home.

Robotics

➤ About:

- **Robotics** is a branch of engineering that involves the **conception, design, manufacture and operation of robots**.
 - Robot is any **automatically operated machine** that replaces human effort.
- The objective of the robotics field is to **create intelligent machines** that can assist humans in a variety of ways.

➤ Advantages:

- In many situations robots can **increase productivity, efficiency, quality and consistency** of products.
- Robots **can work in environments which are unsafe for humans** as they don't have the same environmental requirements that humans do – such as lighting, air conditioning or noise protection.
- Robots have some sensors/actuators which are **more capable than humans**.
 - Unlike humans, robots don't get bored. Until they wear out, they can do the same thing again and again.
 - They can be very accurate – to fractions of an inch (as is needed for example in manufacturing of microelectronics).

Note:

- **Disadvantages:**
 - The use of robots can create **economic problems if they replace human jobs.**
 - Robots can only do what they are told to do – **they can't improvise**
 - This means that **safety procedures are needed** to protect humans and other robots.
 - Although robots can be superior to humans in some ways, **they are less dexterous than humans.**
 - Robotics **lack emotional intelligence**, which plays a critical role in intense situations.
 - Often robots are **very costly** – in terms of the initial cost, maintenance, the need for extra components and the need to be programmed to do the task.
 - **Surveillance concerns** pose a problem of entering a privacy nightmare.

Semi-Cryogenic Propellant Tank

Why in News

Recently, **Hindustan Aeronautics Ltd** (HAL) delivered the **heaviest semi-cryogenic propellant tank** (SC120- LOX) to the **Indian Space Research Organization (ISRO).**

- In 2020, HAL delivered the **biggest ever cryogenic Liquid Hydrogen tank** (C32-LH2) to ISRO.

Key Points

- **About:**
 - The **semi cryo-liquid oxygen (LOX) tank** - the first developmental welded hardware - **is a part of the SC120 stage intended for payload enhancement** by replacing the L110 (liquid) stage **in the existing Mk-III launch vehicle.**

- **GSLV Mk III** is a three-stage heavy-lift launch vehicle developed by ISRO. The vehicle has two solid strap-ons, a core liquid booster and a cryogenic upper stage.

➤ Cryogenic Engine:

- A cryogenic engine/ cryogenic stage is the **last stage of space launch vehicles which makes use of Cryogenics.**
 - Cryogenics is the study of the production and behaviour of materials at extremely low temperatures (below -150 degree Centigrade) to lift and place heavier objects in space.
- A cryogenic engine provides **more force with each kilogram of cryogenic propellant it uses** compared to other propellants, such as **solid and liquid propellant rocket engines** and is more efficient.
- It uses **Liquid Oxygen (LOX)** and **Liquid Hydrogen (LH2)** as propellants which liquefy at -183 deg C and -253 deg C respectively.

➤ Semi Cryogenic Engine:

- Unlike a Cryogenic engine, a Semi Cryogenic engine **uses Refined kerosene instead of liquid hydrogen.**
- The liquid oxygen is used as a Oxidiser.
 - That's the advantage of using a Semi Cryogenic engine as it requires Refined Kerosene which is lighter than liquid fuel and can be stored in a normal temperature.
- Kerosene combined with liquid oxygen **provide a higher thrust to the rocket.**
- Refined Kerosene occupies less space, **making it possible to carry more propellant** in a Semi Cryogenic engines fuel compartment.
- A semi cryogenic engine is **more powerful, environment friendly and cost effective** as compared to a cryogenic engine.



Note:

Environment and Ecology

Highlights

- Kunming Declaration on Biodiversity
- Right to Clean Environment
- High Ambition Coalition for Nature and People
- Javan Gibbon
- New Tiger Reserve: Chhattisgarh
- Hara Bhara: Aerial Seeding Campaign
- Marine Protected Areas in Antarctica
- State of Climate Services Report 2021: WMO
- Global Climate Risk Index 2021

Kunming Declaration on Biodiversity

Why in News

Recently, the **Kunming Declaration** was adopted by over 100 countries at the ongoing **15th Conference of the Parties** to the **United Nations Convention on Biological Diversity** in China.

- The adoption of the declaration will **create momentum for a new global biodiversity pact**.
- In a previous agreement, **Strategic Plan for Biodiversity 2011-2020**, signed in Aichi, Japan, in 2010, governments agreed on **20 targets to try to slow biodiversity loss and protect habitats by 2020**.

Key Points

- **About:**
 - It calls for **urgent and integrated action** to reflect **biodiversity considerations in all sectors of the global economy** but crucial issues - like funding conservation in poorer countries and committing to biodiversity-friendly supply chains have been left to discuss later.
 - It is **not a binding international agreement**.
 - It **calls upon the parties to mainstream biodiversity protection in decision-making** and recognise the importance of conservation in protecting human health.
 - The theme of the declaration is **Ecological Civilization: Building a Shared Future for All Life on Earth**.

- By adopting this, the **nations have committed themselves to support the development, adoption and implementation** of an effective post-2020 implementation plan, a capacity building action plan for the **Cartagena Protocol on biosafety**.
 - The Protocol seeks to protect biological diversity from the potential risks posed by **living modified organisms** resulting from modern biotechnology.
- As per the declaration the signatory nations will ensure that the **post-pandemic recovery policies, programmes and plans contribute to the conservation** and sustainable use of biodiversity, promoting sustainable and inclusive development.
 - **30 by 30 Target:**
 - The declaration made a reference to the '30 by 30' target which is a **key proposal being debated at the COP15**, that would afford **30% of the Earth's land and oceans protected status by 2030**.
 - Apart from this, the goal to halve the use of chemicals in agriculture and stop creating plastic waste is also being debated.
 - **Kunming Biodiversity Fund:**
 - China has also pledged to **inject USD 233 million into a new fund** to protect biodiversity in developing countries. The fund is being referred to by China as **Kunming Biodiversity Fund**.
 - It is the right step in this direction. However, some countries have reservations regarding this fund.
 - Some countries have called this fund as **"a drop in the bucket"** given that China is the world's biggest polluter.
 - Further, some rich country donors say a new fund for conservation is unnecessary because

Note:



the **United Nations' Global Environment Facility** already helps developing nations finance green projects.

- **Global Initiatives to Save Biodiversity:**
 - **Convention on Biological Diversity:**
 - It is a **legally binding treaty to conserve biodiversity** that has been in force since 1993.
 - India is a party to the convention.
 - **Convention on International Trade in Endangered Species of Wild Fauna and Flora:**
 - It provides public, private and **non-governmental organisations** with the knowledge and **tools that enable human progress, economic development and nature conservation** to take place together.
 - India is a member of the convention.
 - **World Wide Fund for Nature:**
 - It is an international non-governmental organisation for the conservation, research and restoration of the natural environment..
 - **Global Biodiversity Assessment:**
 - It is an independent, critical, peer reviewed scientific analysis of the current issues, theories and views regarding the main aspects of biodiversity.
 - **Man and the Biosphere Program:**
 - It was **launched in 1970** and has initiated **programmes and activities focusing on the diversity and the resources provided by nature, humans' impacts on biodiversity**, as well as how biodiversity affects human activities.

Climate Financing

- **About:**
 - Climate finance refers to **local, national or transnational financing**—drawn from public, private and alternative sources of financing—that seeks to **support mitigation and adaptation actions** that will address **climate change**.
- **Some Global Climate Funds:**
 - **Green Climate Fund (GCF):**
 - It was established to limit or reduce **Greenhouse Gas (GHG)** emissions in developing countries and to help vulnerable societies adapt to the unavoidable impacts of climate change.
 - **Adaptation Fund (AF):**

- It was established under the **Kyoto Protocol** in 2001 and has committed USD 532 million to climate adaptation and resilience activities.
- **Global Environment Fund (GEF):**
 - GEF has served as an operating entity of the financial mechanism since the Convention came into force in 1994.
 - It is a **private equity fund focused on seeking long term financial returns** by investments in clean energy under climate change.
- **Additional Funds:** In addition to providing guidance to the GEF and the GCF, parties have established two special funds:
 - The **Special Climate Change Fund (SCCF)** and the **Least Developed Countries Fund (LDCF)**.
 - Both funds are managed by the GEF.

Right to Clean Environment

Why in News

Recently, the **United Nations Human Rights Council (UNHRC)** unanimously voted for recognising a **clean, healthy and sustainable environment as a Universal Human Right**.

- If recognised by all, the right will be the first of its kind in more than 70 years since the **Universal Declaration of Human Rights (UDHR)** was adopted by the UN General Assembly in 1948.
- **UDHR:** The 30 rights and freedoms **include civil and political rights**, like the right to life, liberty, free speech and privacy and economic, social and cultural rights, like the right to social security, health and education, etc.

Key Points

- **Background:**
 - The **concept of human rights in general emerged after the Second World War (1939-45)**, but the right to a healthy environment, as one of those human rights, was never a priority.
 - The **right to a clean environment is rooted in the 1972 Stockholm Declaration**, popularly called as the **Magna Carta of human environment**.
 - It contained principles and recommendations for environmental policy.

Note:



- 'Caring for the Earth 1991' and the 'Earth Summit of 1992' also declared that human beings are entitled to a healthy and productive life in harmony with nature.
- **About:**
 - The human right to a healthy environment **brings together the environmental dimensions of civil, cultural, economic, political, and social rights, and protects the core elements of the natural environment** that enable a life of dignity.
 - The **right to life (Article 21)** has been used in a diversified manner **in India**. It includes, inter alia, the **right to survive as a species, quality of life, the right to live with dignity and the right to livelihood**.
 - **Article 21 of the Indian Constitution states:** 'No person shall be deprived of his life or personal liberty except according to procedures established by law.'
 - Further the **Constitutional (forty-second Amendment) Act, 1976** incorporated two significant articles viz. **Article 48-A and 51A (g)** thereby making the Indian Constitution the first in the world conferring constitutional status to the environment protection.
 - **Article 48-A:** The State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country.
 - **Article 51A(g):** It is a duty of every citizen to protect and preserve the environment.
- **Environment Protection Laws in India:**
 - **Wildlife (rotection) Act, 1972**
 - **Water (prevention and control of pollution) Act, 1974**
 - **The Forest (conservation) Act, 1989**
 - **The Air (prevention and control of pollution) Act, 1981**
 - **The Environment (protection) Act, 1986**
 - **The National Green Tribunal Act, 2010**
- **Environmental Principles:**
 - **Inter-generational Equity:** It states that every generation holds Earth in common, therefore its resources should be used judicially and for the common benefit of all.

- **Polluter Pays Principle:** It states that the polluter should bear the cost of damage caused by it to the natural environment.
- **Precautionary Principle:** It states that even in the absence of scientific evidence, measures must be taken to anticipate and prevent the causes of environmental degradation. It is the social responsibility of the State to protect the public from any plausible risk.
- **Public trust Doctrine:** It states that resources like water, air, sea and forest have a great importance to the general public that it would be unjustified to make it the subject of private ownership. It poses a duty on the State to protect such resources for the benefit of all and not to permit any commercial use of it.
- **Sustainable Development Principle:** It states that the State should try to strike a balance between development and environment.

United Nations Human Rights Council

- **About:**
 - It is an **inter-governmental body within the United Nations system** responsible for strengthening the promotion and protection of **human rights** around the world.
- **Formation:**
 - The Council was created by the **United Nations General Assembly (UNGA) in 2006**. It is headquartered in **Geneva, Switzerland**.
- **Members:**
 - It is made up of 47 United Nations Member States which are **elected by the UNGA**.
 - **India was elected in January 2019** for a period of three years.
- **Procedures and Mechanisms:**
 - **Universal Periodic Review: UPR** serves to assess the human rights situations in all United Nations Member States.
 - **UN Special Procedures:** These are made up of **special rapporteurs**, special representatives, independent experts and working groups that monitor, examine, advise and publicly report on thematic issues or human rights situations in specific countries.

Note:



High Ambition Coalition for Nature and People

Why in News

Recently, India joined the **High Ambition Coalition (HAC) for Nature and People**.

- India is the first of the **BRICS** (Brazil, Russia, India, China and South Africa) to join the HAC.

Key Points

- **About:**
 - It is an **intergovernmental group** championing a global deal for nature and people that can **halt the accelerating loss of species, and protect vital ecosystems** that are the source of our economic security.
 - It was **launched in 2019** by **Costa Rica, France and Britain**.
 - It is **co-chaired by Costa Rica and France** and the **Ocean co-chair** belongs to the **United Kingdom**.
- **Aim:**
 - To **promote an international agreement** to protect at least 30% of the world's land and ocean by 2030 (**Global 30×30 target**).
 - To **manage the planet sustainably** with no net loss of natural habitats, supported by a circular economy, and strives for the sustainable and equitable sharing of benefits from nature.
- **Members:**
 - It has **more than 70 countries** which are a mix of countries in the global north and south, European, Latin American, Africa and Asia countries are among the members.
- **Related Initiatives:**
 - **Global:**
 - **United Nations Climate Change Conference.**
 - **Conference of the Parties 26 (COP 26).**
 - **Climate Financing.**
 - **Common But Differentiated Responsibilities (CBDR)**
 - **International Solar Alliance**
 - **Coalition of Disaster Resilient Infrastructure**
 - **Indian:**

- **National Clean Air Programme (NCAP)**
- **Bharat Stage-VI (BS-VI) emission norms**
- **UJALA scheme**
- **National Action Plan on Climate Change (NAPCC).**

Javan Gibbon

Why in News

Indonesia is taking steps to protect the habitat of **Javan Gibbon (*Hylobates moloch*)**, which is **endangered by climate change and human encroachment**.

- The species is also **hunted for both meat and pet trade**.

Key Points

- **About:**
 - The **silvery gibbon**, also known as the **Javan gibbon**, is a primate. They are found in groups only, usually in a pair of two.
 - It is **endemic to the Indonesian island of Java**, where it inhabits undisturbed **rainforests** up to an altitude of 2,450 m.
- It **helps in regenerating forest vegetation by dispersing seeds**.
- There are around **4,000 Javan gibbons left**.
- It was **declared Critically Endangered in 2004** but since has recovered to status of **Endangered** as per IUCN criterion. However, the latest IUCN estimate shows that their **population is decreasing**.
- **Habitat:**
 - The Javan Gibbon wild population is **only found in Java, Indonesia**.
 - It is **not found in India** (The **hoolock gibbon** is the **only gibbon found in India**).
- **Protection Status:**
 - **IUCN:** Endangered (EN)
 - **CITES:** Appendix I



Note:

New Tiger Reserve: Chhattisgarh

Why in News

Recently, the **National Tiger Conservation Authority (NTCA)** has designated the combined areas of the **Guru Ghasidas National Park** and **Tamor Pingla Wildlife Sanctuary** as a **Tiger Reserve**.

- NTCA is a statutory body under the **Ministry of Environment, Forests and Climate Change**, established in 2005 for strengthening tiger conservation.

Key Points

➤ About:

- It is located in the **northern part of Chhattisgarh**, bordering Madhya Pradesh and Jharkhand.
- Approval was granted under Section 38V(1) of the **Wildlife (Protection) Act, 1972**.
- This will be the **fourth Tiger Reserve in Chhattisgarh**, after the **Udanti-Sitanadi**, **Achanakmar**, and **Indravati Reserves**.

➤ Significance:

- Guru Ghasidas National Park was the last known habitat of the **Asiatic cheetah** in the country.
- It connects Jharkhand and Madhya Pradesh and provides a corridor for tigers to move between the **Bandhavgarh** (Madhya Pradesh) and **Palamau Tiger Reserves** (Jharkhand).

➤ Guru Ghasidas National Park:

○ About:

- Named after the **Satnami reformist hero** of the place, **Guru Ghasidas**, is the result of the carving of Chhattisgarh from Madhya Pradesh in the year of 2000. It is located in the Koriya district of Chhattisgarh.
- The park has **undulating topography** and it falls under the **Tropical climate zone**.

○ Biodiversity:

- **Flora:** The vegetation consists mainly of mixed deciduous forest with teak, sal and bamboo trees.
- **Fauna:** **Tiger, Leopard**, Chital, Nilgai, **Chinkara, Jackal**, Sambar, Four-horned Antelope etc.

➤ Tamor Pingla Wildlife Sanctuary:

○ About:

- It is located in the **Surajpur district of Chhattisgarh** bordering Uttar Pradesh. It is named after **Tamor hill and Pingla Nalla**.
- Tamor hill and Pingla Nalla are considered to be the old and prominent features of the sanctuary area.
- **Biodiversity:**
 - **Flora:** **Mixed deciduous forests dominate the sanctuary**. Sal and bamboo forests are seen all through.
 - **Fauna:** Tigers, Elephants, leopards, bears, sambar deer, blue bulls, chital, bison and many such animals are found here.

National Parks & Sanctuaries of Chhattisgarh



Hara Bhara: Aerial Seeding Campaign

Why in News

Recently, **Hara Bhara, India's first aerial seeding campaign in Telangana** using the **Seedcopter drone** was launched.

- Earlier, in August 2015, **Andhra Pradesh government had launched the aerial seeding programme** using **Indian Navy helicopters**.

Key Points

➤ Hara Bhara Campaign:

- The idea of the campaign is to **accelerate the mission of reforestation** by planting one billion trees using drones by **2030 in the country**.
- The project **uses drones to disperse seed balls**

Note:

over thin, barren, and empty forest lands to turn them into lush green abodes of trees.

- The 'seedcopter' which is a **drone** developed by **Marut Drones** is an aerial seeding solution for **rapid and scalable reforestation**.

➤ **Aerial Seeding:**

- It is a **plantation technique** wherein seed balls — seeds covered with a mixture of clay, compost, char and other components — are **sprayed using aerial devices**, including planes, helicopters or drones.
- The **plant species which are native** to the area and hardy, with seeds that are of an appropriate size for preparing seedballs are usually used for aerial seeding, with a higher survival percentage.
- Seeds balls/pellets are **dispersed in a targeted area** by low-flying drones, with the coating providing the required weight for seeds to airdrop on a predetermined location rather than getting deterred by the wind.
- These pellets **sprout when there is enough rain**, with nutrients present within them helping in initial growth.

➤ **Advantages of Aerial Seeding:**

- **Access to Inaccessible Areas:**
 - Areas that are **inaccessible**, having steep slopes or no forest routes, can be targeted using this method.
- **No Extra Attention Requires:**
 - The **process of the seed's germination and growth is such that it requires no attention** after it is dispersed and thus seed pellets are known as the "fire and forget" way of planting.
- **Eliminate Need of Ploughing:**
 - They **eliminate any need for ploughing and do not need to be planted** since they are already surrounded by soil, nutrients, and microorganisms.
 - The clay shell also protects them from birds, ants and rats.
- **Prevents Soil Runoff:**
 - Aerial application **does not cause soil compaction**, hence prevents soil runoff.
 - This type of seeding technique will be most **useful for tropical forests because they absorb carbon much faster** than other forest types and also support much higher biodiversity.

➤ **Challenge:**

- Drones may reduce costs, but one cannot rule out the **possibility of seeds falling on the wrong spot**.
- Even when they reach the ground **many variables can hinder the emergence of seedlings**, such as soil composition, animal predation and weed competition.

➤ **Related Indian Initiatives:**

- National Mission for a Green India
- **National Afforestation Programme (NAP)**
- **Compensatory Afforestation Fund Management and Planning Authority, (CAMPA Funds)**
- National Action Programme to Combat Desertification

Marine Protected Areas in Antarctica

Why in News

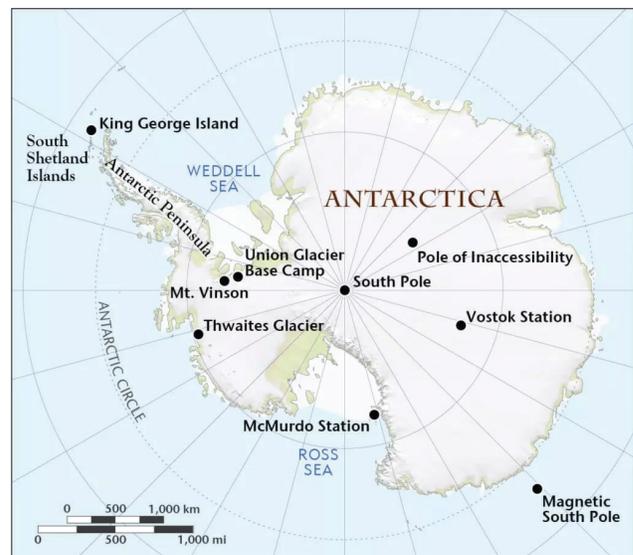
India has extended its support for protecting the Antarctic environment and for co-sponsoring the **proposal of the European Union** for designating East Antarctica and the Weddell Sea as Marine Protected Areas (MPAs).

- The **Southern Ocean**, also called Antarctic Ocean, is a body of salt water covering approximately one-sixteenth of Earth's total ocean area.

Key Points

➤ **Marine Protected Areas:**

- In general terms, a Marine Protected Area (MPA)



Note:

is a marine area that provides protection for all or part of the natural resources it contains.

- Within an MPA, **certain activities are limited, or entirely prohibited**, to meet specific conservation, habitat protection, ecosystem monitoring or fisheries management objectives.
 - MPAs **do not necessarily exclude fishing, research or other human activities**; in fact, many MPAs are multi-purpose areas.
 - The **Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)** has agreed a **framework** that describes the objectives and requirements for establishing MPAs.
- **MPAs in Antarctica:**
- Currently, only 5% of the Southern Ocean is protected. MPAs were **established in the South Orkney Islands in 2009 and the Ross Sea region in 2016**.
 - **Another three proposals** for MPAs are being considered for **East Antarctica, the Weddell Sea, and the Antarctic Peninsula**.
 - MPA proposals are driven by conservation and sustainable utilization principles and adhering to the global cooperation frameworks (such as **Sustainable Development Goals, UN Decade of Oceans, Convention on Biodiversity**, etc.)
 - **India is a signatory** to these conventions or agreements.
 - India urged the **Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)** member countries to ensure that India remains associated with the formulation, adaptation and implementation mechanisms of these MPAs in future.
- **Need to Establish MPAs:**
- The health of the Southern Ocean is driven by changes to the ocean itself - such as:
 - **Ocean Acidification**
 - Changes in sea-ice concentration
 - Events triggered by climate change such as **heat waves and extreme weather**.
 - These changes **affect the marine ecosystem and species of the Antarctic region**.
 - Further, in response to these impacts, the threat of **new and invasive species in the Southern Ocean** is growing and endemic marine species like **penguins are experiencing a historic die-off**.

- Apart from this there is a rapid increase in melting of glaciers in Antarctica . For example, **Thwaites Glacier**.
- Studies show that **MPAs can help vulnerable ecosystems build resilience to climate change** by eliminating additional stresses such as fishing.
- In addition, their relatively undisturbed waters **provide a natural laboratory** for studying how intact marine ecosystems react to a warming and acidifying ocean.

➤ **About Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR):**

- CCAMLR is a **multilateral response** to concerns that **unregulated increases in krill catches in the Southern Ocean** could be detrimental for Antarctic marine ecosystems particularly for seabirds, seals, whales and fish that depend on krill for food.
- CCAMLR was established by **international convention in 1982** with the objective of conserving Antarctic marine life.
- An important feature of CCAMLR is the **ecosystem approach** to conservation, requiring that the effects on the ecosystem must be taken into account in managing the harvesting of marine resources.
- It's **Secretariat is located in Hobart, Tasmania, Australia**.

India's Antarctic Missions

- India is expanding its infrastructure development in Antarctica.
- The newest base commissioned in 2015 is **Bharati**.
- India is rebuilding its second station, **Maitri**, to make it bigger and last for at least 30 more years.
- **Dakshin Gangotri**, the first Indian base established in 1984, has weakened and become just a supply base.

Antarctic Treaty System

- There are few related agreements that make up the Antarctic treaty system. They are as follows:
 - The **Protocol on Environmental Protection to the Antarctic Treaty** (Madrid, 1991).
 - The **Convention for the Conservation of Antarctic Seals** (CCAS, London, 1972).
 - The **Convention on the Conservation of Antarctic Marine Living Resources** (CCAMLR, Canberra, 1980).

Note:

State of Climate Services Report 2021: WMO

Why in News

Recently, the **World Meteorological Organization (WMO)** released the **State of Climate Services report 2021**. It focuses on **Terrestrial Water Storage**.

- Earlier, on **water day** (22nd March), in a **report** released by the **United Nations Children's Fund (UNICEF)**, **one in five children** worldwide reside in areas of high or **extremely high water vulnerability**.

Key Points

➤ Terrestrial Water Storage (TWS):

- TWS is the **sum of all water on the land surface and in the subsurface**, i.e. surface water, soil moisture, snow and ice and groundwater.
 - Water is a key prerequisite for human development. But only **0.5% of water on Earth is usable** and available as freshwater.
- Water **resources across the world are under tremendous pressure** due to human and naturally-induced stressors.
 - These include population growth, **urbanisation** and decreasing availability of freshwater.
- **Extreme weather events** too have been responsible for the pressure on water resources realised across sectors and regions.

➤ Global Scenario:

- TWS **dropped at a rate of 1 cm per year in 20 years** (2002-2021).
- The **biggest losses have occurred in Antarctica and Greenland**. But many highly populated, lower latitude locations have also experienced TWS losses.

➤ Indian Scenario:

- **About:**
 - The TWS has been **lost at a rate of at least 3 cm per year**. In some regions, the loss has been over 4 cm per year too.
 - India has recorded the **highest loss in terrestrial water storage** if the loss of water storage in **Antarctica and Greenland is excluded**.
 - India is the **'topmost hotspot of TWS loss'**. The **northern part of India** has experienced the **maximum loss** within the country.

○ Per Capita Availability:

- In India, per capita water availability is **reducing due to an increase in population**.
- The average annual per capita water availability has **reduced to 1,545 cubic metres in 2011, from 1,816 cubic metres in 2001**.
- It is **projected to further decrease to 1,367 cubic metres in 2031**, according to the Union Ministry of Housing and Urban Affairs.

○ River Basins:

- **Five** of the 21 river basins in India are '**absolute water scarce**' (per capita water availability below 500 cubic metres) according to the Falkenmark Water Stress Indicator.
- **Five** are '**water scarce**' (per capita water availability below 1,000 cubic metres) and three are '**water stressed**' (per capita water availability below 1,700 cubic metres).
- By 2050, six will become absolute water scarce, six will become water scarce and four will become water stressed, according to the State of India's Environment in figures, 2020.
 - The **Falkenmark indicator** is one of the most widely used indicators for assessing the stress on water. It **relates the total freshwater resources with the total population** in a country and indicates the pressure that population puts on water resources, including the needs for natural ecosystems.

➤ Recommendations:

○ Investments Needed:

- **Integrated Resources Water Management** as a solution to better manage water stress, especially in **Small Island Developing States (SIDS)** and Least Developed Countries (LDCs).
- In **end-to-end drought and flood early warning systems** in at-risk LDCs, including for drought warning in Africa and flood warning in Asia.

○ Fill Capacity Gap:

- Fill the capacity gap in collecting data for basic hydrological variables which underpin climate services and early warning systems.
- Fill the gaps in data on country capacities for climate services in the water sector, especially for SIDS.

○ Improve Interaction:

Note:



- Improve the interaction **among national level stakeholders** to co-develop and operationalize climate services with information users to better support adaptation in the water sector.
- There is also a pressing need for **better monitoring and evaluation of socio-economic benefits**, which will help to showcase best practices.
- **Join the Water and Climate Coalition:**
 - Water and Climate Coalition is a platform for its members to partner on joint activities and implement solutions that address the gaps of operational water and climate challenges with a focus on data and information.

Related Government Initiatives

- **Jal Kranti Abhiyan.**
- **National Water Mission.**
- **National Rural Drinking Water Programme.**
- **NITI Aayog Composite Water Management Index.**
- **Jal Jeevan Mission.**
- **Jal Shakti Abhiyan.**
- **Atal Bhujal Yojana.**

Global Climate Risk Index 2021

Why in News

The international environmental think tank 'Germanwatch' released the **Global Climate Risk Index 2021**.

- This is the **16th Edition** of the Index. It is published **annually**.
- **Germanwatch**, based in **Bonn and Berlin (Germany)**, is an **independent development and environmental organisation** which works for sustainable global development.

Key Points

- **About the Index:**
 - The Index **analyses the extent** to which **countries and regions** have been affected by the **impacts of weather-related loss events** (storms, floods, heat waves etc.).
 - The impact is calculated in terms of **fatalities and economic losses**, both.

- The most recent data available **for 2019** and from **2000 to 2019** were taken into account.
- The 2021 Index **does not include data from United States of America**.
- The Climate Risk Index clearly signals that repercussions of escalating climate change can no longer be ignored, on any continent or in any region.
- Impacts from extreme-weather events **hit the poorest countries hardest** as these are particularly vulnerable to the damaging effects of a hazard, have a lower coping capacity and may need more time to rebuild and recover.
- **High-income countries** are also getting severely impacted by climate change.

Ranking 2019 (2018)	Country
1 (54)	Mozambique
2 (132)	Zimbabwe
3 (135)	The Bahamas
4 (1)	Japan
5 (93)	Malawi
6 (24)	Islamic Republic of Afghanistan
7 (5)	India
8 (133)	South Sudan
9 (27)	Niger
10 (59)	Bolivia

About 2021 Findings:

- **Mozambique, Zimbabwe** as well as the **Bahamas** were the **most affected countries in 2019**.
- For the period from **2000 to 2019, Puerto Rico, Myanmar and Haiti** rank highest.
- **Storms and their direct implications**-precipitation, **floods** and **landslides**, were one major cause of losses and damages in 2019.
- Of the ten most affected countries in 2019, six were hit by **tropical cyclones**. Recent science suggests that the **number of severe tropical cyclones will increase** with every tenth of a degree in global average temperature rise.

CRI 2000-2019 (1999-2018)	Country
1 (1)	Puerto Rico
2 (2)	Myanmar
3 (3)	Haiti
4 (4)	Philippines
5 (14)	Mozambique
6 (20)	The Bahamas
7 (7)	Bangladesh
8 (5)	Pakistan
9 (8)	Thailand
10 (9)	Nepal

Note:

- **Eight out of the ten countries** most affected by the quantified impacts of extreme weather events in 2019 **belong to the low- to lower-middle income category**. Half of them are **Least Developed Countries**.
- **India's Position:**
 - India has **improved its rankings** from last year. It is **ranked 7th in the 2021 Index** as compared to **5th in 2020 Index**.
 - The **Indian monsoon lasted a month longer than usual** in the year 2019, with surplus rains causing major hardship. The rain was 110% of normal, which is the **most since 1994**.
 - The **floods caused by heavy rains** were responsible for 1800 deaths and led to **displacement of 1.8 million people**.
 - Overall, **11.8 million people were affected** by the intense monsoon season and the **economic damage** caused was estimated to be **US\$ 10 billion**.
 - India was **hit by a total of 8 tropical cyclones**. Of which, **Cyclone Fani** (May, 2019) caused the maximum damage.
 - The **Himalayan glaciers, the coastlines, and the deserts in India** have been severely affected by global warming.
 - The Report also points to an **increase in the number of heat waves**, increased intensity and frequency of **cyclones** and an **increased rate of melting of glaciers** in India.
- **Suggestions:**
 - The **global Covid-19 pandemic** has reiterated the fact that **both risks and vulnerability are systemic and interconnected**. It is therefore important to **strengthen the resilience of the most vulnerable** against different types of risk (climatic, geophysical, economic or health-related).
 - After the international climate policy process stalled in 2020 due to the Covid-19 pandemic, expectations regarding progress on the **long-term finance goal and adequate support for adaptation** lie in 2021 and 2022.
 - The process needs to deliver:
 - a decision on how the **need for support for vulnerable countries** concerning **future loss and damage** is to be determined on an ongoing basis.
 - the necessary steps to **generate and make available financial resources** to meet these needs.
 - strengthening the **implementation of measures** for adapting to climate change.
 - **Effective climate change mitigation and adaptation** to prevent or minimize potential damage.

Note:



History

Highlights

- Shyamji Krishna Varma
- Gandhi Jayanti
- Republics in Ancient India

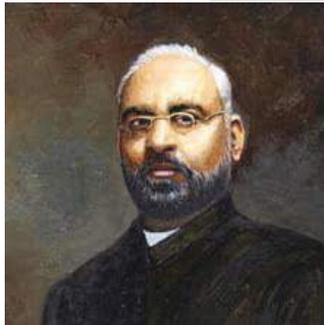
Shyamji Krishna Varma

Why in News

The Prime Minister paid tributes to **revolutionary freedom fighter Shyamji Krishna Varma** on his birth anniversary (4th October).

Key Points

- Shyamji Krishna Varma was **born** on 4th October, 1857 in **Mandvi town of Kachchh district of Gujarat**.
- He was an expert in **Sanskrit and other languages**.
 - His deep knowledge of the Sanskrit language caught the attention of **Monier Williams, a professor of the subject in Oxford University**.
- He was inspired by **Bal Gangadhar Tilak, Swami Dayanand Saraswati** and **Herbert Spencer**.
- He **founded the Indian Home Rule Society, India House and The Indian Sociologist** in London.
 - Indian Home Rule Society and the India House worked towards **inspiring youngsters in Britain** to take up revolutionary activities against their own representatives in India.
 - The monthly Indian Sociologist became an outlet for **nationalist ideas and through the Indian Home Rule Society**, he criticised the British rule in India.
- Varma became the **first President of Bombay Arya Samaj**. He **inspired Veer Savarkar** who was a member of India House in London. Verma also served as the **Divan of a number of states** in India.



- Swami Dayanand Saraswati was the founder of the Hindu reform organisation Arya Samaj.
- He was a **barrister in London**, when in 1905, he was barred from practising law by the Inner Temple following **charges of sedition** for writing against the colonial government.
 - The move was significant as the **Honourable Society of the Inner Temple** is one of the **four professional associations for barristers** and judges in London.
 - He was **posthumously reinstated by the Inner Temple in 2015** after the Inn's governing council noted that Varma "did not receive an entirely fair hearing".
- In the face of criticism by the British, Varma **shifted his base from England to Paris** and continued his movement.
- After the outbreak of the **Second World War (1939-45)**, however, he **moved to Geneva in Switzerland** and spent the rest of his life there. He died on 30th March, 1930.

Gandhi Jayanti

Why in News

2nd October, 2021 marked the **152nd birth anniversary of Mahatma Gandhi**.

- India also pays tribute to **Lal Bahadur Shastri** on the same day every year.

Key Points

- **Birth:** 2nd October 1869 in Porbandar (Gujarat)
- **Brief Profile:** Lawyer, politician, social activist, and writer who became



Note:

the leader of the nationalist movement against the British rule of India.

- **Satyagrah:** In South Africa (1893-1915), he had successfully fought the racist regime with a novel method of mass agitation, which he called satyagraha.
 - The idea of satyagraha emphasised the power of truth and the need to search for truth with non-violence.
 - The **International Day of Non-Violence is observed on 2nd October**, the birthday of Mahatma Gandhi.
 - **Gandhi Peace Prize** is given for social, economic and political transformation through non-violence and other **Gandhian methods**.
- **Return to India:** He returned to India from South Africa on 9th January 1915.
 - **Pravasi Bharatiya Divas (PBD)** is celebrated on 9th January every year to mark the contribution of the Overseas Indian community in the development of India.
- **Satyagraha Movements in India:** Mahatma Gandhi believed that the dharma of non-violence could unite all Indians.
 - **In 1916** he travelled to Champaran in Bihar to inspire the peasants to struggle against the oppressive plantation system.
 - **In 1917**, he organised a satyagraha to support the peasants of the Kheda district of Gujarat. Affected by crop failure and a plague epidemic, the peasants of Kheda could not pay the revenue, and were demanding that **revenue collection be relaxed**.
 - **In 1918**, he went to Ahmedabad to organise a satyagraha movement **amongst cotton mill workers**.
 - **In 1919**, he decided to launch a nationwide satyagraha against the proposed **Rowlatt Act (1919)**.
 - The Act gave the government enormous powers to repress political activities, and allowed detention of political prisoners without trial for two years.
 - On 13th April, 1919 the infamous **Jallianwalla Bagh incident** took place. Seeing violence spread, Mahatma Gandhi called off the movement (18th April, 1919).
- **Non-Cooperation Movement (1920-22):** At the Calcutta session of the Congress in September 1920, he convinced other leaders of the need to start a non-cooperation movement in support of Khilafat as well as for swaraj.

- At the **Congress session at Nagpur in December 1920**, the Non-Cooperation programme was adopted.
- In February 1922, Mahatma Gandhi decided to withdraw the Non-Cooperation Movement after the **Chauri-Chaura incident**.
- **The Salt March:** In 1930, Gandhiji declared that he would lead a march to break the salt law.
 - He marched from Gandhi's ashram in Sabarmati to the Gujarati coastal town of Dandi, where they broke the government law by gathering natural salt found on the seashore, and boiling sea water to produce salt.
 - This marked the beginning of the Civil Disobedience Movement.
- **Civil Disobedience Movement:**
 - In 1931, Gandhi accepted a truce (the **Gandhi-Irwin Pact**), called off civil disobedience, and agreed to attend the Second Round Table Conference in London as the sole representative of the Indian National Congress.
 - After returning from London, Mahatma Gandhi relaunched the Civil Disobedience Movement. For over a year, the movement continued, but by 1934 it lost its momentum.
- **Quit India Movement:**
 - With the outbreak of **World War II (1939-45)**, the nationalist struggle in India entered its last crucial phase.
 - The failure of the mission of Stafford Cripps, a British cabinet minister who went to India in March 1942 with an offer that Gandhi found unacceptable, the British equivocation on the transfer of power to Indian hands, and the encouragement given by high British officials to conservative and communal forces promoting discord between Muslims and Hindus impelled Gandhi to demand in the summer of 1942 an immediate British withdrawal from India—what became known as the Quit India Movement.
- **Social Work:**
 - He worked for the upliftment of untouchables and gave them a new name 'Harijan' meaning the children of God.
 - In September 1932, B.R. Ambedkar negotiated the **Poona Pact** with Mahatma Gandhi.

Note:



- His symbol of **self-reliance - the spinning wheel** - became a popular symbol of the Indian Independence Movement.
- He **played a key role in pacifying people and averting the Hindu-Muslim riots** as tensions rose before and during the partition of the country.
 - He founded the **Hindustani Prachar Sabha in 1942** at Wardha in Maharashtra. The aim of the organisation was to promote Hindustani, a link language between Hindi and Urdu.
- **Books Written:** Hind Swaraj, My Experiments with Truth (Autobiography)
- **Death:** He was shot dead by Nathuram Godse on 30th January, 1948.
 - 30th January is observed as **Martyrs' Day**.

Republics in Ancient India

Why in News

Recently, while addressing the **United Nations General Assembly**, the Prime Minister made an important historical point that **India is not just the world's largest democracy, but also the Mother of Democracy**.

- There is evidence of the existence of **proto forms of democracy and republicanism** in ancient India.

Key Points

- **Vedic Governance:** The Vedas describe at least **two forms of republican governance**:
 - **Monarchy:** The first would consist of elected kings. This has always been seen as an early form of democracy.
 - **Republics:** The second form is that of rule without a monarch, with power vested in a council or sabha.
 - The membership of such sabhas was not always determined by birth, but they often **comprised people who had distinguished themselves by their actions**.
 - There is even a hint of the **modern bicameral system of legislatures**, with the **sabha** often sharing power with the **samiti**, which was made up of **common people**.
 - The **vidhaata**, or the assembly of people for debating policy, military matters and important issues impacting all, has been mentioned more

than a hundred times in the **Rig Veda**. Both **women and men** took part in these deliberations.

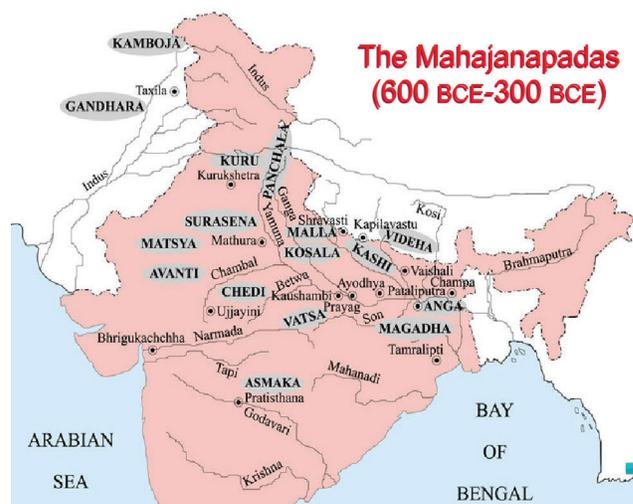
➤ Mahabharata:

- In Chapter 107/108 of Mahabharata's **Shanti Parva**, there is a **detailed narration** about the features of **republics (called ganas) in India**.
 - It states that when there is **unity among the people** of a republic that **republic becomes powerful** and its people become prosperous and they are **destroyed only by internal conflicts** between the people.
- It shows that in ancient India there were not only kingdoms (like Hastinapur and Indraprastha) but also **regions where there was no king but a republic**.

➤ Buddhist Canons:

- The **Buddhist Canon**, both in **Sanskrit** (in which much of Mahayana Buddhist literature was written) and in **Pali** (in which much of Hinayana literature was written) has extensive reference to republics in India, e.g. the **Lichchavi city of Vaishali**.
 - It also describes in detail Vaishali's rivalry with neighbouring Magadha, which was a monarchy. Had the Lichchavis won, the trajectory of governance may well have been non-monarchical in the Subcontinent.
- **The Mahanibbana Sutta** (Pali Buddhist work) and the **Avadaana Shatak** (a Sanskrit Buddhist text of the second century A.D) also mention that certain areas were under a republican form of government.
- Buddhist and Jain texts list **16 powerful states or mahajanapadas of the time**.

➤ Greek Records:



Note:

- The **Greek historian Diodorus Siculus** writes that at the time of Alexander's invasion (in 326 B.C.), most cities in **North West India had democratic forms of government** (though some areas were under kings, e.g. Ambhi and Porus) and this is **also mentioned by the historian Arian**.
 - Alexander's army faced its fiercest resistance from the armies of these republics, e.g. the **Mallas**, and gained victory only after suffering huge casualties.
- **Kautilya's Arthashastra:**
 - Other sources appear in the **Ashtadhyayi of Panini, the Arthashastra of Kautilya**, etc.
- **Elements of State by Kautilya:** Any state is thought of as composed of seven elements. The first three are swami or the king, amatya or the ministers (administration) and janapada or the people.
 - The king must function on the advice of the amatyas for the good of the people.
 - The ministers are appointed from amongst the people (the Arthashastra also **mentions entrance tests**).
 - As per the Arthashastra, in the **happiness and benefit of his people lies the happiness and benefit of the King**.



drishti

Note:



drishti

Geography

Highlights

- Landslide and Flood Early Warning System
- Detoxification of Lukha River: Meghalaya

Landslide and Flood Early Warning System

Why in News

The **Council of Scientific and Industrial Research -National Geophysical Research Institute (CSIR-NGRI)** has launched an **'Environmental Seismology' group** to develop a **'Landslide and Flood Early Warning System'** for the **Himalayan region**.

- The scientists at the NGRI in collaboration with German scientists at GFZ, Potsdam have launched this system.

Key Points

- **About the Early Warning System:**
 - It will be **based on real-time monitoring with dense seismological networks**, coupled with satellite data, numerical modelling and geomorphic analysis.
 - The greatest strength of the broadband seismic network is that it **enables a complete spatiotemporal tracking of the entire disaster sequence** using polarization and back-tracing approaches.
 - Early warning systems **help to reduce economic losses and mitigate the number of injuries or deaths from a disaster**, by providing information that allows individuals and communities to protect their lives and property.
- **Landslide:**
 - **About:** It is defined as the **movement of a mass of rock, debris, or earth down a slope**.
 - They are a **type of mass wasting**, which denotes any downward movement of soil and rock under the direct influence of gravity.
 - The term landslide encompasses **five modes of slope movement**: falls, topples, slides, spreads, and flows.

- **Cause:** Slope movement **occurs when forces acting downward** (mainly due to gravity) **exceed the strength of the earth materials** that compose the slope.
 - Landslides are caused due to **three major factors**: geology, morphology, and human activity.
- **Landslide-Prone Areas:** The entire Himalayan tract, hills/mountains in sub-Himalayan terrains of North-east India, Western Ghats, the Nilgiris in Tamil Nadu Konkan areas are landslide-prone.
- **Steps Taken:** **Geological Survey of India (GSI)** has launched and undertook a **national programme on landslide susceptibility mapping** - Macro scale (1:50,000) with an aim to cover the 0.42 million sq. km landslide prone areas of the country.

➤ Floods:

- **About:** These are the most frequent type of natural disaster and **occur when an overflow of water submerges land that is usually dry**.
 - It is often **caused by** heavy rainfall, rapid snowmelt or a storm surge from a tropical cyclone or tsunami in coastal areas.
- **Types:** There are 3 common types of floods:
 - **Flash floods** are caused by rapid and excessive rainfall that raises water heights quickly, and rivers, streams, channels or roads may be overtaken.
 - These are highly localised events of short duration with a very high peak and usually have less than six hours between the occurrence of the rainfall and peak flood.
 - **River floods** are caused when consistent rain or snow melt forces a river to exceed capacity.
 - **Coastal floods** are caused by storm surges associated with tropical cyclones and tsunamis.
- **Vulnerability:** The major flood prone regions in India are Punjab, Haryana, most of the Gangetic

Note:

plains, including Uttar Pradesh, North Bihar and West Bengal, the Brahmaputra valley, coastal Andhra Pradesh and Orissa, and southern Gujarat.

- Now-a-days Kerala and Tamil Nadu also feel the fury of the floods.

○ **Steps Taken:**

- **Flood-plain zoning** was initiated in India which provided for taking up surveys and demarcation of flood zones or plains. It prevents indiscriminate development and human settlement in such areas.
- The **National Water Policy** highlights the provisions for project planning, surface- and groundwater development, irrigation and flood control.
- The work of **flood forecasting and warning in India is entrusted with the Central Water Commission (CWC).**

Detoxification of Lukha River: Meghalaya

Why in News

Recently, the Meghalaya Government has claimed that a **detoxing pilot project** has brought the **Lukha river back** from the dead.

Key Points

➤ **About:**

- The Lukha River was considered toxic beyond redemption a decade ago owing to **contamination due to acid mine drainage and run-off from the coal mines.**

- **Phytoremediation method** was used to detoxify the river, where **Algae** was used to remove major toxic contents from the water.
- The pilot project was **undertaken under the District Mineral Fund** after reports of low pH levels affecting the aquatic life in the river.
 - Most living organisms, especially aquatic life, function at the **optimal pH range of 6.5 to 8.5.**
 - pH is a **measure of how acidic/basic water is.** The range goes from 0 to 14, with 7 being neutral. pHs of less than 7 indicate acidity, whereas a pH of greater than 7 indicates a base. The **pH of water is a very important measurement concerning water quality.**

➤ **Lukha River:**

- The Lukha is located in the southern part of **east Jaintia Hills** of Meghalaya where most of Meghalaya's **rat-hole coal mines are located.**
 - It has become a victim of the unsustainable large-scale mining of coal and limestone, allegedly responsible for the pollution that turns the river its surreal winter hue.
- It **receives water from the Lunar river** (Wah Lunar) and small streams draining from the **Narpuh Reserve Forest** and the undulating hills of the area while flowing down.
- The river is mainly fed by monsoon rain and flows in the south-west direction and later takes a southern path after **joining the Lunar river near the Gaddum village.**
- The river passes via the Sonapur village and then **into southern Assam's Barak Valley and ends up in the floodplains of Bangladesh.**



Note:



Social Issues

Highlights

- Global Girlhood Report 2021: Girls Right in Crisis
- Digital Divide in Education
- Antimalarial Drug Resistance
- Ecological Threat Report 2021
- 2021 State of the Education Report for India: UNESCO

Global Girlhood Report 2021: Girls Right in Crisis

Why in News

Recently, an **Non-Governmental Organization (NGO)**, Save the Children released the **Global Girlhood Report 2021: Girls Right in Crisis**.

International Day of the Girl Child

➤ About:

- It is observed annually on **11th October**. It was declared by the **United Nations (UN)**, which was first observed in 2012.
 - A resolution to declare **11th October** as the International Day of the Girl Child was adopted by the UN General Assembly on 19th December 2011.
- The day is **dedicated to raising awareness on gender equality** while assuring rights and improving opportunities for girls.

➤ Theme for 2021:

- Digital generation. Our generation.

Key Points

➤ Rate of Child Marriage:

- West and Central Africa **has the highest rate of child marriage** in the world.

➤ Death Due to Child Marriage:

- **Child marriage kills more than 60 girls a day** globally, 26 girls a day in West and Central Africa and **six girls a day** in South Asia.
 - South Asia is followed by **East Asia** and the **Pacific** and **Latin American** and the **Caribbean**.

- The deaths are majorly caused from **pregnancy and childbirth** resulting from child marriage.
- **Effect of Covid on Child Marriage:**
 - **With school closures, health services under strain or closed**, and more families being pushed into poverty, women and girls face an increased risk of violence during lengthy **lockdowns**.
 - **A further 10 million girls** are now **expected to marry by 2030**, leaving more girls at risk of dying.
 - Earlier, according to a report published by ChildLine India **the pandemic and the subsequent lockdown have proved to be new drivers of child marriages** in rural Madhya Pradesh.
 - Also some activists and organisations of Karnataka have raised the issue of **increased child marriages in Lockdown** with the Ministry of Women and Child Development.
- **Suggestions:** The report called on the governments to:
 - **Help Girls Raising Voices:**
 - Raise girls' voices by **supporting their right to safe and meaningful participation** in all public decision-making.
 - **Focus on Gender Equality:**
 - Address immediate and ongoing risks of **gender-based violence**, including child marriage, by putting **girls' rights and gender equality at the center** of **Covid-19** and humanitarian responses, development policy, and broader efforts to build forward better.
 - **Guarantee Girls Their Rights:**
 - Guarantee the rights of all girls, **including those impacted by different forms of inequality and discrimination** by developing inclusive policies and programs. Safe and ethical data collection must also be improved to better understand

Note:

and respond in real-time to Covid-19's impact on existing economic, climate, and conflict-related crises.

○ **Ensure Participation of Female Staffs:**

- Ensure the **safe and unrestricted participation of female humanitarian staff in all humanitarian response efforts**, including needs assessments and the design, implementation, and monitoring, and evaluation of all humanitarian services at every level.

○ **Join the Generation Equality Movement:**

- The movement is working to deliver on the **Global Acceleration Plan for Gender Equality** (launched by Generation Equality Forum), which set a target to prevent nine million child marriages in five years.

➤ **Related Indian Initiatives:**

- The **Child Marriage Restraint Act of 1929** restricts the practice of child marriage.
- The **Special Marriage Act, 1954** and the **Prohibition of Child Marriage Act, 2006** prescribe 18 and 21 years as the minimum age of consent for marriage for women and men respectively.
 - The **Prohibition of Child Marriage Act, 2006** was enacted to address and fix the shortcomings of the Child Marriage Restraint Act.
- The **Union Ministry for Women and Child Development** has set up a committee to examine matters pertaining to age of motherhood, imperatives of lowering **Maternal Mortality Ratio** and the improvement of nutritional levels among women. The Committee is headed by Jaya Jaitely.
 - The Committee was proposed in the **Union Budget 2020-21**.

Child Marriages India Specific Data

- **United Nations Children's Fund (UNICEF)** estimates suggest that each year, at least **1.5 million girls under 18 get married in India**, which makes it home to the **largest number of child brides in the world** - accounting for a third of the global total.
 - Nearly 16% of adolescent girls aged 15-19 are currently married.
- While the prevalence of girls getting married before age 18 has **declined from 47% to 27% between 2005-2006 and 2015-2016**.

- Prevention of Child Marriage is a part of **SDG 5** which deals with gender equality and empowerment of all women and girls.

Digital Divide in Education

Why in News

Recently, the **Supreme Court** (SC) warned that the **Digital Divide caused by online classes will defeat the fundamental right** of every poor child to study in mainstream schools.

- SC lamented how the **Right to Education** of little children now **depends on who can afford "gadgets"** for online classes and who cannot.
- During the course of the **Covid-19 pandemic**, as schools increasingly turned to online education the digital divide produced stark consequences.

Key Points

➤ **Digital Divide:**

- The digital divide refers to the **gap between demographics and regions that have access to modern information** and communications technology and those that don't have access.
 - It is the **gap that exists between individuals who have access to modern information and communication technology and those who lack access**.
- Digital divides exist between **developed and developing countries**, urban and rural populations, young and educated versus older and less-educated individuals, and men and women.
- In India the **urban-rural divide** is the single biggest factor in the digital divide.

➤ **Pre-Pandemic Divide:**

- Students from the urban area and rich families were learning the concepts of science with the help of modern technology and other e-learning platforms while schools in rural areas and poor families were lacking in basic infrastructure facilities like **toilets, proper classrooms and drinking water**.
- The condition of **female children in rural India was even worse than the male child**, it was seen that many girls were dropping out of schools as the **menstruation cycle** starts as schools **do not have basic facilities like toilets, primary care in schools**.

Note:



- In some areas, students had to walk for **10-12 Kms to avail basic education**.
- **Post-Pandemic Divide:**
 - In **urban areas and rich families** where students and teachers are acquainted with digital education and due to comparatively high income, families can **easily afford digital devices for education** as well as they can afford various e-learning platforms.
 - The situation is the opposite in rural areas and poor families. In most cases, **smartphones are owned by earning members**, thus students are finding lots of difficulties in attending online lectures. Those who can afford smartphones are facing network issues.
 - In some cases, **teachers are unfamiliar with online education technology**.
- **Consequences:**
 - **The Disadvantaged Bear the Brunt:**
 - Children belonging to the **Economically Weaker Sections** [EWS]/Disadvantaged Groups [DG] had to suffer the consequence of not **having to fully pursue their education** or worse still drop out because of the lack of access to Internet and computer.
 - They even run the **danger of being drawn into child labour** or worse, child trafficking.
 - **Unfair Competitive Edge:**
 - The poor will remain void of crucial information presented online concerning academia, and thus they will always lag, and this may be summed up by **poor performance**.
 - Hence superior students who can access the internet have an unfair **competitive edge over their less privileged counterparts**.
 - **Disparity in Learning:**
 - The people in **lower socio-economic classes are disadvantaged and have to undergo long hours of cumbersome studies** in meeting the objectives of the course.
 - While the rich can easily access schooling materials online and work on their programs in a flash.
 - **Decreased Productivity Among the Poor:**
 - Most underdeveloped countries or the rural areas tend to **produce half-baked graduates because of inadequate training** due to limited

research abilities as connectivity to the internet is limited besides having low cadre training equipment.

- **Constitutional Provisions for Right To Education:**
 - Originally **Part IV of Indian Constitution**, Article 45 and Article 39 (f) of **DPSP (Directive Principles of State Policy)**, had a provision for state funded as well as equitable and accessible education.
 - The **86th Constitutional Amendment in 2002**, provided Right to Education as a fundamental right in **Part-III of the Constitution**.
 - It inserted **Article 21A** which made Right to Education a fundamental right for children between 6-14 years.
 - It provided for a follow-up legislation **Right to Education Act 2009**.
- **Related Initiatives:**
 - **National Education Policy, 2020**.
 - **Digital Infrastructure for Knowledge Sharing (DIKSHA)**.
 - **PM eVidya**.
 - **Swayam Prabha TV Channel**
 - **SWAYAM portal**

Antimalarial Drug Resistance

Why in News

In recent years there is increasing evidence of the **Antimalarial Drugs Resistance (AMR)** against **Malaria**.

- It has been noticed while treating with the Drugs (Artemisinin or Chloroquine), either alone or with partner drugs.

Key Points

- **Drug Resistance:**
 - It is simply defined as the ability of disease-causing germs (e.g., bacteria or viruses) to **continue multiplying despite the presence of drugs** that usually kill them.
 - Drug resistance is the **reduction in effectiveness of a medication** to cure a disease or condition.
 - **For example:** With **HIV (Human immunodeficiency virus)**, drug resistance is caused by **mutations** in

Note:

the virus's genetic structure. These mutations lead to changes in certain HIV proteins and enzymes (e.g., protease enzyme) which helps HIV to replicate.

➤ Factors Causing AMR:

○ Mutations:

- The mutations in the malarial parasite have been responsible for artemisinin partial resistance.
- As many as 1,044 studies conducted globally from 2010-2019 confirmed the Pfk13 mutation.

○ Inadequate Coverage:

- Imperfect coverage of antimalarial drugs, improper diagnosis, misuse of drugs and not-so-good mosquito control programmes were cited by the report as major contributory factors causing resistance against these drugs.
- These failures lead to increased exposure of the malaria parasites to drugs, increasing the risk of drug resistance

➤ Concern:

- Chloroquine (CQ) is the most commonly prescribed drug for P Vivax parasite. A World Health Organisation (WHO) report said P vivax resistance to chloroquine had been reported from all WHO regions.
 - Twenty-eight countries, including India, showed the CQ resistance.
- A widespread resistance scenario could result in a yearly excess of 22 million treatment failures, 116,000 deaths and costs including an estimated USD 130 million to change treatment policy.

Malaria

➤ About:

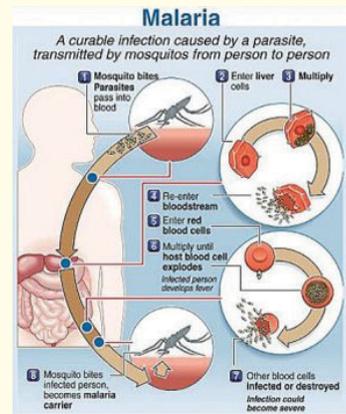
- It is a life threatening mosquito borne blood disease caused by plasmodium parasites, predominantly found in the tropical and subtropical areas of Africa, South America as well as Asia.
 - The parasites spread through the bites of infected female Anopheles mosquitoes.
 - When an infected mosquito bites a person, the parasite is released into the bloodstream, it then travels to the liver where it matures.

➤ Symptoms:

- Sweating, headache, nausea, vomiting and abdominal pain etc are cited as the symptoms.

➤ Types:

- Four types of Parasites can infect humans: Plasmodium Vivax, P. ovale, P. malariae and P. falciparum.



➤ Indian Scenario:

- India carries 2% of the global malaria case burden and 2% of global malaria deaths.
 - India also bears 85.2% of the malaria burden in South East Asia.
- India carries 47% of the global P. vivax malaria burden, making the country strategically important for global malaria elimination, particularly in the South-East Asian region, on the other hand India is the only high endemic country which has reported a decline of 17.6% in 2019 as compared to 2018.

➤ Related Initiatives:

- National Strategic Plan for Malaria Elimination (2017-22).
- National Framework for Malaria Elimination.

Ecological Threat Report 2021

Why in News

Recently, the Institute of Economics and Peace (IEP), an international think tank released the Ecological Threat Report (ETR) 2021: Understanding ecological threats, resilience and peace.

- This is the second edition of the ETR, which covers 178 independent states and territories.
- The ETR includes the most recent and respected scientific research on population growth, water stress, food insecurity, droughts, floods, cyclones, and rising temperature.

Key Points

➤ Conflict and Ecological Threats:

- Around 1.26 billion people across 30 countries

Note:

are suffering from both extreme ecological risk and low levels of resilience.

- These countries are least likely to be able to mitigate and adapt to new ecological threats, leading to mass displacement.
 - As many as **13 countries faced extremely high** and 34 others faced high ecological threats.
 - The most vulnerable countries are clustered in the **Middle East and North Africa, sub-Saharan Africa and South Asia**.
 - **Ecological degradation and conflict work** in a vicious circle, whereby one degradation of resources leads to conflict and vice versa.
 - **Climate change** will have an amplifying effect, causing further ecological degradation and pushing some countries through violent tipping points
- **Food Risk:**
- Global food insecurity has **increased by 44% since 2014**, affecting 30.4% of the world's population in 2020, and is likely to rise further.
 - As a region, **south Asia is the worst-placed**, with water and food risks driving the average ETR score in the region.
 - **Covid-19 has amplified food insecurity further** and will likely have a long-lasting negative impact on world hunger due to stagnant economic growth.
- **Water Risk:**
- **By 2040 over 5.4 billion people** will live in countries facing extreme water stress.
 - Lebanon and Jordan are the countries most at risk.
 - **Sub-Saharan Africa has the most countries** with the lowest levels of social resilience combined with the highest population growth.
 - 70% of its population suffer from inadequate access to safely managed water, which will be compounded by high population growth.
- **Rapid Population Growth:**
- Eleven countries are projected to **double their population between 2021 and 2050**. They are all in sub-Saharan Africa.
 - The three countries with the largest projected increases in population are **Niger, Angola and Somalia**, where the populations will increase by 161, 128 and 113% respectively.

➤ **Temperature Anomalies and Natural Disasters:**

- From 1990 to 2020, a total of **10,320 natural disasters occurred globally**. **Flooding** has been the **most common natural disaster**, accounting for 42 % of the total disaster count.
- In 2020, **177 countries and territories recorded a warmer average temperature** compared to their historical average temperatures.

➤ **Recommendations:**

- The report recommended a policy to **combine health, food, water, refugee relief, finance, agricultural and business development** into one integrated agency in high-risk areas and empowering local communities.

Internal Displacement in India

- According to report titled **The 'Lost at Home'** published last year by the **United Nation Children's Fund (UNICEF)**, more than **five million people were internally displaced in India** due to natural disasters, conflict and violence in 2019, constituting the **highest number of new internal displacements in the world** during the period followed by the Philippines, Bangladesh and China.
- Almost 33 million new displacements were recorded in 2019 - **around 25 million were due to natural disasters** and **8.5 million as consequence of conflict and violence**.

2021 State of the Education Report for India: UNESCO

Why in News

On the Occasion of the **World Teachers' Day (5th October)**, the **United Nations Educational, Scientific and Cultural Organization (UNESCO)** launched its **2021 State of the Education Report (SOER) for India: "No Teacher, No Class"**.

Key Points

- **About:**
- The findings are largely based on analysis of **Periodic Labour Force Survey (PLFS)** and the **Unified District Information System for Education (UDISE) data (2018-19)**.

Note:

MOST TEACHER VACANCIES IN UP

- UP (3.3L), Bihar (2.2L) & Bengal (1.1L) have the most vacancies in teaching positions in schools
- Of the 11L vacant posts in the country, 69% are in rural areas, according to a Unesco study
- At 21k, MP has the highest number of single-teacher schools
- 7.7% pre-primary, 4.6% primary, 3.3% upper-primary & 0.8% secondary teachers in India are underqualified



“Pupil-teacher ratios are adverse in secondary schools. Also, there's no info on availability of special education, music, arts and physical education teachers. The need (for teachers) is likely to grow, given the shortages in certain education levels and subjects (and because) about 30% of the current workforce will need to be replaced

—Unesco state of education report

- It aims to serve as a reference for enhancing the implementation of the **National Education Policy (NEP)** and towards the realization of the **Sustainable Development Goal (SDG) 4** (target 4c on teachers).
 - **Target 4c:** By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States.
- **Findings of the Report:**
 - **Lack of Teachers:**
 - There are nearly **1.2 lakh single-teacher schools** in the country of which an overwhelming **89% are in rural areas**.
 - The report projects that **India needs 11.16 lakh additional teachers** to meet the current shortfall.
 - **Performance of States (Women Teachers):**
 - **Tripura has the least number of women teachers**, followed by Assam, Jharkhand and Rajasthan.
 - **Chandigarh leads the chart** followed by Goa, Delhi, Kerala.
 - **Increase in Number of Teachers in Private Sector:**
 - The proportion of teachers employed in the private sector **grew from 21% in 2013-14 to 35% in 2018-19**.
 - The **Right to Education Act** stipulates that the **Pupil-Teacher Ratio (PTR)** should be 30:1 in classes 1-5 and 35:1 in higher grades.

○ Lack of Digital Infrastructure:

- The **overall availability of computing devices** (desktops or laptops) in schools is 22% for all India, with rural areas seeing much lower provisioning (18%) than urban areas (43%).
- **Access to the internet in schools** is 19% all over India - only 14% in rural areas compared to 42% in urban areas.

○ Increment in Gross Enrolment Ratio (GER):

- For **elementary schools**, it has **increased from 81.6 in 2001 to 93.03** in 2018-19 and stands at 102.1 in 2019-20.
 - **GER is the number of students enrolled** in a given level of education, regardless of age, expressed as a percentage of the official school-age population corresponding to the same level of education.
- **Overall retention is 74.6%** for elementary education and 59.6% for secondary education in 2019-20.

➤ Recommendations:

- **Increase the number of teachers and improve working conditions** in North Eastern states, rural areas and **'aspirational districts'**.
- **Increase the number of physical education, music, art, vocational education, early childhood and special education teachers.**
- Value the **professional autonomy of teachers.**
- Build **teachers' career pathways.**
- Provide teachers with **meaningful Information and Communication Technology (ICT) training.**
- Develop **teaching governance** through consultative processes, based on mutual accountability.

Initiatives Taken

- **NIPUN Bharat Mission**
- **NISHTHA 2.0** (Teachers' Training Programme)
- **New National Education Policy (NEP), 2020**
- **Sarva Shiksha Abhiyan**
- **PM Poshan Scheme**
- **Right To Education (RTE) Act, 2009**
- **Beti Bachao Beti Padhao**



Note:



drishti

Security

Highlights

- Exercise AJEYA Warrior –2021

Exercise AJEYA WARRIOR-2021

Why in News

Recently, the 6th Edition of India - UK Joint Company Level Military Training Exercise AJEYA WARRIOR has commenced in Uttarakhand.



- Earlier, India and the UK participated in a two-day bilateral Passage Exercise (PASSEX) in the Bay of Bengal.

Key Points

- **About:**
 - The exercise is conducted **alternatively in the United Kingdom and India.**
 - The exercise is **part of an initiative** to develop interoperability and sharing expertise with friendly foreign nations.
- **Other Joint Exercises between India and UK:**
 - **Navy: Konkan**
 - **Air Force: Indradhanush**

Joint Military Exercises of India with Other Countries

Name of Exercise	Country
Garuda Shakti	Indonesia
Ekuverin	Maldives
Hand-in-Hand	China
Kuruksheetra	Singapore
Mitra Shakti	Sri Lanka
Nomadic Elephant	Mongolia
Shakti	France
Surya Kiran	Nepal
Yudh Abhyas	USA



Note:

Miscellaneous

Highlights

- Indian Sandalwood
- Dr. Abdul Qadeer Khan
- Indian Peafowl
- Most Promising Astronomical Site: Hanle
- SACRED Portal for Elderly
- Giloy or Guduchi
- Nobel Prize for Literature, 2021
- Green Term Loan
- Drone-Based Vaccine Delivery Model: i-Drone
- Henley Passport Index 2021
- Nobel Prize for Economic Sciences, 2021
- New Cicada Species: Nagaland
- Flower Scorpionfish

Indian Sandalwood

Why in News

Recently, as a part of the ongoing '**Azaadi ka Amrit Mahotsav**' initiative, the government of India inaugurated a **training program on Indian Sandalwood Farming & Management**.

- The programme aims at establishing **Sandalwood Technology Innovation centres** in the growing states, value addition in training & skill development as well as introducing new methods of cultivation among farmers & young entrepreneurs.



Key Points

- **About:**
 - *Santalum album*, commonly known as Indian Sandalwood, is a **dry deciduous forest species native to** China, India, Indonesia, Australia, and the Philippines.
 - Sandalwood has been long associated with the Indian heritage & culture, as the country contributed **85% of the world' sandalwood trade erstwhile**. However, lately this has been declining at a fast rate.

- This small tropical tree **grows to 20m high with red wood and a variety of dark colors of bark** (dark brown, reddish and dark grey).

- Because it is **strong and durable**, *S. album* is mostly harvested for its timber.

- **IUCN Red List Status:** Vulnerable

- **Uses:**

- In India, it is also called "**Chandan**" and "**Srigandha**". Sandalwood has a special place in Indian tradition where it is being **used from cradle to cremation**.
- **Sandalwood heartwood**, which is close-grained, is **used for fine furniture and carving**. The heartwood and roots also contain '**sandal oil**' which is valued for **use in perfumes, incense, cosmetics, soaps, and medicines**. The **bark contains tannin**, which is used **for dye**.
- Sandalwood essential oil has **antiseptic, anti-inflammatory, antispasmodic and astringent properties**.
 - It is used in **aromatherapy** to reduce stress, hypertension and heals wounds and treats skin blemishes.

Sandalwood Market

- Though there are many varieties of sandalwood available in the world, **Indian sandalwood and Australian sandalwood are very famous** and have excellent commercial value in the market.
- Globally, **India & Australia are the largest growers of sandalwood**, while the biggest markets lie in the United States, China, Japan & the Indian domestic market

Note:



- **Major Growing Areas:** In India, sandalwood is mostly grown in Andhra Pradesh, Telangana, Bihar, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, and Tamil Nadu.

Dr. Abdul Qadeer Khan

Why in News

Recently, **Dr Abdul Qadeer Khan of Pakistan** passed away. He is hailed as the man who single-handedly ensured that Pakistan succeeded in **making nuclear weapons**. This was significant, as this made Pakistan an **equal of India** in terms of Nuclear Weapon state.

- Due to this, he is revered in Pakistan as the **“father” of the country’s “atom bomb” or Nuclear Hero**.
- However, the western world criticised him as a **nuclear thief or “the greatest nuclear proliferator of all time”**.

Key Points

- **About Dr Abdul Qadeer Khan:**
 - In **1975**, Khan, then **working in Holland in a uranium enrichment facility as a German-Dutch translator, offered his services to then PM Zulfikar Ali Bhutto**, who wanted Pakistan to have its own nuclear programme.
 - He provided the **first blueprints for Pakistan’s centrifuges**, setting it on the path to uranium enrichment.
 - In **1976**, he **joined Pakistan Atomic Energy Commission’s nuclear weapons effort**.
 - He was **convicted by a Dutch court for the theft**.
 - Also, he has **smuggled nuclear secrets to states including North Korea, Iran and Libya**.
 - For this, he was arrested and placed in a house arrest.
 - Due to his contribution, **by 1998, Pakistan had conducted its first nuclear tests**.
 - Pakistan honoured him with the titles of **Nishan-e-Imtiaz** (Order of Excellence, Pakistan’s highest civilian honour) and **Mohsin-e-Pakistan** (Benefactor of Pakistan).
- **About India’s Nuclear Tests and Nuclear Doctrine:**
 - In **1965**, India with **NAM countries** proposed some principles to prevent the proliferation of nuclear weapons to the **UN Disarmament commission**.

These are:

- Not to transfer Nuclear technology to others.
- No use of nuclear weapons against non nuclear countries.
- UN security cover to non nuclear States.
- Nuclear disarmament ban on the nuclear test.
- In May **1974**, India conducted its **first nuclear test in Pokhran** with the codename of **“Smiling Buddha”**.
- In **1998**, five nuclear tests were conducted as a part of the series of Pokhran-II.
 - These tests were collectively called **Operation Shakti**.
- In 2003, India adopted its **Nuclear Doctrine of ‘No First Use’** i.e. India will use nuclear weapons only in retaliation against a nuclear attack on its Territory.
- **India** possessed an estimated **156 nuclear warheads** at the start of 2021 compared to 150 at the start of last year, while **Pakistan had 165 warheads**, up from 160 in 2020 (**SIPRI Yearbook 2021**).
 - Pakistan has not stated a **“no first use” policy** and there is little known about its nuclear doctrine.

Indian Peafowl

Why in news

Recently, a man was hit by a **peafowl in Kerala** after which he died. This incident has turned the spotlight on the **increasing population of Indian peafowls** in the state.

Key Points

- **About:**
 - The **collective name for peacocks** is peafowl. The male of the variety is called a **peacock** and the female peafowl is called a **peahen**.



Note:

- The **Indian peacock** is also the **National Bird of India**.
- **Peafowl (Pavo cristatus)** belongs to the **Phasianidae family**. They are among the **largest of all birds that fly**.
 - **Phasianidae** is the pheasant family, a bird family that includes among its members the jungle fowl (from which the domestic chicken is descended), partridge, peacock, pheasant, and quail.
- The two most-recognizable **species of peafowl** are:
 - The **blue, or Indian, peacock** of India and Sri Lanka.
 - The **green or Javanese, peacock (P. muticus)** found from Myanmar (Burma) to Java.
- **Habitat:**
 - The Indian peafowl is a **native of India** and some parts of **Pakistan and Sri Lanka**.
 - The species are **currently habituated more in central Kerala**, followed by southeast and northwest parts of the state.
 - At least **19% of the states' area is suitable habitat for this species** and this may increase by **40-50% by 2050**.
 - They are **well adapted to living in forest edges and cultivated areas**.
- **Concerns:**
 - They are a **threat to paddy farmers** in Kerala. They destroy its seeds and cause man-animal conflict.
 - Agriculture expansion and **deforestation** have caused other species to **'invade human territory'**.
 - The growing population of peafowls signals **climate change**. They are known to grow and thrive in dry conditions.
- **Protection Status:**
 - **IUCN:** Least Concern
 - **Wildlife (Protection) Act, 1972:** Schedule I

Most Promising Astronomical Site: Hanle

According to a recent study, the **Indian Astronomical Observatory (IAO)** located at Hanle near Leh in Ladakh is becoming one of the promising observatory sites globally.

- The **Indian Astronomical Observatory** has one of the **world's highest sites for optical, infrared and gamma-ray telescopes**.

Key Points

- **About:**
 - Hanle site is **as dry as the Atacama Desert** in Chile and much drier than Devasthal (Uttarakhand) and has around **270 clear nights in a year** and is also one of the **emerging sites for infrared and sub-mm optical astronomy**.
 - This is **because water vapour absorbs electromagnetic signals** and reduces their strength.
 - It has advantages of more **clear nights, minimal light pollution, background aerosol concentration, extremely dry atmospheric conditions, and uninterrupted monsoon**.
 - Such conditions are considered **crucial for astronomers to build huge telescopes and plan for future observatories** and predict how they will vary with time.
- **Other Promising Sites:**
 - **Merak observatories** in Ladakh.
 - **Devasthal** in Nainital, **Ali Observatory** in the **Tibet Autonomous Region** in China.
 - **South African Large Telescope** in South Africa.
 - **University of Tokyo Atacama Observatory** and **Paranal** in Chile.
 - **Mexico's National Astronomical Observatory**.
- **Trans-Himalayan Region:**
 - The **Trans-Himalayas Mountain Region or Tibet Himalayan Region** is located to the north of the Great Himalayas which consists of **Karakoram, Ladakh, Zaskar** and **Kailash** mountain ranges.
 - It is also called the **Tibet Himalayan Region** because most of the part of these ranges lies in Tibet.
 - They are the eastward continuation of the most northerly ranges of the **Himalayas**.
 - It consists of an **ill-defined mountain area** about 600 miles long and 140 miles wide in the centre, narrowing to a 20-mile width at the eastern and western ends.
 - It is mainly composed of **granites** and **volcanic rocks** of the Neogene and Paleogene age.

Note:





SACRED Portal for Elderly

Why in News

In a first of its kind move, the government has come up with an **online employment exchange platform to cater to senior citizens** seeking job opportunities.

- The portal developed by the **Ministry of Social Justice and Empowerment** is named **Senior Able Citizens for Re-Employment in Dignity (SACRED)**.
- The **International Day of Older Persons** is observed on **1st October** each year.

Key Points

- **About:**
 - **Citizens above 60 years of age** can register on the portal and find jobs and work opportunities.
 - The Employment Portal will serve **not only the senior citizens** seeking employment, **but also the employers, the Self Help Groups (SHGs),** the senior citizens gaining skills, and other agencies or individuals.
 - An **amount of Rs. 10 Cr** would be provided for funding for the **platform development** along with **maintenance grant of @ Rs. 2 Cr per year for 5 years.**
 - The portal is shaped **on the recommendations of the Empowered Expert Committee (EEC) report on startups for the elderly.**
- **Need:**
 - There is a **sharp rise in India's elderly population** and thrust is on creating an ecosystem that supports their needs more holistically.

- According to the **Longitudinal Ageing Study of India (LASI)**, India will have over 319 million elderly by 2050 compared to the 120 million now.
- **More than 50% senior citizens are found active** as per the LASI report 2020. Many senior citizens having experience, time and energy can be used by the business enterprises looking for stable employees with experience.

➤ Other Recent Initiatives:

- **Elder Line:** The first Pan-India toll-free helpline number (14567) for Senior Citizens.
- **SAGE (Seniorcare Aging Growth Engine) Portal:** It will be a "one-stop access" of elderly care products and services by credible start-ups.
- **International Day of Older Persons (1st October):**
 - **Theme 2021:** Digital Equity for All Ages
 - The **United Nations General Assembly** has declared **2021-2030 the Decade of Healthy Aging.**

Giloy or Guduchi

Why in News

According to the **Ministry of AYUSH, Giloy or Guduchi,** a popularly known **herb is safe to use.**

- However, similar looking plants in circulation such as **Tinospora crispa can be harmful.** Tinospora crispa is a medicinal plant belonging to the botanical family Menispermaceae and is widely distributed in **Southeast Asia and the northeastern region of India.**

Key Points

- **Giloy (*Tinospora cordifolia*)** is a **climbing shrub** that grows on other trees, from the **botanical family Menispermaceae.**
- It is an **essential herb in Ayurvedic medicine** and all its parts are thought to have health benefits.
- People have long **used it to treat a wide range of issues,** including fever, infections, diarrhoea and diabetes.
- Guduchi's **hepato-protective properties** are well established and is known for its **immense therapeutic applications** and the practices are regulated in accordance with various applicable provisions.
 - Hepatoprotection or anti hepatotoxicity is the **ability of a chemical substance to prevent damage to the liver.**

Note:



- The plant is **native to India** but also found in China and tropical areas of Australia and Africa.
- The Ministry of AYUSH has a well-established system of **Pharmacovigilance** (for reporting of suspected adverse drug reactions from AYUSH medication), with its network spreading across all over India.

Nobel Prize for Literature, 2021

Why in News

The **2021 Nobel Prize in Literature** has been awarded to **novelist Abdulrazak Gurnah** “for his uncompromising and compassionate penetration of the effects of colonialism and the fate of the refugee in the gulf between cultures and continents”.

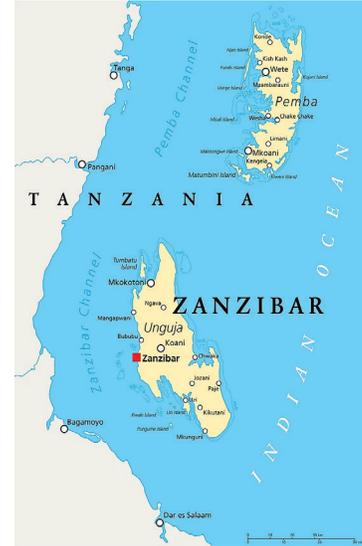
- **Last year**, the award was given to **Louise Glück** “for her unmistakable poetic voice that with austere beauty makes individual existence universal.”
- The **Nobel Prizes in Physics, Chemistry and Medicine for 2021** have already been awarded.

Key Points

- **About:**
 - **Abdulrazak Gurnah** was born in 1948 and **grew up on the island of Zanzibar in the Indian Ocean**. He was forced to flee to the UK, the former colonial power, at the end of the 1960s after a revolution occurred in Zanzibar.
 - **Zanzibar is part of East Africa**, a region known as the Swahili coast, stretching from present-day Somalia to Mozambique on the western shores of the Indian Ocean.
 - He has **published ten novels and a number of short stories**. The **theme of the refugee’s disruption** runs throughout his work.

- He **began writing as a 21-year-old in English exile**, and although Swahili was his first language, English became his literary tool.

- Gurnah’s **fourth novel ‘Paradise’ (1994)**, his breakthrough as a writer, evolved from a research trip to East Africa around 1990.



➤ Significance:

- At a time when the **global refugee crisis** is exponentially on the rise, Gurnah’s work **draws attention to how racism and prejudice** against targeted communities and religions perpetuate cultures of oppression.

Green Term Loan

Why in News

Recently, NTPC Renewable Energy (**NTPC-REL**), a subsidiary of NTPC, has signed its **first Green Term Loan agreement** for installation of **Solar Projects in Rajasthan & Gujarat**.

- NTPC-REL is also constructing **India’s largest single local solar power park** of 4.75 GW in Kutch.
- NTPC is taking various steps to make its energy portfolio greener by adding significant capacities of renewable energy sources.

Key Points

- **About ‘Green Loan’:**
 - A green loan is a form of financing that seeks to enable and empower businesses **to finance projects which have a distinct environmental impact**, or rather, which are directed towards financing **‘green projects’**.
- **Benefits of Green Loans:**
 - **Corporate Advantage:**
 - It will help raise **corporate value**, by demonstrating that they are actively promoting Green Projects

Note:



by procuring Green Loans, which could possibly earn them public acceptance.

- This will also help in fulfilling **Corporate Social Responsibility targets**.
- **Balancing Economy With Ecology:**
 - By providing Green Loans, lenders can support the realization of the environmental benefits that contribute to **creating a sustainable society, while simultaneously gaining returns on their lending**.
 - An increase in Green Loans and Green Deposits will enhance individual awareness of Green Loans.
- **Environmental Benefits:**
 - An increase in Green Loans is expected to increase private funds in Green Projects, **contributing to the substantial reduction of GHG (GreenHouse Gas) emissions and the prevention of degradation of natural capital**.
 - The promotion of Green Projects can **lower energy costs, strengthen energy security, revitalize the regional economy, and enhance resilience in the event of disasters**.

Other Related Concepts

- **Green Bonds:** A **green bond** is a debt instrument with which capital is being raised to fund 'green' projects, which typically include those relating to renewable energy, clean transportation, sustainable water management etc.
- **ESG Fund:** **ESG Fund** is a combination of three words i.e. **environment, social and governance**. It is a kind of **mutual fund**.
 - Its investing is used synonymously with **sustainable investing or socially responsible investing**.

Drone-Based Vaccine Delivery Model: i-Drone

Why in News

Recently, the Ministry of Health and Family Welfare has launched a Drone-Based vaccine delivery model named, **Drone Response and Outreach in North East (i-Drone)**.

- Drone is a layman terminology for **Unmanned Aircraft (UA)**. There are three subsets of Unmanned Aircraft-

Remotely Piloted Aircraft, Autonomous Aircraft and Model Aircraft.



Key Points

- **About:**
 - **Indian Council of Medical Research (ICMR)** has devised the model to make sure that life-saving vaccines reach everyone.
 - It has been designed to facilitate vaccine delivery **to tough and hard-to-reach terrains** of India.
 - Currently, the drone based delivery project has been granted permission for implementation in **Manipur and Nagaland**, as well as union territory of **Andaman and Nicobar Island**.
 - The permission was granted to the **ICMR** for conducting feasibility study of **Covid-19 vaccine** delivery using drones, in collaboration with IIT-Kanpur.
- **Significance:**
 - It will help in **overcoming the gaps in current vaccine delivery mechanisms** and can be used in delivering important **life-saving medicines**, collecting blood samples etc.
 - This technology can also be **used in critical situations**. It can be a game changer in **addressing the challenges in health care delivery**, particularly health supplies in difficult areas.
- **Other Projects Using Drones:**
 - Telangana government has selected 16 Primary Healthcare Centres (PHCs) for pilot testing the ambitious **'Medicine from the sky', the first-of-its-kind project**.

Note:

- The **International Crops Research Institute (ICRISAT)** was permitted to deploy **drones for agricultural research activities**, apart from some agriculture universities and educational institutions.

Indian Council of Medical Research

- It is the apex body in India for the **formulation, coordination and promotion of biomedical research**.
- Its mandate is to **conduct, coordinate and implement medical research** for the benefit of the Society; translating medical innovations into products/processes and introducing them into the public health system.
- It is **funded by the Government of India** through the Department of Health Research, Ministry of Health & Family Welfare.

Henley Passport Index 2021

Why in News

India has been **ranked 90th** in the most powerful passport report 'Henley Passport Index 2021'.

Key Points

- **About the Index:**
 - The **Henley Passport Index** is the **original ranking of all the world's passports** according to the number of destinations their holders can access without a prior visa.
 - Originally created by **Dr. Christian H. Kaelin (chairman of Henley & Partners)**, the ranking is based on exclusive data from the **International Air Transport Association (IATA)**, which maintains the world's largest and most accurate database of travel information.
 - It was **launched in 2006** and includes 199 different passports.
- **Global Rankings:**
 - **Japan and Singapore** stood at the **top** of this year's list, with their passport holders allowed to travel **visa-free to 192 countries**, while South Korea and Germany share the second position.
 - For the third consecutive year, Japan has secured the top position.
 - Meanwhile, **Afghanistan, Iraq, Syria, Pakistan, and Yemen** are among the **least powerful**.

India's Performance:

- India **fell down to the 90th position**, with its passport holders **allowed to travel visa-free to 58 countries**.
 - India shares the rank with **Tajikistan and Burkina Faso**.
- India was **ranked 85th** in the January 2021's index', (84th) in 2020 and (82nd) in 2019.

Nobel Prize for Economic Sciences, 2021

Why in News

The **2021 Nobel Prize in Economic Sciences** has been awarded in one half to **Canadian-born David Card** and the **other half jointly to Israeli-American Joshua D Angrist and Dutch-American Guido W Imbens**.

- David Card has been awarded for his **empirical contributions to labour economics**. Joshua D Angrist and Guido W Imbens won the award **"for their methodological contributions to the analysis of causal relationships."**
- The **2020 Nobel Prize in Economic Sciences** was awarded to **Paul R Milgrom and Robert B Wilson** "for improvements to auction theory and inventions of new auction formats".

Key Points

- **About:**
 - **Established:** Unlike the other Nobel prizes, the **economics award wasn't established** in the will of **Alfred Nobel** but by the **Swedish central bank** in his memory in 1968.
- **Contributions:**
 - **David Card:** He has analysed how **minimum wages, immigration and education** impact the labour market.
 - One of the significant findings of this research was that **"increasing the minimum wage does not necessarily lead to fewer jobs"**.
 - It also led to the understanding that **"people who were born in a country can benefit from new immigration, while people who immigrated at an earlier time risk being negatively affected"**.
 - It also illuminated the **role of resources available in school** in shaping the future of students in the labour market.

Note:



- **Joshua Angrist and Guido Imbens:** They were rewarded for their “**methodological contributions**” to the research tool.

Nobel Prizes 2021		
Field	Recipient	Contributions
Chemistry	Benjamin List and David W.C. MacMillan	Finding an easier and environmentally cleaner way to build molecules that can be used to make compounds, including medicines and pesticides (organocatalysis).
Physics	Syukuro Manabe, Klaus Hasselmann and Giorgio Parisi	Understanding of complex physical systems.
Medicine	David Julius and Ardem Patapoutian	For their work in the field of somatosensation, that is the ability of specialised organs such as eyes, ears and skin to see, hear and feel.
Peace Prize	Maria Ressa and Dmitry Muratov	For their efforts to safeguard freedom of expression, which is a precondition for democracy and lasting peace.
Literature	Abdulrazak Gurnah	For his uncompromising and compassionate penetration of the effects of colonialism and the fate of the refugee in the gulf between cultures and continents.
Economics	David Card, Joshua Angrist and Guido Imbens	Research on wages, jobs.

- Their work demonstrated “**how precise conclusions about cause and effect can be drawn from natural experiments**”.

New Cicada Species: Nagaland

Why in News

Recently, a new cicada species (*Platyomia kohimaensis*) was found in the **Naga Hills of Nagaland**.

- Earlier, two species of Cicadas ***Savazana mirabilis*** and ***Salvazana imperialis*** were discovered in Meghalaya.

Key Points

➤ **About:**

- Cicadas are hemipteran insects known for their **loud, complex and species-specific acoustic signals** or songs.

- Hemipteran insects, **also called true bugs**, have mouthparts used for **piercing and sucking and have two pairs of wings**.



- The new cicada species belongs to the ***Platyomia radha group*** described from the Naga Hills in the eastern Himalayas.
- It is a **dusk singing, large-sized cicada that calls for a short window** during the evening twilight hours. It timbalises in the form of a continuous and regular cackling.
 - Timbal is a sound producing membrane in various insects.

➤ **Significance of Cicadas:**

- They are mostly beneficial. They **prune mature trees, aerate the soil**, and once they die, **their bodies serve as an important source of nitrogen** for growing trees.
- With their acoustic signatures, they act as **indicators of a healthy forest ecosystem**.

➤ **Habitat:**

- Most cicadas are **canopy dwellers** and are found in **natural forests with large trees**.

Note:

- The **generic diversity of cicadas in India and Bangladesh ranks the highest** in the world, followed by China.
- **Threat:**
 - Large-scale clearing of natural forest land into human settlement and agricultural fields, along with **burning of forests is behind the shrinking distribution** of Cicada.
 - Since it is considered a delicacy and fetches a good price, its **unabated capturing and killing during its mass emergence** poses a great threat to its survival.

Flower Scorpionfish

Why in News

Recently, a fish species named **Flower Scorpionfish** (*Hoplosebastes Armatus*) which was only found in the **Pacific Ocean** has been discovered in the **Indian Ocean**.



- The **rise in the temperature** of sea water due to global warming might have induced the migration of this species from different regions.

Key Points

- **About:**
 - It belongs to the order of **ray-finned fish** that are also known as **Scorpaeniforme**.
 - It was **discovered** in the Pacific Ocean off Japan almost a century ago in **1929**.
 - Fish of the scorpionfish family are some of the most poisonous animals in the ocean
 - The head of the species is comparatively large and greater than the body.
 - The **length** of the species ranged from **75-127 mm**, while its body **width** was from **14-22 mm**.
 - Scorpionfish **blend in perfectly with their coral and rocky surroundings** because of their mottled color patterns.
- **Habitat:**
 - Earlier, they were only found in the **Pacific Ocean**. However, its range now extends from the **Northwest Pacific to the Indian Ocean**
- **Scorpaeniformes:**
 - Also called **mail-cheeked fish**, any one of a group of bony fishes that are characterized by a plate of bone running across each cheek.
 - They are **widespread throughout the oceans** of the world.
 - They are believed to have originated in warm marine waters but have invaded temperate and even **Arctic** and **Antarctic seas**, as well as fresh waters of the **Northern Hemisphere**.



Note:



Key Points

Details

Blank area for Key Points.

Lined area for Details.

Summary

Blank area for Summary.